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CONSULTANCY REPORT

Towards a Business Case for a Pacific Climate Change Portal

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Photo Courtesy of Trevor Jones

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Towards a Business Case for a Pacific Climate Change Portal

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About this document

This Professional Opinion reports the findings of a consultancy undertaken for the Secretariat for the Pacific Regional Environment Programme (SPREP) by Geoscience Australia in the period 15 December 2010 to 2 April 2011.

Geoscience Australia was engaged by SPREP to assist in developing a business case for a Pacific Climate Change Portal. This portal will act as a focus for climate and climate change information relevant to the Pacific, provide up to date information for decision makers, and researchers, and improve communication and collaboration in adaptation initiatives by national, regional and international stakeholders. More background information is provided in the Introduction on the reasons for the consultancy.

This report contains information on consultation with selected Pacific national and regional organisations and other national organisations active in the Pacific. It also contains recommendations on the key design functionalities of a Pacific Climate Change portal, staged to reflect development of a portal from simple and achievable now to complex and achievable in future with enhanced functionality that is dependent on availability of resources and requisite datasets.

The consultancy was established with a view to stakeholders having draft information on elements of the business case including a proposed budget for establishment for a Pacific Portal available for comment at the 2011 Climate Change Roundtable in Niue, 14-17 March. The Consultancy officially commenced on 26 January 2011, although some earlier discussions were undertaken between Geoscience Australia and SPREP from the 15th December 2010.

As a result of the very limited time frame and limited budget, there are risks to note. These include:

a. It was not possible to consult all of the stakeholders considered 'core' by SPREP, as well as other stakeholders considered key such as the national climate change focal points, data providers and potential end users in research, government, non-government and education, on their needs and views. This report represents the views of those we were able to engage. It therefore may not have canvassed, prioritised and adequately presented the full range of issues;

b. It was not possible to undertake a complete literature review or analysis of the large and greatly expanding delivery of information on all aspects of climate change, small island states, environment, etc., that is potentially linked to the Pacific climate change portal. Therefore there is a risk that highly relevant initiatives could have been overlooked;

c. There is a risk that this report may not accurately reflect the views of stakeholders who have been consulted due to insufficient time for these stakeholders to review comments attributed to them and outcomes reported from meetings with them.

Therefore the assumptions, views, conclusions and recommendations of this report have been put forth noting these risks.

This report makes several recommendations to reduce these risks through further consultation coordinated by SPREP or the Climate Change Information and Knowledge Management Working Group (the 'Knowledge Management Working Group') of the Pacific Climate Change Roundtable.

Notwithstanding these limitations of the consultancy, Geoscience Australia, SPREP and the core stakeholders for a Pacific portal have attempted to compile views, highlight issues and recommend ways forward so that this Consultancy will prove valuable in guiding further steps to establish the portal.

Executive Summary

This Professional Opinion reports the interim findings of a consultancy undertaken for the Secretariat for the Pacific Regional Environment Programme (SPREP) by Geoscience Australia in the period 15 December 2010 to 2 April 2011.

Geoscience Australia was engaged by SPREP to assist in developing a business case for a Pacific Climate Change Portal. This portal will act as a focus for climate and climate change information relevant to the Pacific, provide up to date information for decision makers, and researchers, and improve communication and collaboration in adaptation initiatives by national, regional and international stakeholders.

Geoscience Australia has consulted as much as possible in the time available with stakeholders for the portal identified by SPREP to be 'core'. These stakeholders include the Secretariat of the Pacific Community (SPC), United Nations organisations, notably the United Nations Development Programme (UNDP), and the National Oceanographic and Atmospheric Administration (NOAA), along with SPREP itself. The consultations allowed Geoscience Australia to identify key issues, recommend core functionalities of the portal and a preferred operational model and identify partnerships and resources required for sustainable, long term operation of the portal.

As a part of this consultancy, Geoscience Australia constructed a 'demonstrator' Pacific Climate Change web portal to illustrate how users could operate the proposed key functionalities of the portal, and to give potential users an illustration of two 'look and feel' options. This demonstrator portal can be visited at http://www.pacificportal.com.au/ . It will be active until approximately the end of June 2011.

ISSUES

There are a number of initiatives for the Pacific that are similar to, related to, or complement the proposed Climate Change portal. Several of these web sites or portals can potentially provide climate change subsets of their content to the Pacific Climate Change portal.

Portal content can become out of date if information sources do not send current information to the portal. Therefore governance arrangements are required to ensure that the portal remains functional, current and robust against those risks.

All of the stakeholders consulted by Geoscience Australia stated that a Pacific Climate Change Portal would be valuable, and each also stated that they wanted the portal to be successful.

None of the issues raised is strictly technical or technological. Rather, the main drivers for the success of the portal are based around:

(a) Relevance of the content, currency and functionality;

(b) Partnerships to ensure ongoing relevance and currency;

(c) Adequate ongoing resources to provide, update and deliver content, operate the portal, improve functionality and maintain partnerships; and

(d) access to portal data and functionality.

PROPOSED CORE ELEMENTS OF THE PORTAL

Three core information sharing elements could be considered part of the Regional Pacific Climate Change Portal, based on an analysis of the feedback from stakeholders. These are:

1. A search function to interrogate databases of project activities and output matrices;
2. A forum for question and answers; and
3. A facility for unstructured searching of climate change information.

HOSTING AND OPERATIONS

Two options of physical hosting of the portal are recommended for investigation. These are:

1. Infrastructure as a service, also known as cloud services typically offered by commercial companies such as Web hosting companies, Google and Amazon.
2. Portal is hosted by a regional Climate Change business partner.

A third option, wherein the portal is hosted by SPREP, is not preferred because of staff capacity and bandwidth issues.

STRUCTURAL MODEL FOR OPERATIONS

Geoscience Australia recommends a centralised structure, initially consisting of 2 FTE Information Management/Researcher/Librarian staff, with this number increasing as the portal grows. Geoscience Australia also recommends the resourcing of similar Information Management/Researcher/Librarian personnel within perhaps seven stakeholder countries and agencies for the initial 12 - 24 months to establish information exchange and render partnerships effective.

RECOMMENDATIONS

1. SPREP and its core partners build on resources, web sites, web functionalities, databases, search engines and interactive fora that are already available as a basis for portal operation.

2. SPREP[1]:

    a. Undertake further consultations on the web portal at and after the PCCR, including a stakeholder needs survey;

    b. Make a decision on who will take this forward (The PCCR recommended SPREP, working closely with a Steering Committee from the Knowledge Management Working Group); and

[1] Taken from 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 19.

c. Commence implementation, addressing issues such as: fundraising, governance, and partnership arrangements.

3. SPREP and the Knowledge Management Working Group coordinate a stakeholder needs survey prior to the establishment of the portal as an initial step to better define (a) clearer identification of audience groups, (b) types of information and products, (c) capacity building needs, and (d) involvement of non-government groups [towards] development of a policy in this regard. GA has included the services of a Business Analyst in the proposed budget for this purpose. [2]

   A first step in this process would be to collect, analyse and act on the feedback received at the Pacific Climate Change Roundtable 2011 such as the contents of questionnaires on Information Management filled in by Roundtable respondents.

   Furthermore, SPREP and the Knowledge Management Working Group should revise the cost model in this report (Appendix C) following analysis of the stakeholder needs survey.

4. SPREP and its core partners start simple with the portal and establish perhaps only three areas of functionality in the first instance. These are:

   a. Establishment, maintenance and search capability for the project matrix;

   b. Interactive fora linked to Adaptation Learning Mechanism and Solution Exchange;

   c. Enterprise search capability of stakeholder web sites.

5. SPREP establish formal partnerships with core stakeholders to enable the initial and ongoing functionality of the portal.

6. SPREP and its core partners nourish the principle that the function of the portal must be clear, defined and simple to ensure its success. A 'one stop shop' is doomed to inefficiency, atrophy and disappointment.

7. SPREP and the Steering Committee of the Knowledge Management Working Group consider for adoption the structural model proposed for the portal of centralised Information Management resources with, for an initial 12 – 24 months, additional staff resources outposted to several regional countries.

8. SPREP and the Steering Committee from the Knowledge Management Working Group develop an initial, conceptual framework for (a) processes for selection of knowledge, information and data for the portal, (b) quality control and (c) the role of administrators in uploading and managing information.[3]

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[2] This Recommendation makes reference to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 35.

[3] This Recommendation makes reference to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 35.

9. SPREP establish a Governance Committee to provide oversight of the portal's strategic direction, including any major functional improvements and future development based on feedback received from the portal's users. [The Governance Committee is separate from the Steering Committee from the Knowledge Management Working Group. The Governance Committee will have ongoing, regular responsibilities in contrast to the Steering Committee which is aimed to assist SPREP to establish the portal.] Additionally:

    a. The Governance Committee lead a review of the portal as a two-year milestone in the portal's operation;

    b. The Governance Committee conduct an annual user needs survey to gauge evolving user trends, for example in social networking, and changes to the portal to meet these needs. These surveys could be conducted for low cost and GA has included these annual surveys in the proposed budget.

10. In relation to national-regional collaboration on the portal, national focal points:

    a. Review the status of (a) national needs for in-country Information Management training; (b) capacity building in Information Management; (c) awareness raising in relation to Information Management issues for climate change; (d) improving access to data and removing barriers to data sharing nationally and sub-nationally; and (e) national Information Management strategies, including data compilation and dissemination strategies; with the aim of ensuring adequate national Information Management practice to support the long term viability of the portal[4]; and

    b. Establish Information Management policy and practice to ensure their country's commitment is met in sustaining the portal, working with SPREP and international partners as required.

[4] This Recommendation makes reference to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 35.

Introduction

SUMMARY BACKGROUND INFORMATION FROM SPREP

1. In recognition of the potential adverse impacts of climate change in the Pacific region and the negative implications this has for the sustainable development of Pacific island countries, Pacific Island Leaders in 2005 endorsed the Pacific Islands Framework for Action on Climate Change 2006-2015. The Framework provides the region's guiding vision for enhancing the resilience of the Pacific island people, their livelihoods and environment to the risks and impacts of climate change.

2. Delegates to the 2008 Pacific Climate Change Roundtable began the task of collating a matrix of existing and planned climate change-related activities in the Pacific. It is envisaged that this matrix, once established, will form a crucial element of the proposed portal.

3. A significant body of information on climate change issues in the Pacific already exists and considerable amounts of data are available from a variety of sources (on and off-line). Pacific-relevant climate information and data are produced by organisations and institutions in the Pacific, but are often not shared in a coordinated manner. Added to this, further information and data, both directly and indirectly relevant to the Pacific, is produced by organisations and institutions outside the region.

4. A key concern for decision makers, researchers, institutions and organisations in the region is accessing this information in a timely manner and in a useable form. The portal will need to provide tools to allow the widest utilization by a large variety of end users, which may require that the portal also be considered in the context of other initiatives in the region on capacity building.

5. There is a clear need for the Pacific to gain access to existing information and data and to ensure new information and data is made available to decision makers as soon as practicable. Yet, currently there is no region-wide agreed mechanism for collating and disseminating climate-related information in the Pacific.

6. Equally important is the need for improved communication and collaboration in both the development and implementation of climate change adaption initiatives at the international, regional and national level. The portal should facilitate enhanced communication and provide a common forum for collaboration, maximising synergies and reducing duplication between key stakeholders.

7. SPREP, as the organisation with the mandate of "consolidating and distributing information on climate change" in the Pacific islands region, is the logical locus of any effort to provide a single point of access to information and data on climate, climate change and climate variability in the region.

8. In an effort to bring SPREP's proposal for a Pacific Climate Change Portal to life, a sub-set of Delegates at the 2008 Pacific Climate Change Roundtable formed a working group to discuss the concept of the portal, its operational requirements and potential

format. The Pacific Climate Change Portal Working Group made recommendations to Roundtable Delegates endorsing the portal concept and urging the Roundtable to mandate the Working Group to move forward to a scoping phase and exploration of funding options. The Roundtable endorsed the recommendations of the Working Group, resulting in the production of these terms of reference.

HIGH LEVEL OBJECTIVES FOR THE CONSULTANCY

a. Provide SPREP and member countries with a business case for the development of a Pacific Climate Change Portal; and

b. Suggest a range of feasible options for its design and implementation, and from these options to recommend the most effective way forward within the Pacific context. These options need to include considerations and recommendations of choice of platform for the portal and structures and systems of governance to ensure that the portal development is guided by the recommendations and information needs of the range of identified stakeholders.

SPECIFIC TASKS

a. Carry out a brief analysis of websites (including portals and portlets) of core institutions and organizations and their relevant datasets, products and services to make recommendations for the most appropriate options for a Pacific Climate Change Portal. The analysis will include portals that are proposed or under development and it will be based on references and information provided by or through SPREP. The core datasets include the project information matrices developed during and after the 2008 Roundtable. The Consultant will consult with core user groups and beneficiaries identified by SPREP to assess the needs of these potential users and contributors, including access and infrastructure limitations.

b. Develop a brief analysis for further investigation by SPREP and its collaborators of possible partnerships with core international portal projects of a similar nature. The outcomes of this analysis will be reflected in the presentation to the Pacific Climate Change Roundtable.

c. Based on user groups identified by SPREP and their needs for climate change-relevant information, and the need for enhanced communication and collaboration between stakeholders, formulate a set of high-level objectives that define the operational structure of the portal.

d. Develop a series of feasible conceptual design options for the portal to meet these identified objectives. Design options need to include considerations of the choice of platform, timelines for development and implementation, and systems and processes of governance and management. An approximate costing of each design option is required. A range of options must be presented to all key partners for their considerations.

CONSULTANCY TIMELINE

- Consultancy Engagement late December 2010;

- Consultancy Agreement signed by SPREP on 26 January 2011;
- Consultation period late January/February 2011;
- Concept design options mock-up developed February 2011;
- Presentation to Pacific Climate Change Roundtable 15 March 2011;
- Final Report forwarded by 22 April 2011.

Consultation process

Geoscience Australia has consulted as much as possible with core stakeholders for the portal with the time and resources available. Geoscience Australia is grateful to all of the individuals and organizations who have given their goodwill, time and intellectual input into defining what is important for a Pacific Climate Change portal, how partnerships may work, technical solutions and the resources required to manage the portal. The issues raised, analysis and recommendations in this report are in many cases derived from the comments of colleagues or reflect the advice of these colleagues.

The first step in the consultation process, which occurred prior to the signing of the Consultancy Agreement, was for Geoscience Australia to seek SPREP's views to determine:

- what SPREP requires from the consultancy including outcomes, end products, consultation with stakeholders and reporting;
- what SPREP requires from the Climate Change portal;
- whom SPREP considers the key stakeholders for the portal and for what reasons.

GA representatives Trevor Jones and Stuart Ross met with SPREP personnel including Director David Sheppard, Deputy Director Kosi Latu, Pacific Futures Programme Leader Netatua Pelesikoti, Climate Change Adviser Espen Ronneberg, Dean Solofa, Peter Murgatroyd and other staff members at SPREP on 15-17 December 2010.

The discussions led to a need for significant changes to the terms of reference of the draft Consultancy Agreement which, when signed by SPREP on 26 January, provided limited scope for the consultancy and severely short timelines for stakeholder consultation, feedback to stakeholders and preparation of a demonstration portal for the Pacific Climate Change Roundtable on 14-17 March 2011 in Niue.

SPREP identified the Secretariat of the Pacific Community (SPC), United Nations organisations, notably the United Nations Development Programme (UNDP), and the National Oceanographic and Atmospheric Administration (NOAA) as three core stakeholders for the portal, along with SPREP itself. Other key stakeholders were identified as the national Climate Change focal points, the Climate Change Portal Working Group and the University of the South Pacific (USP).

While in Apia in December, GA personnel also met with:

- UNDP's Gabor Vereczi, Regional Technical Advisor for Climate Change Adaptation in the Pacific, on 17 December in Apia;
- Ian Bignall, Counsellor Development Cooperation, AusAID; and
- Jessica Robbins, ex-UNDP Suva, by phone.

An initial 4-page flier on the consultancy for the Climate Change portal was prepared by GA and distributed by SPREP around 18 February 2011. The flier sought feedback from recipients. However, at the time of writing, only two recipients had been able to respond.

Geoscience Australia arranged additional consultations with the core stakeholders defined by SPREP and with other important organisations where possible.

GA met with key organisations in Suva, Fiji, on 1-2 February 2011 to continue discussions with core stakeholders. Meetings were held with SPC's Applied Geoscience and Technology Division (SPC SOPAC), UNDP, AusAID, Forum Secretariat, GIZ and the USP Pacific Centre for Environment and Sustainable Development (PACE-SD).

An Interim Report on the consultancy for the Climate Change portal was forwarded by GA to SPREP on 7 March 2011. The Interim Report was, in essence, a draft of this Final Report. The Interim Report was distributed by SPREP to stakeholders prior to the Pacific Climate Change Roundtable that was held in Niue on 14-17 March 2011.

Geoscience Australia made a presentation on the findings so far to the Pacific Climate Change Roundtable on 15 March. Significant feedback and commentary was received from national and regional representatives and partners at the Roundtable: during this session; from delegates in a meeting of the Roundtable Climate Change Information and Knowledge Management Working Group on 16 March; and from informal meetings and discussions with delegates throughout the Roundtable. This report also draws on the analysis by the Roundtable Climate Change Information and Knowledge Management Working Group of a questionnaire on Information Management received from delegates at the Roundtable.

A summary of consultation face to face meetings and teleconferences in January and February 2011, subjects for discussion and outcomes, is included in Appendix A.

Issues identified

1. There are many dead or moribund web sites and portals originally established for climate change or related issues in the Pacific. Some of the reasons why these web sites or portals have floundered include lack of relevance and therefore lack of use, inadequate resources to maintain them, or expiry of management resources, for example once projects have ended without provision made for ongoing operation of the portal or web site.

Therefore, there's a risk that the Pacific Climate Change portal could go the same way unless that risk is managed. Some issues and possible risk management solutions are discussed below.

2. There are a number of initiatives for the Pacific that are similar to, related to, or complement to the proposed Climate Change portal. These initiatives are either established or in the planning stages. They include:

    (a) SPC SOPAC's Pacific Disaster Net (PDN, http://www.pacificdisaster.net/);

    (b) SPREP's Pacific Environment Information Network (PEIN; http://www.sprep.org/projects/irc_pein.htm);

    (c) The Pacific Climate Information System (PaCIS) initiative of NOAA (http://www.noaaclimatepacis.org/#dataServices/noaaPartners);

    (d) UNDP's Adaptation Learning Mechanism (ALM; http://www.adaptationlearning.net/);

    (e) UNDP's proposal and trial for a Pacific Solution Exchange (PSE; http://www.solutionexchange-un.net/pacific/);

    (f) The "revitalisation" of the Small Island Developing States Network (SIDSNET; http://www.sidsnet.org/);

    (g) The website of the International Institute for Sustainable Development (IISD; http://www.iisd.org/);

    (h) The Climate Change Lands database initiative of SPC and GIZ (in development).

    Several of these web sites or portals can potentially provide climate change subsets of their content to the Pacific Climate Change portal. There is an excellent opportunity that the proposed portal can partner with some or all of these databases, web sites and portals.

    Initial consultations with individuals and agencies who are leading these activities have been very positive with regards to partnerships. For example, personnel at SPC SOPAC (PDN), GIZ (database), NOAA (PaCIS), UNDP (ALM, PSE) have all indicated high interest and a willingness to collaborate.

3. From Geoscience Australia's stakeholder engagement combined with background research, there is a clear need for a coordinated approach to climate change related information within the region. This is demonstrated through several major organisations operating in the Pacific region, operating independently or with minimal coordination.

4. Geoscience Australia's limited discussions with core stakeholders have pointed to three areas of functionality for the portal, and these three areas are described later in this section. However, there is also a need to understand what a broader range of potential users require from the portal. A user needs survey would determine the range of

functions required of the portal, and provide statistics that indicate the numbers of potential users for each of these functionalities. This information would provide guidance on what the key functionalities need to be, and priorities for additional functions. An annual user needs survey would also ensure that the portal is meeting the evolving requirements of stakeholders, for example through an anticipated increase in usage of social networking sites through the portal.

5. Several stakeholders indicated that the portal should be considered the "one-stop-shop" for Pacific region climate change information seekers. Given the numerous, disparate sources of information across the region and internationally, and the rate of change of information produced by a large level of activity in programs related to climate change in the Pacific, it is highly unlikely that the "one-stop-shop" concept could be achieved. The concept also raises user expectations that, regardless of the user requirements, the portal will be able to meet it. Previous attempts at this concept nationally and internationally have generally been less successful than expected by stakeholders who were consulted. For this reason Geoscience Australia is recommending a focus on achieving a small number of core components within a defined time period. If successful, further integration of new components can developed over time. It was highly regarded by stakeholders that creating the core components well in the short term will assist gaining long term support.

6. Portal content can become out of date if information sources do not send current information to the portal. Also, parts of the portal may become dysfunctional if source agencies change the structure of their web sites or feeds or if the portal managers change the portal's functionality or structure without consulting the contributors.

   Therefore governance arrangements and technical solutions such as automated link checks are required to ensure that the portal remains functional, current and robust against those risks.

7. Feedback received indicated a concern for how the portal will be managed, and by whom.

8. There are several examples of the 'matrix' of existing and planned climate change-related activities in the Pacific, containing information on country, national agency, contacts, project status, partners, and whether activities are project- or data-based for example. These include:

   a. SPREP's version from the 2008 Climate Change Roundtable;

   b. Several versions of a more recent matrix prepared on behalf of the DPCC (hosted by SPC, SPREP, UNDP);

   c. The Disaster Risk Reduction Projects inventory of the International Strategy for Disaster Reduction's Asia Partnership for Disaster Reduction to be found on the DRR Project portal;

   d. NOAA's inventory of climate change projects undertaken with US-based resources (behind NOAA's firewall).

Therefore, the concept of the matrix is non-unique. A question that arises therefore is whether a centralised, Single Point of Truth (SPOT) matrix should be developed and maintained at all or whether, for example, a distributed, interoperable model is preferable.

The simplest and most achievable approach would be to establish the portal with a SPOT matrix so that users can access a functional search tool.

In the longer term, it may be desirable to link the various related matrices in an interoperable sense. This would be a complex task. However, it could be achieved in an iterative process beginning perhaps with the Climate Change portal's matrix and the 'matrices' of core stakeholders such as SPC SOPAC and NOAA.

To achieve effective interoperability, attribute fields must be selected from each matrix and rules must be established and applied to each matrix so that disparate attribute fields will map into a commonly agreed schema.

FURTHER ISSUES IDENTIFIED AT THE 2011 PACIFIC CLIMATE CHANGE ROUNDTABLE (PCCR)[5]

9. Is the target audience for the portal decision makers, the general public, somewhere in between these two or all of the above? There is a need to clearly define the target audience, articulate who the key target groups are and design and incorporate content to reflect their needs. Which are the key stakeholder groups to target? This decision will largely determine the relevant types of products and the nature of the portal functionality. Delegates at the PCCR stated that the portal should be user-friendly. However, a determination of the key target groups will add context to the term 'user friendly'.

10. Discussions at the PCCR pointed to the need for quality control of information accessed through the portal. This is important for at least two reasons. The first is that PICT users of the portal need assurance that information returned from searches through the portal is validated to some degree. Second, the 'owners' of the portal (e.g., those organisations whose logos appear on the portal) are implicitly endorsing information accessed through the portal. This issue has several aspects including:

    a. What data, information and knowledge will be presented on the portal? Validate scientific literature is one 'safe' area. However, what are the decisions around 'grey' literature, opinion, or comment? It is important to acknowledge the source of information, therefore metadata are also important.

    b. Who can suggest content, who makes decisions on content, and what is the role of portal administrators vis a vis groups at national level for knowledge management, dissemination and communication?

[5] Many comments refer to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', Annexe E: Report of the Climate Change Information and Knowledge Management Working Group

11. Traditional Knowledge is a special issue in relation to Knowledge Management for the portal. Some Traditional Knowledge is sacred and will not be divulged. The knowledge that its owners do agree to share is likely to be qualitative or descriptive and therefore more difficult to capture in digital or database format, or to 'validate'.

12. Geoscience Australia recognises that a key success factor for the Climate Change Portal is consistent, valid and relevant content. A major factor for the ongoing success of the portal is sustaining the flow of information to the portal from national sources. There are several issues around this. This information could cover areas such as projects underway or planned, datasets on adaptation or mitigation, partners, key contacts, planned outcomes, timeframes. In other words, the information comprises many of the elements of the matrix that stakeholders regard as highly important if it is current. Other important information such as Traditional Knowledge, case studies and lessons learnt in adaptation are also important.

    Countries will need to coordinate what country-specific scientific information and Traditional Knowledge is uploaded, develop their access protocols. The arrangements and protocols may or may not be in place. To what extent do countries need to develop their own Knowledge and Information Management, dissemination and communication policies and local teams regarding climate change?

    During the meeting of the Knowledge Management Working Group, country representatives stated that although resources are supplied to assist countries to develop a capability to contribute content to the Portal, this implies that the country-based challenges surrounding data sharing have been resolved.

    The Pacific Climate Change portal is a regional solution to information sharing. It should not been seen as the solution to resolve national information sharing issues.

    Ongoing success in this process touches upon broader Information Management issues in-country across all types of information, and not just information on climate change. With respect to the portal, some national agencies responsible for engaging with portal operators and sending information to the portal may not have the capacity (budget, skills base, available human resources, ICT and IM infrastructure) or governance arrangements to gather relevant information on climate change-related activities from national, provincial or other sub national agencies.

    In relation to data transfer to the portal, for example data that update the matrix, national IM contacts will also need to work with the portal administrators to develop data in formats that are compatible with portal formats. There may be initial difficulties to solve in developing schema for interoperable datasets.

    Solutions to these issues may extend beyond relatively simple arrangements, protocols and information sharing in climate change between national representatives and the portal operators. Solutions may require resources and, in some countries, capacity building and an embracing of Knowledge and Information Management principles at national and sub-national level.

13. The desired translation of the portal pages and information from English into French has obvious funding issues. French is an official language of SPREP.

SUMMARY OF ISSUES

All of the stakeholders consulted by Geoscience Australia stated that a Pacific Climate Change Portal would be valuable, and each also stated that they wanted the portal to be successful.

The reader will note that none of the issues raised here is strictly technical or technological. It became clear to Geoscience Australia and core stakeholders that technical issues are not the main drivers that will make or break the success of the portal.

The main drivers for the success of the portal are based around:

(a) Relevance of the content, currency and functionality;

(b) Partnerships to ensure ongoing relevance and currency;

(c) Adequate ongoing resources to provide, update and deliver content, operate the portal, improve functionality and maintain partnerships; and

(d) Access to portal data and functionality.

Certainly the current low Internet bandwidth in Samoa would create difficulties if SPREP were to physically host the portal. However there are relatively simple design options that would obviate this problem.

Although there were some differences in opinion and comment on what features stakeholders saw as useful in the portal for themselves and others, there were several strong common threads in those features. Geoscience Australia has identified three core functionalities of the portal from stakeholder feedback and these three elements are described in the section "Core elements of the Pacific Climate Change portal" below.

However, first, a set of portal Design Principles is defined.

Portal Design Principles

Geoscience Australia followed the following key design principles when choosing the implementation options:

- Intent of being a regional website;
- Consideration of internet connectivity across the region;
- Consideration of varied internet bandwidth across the region;
- Usability principles;
- Technical capability to build and support portal within the region;
- Available base data, in particular spatial information;

- Technology usage trends – i.e., growing usage of smart phone technology; and
- The rich cultural diversity in the Pacific.

As a result of these principles there are several elements that have been recommended. These include:

- No single agency branding of website, considered a regional resource;
- A light, optimised website for low bandwidth users;
- Extensive use of PDF format for project resources for compression;
- The ability for each page to able to be formatted for printing;
- The ability for the portal content to be produced in a portable format on DVD for users who aren't connected to the Internet; and
- Emails of portal updates sent out regularly to users to build an engagement process.

Technology Rationale

The base technology recommended by Geoscience Australia to underpin the portal is a web content management system. Examples of such systems include Joomla and Drupal. A full list of possible technologies can be found on Wikipedia (hyperlink). The reasons for preferring and recommending this approach are:

- SPREP already operates similar technology for websites such as PI-GOOS etc.;
- SPREP core partners such as SPC SOPAC also take a similar approach;
- The systems provide many components and extensions with minimal coding;
- The approach takes less time and less effort to deliver core components;
- Less training of technical staff is required; and
- The approach reduces maintenance costs.

The other, non-preferred, approach considered is a customised coded application. In this type of application code is written in a particular language and the portal's components are built using libraries of software or frameworks available from the opensource or commercial software development community. Examples of such frameworks are the Google Web Toolkit, Cacoon and Spring. The reasons this approach has not been recommended for the portal are:

- The technical skill set availability within the region was assessed as limited. This would impact the ability to build, maintain and support the portal over time; and
- The initial cost of development can be higher depending on personnel costs and scope of work.

It should be noted that the final decision on which technology underpins the portal should take into consideration the hosting agency's supported applications stack. If not taken into consideration, costs for support could be significantly higher than anticipated due to a requirement for specialised personnel.

Core elements of the Pacific Climate Change portal

Three core information sharing elements could be considered part of the Regional Pacific Climate Change Portal, based on an analysis of the feedback from the range of stakeholders consulted so far. These three elements are:

1) A search function to interrogate databases of project activities and output "matrices";
2) A forum for question and answers; and
3) A facility for unstructured searching.

The three core elements are described below.

CORE ELEMENT 1: PROJECT ACTIVITY – OUTPUT MATRIX

The project activity and output matrix was the most frequently requested feature of the proposed portal. During stakeholder interviews, it was identified that at least five such matrices exist, compiled by individual agencies or consortia, and at either the design prototype stage or completion.

It was noted that only a few had a sustained update model resulting in many being snapshots at a point in time as opposed to the continually maintained information set. It was also noted that there was an inconsistent data model or information structure applied across the matrices. The variations included a large variety of information structures with some overlapping data contained within multiple matrices.

Geoscience Australia recommends that the multiple matrices be combined with the regional climate change portal becoming the single custodian of climate change related projects and activities in the region. The models vary for implementation of this custodial model and options are detailed in the implementation section below.

Prior to a single project/activity matrix being created, an agreed information model is needed. Due to the variance in the existing matrices, it is clear that each organisation is collating information for a particular purpose. The recommendation is to agree on a core set of information that is common to all existing matrices.

An example information structure is provided in Appendix B.

The information model's core components should be mandatory with optional components for those parameters that cannot be considered to be shared requirements by the stakeholder community. On establishment of a single information model, the implementation phase can commence. Without an agreed information model the true benefits of a single matrix can not be realised.

An example of an operating information model is Pacific Disaster.Net. The information model has defined key mandatory fields, optional and conditional fields. The consistency of

format and layout greatly improves the ability for data interaction with other related information sources.

Implementation

Implementing the recommended model for custodianship of the "matrix" can be undertaken in several ways, namely through a centralised or distributed approach. The centralised approach is the creation of a central database that the custodian maintains on behalf of the stakeholders. An example of this approach is the PacificDisaster.Net tool operated by SPC SOPAC. The advantages of this approach are:

- Less coordination is necessary;
- The cost of technology is relatively low;
- Trained personnel apply consistent standards to data; and
- The operational processes are more reliable because they are not as dependent on technology.

A decentralised approach is the creation of an information model as mentioned above. However, in the decentralised approach the portal polls individual project activity data sources that are hosted by various communities or organisations. The portal collates the information which is then searchable through a single portal. The advantages of this approach are:

- Once established, the approach reduces operating costs;
- Stakeholder agencies have increased flexibility in the structures of their own activity information.

Future Stages

Table 1 below describes the future steps and their respective time frames that Geoscience Australia believes are future directions for this core element.

Table 1: Future steps for Core Element 1

Technology	Timeframe
Agreed information model in place	6 months
Centralised catalogue established; updates are via centralised interface by some stakeholder through resourced personnel or central resource Decentralised resources assist key stakeholder agencies and prepare transition for long term support within the agency	1 year
Centralised model continues to support smaller stakeholders, however decentralised update arrangements can be in place, and initial stakeholders piloted. E.g. NOAA	2 years

CORE ELEMENT 2: QUESTION AND ANSWER FORUM

Several core stakeholders consistently raised a requirement of the portal to provide a forum through which stakeholders can query climate change science and adaptation policy and practice. Also, these same stakeholders recommended that the portal needs to provide a social interaction forum for exchange of ideas and open communication. UNDP personnel were among the people who consider this function highly important. Existing mechanisms such as the Adaptation Learning Mechanism (http://www.adaptationlearning.net/) and the Pacific Solution Exchange (http://www.solutionexchange-un.net/pacific/) are the beginnings of such capabilities. These mechanisms give geographically separated individuals the ability to ask questions of a scientific or policy community as well as share resources or answers they may have to key problems or issues.

Analysis of both sites and mechanisms indicates a small but growing need for such capabilities. Geoscience Australia also notes that the unstructured social networking sites such as Facebook also offer some capability in this regard.

Implementation options

The creation of yet another Q&A Forum in the Pacific Climate Change portal would be a direct duplication of existing capabilities. Given the relatively low usage of such a forum a fully integrated approach may not realise the benefits intended.

Geoscience Australia recommends that the portal reference and interface with the existing forum mechanisms, raising awareness of their availability to a broader community. The portal will allow users to search for keywords through the existing tools as well as view current discussion topics. For further functionality, such as submitting a question or interacting on the forum, the portal would direct the user to the hosting forum.

The portal should integrate social networking aspects into its design. This will allow information to be shared in non-traditional ways. This has been implemented in the "mock-up" website by including icons for Facebook, LinkedIn and twitter for each article found.

The rationale behind a minimalist integration approach for Q&A fora focuses on the investment required to integrate several technologies. This is not perceived to return a major benefit whilst the user base is relatively small. As noted in the technology pathway for this component, social networking is seen as a growth area for sharing of information and will need to be revisited as usage of social networking grows in the region.

Future Stages

Table 2 below describes the future steps and their respective time frame that Geoscience Australia believes are future directions for this core element.

Table 2: Future steps for Core Element 2

Technology	Timeframe
Minimal integration with existing fora, but noting linkages and raising awareness of their availability	1 years
Re-evaluate use of fora when in full production	2 years

CORE ELEMENT 3: UNSTRUCTURED SEARCH (ENTERPRISE AND SITE)

Large volumes of relevant regional climate change information exist across the Pacific and internationally in unstructured websites. As a result Geoscience Australia believes that an unstructured search of relevant websites through a single interface would be a necessary capability in addition to the structured matrix mentioned above. The term "relevant" implies a subset of websites that a user may find by searching Google, with the search results being more focused on the subject matter.

Implementation

Implementation of an unstructured search requires a list of web based resources that are deemed relevant to the topic area. For example, the PacificDisaster.Net application has a list with approximately 360 entries. Once established, this list needs to be maintained and updated to ensure relevant update information is being harvested.

Gathering information from the list of resources can be performed in several ways. These include using trained personnel to manually scan and capture the resources. Technology can assist in this process. For example, a customised Google search can provide a "deep dive" functionality against a list of URLs. This is a free service offered by Google and is demonstrated in the "mock-up" website put together as part of the consultancy.

It should be noted that, while technology may partly automate the process of gathering information, the level of interpretation and assessment still requires careful attention. Technology cannot determine as accurately as people the "relevance" of an article or resource.

Geoscience Australia recommends a combination of personnel resources and Google technology to perform this function. The personnel are required to ensure the list of relevant web based resources is maintained and updated.

Future Stages

Table 3 below describes the future steps and their respective time frame that Geoscience Australia believes are future directions for this core element.

Table 3: Future steps for Core Element 3

Technology	Timeframe
Google Custom search, Site Search, RSS Feeds	6 months
Enterprise search of websites	2 years
Enterprise Search of websites, databases, document repositories	5 years

Enterprise Search is a system that performs a similar function to Google's custom search. However, it can browse additional information stores that may not be simple web-based resources. This enhanced capability includes gathering information from structured database queries and third party tools such as electronic document management stores (e.g., TRIM; (http://h71028.www7.hp.com/enterprise/w1/en/software/information-management-trim.html) or other document stores that agencies operate. The reader should note that in order for this tool to be successful these resources would need to made visible (secured with username/password) through the Internet or stated network. Geoscience Australia notes that this provision may be difficult for some agencies due to their security policies.

Hosting and Operations

There are several options with regards to the hosting of the climate change portal. It should be noted that the hosting should be considered separately from the portal's operational model, i.e., the physical location of staff that support the content. Three hosting options were considered.

1. Infrastructure as a service, also known as cloud services typically offered by commercial companies such as Web hosting companies, Google and Amazon.

   Benefits:

   - Freedom of choice of software platform for portal. This includes the ongoing management of the portal;
   - The performance, capacity and availability of the system are capable of growing with the portal's use.

   Disadvantages:

   - Cost of technical staff required to deploy and manage infrastructure/applications;
   - Long term, ongoing cost implications will be higher than other options.

2. Portal is hosted by a regional Climate Change business partner.

Benefits:

- Take advantage of existing capability as these hosting services exist in regional agencies. In particular NOAA and SPC were open to the proposal to host if necessary;
- Reduction in costs due to possible in kind contribution from hosting agency;
- Larger regional agency's ICT infrastructure supports the potential scale of the portal use.

Disadvantages:

- Additional effort required to maintain relationships through formal agreements, etc.;
- Support model would still require funding for support including in the host regional agency.

3. Portal hosted by SPREP.

Benefits:

- SPREP is the organisation with the mandate, passion and oversight for delivery of the portal and SPREP would directly manage the ICT infrastructure;
- SPREP Resource Centre staff trained in information management would be available to contribute to portal content and maintenance.

Disadvantages:

- Additional skill sets required to implement, configure and manage the system as it was not indicated that SPREP operated a team of system administrators;
- Cost of addressing SPREP's ICT environment and particularly the issue of bandwidth to support the expected response rates.

RECOMMENDATION

On the basis of cost implications of Option 3, Geoscience Australia recommends further investigation into the feasibility of Options 1 or 2.

MODEL OF OPERATIONS

SPREP's vision of the Pacific Climate Change Portal includes the intent that it is a long term investment, i.e., more than 10 years. The operational model recommended needs to support this long term objective through the creation of a sustainable resource base focused on coordination, information sharing and regional engagement.

As a basis of this recommendation to investigate Hosting Options 1 and 2, Geoscience Australia has investigated existing portals operating in the region including the Adaptation Learning Mechanism, Solution Exchange and the PacificDisaster.Net. It was recognised

that a key success factor to the establishment and long term sustenance of the portal is the number of personnel appointed and their skills.

All three of the portals mentioned above had key staff dedicated to the daily operations and management, the size varied depending on the size of operations. In existing cases generally this involved centralised teams operating from a single location.

RECOMMENDATION

Geoscience Australia recommends a centralised structure, initially consisting of 2 FTE staff, with this number increasing as the portal grows. The roles envisaged include a portal team leader as well as an Information Manager/Researcher/Librarian cataloguer.

In addition to assisting to develop a regional portal model, Geoscience Australia recommends the resourcing of similar Information Management/Researcher/Librarian personnel within stakeholder countries and agencies for 12 - 24 months. Their placement roles will have three components:

- Engage the stakeholder agency to understand its business and areas in which the agency and its stakeholders could benefit from the Climate Change Portal;
- Collate and maintain information relating to the Project/Activities Matrix and other suitable resources and make it available through the portal on behalf of the stakeholder agency (and its national stakeholders); and
- Train staff in the stakeholder agency with a view to handing over ongoing responsibility to the stakeholder agency after the 12 - 24 month tenure.

Geoscience Australia envisages that these personnel could be outposted in perhaps seven countries for a period of 12 - 24 months. The seven countries could provide a sample of the diversity of social, environmental, geomorphological and ITC conditions found in the Pacific. The countries would demonstrate the partnership actions required to sustain the operation of the portal in the longer term with interaction from more countries. Population size; atoll, volcanic island or other setting; in-country institutional arrangements, remoteness of the country's communities, and the volume of climate change adaptation issues being managed by individual countries could all be factors in selecting the proposed first seven countries. Pacific stakeholders would need to determine how to nominate these countries.

The model for staff resourcing is shown in Figure 1.

The skill set required for both the staff with the central agency and outposted staff is similar, and is based upon the skill set of an Information Manager/Librarian. The employment of staff from the region would also build upon the sustainability model through capacity building. Geoscience Australia sees the use of graduates from the University of South Pacific's Information Management/Librarianship courses as being suitable candidates.

It should be noted the recommended operational model relates to the ongoing resourcing of the portal. It does not include the resourcing required for the initial implementation team. However, it would be advantageous to involve those that will be operating the portal in the longer term to be part of the implementation team.

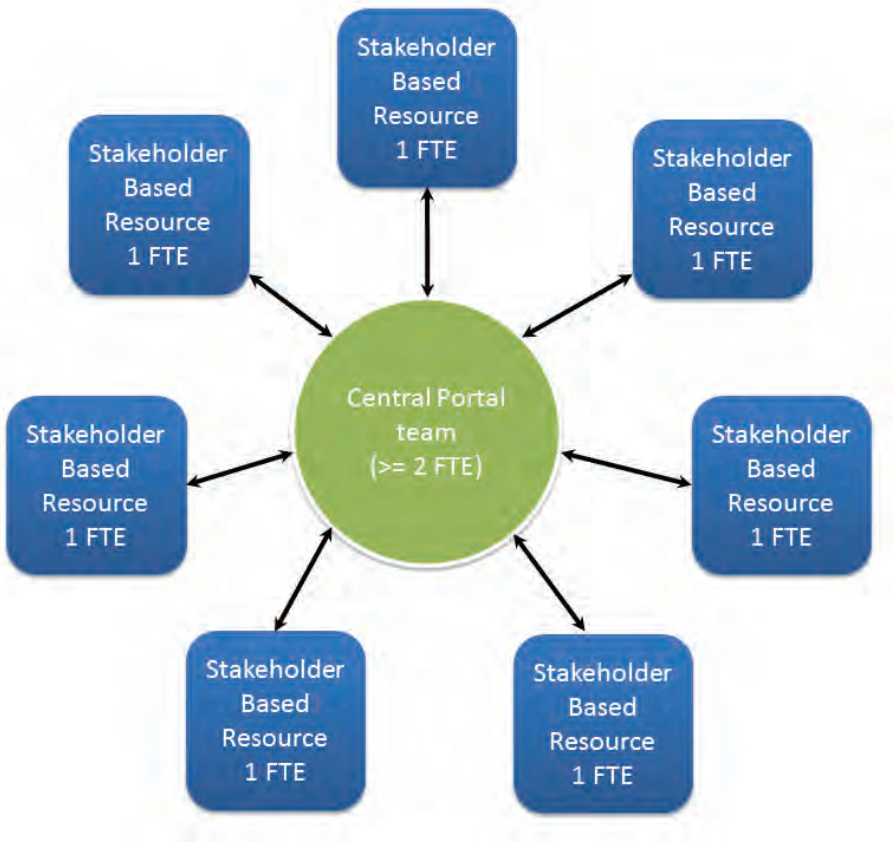


Figure 1: Possible initial team structure for Pacific Climate Change Portal

Portal Governance

Due to regional usage of the portal, Geoscience Australia recommends that a Governance Committee be established that has oversight of the portal's strategic direction. This role would include oversight of any major functional improvements as well as consideration of future development based on feedback received from the portal's users. The Governance Committee could also play a role in establishing and maintaining effective engagement with Pacific countries, regional organisations and partners.

It is envisaged that body membership would consist of representatives from:

- The agency directly responsible for managing the portal (and which is funded to do so);
- Stakeholders who are key users;
- A subset of the stakeholders that supply content to the portal; and
- The portal team leader.

Future strategies

There is significant action globally, regionally and nationally to link Disaster Risk Management and Climate Change Adaptation more closely, and this is also true in the Pacific. The business case for the portal, and development of the portal, should take advantage of the synergies of this approach in its definition of stakeholders, "matrix" content and linking of existing portals and web sites. This driver provides good reasons to make the link strong between PDN and the Climate Change Portal.

Climate change is also an issue that cuts across many other development issues in Pacific countries. The impact of climate change on other sectors is also relevant when defining stakeholders and portal content and functionality. These linkages can be explored as the portal evolves and matures.

There is a need for increased usage of spatial data and GIS applications to be available on the portal and associated climate change web sites. This need was acknowledged by USP in relation to educational needs of students and by SPC SOPAC in relation to them having the capacity to provide many GIS-based datasets. The current limitations to meeting this need include:

a. In many Pacific countries spatial data awareness is still developing, there is limited capacity to analyse and manage spatial data and GIS-based spatial datasets are not common; and

b. The limited Internet bandwidth in many countries precludes any reasonable capability to download large spatial datasets or work interactively with them online.

The development of this capability in the portal is identified given the growth in spatial awareness globally, an anticipated increase in spatial data and spatial awareness in the Pacific, and the already-identified need for spatial data.

Geoscience Australia recognises the introduction of the Pacific Climate Change portal, in particular the three focus areas overlaps with some components of existing facilities. Table 4 represents a view of how we see existing facilities fitting with the Pacific Portal. The timeframe of integration will vary across facilities.

Table 4: Integration of existing facilities into the Pacific Climate Change portal

	Climate Change Portal Focus areas		
Existing facility	**Project/Activity Matrix**	**Questions/Answer Forum**	**Resources**
Adaptation Learning mechanism (ALM)	Submission of relevant data to Pacific Portal. Due to ALM's global perspective, global capability would need to remain intact	Remain as per current arrangements with Pacific portal linking to this capability	Development of Pacific region specific RSS feed for inclusion in Pacific Portal Resources page
Solution Exchange	It was noted that there isn't significant activity in this category for Solution Exchange	Remain as per current arrangements with Pacific portal linking to this capability	Development of Pacific region specific RSS feed for inclusion in Pacific Portal Resources page
Pacific Disaster.Net	Future direction should see climate change related information merge with the portal. It was noted that PDN's business case for offline delivery would require local resources to remain within PDN	It was noted that there isn't significant activity in this category	Development of climate change specific RSS feed for inclusion in Climate Change Portal Resources page
Country Governments	Contribution of relevant data to Pacific portal through liaison officers	It was noted that there isn't significant activity in this category	Development of climate change specific RSS feed for inclusion in Climate Change Portal Resources page
Development partners	Contribution of information and updates to Climate Change Pacific portal. E.g. through existing DPCC mechanism	Outside of facilities researched, there isn't significant activity in this category	Development of climate change specific RSS feed for inclusion in Climate Change Portal Resources page
DRR Project Portal	Becoming the engine behind the Pacific portal's project/activity matrix. It would be used as a method to store and manage this information whilst maintaining the portal look and feel	It was noted that there isn't significant activity in this category	Development of Pacific region specific RSS feed for inclusion in Pacific Portal Resources page

Geoscience recognises the above list is not exhaustive however it gives an indication of how existing sites and information fit within the Portal's focus areas. During its research Geoscience Australia became aware that there are several facilities being actively built or redeveloped that may overlap with the Portal's three focus areas, for example SIDS.Net (http://www.sidsnet.org/)

Costing

Preliminary cost estimates have been made to establish the portal and for its operation over the first six years. Two cost models are drafted. Each includes allowance for a Business Analyst to undertake further consultation on stakeholder needs prior to establishing the portal, and annual stakeholder needs surveys. The two cost estimates are:

- A cost model based on preferred options for hosting, operating and governing the portal, including staff resources for the central agency and outposts. The total cost over six years is estimated to be approximately USD 1,099,000 with highest costs in Years 1 and 2;
- A cost model based on the non-preferred option for operating the portal, namely the central agency (presumably SPREP) recruiting a new software engineer and resourcing this specialist function year to year for technical maintenance. The total cost over six years is estimated to be approximately USD 1,453,000.

The two draft cost models are included in Appendix C.

Recommendations

1) SPREP and its core partners build on resources, web sites, web functionalities, databases, search engines and interactive fora that are already available as a basis for portal operation.

2) SPREP[6]:

    a. Undertake further consultations on the web portal at and after the PCCR, including a stakeholder needs survey;

    b. Make a decision on who will take this forward (The PCCR recommended SPREP, working closely with a Steering Committee from the Knowledge Management Working Group); and

[6] Taken from 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 19.

c. Commence implementation, addressing issues such as: fundraising, governance, and partnership arrangements.

3) SPREP and the Knowledge Management Working Group coordinate a stakeholder needs survey prior to the establishment of the portal as an initial step to better define (a) clearer identification of audience groups, (b) types of information and products, (c) capacity building needs, and (d) involvement of non-government groups [towards] development of a policy in this regard. GA has included the services of a Business Analyst in the proposed budget for this purpose. [7]

   A first step in this process would be to collect, analyse and act on the feedback received at the Pacific Climate Change Roundtable 2011 such as the contents of questionnaires on Information Management filled in by Roundtable respondents.

   Furthermore, SPREP and the Knowledge Management Working Group should revise the cost model in this report (Appendix C) following analysis of the stakeholder needs survey.

4) SPREP and its core partners start simple with the portal and establish perhaps only three areas of functionality in the first instance. These are:

   a. Establishment, maintenance and search capability for the matrix;

   b. Interactive fora linked to Adaptation Learning Mechanism and Solution Exchange;

   c. Enterprise search capability of stakeholder web sites.

5) SPREP establish formal partnerships with core stakeholders to enable the initial and ongoing functionality of the portal.

6) SPREP and its core partners nourish the principle that the function of the portal must be clear, defined and simple to ensure its success. A 'one stop shop' is doomed to inefficiency, atrophy and disappointment.

7) SPREP and the Steering Committee of the Knowledge Management Working Group consider for adoption the structural model proposed for the portal of centralised Information Management resources with, for an initial 12 – 24 months, additional staff resources outposted to several regional countries.

8) SPREP and the Steering Committee from the Knowledge Management Working Group develop an initial, conceptual framework for (a) processes for selection of knowledge, information and data for the portal, (b) quality control and (c) the role of administrators in uploading and managing information.[8]

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[7] This Recommendation makes reference to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 35.

[8] This Recommendation makes reference to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 35.

9) SPREP establish a Governance Committee to provide oversight of the portal's strategic direction, including any major functional improvements and future development based on feedback received from the portal's users. [The Governance Committee is separate from the Steering Committee from the Knowledge Management Working Group. The Governance Committee will have ongoing, regular responsibilities in contrast to the Steering Committee which is aimed to assist SPREP to establish the portal.] Additionally:

    a. The Governance Committee lead a review of the portal as a two-year milestone in the portal's operation;

    b. The Governance Committee conduct an annual user needs survey to gauge evolving user trends, for example in social networking, and changes to the portal to meet these needs. These surveys could be conducted for low cost and GA has included these annual surveys in the proposed budget.

10) In relation to national-regional collaboration on the portal, national focal points:

    a. Review the status of (a) national needs for in-country Information Management training; (b) capacity building in Information Management; (c) awareness raising in relation to Information Management issues for climate change; (d) improving access to data and removing barriers to data sharing nationally and sub-nationally; and (e) national Information Management strategies, including data compilation and dissemination strategies; with the aim of ensuring adequate national Information Management practice to support the long term viability of the portal[9]; and

    b. Establish Information Management policy and practice to ensure their country's commitment is met in sustaining the portal, working with SPREP and international partners as required.

Acknowledgements

The authors thank all those individuals and agencies who contributed valuable ideas and comment to shape the form of the proposed Pacific Climate Change portal. Among those were many of the participants at the 2011 Pacific Climate Change Roundtable in Niue, who provided feedback on draft concepts for the portal.

The authors also thank Chris Nelson and Martyn Hazelwood at Geoscience Australia and Jutta May at SPC SOPAC for their careful reviews that no doubt improved this report.

[9] This Recommendation makes reference to 'Summary of outcomes from the Niue Pacific Climate Change Roundtable Meeting, 14 to 17 March, 2011, Draft Report of 25 March, 2011', para. 35.

Appendix A: Summary of stakeholder consultations through February 2011

Table 5: Summary of stakeholder consultations December 2010 – February 2011

Agency and staff consulted	Discussion topics	Key findings and issues	Outcomes
SPC Applied Geoscience and Technology Division (SPC SOPAC) Jutta May, Jens Kruger, Sachindra Singh, Tagaloa Cooper, Russell Howorth, Mosese Sikivou, other staff	Views on value of portal and key portal functions, Pacific Disaster Net (PDN) – content, resources, future directions GeoNetwork	Portal valuable Users value simple yet complete information being 'pushed' to them regularly – see PDN weekly 'new documents' More than 3 FTEs required to operate PDN and more than 1 FTE to operate GeoNetwork SPC SOPAC recommends the ADPC DRR Project Portal (http://www.drrprojects.net/drrp/drrpp/) as a host for the Matrix. It has good functionality	In-principle agreement for SPC SOPAC to partner with the Pacific Climate Change portal through PDN Agreement to contribute content etc. to portal demonstration at 2011 CC Roundtable
UNDP Apia Gabor Vereczi	Views on value of portal and key portal functions, Adaptation Learning Mechanism (ALM), Solution Exchange (SE), Relationship CCA-DRR	Very pleased that the Portal is on the way Recommends further consideration of value of ALM and PSE Need a mechanism to capture, codify and disseminate good practice and lessons learnt	GA recommends portal Q&A functionality similar to ALM and SE, or even using ALM and SE Partnership possible with ALM
UNDP Suva Karen Bernard, Moortaza	Views on value of portal and key portal functions, Adaptation Learning Mechanism, Solution Exchange, Relationship CCA-	Portal valuable Need to consult with stakeholders on needs	GA recommends portal Q&A functionality similar to ALM and SE, or even using ALM and SE

Jiwanji, Jennifer Nagyal	DRR	Need clear definition of scope Useful information from Matrix search capability includes project reports, grey literature, project and program reviews and evaluations, data (not metadata) and key in-country contacts Need functionality for communication such as UNDP's Adaptation Learning Mechanism and Solution Exchange	
NOAA John Marra, Uday Kari	Relevant NOAA initiatives such as PaCIS	Collaboration on a Pacific portal valuable NOAA has similar ideas to SPREP and stakeholders on the need for a portal and web resources	NOAA definitely interested in a collaborative approach In principle agreement to partner on portal development, and for NOAA to be the first distributive (interoperational) partner
AusAID Apia Ian Bignall	Views on value of portal and key portal functions, relation of portal to Australian government CC initiatives	CC Portal is very much needed Portal needs to be done well and supported else it could fail The Matrix would be useful to national governments (example given, Samoa) to assist them to decide whether to accept projects or not	Matrix search functionality recommended on advice of several core stakeholders
AusAID Suva Ryan Medrana, Marina Pene Illingworth	Views on value of portal and key portal functions, relation of portal to Australian government CC initiatives	Portal valuable Staged approach to portal development from simple to complex is appropriate	AusAID recommendations for staged approach and further consultation adopted by Geoscience Australia

		There is insufficient time to consult broadly with stakeholders prior to Roundtable – consult at Roundtable and take up afterwards	
GIZ Marita Manley, Felix Ries	SPC-GIZ Climate Change database and possible relation to Climate Change portal	Portal valuable Asia-Pacific Network on Climate Change (http://www.climateanddevelopment.org/ap-net/index.html) has some supporting functions and information for portal	In-principle agreement to work with the Pacific Climate Change portal once database further developed
USP Pacific Centre for Environment and Sustainable Development (PACE-SD) Murari Lal, Conway Pene	CC portal as a key educational outreach tool	Portal a potential key outreach tool to 12 campuses – USP has good bandwidth in many countries Portal could advertise the significant human resources (graduates with climate change expertise) that USP supplies to the region USP could contribute a GIS component. However this may be up to 10 years out due to limitations in capacity, technology and relevant data	USP has agreed to provide comment on content that they consider important for the portal
Forum Secretariat Coral Pasisi	Importance of climate change to Pacific Island Leaders Inform Forum Secretariat of progress on the climate change portal	A focus for Pacific Island Leaders in 2010 was improved access to and management of information on climate change adaptation and mitigation	Forum Secretariat to be kept informed of progress

Appendix B: An example Information Structure

Information element	Description	Type
Project Identifier	Unique identifier that can be used to relate	AlphaNumeric (6 long)
Project title	Brief title of the project	Character (100 long)
Project description	Summary of the project/activity	Character (300 long)
. . . . . .	. . . . . .	. . . . . .
Beginning Date	Date the project/activity is due to be commenced	Date (format dd/mm/yyyy)
Ending Date	Date the project/activity is due to be completed	Date (format dd/mm/yyyy)

An example of a possible high level information mode is shown in Figure 2 below.

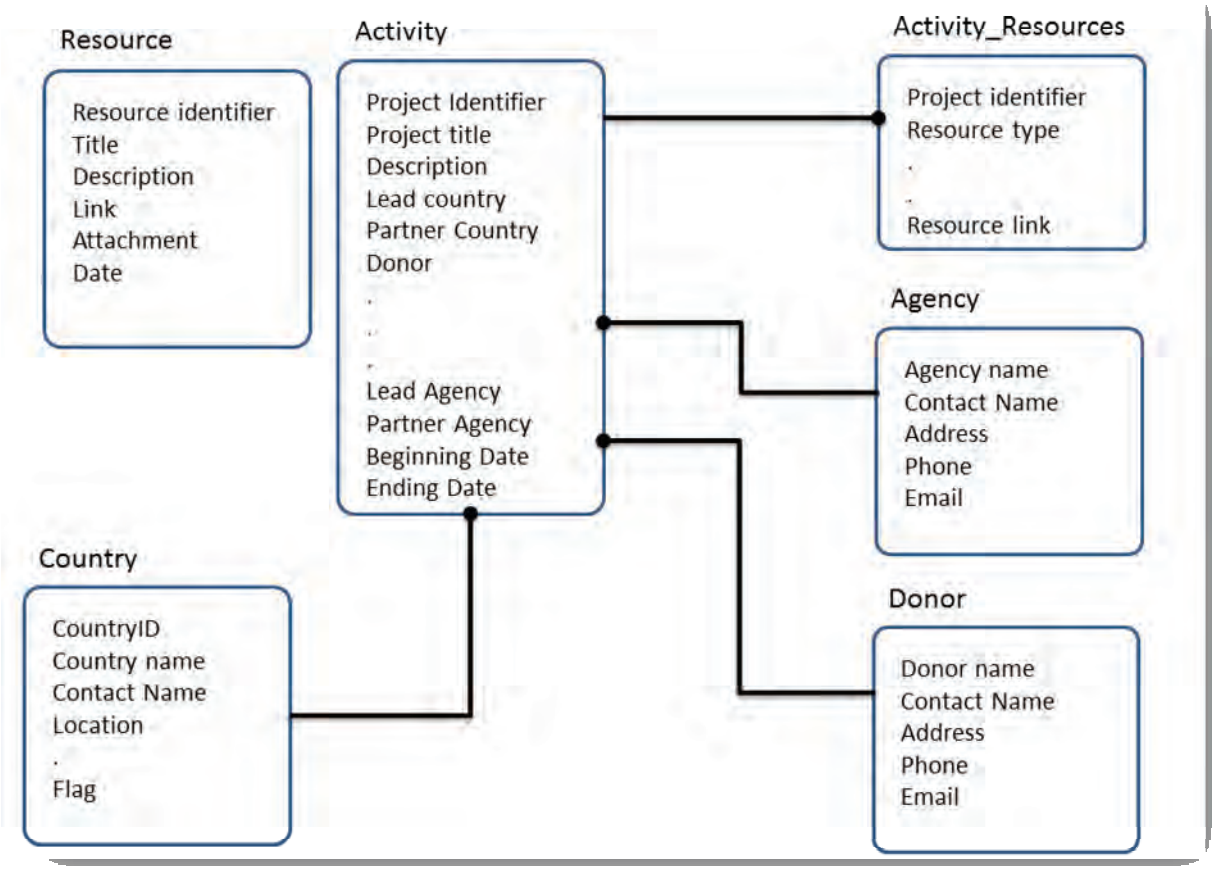


Figure 2: High level information mode for Matrix interoperability

Appendix C: Draft cost models for portal establishment and operation

COSTS FOR PREFERRED HOSTING, GOVERNANCE AND OPERATIONAL MODEL

Proposed Budget (USD)		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
1	**Phase 1 : Stakeholder needs analysis**							
1.1	*Staff Costs*							
	Business analyst	$45,000	$0	$0	$0	$0	$0	$45,000
	Travel to 3 stakeholder locations	$12,000	$0	$0	$0	$0	$0	$12,000
	Sub Total 1	**$57,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$57,000**
2	**Phase 2 : Establishment**							
2.1	*Staff Costs*							
	Interface designer/developer	$22,000	$0	$0	$0	$0	$0	$22,000
	Governance establishment (0.4 FTE) @ $130,000	$52,000	$0	$0	$0	$0	$0	$52,000
2.2	*Other Costs*							
	Web site hosting (cloud services)	$40	$0	$0	$0	$0	$0	$40
	Content management Software (Open Source)	$0	$0	$0	$0	$0	$0	$0
	Sub Total 2	**$74,040**	**$0**	**$0**	**$0**	**$0**	**$0**	**$74,040**
3	**Phase 3 : Operational**							
3.1	*Staff Costs*							
	Team Leader (1 FTE @ $100k / year)	$68,000	$75,000	$75,000	$75,000	$75,000	$75,000	$443,000
	Senior Researcher (1 FTE @ 16k / year)	$8,000	$16,000	$16,000	$16,000	$16,000	$16,000	$88,000
	Research Associate (1 FTE @ 14k / year)	$6,000	$12,000	$12,000	$12,000	$12,000	$12,000	$66,000

	Stakeholder based researcher (7 FTE @ 15k/year)	$52,500	$105,000					$157,500
	Technical maintenance		$22,000	$22,000	$22,000	$22,000	$22,000	$110,000
	Governance maintenance (0.1 FTE) @ $130,000		$13,000	$13,000	$13,000	$13,000	$13,000	$65,000
	Stakeholder agency in kind technical support	$0	$0	$0	$0	$0	$0	$0
3.2	*Other Costs*							
	Content management Software (Open Source)		$0	$0	$0	$0	$0	$0
	Web site hosting		$40	$40	$40	$40	$40	$200
	Training	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$7,200
	Travel	$7,000	$3,000	$3,000	$3,000	$3,000	$3,000	$22,000
	Incidentals		$2,000	$2,000	$2,000	$2,000	$2,000	$10,000
	Sub Total 3	**$142,200**	**$249,240**	**$144,240**	**$144,240**	**$144,240**	**$144,240**	**$968,400**
	TOTAL							**$1,099,440**

COSTS FOR NON-PREFERRED HOSTING AND OPERATIONAL MODEL

Proposed Budget (USD)		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
1	**Phase 1 : Stakeholder needs analysis**							
1.1	*Staff Costs*							
	Business analyst	$45,000	$0	$0	$0	$0	$0	$45,000
	Travel to 3 stakeholder locations	$12,000	$0	$0	$0	$0	$0	$12,000
	Sub Total 1	**$57,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$57,000**
2	**Phase 2 : Establishment**							
2.1	*Staff Costs*							
	Software Engineer	$81,000	$0	$0	$0	$0	$0	$81,000
	Governance establishment (0.4 FTE) @ $130,000	$52,000	$0	$0	$0	$0	$0	$52,000
2.2	*Other Costs*							
	Web site hosting (cloud services)	$40	$0	$0	$0	$0	$0	$40
	Content management Software (Open Source)	$0	$0	$0	$0	$0	$0	$0
	Sub Total 2	**$133,040**	**$0**	**$0**	**$0**	**$0**	**$0**	**$133,040**
3	**Phase 3 : Operational**							
3.1	*Staff Costs*							
	Team Leader (1 FTE @ $100k / year)	$67,500	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
	Senior Researcher (1 FTE @ 16k / year)	$8,000	$16,000	$16,000	$16,000	$16,000	$16,000	$88,000
	Research Associate (1 FTE @ 14k / year)	$6,000	$12,000	$12,000	$12,000	$12,000	$12,000	$66,000
	Stakeholder based researcher (7 FTE @ 15k/year)	$52,500	$105,000					$157,500
	Technical maintenance		$81,000	$81,000	$81,000	$81,000	$81,000	$405,000

	Governance maintenance (0.1 FTE) @ $130,000		$13,000	$13,000	$13,000	$13,000	$13,000	$65,000
	Stakeholder agency in kind technical support	$0	$0	$0	$0	$0	$0	$0
3.2	*Other Costs*							
	Content management Software (Open Source)		$0	$0	$0	$0	$0	$0
	Web site hosting		$40	$40	$40	$40	$40	$200
	Training	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$7,200
	Travel	$7,000	$3,000	$3,000	$3,000	$3,000	$3,000	$22,000
	Incidentals		$2,000	$2,000	$2,000	$2,000	$2,000	$10,000
	Sub Total 3	**$142,200**	**$308,240**	**$203,240**	**$203,240**	**$203,240**	**$203,240**	**$1,263,400**
	TOTAL							**$1,453,440**