Development of an Integrated Climate Change Adaptation Based Risk Diagnosis and Response Process

KAP II Component 1.3.2

Final
September 2009
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Acronyms

ADM Adaptation Decision Matrix
AUSAID Australian Government Overseas Aid Program
CCA Climate Change Adaptation
CCST Climate Change Study Team
CHARM Comprehensive Hazard and Risk Management
CHRDPC Coastal Hazard Risk Diagnosis and Planning
CLPB Central Land Planning Board
CMC Coastal Monitoring Committee
DSG Direction Setting Guidance
ECD Environment and Conservation Division of MELAD
EIA Environmental Impact Assessment
EU European Union
FMC Foreshore Management Committee
FMP Foreshore Management Plan
GoK Government of Kiribati
ICZM Integrated Coastal Zone Management
IDM Integrated Decision Making
IPCC Intergovernmental Panel on Climate Change
KAP II Kiribati Adaptation Program Phase II
KDP Kiribati Development Plan
LLPB Local Land Planning Board
MCTTD Ministry of Communication, Transport and Tourism Development
MELAD Ministry of Environment, Lands and Agricultural Development
MFED Ministry of Finance and Economic Development
MFMRD Ministry of Fisheries and Marine Resources Development
MISA Ministry of Internal and Social Affairs
MOP Ministerial Operational Plan
MPWU Ministry of Public Works Unit
NASC National Adaptation Steering Committee
NDP National Development Plan
NIWA New Zealand Institute of Water and Atmospheric Research
NSPRA National Strategic Policy Risk Assessment
NWSCC National Water and Sanitation Coordination Committee
NZAID New Zealand’s International Aid and Development Agency
OB Office of the President
PMU Project Management Unit (of KAP II)
SOPAC South Pacific Islands Applied Geoscience Commission
SPREP South Pacific Regional Environment Programme
TA Technical Assistance
ToR Terms of Reference
V& A Vulnerability and Adaptation
Executive Summary

The key goal of the Kiribati Adaptation Project (KAP) is to reduce Kiribati’s vulnerability to climate change, climate variability and sea level rise. The KAP is supported by the World Bank, the Global Environmental Facility (GEF), AusAID and NZAID and through a parallel project by the European Union. Implementation of the program is being carried out within three main phases.

This is the final report of Kiribati Adaptation Project – Phase II (KAP II) Component 1.3.2 for the Development of an Integrated Climate Change Adaptation Based Risk Diagnosis and Response Process.

The purpose of this report is to summarise the key outcomes undertaken to fulfil the Terms of Reference (ToR) for Component 1.3.2.

A summary of the five required Tasks for the Technical Assistance (TA) follow:

Tasks 1&2 Review and validate the existing erosion and flood management approach in Kiribati (as presented in the Kench (2005) report), and develop an integrated decision-making process for analysis, evaluation and development of Climate Change Adaptation (CCA) strategies.

Task 3 Recommend reconfiguration of the institutional processes and regulatory procedures to allow for a coordinated coastal hazard risk diagnosis and planning process.

Task 4 Design and co-ordinate workshops to: raise awareness of the need for coordinated assessment and planning of coastal hazards; and develop pilot studies that demonstrate the coordinated process to develop adaptation strategies to climate change.

Task 5 Facilitate a final workshop that reviews the coordinated approach to adaptation to coastal hazards including presentation of findings.

The report first provides a strategic overview of the tasks undertaken during the project assignment from November 2007 to December 2008. The key result areas are then presented in summary form organised by Task. This summary makes extensive reference to the various outputs completed during project execution, including Workshop Reports and
Task-specific Reports and Technical Handbooks drafted to fulfil individual ToRs. All such reports are provided electronically as a CD Appendix. The key results are outlined below.

**Key results of the five Tasks**

**Tasks 1 & 2**

The aim of Task 1 and Task 2 was to review and validate the existing erosion and flood management approach in Kiribati (as presented in the Kench (2005) report), and develop an integrated decision-making process for analysis, evaluation and development of CCA strategies. The Kench report findings were validated through key stakeholder interviews, which confirmed the fragmented and reactive approach to coastal hazard management in Kiribati. Unfortunately, at the time of the interviews it was also confirmed that there had been limited progress in addressing the key aspects of the management approach.

While there had been progress in the collation of underlying coastal process information supporting coastal decision making, most notably under the South Pacific Islands Geoscience Commission/European Union (SOPAC/EU) programme under KAP, there had been very few positive changes to the coastal hazard management system described by Kench (2005).

Rather, the increased pressure on coastal resources, particularly in South Tarawa had resulted in increased workload for processing applications to construct coastal engineering works and other coastal management activities. This increased workload was compounded by chronic capacity constraints in many Government of Kiribati Ministries, particularly the Ministry of Public Works and Utilities (MPWU), the key agency responsible for providing technical advice on applications. It appeared that this created a vicious circle where the increased pressure for reactive management activities, focused on the assessment of individual applications (such as sea walls), meant that there was less time for pro-active management activities that could increase the effectiveness of on-the ground management work.

Following review and validation of the existing approach to erosion and flood management, a review of international Best Practice for Integrated Decision Making (IDM), and specifically IDM with regard to Climate Change Adaptation (CCA), was conducted. The aim of the review was to develop an integrated decision making process for analysis, evaluation and development of CCA strategies. The review found that an effective approach to IDM should be embedded within a framework that considers three key elements, namely:
• Directional setting guidance – e.g. strategies, policies, guidelines;
• Institutional arrangements; and
• Coastal management planning.

The attributes of each of these elements were explored and considered in conjunction with the recommendations made by Kench and key stakeholders consulted throughout Task 1 and 2. This information was subsequently used to inform development of the IDM approach.

Importantly, the outputs of Task 1 and 2 underpinned the work carried out through subsequent phases of the project. Specifically, the components of the IDM framework (shown the figure above) and their relationship to the ToR tasks is summarised in the Table below.
<table>
<thead>
<tr>
<th>IDM Component</th>
<th>ToR task</th>
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<tbody>
<tr>
<td>Direction Setting Guidance</td>
<td>Task 3</td>
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<tr>
<td>Institutional arrangements</td>
<td>Task 3</td>
</tr>
<tr>
<td>Coastal Management plans</td>
<td>Task 1 and 2; Task 3</td>
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<tr>
<td>Coastal Vulnerability and Adaptation (V&amp;A) (specifically risk-based methods)</td>
<td>Task 4; Task 5</td>
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### Task 3

As highlighted above in Tasks 1&2, it was found that an integrated decision making process for CCA should be embedded within the context of Integrated Coastal Zone Management (ICZM) to accord with internationally accepted Best Practice. Three elements were considered key, namely:

- Appropriate direction-setting guidance;
- Adequate institutional arrangements; and
- Comprehensive coastal management planning.

In addition, elements of regulation and enforcement; and capacity building were also considered.

The recommendations for redesign of institutional and regulatory processes were developed using a three-staged improvement approach. This approach was necessitated by the feedback received by key stakeholders (most notably members of the National Adaptation Steering Committee (NASC)), in concluding that a long term ‘roadmap for improvement’ was essential; but that equally important were short term implemental measures that could ensure positive, although small, improvements that were ‘heading in the right direction’. Overall, the staged approach was considered beneficial, as it would enable:

- Systematic progression towards achieving an end goal;
- Realistic expectations and goals to be set at the outset of the program; and
- Guidance to be provided on the methods, tools and approaches to enable gradual and sustained improvement.

This gradual approach to sustained improvement was strongly supported by key stakeholders.
Task 4

The primary objective of Task 4 was to instil capacity within Government of Kiribati (GoK) ministries to apply a coordinated approach to CHRDP. To achieve this aim, a mentoring approach was taken that deliberately sought to use an action learning process to mentor GoK staff through the risk assessment process. Mentoring was undertaken through workshops, the drafting of technical handbooks and online and telephone support. Very positive results were achieved given that it is the first time such an approach had been used in Kiribati\(^1\). In particular, the formation of a cross-Ministry Working Group proved extremely valuable in promoting a whole-of-government approach.

During the execution of Task 4, coastal erosion and inundation maps were produced for the two Pilot Study sites at Bikenibeu and Temaiku (South Tarawa) for 2030 and 2070. These maps were used as the basis to produce strategic risk assessments on key government assets and other infrastructure. At the conclusion of Task 4, a set of adaptation strategies and an implementation plan were produced for each Pilot Site.

Implementation of the risk assessment process for the Pilot Studies was significantly aided through coordination with the work undertaken through KAP II Component 1.4.0 *Information for Climate Risk Management.*

Task 5

The aim of the final workshop was to review the outcomes of the TA and present the final Pilot Site adaptation strategies developed through Task 4.

The final workshop strongly endorsed the outcomes of Tasks 1 to 4 and recommended further follow up training and mentoring work to embed, extend and mainstream the outcomes of the TA. Further, the workshop recommended that the Level 1 recommendations for institutional configuration made through Task 3 be implemented in early 2009 through a recommendation to Government made through the National Adaptation Steering Committee.

Summary

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\(^1\) At the completion of the TA, staff from MELAD (environment and LaNDP divisions), MFMRD (minerals unit), MPWU and MISA had gained an understanding of the approach to CHRDP and applied this understanding to deliver adaptation recommendations for the Pilot Sites. However, participants suggested additional mentoring may be required to further deepen the understanding of the detailed steps in undertaking risk assessments and to embed the process into decision-making processes of Government.
In summary, at TA completion, considerable progress towards a coordinated approach to CHRDP was delivered. Key progress is apparent through:

- The development of an inter-ministerial group that has the skills and knowledge to complete coastal risk assessments and develop climate change adaptation strategies for Kiribati.

- The development of a three-staged approach to institutional and regulatory change, in which the first stage of works can be implemented under current capacity and resource constraints.

Despite considerable progress, there are a number of remaining challenges that must be addressed before a mainstreamed coordinated approach to CHRDP will be embedded in Kiribati; including:

- Broadening recognition of the importance of achieving an integrated approach to coastal management in Kiribati. Operational Government of Kiribati staff involved in the TA are acutely aware of the benefits that may be achieved through mainstreaming the coordinated approach to CHRDP, which was piloted through the TA. However, there is the need for increased recognition in this regard at senior levels of government.

- Resources allocated to CHRDP are limited. National recognition is required to ensure that funding and resources are allocated to CHRDP. A key challenge is to increase the incorporation of CHRDP in the National Development Plan and subsequently, Ministerial Operational Plans.

- Trialing the risk assessment process has demonstrated the need to further deepen the understanding of the detailed steps in undertaking risk assessments to embed the process into decision-making processes of Government. Guidelines for an extension to the current TA to provide such support are provided in the conclusions and recommendations section of this report (Chapter 5).
1. **Introduction**

The key goal of the Kiribati Adaptation Project (KAP) is to reduce Kiribati’s vulnerability to climate change, climate variability and sea level rise. KAP is supported by the World Bank, the Global Environmental Facility, AusAID and NZAID and through a parallel project by the EU. Implementation of the program is being carried out within three main phases:

**Phase I: Preparation (2003-2005, completed).** This phase began the process of mainstreaming adaptation into national economic planning and identified priority pilot investments for Phase II. It also involved an extensive process of national consultation. The project was closely linked with the preparation of the 2004-07 National Development Plan and Ministry Operational Plans (MOPs).

**Phase II: Pilot Implementation (2006-2009).** This current phase is the focus of this Terms of Reference (ToR). Its objective is to implement pilot adaptation measures, and consolidate the mainstreaming of adaptation into national economic planning.

**Phase III: Expansion (2009-2015).** This phase would gradually scale up the investments piloted under Phase II to cover all major islands and vulnerable sectors of Kiribati.

The key objective of KAP II is to develop and demonstrate the systematic diagnosis of climate-related problems and the design of cost-effective adaptation measures, while continuing the integration of climate risk awareness and responsiveness into economic and operational planning. Lessons learned from KAP II will be used to plan the long-term national response to climate change envisaged for 2009/10 onwards.

This report has been written for KAP II, Component 1.3.2, in response to the ToR for the Senior Climate Change Adaptation Advisor (Appendix A).

The ToR directed the Consultant undertaking the Technical Assistance (TA) to work closely with staff of the National Strategic Policy Risk Assessment (NSPRA) and all key Government of Kiribati (GoK) agencies involved in coastal management, and, where needed, with non-governmental partners, to:

1. Review and validate the existing erosion and flood management approach in Kiribati as presented in the preparation document on coastal protection measures (Kench, 2005).
2. Review and develop an integrated decision-making process for analysis, evaluation and development of Climate Change Adaptation (CCA) strategies as presented in the preparation document on coastal protection measures (Kench, 2005).

3. Work closely with staff from the NSRMU and all relevant GoK agencies to reconfigure the institutional processes and regulatory procedures to allow for the coordinated coastal hazard risk diagnosis and planning process.

4. Design and co-ordinate workshops with staff of key GoK agencies in order to:
   a. Raise awareness of the need for coordinated assessment and planning of coastal hazards; and
   b. Develop pilot studies that demonstrate the coordinated process to develop adaptation strategies to climate change.

5. Facilitate a final workshop that reviews the coordinated approach to adaptation to coastal hazards, presents the adaptation strategies and presents the completed stage one works of adaptation strategies

The approach taken to meet these five tasks and the key findings are summarised and presented in this report. The primary aim is to describe the redesigned processes for coastal management and how climate change risk diagnosis and planning can be embedded within this re-designed process. Finally, further recommendations are presented that can be built on through the final year of KAP II in 2009.

1.1. **Background**

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) has confirmed that sea level rise and its associated impacts are expected through the 21st century and beyond due to human emissions of greenhouse gases. The effects of climate change will likely include a rise in mean sea level with a possible increase in the frequency and magnitude of extreme events and associated elevated storm surges and wave heights. These potential effects will threaten coastal communities and infrastructure worldwide, particularly where development has occurred adjacent to the coastal zone with little or no buffer for natural change.

It is widely acknowledged that Island Nations around the world will be particularly susceptible to these projected climate change effects. Within the Pacific, Kiribati has been recognized as an area potentially at high risk (Figure 1). Under current
conditions, this largely low-lying atoll nation is highly prone to storm surges and extreme high tides, as well as being exposed to strong winds and wave action (Hay & Onorio 2006; NIWA 2008a).

Figure 1  Map of Kiribati, with Tarawa inset

The effects of natural climatic and oceanographic variability will undoubtedly be exacerbated by the effects of future potential climate change, in particular a rise in mean sea level. Population growth and development pressures will also act to compound the effects of physical change. The population of the capital South Tarawa, for example, is currently over 50,000 people and is continuing to grow rapidly, due largely to migration from Outer Islands. This population is concentrated within a relatively long, narrow corridor of land with an average width from of 450 metres (Figure 1). Most of the land lies less than three meters above sea level. In addition, other areas of Kiribati, such as parts of Kiritimati Island, are beginning to experience similar population pressures (Hay & Onorio 2006).
The land development intensity in South Tarawa has increased rapidly in recent years (Figure 2). The management of this development has been a substantial challenge for Government agencies. In addition, management of the coastal zone in Kiribati is currently undertaken in an ad hoc and reactive manner in response to issues at a local scale (Kench, 2005). Hard engineering solutions, namely seawalls (Figure 3), have been used as the primary response to coast erosion problems to the exclusion of other potentially more effective and environmentally appropriate options (Kench, 2005).

Given the current situation, it is clear that Kiribati faces the pressing challenge of developing a systematic and integrated approach to the management of the coastal zone. This approach must be built on an understanding that predicted future climate change impacts and risks will be superimposed on natural physical changes and an evolving coastal system primarily shaped by human development.

**1.2. Aim and objectives**

In addressing this challenge, the purpose of the current TA was to develop a coordinated Coastal Hazard Risk Diagnosis and Planning (CHRDP) process, and to
build capacity to apply it in key government agencies by demonstrating and jointly applying this process in development of specific adaptation strategies for key asset groups. In developing a coordinated CHRDP, the primary goal was to build capacity to apply the approach within key government agencies. Towards this end, a number of actions were specified for completion shown in Table 1.

Table 1  Objectives of the TA aligned to Task numbers

<table>
<thead>
<tr>
<th>Task</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>Review and validate the existing erosion and flood management approach in Kiribati as presented in the preparation document on coastal protection measures (Kench, 2005).</td>
</tr>
<tr>
<td>Task 2</td>
<td>Review and develop an integrated decision-making process for analysis, evaluation and development of CCA strategies as presented in the preparation document on coastal protection measures (Kench, 2005).</td>
</tr>
<tr>
<td>Task 3</td>
<td>Work closely with staff from the NSRMU and all relevant GoK agencies to reconfigure the institutional processes and regulatory procedures to allow for the coordinated coastal hazard risk diagnosis and planning process.</td>
</tr>
<tr>
<td>Task 4</td>
<td>Design and co-ordinate workshops with staff of key GoK agencies in order to: raise awareness of the need for coordinated assessment and planning of coastal hazards; and develop pilot studies that demonstrate the coordinated process to develop adaptation strategies to climate change.</td>
</tr>
<tr>
<td>Task 5</td>
<td>Facilitate a final workshop that reviews the coordinated approach to adaptation to coastal hazards, presents the adaptation strategies and presents the completed stage one works of adaptation strategies.</td>
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</table>

The remainder of this report presents the methods to meet each of the objectives and the key findings (Section 2 to Section 4). The findings are then assessed to set further recommendations that can be built on through the final year of KAP II in 2009, and conclusions drawn from the TA are presented (Section 5).

This report makes extensive reference to the various outputs completed during project execution, including: Workshop Reports; and Reports drafted to fulfil the individual ToRls listed above, or to summarise key stages of the pilot risk assessment process. All such reports are provided electronically as a CD Appendix and are also stored on the KAP Office computer network. A list of Appendices is provided at the end of this Report.
2. Development of an integrated decision-making process for analysis, evaluation and development of Climate Change Adaptation strategies

Task 1 and Task 2 of the ToR (Table 1) focused on presenting suggestions for an Integrated Decision Making (IDM) process for the:

- Analysis;
- Evaluation; and
- Development of Climate Change Adaptation (CCA) strategies in Kiribati.

The aim was to review the current management approach to erosion and flood management and develop an integrated decision-making process for analysis, evaluation and development of CCA strategies as presented in the preparation document on coastal protection measures (Kench 2005) produced during KAP Phase I. Kench described the existing approach to erosion and flood management and suggested an integrated decision-making process for analysis, evaluation and development of CCA strategies. The aim was to review the outcomes and recommendations provided by Kench and set a program for the development of a coordinated approach to CHRDP that was founded on integrated decision-making. The approach to meet this aim is outlined below. Further details on methods and outcomes of Task 1 and 2 were presented in the Task 1 and Task 2 Final Report (see Appendix B).

2.1. Approach

The primary actions for Task 1 and Task 2 were separated into three overriding objectives:

1) Verification of existing erosion and flood management approaches in Kiribati;
2) Identification of opportunities for improvement; and
3) Evaluation of IDM approaches with specific reference to both CCA strategies and the unique set of circumstances in Kiribati.

The methods to achieve each of these objectives are presented in
Table 2.
Table 2  Methods to meet the objectives of Task 1 and Task 2

<table>
<thead>
<tr>
<th>Step</th>
<th>Objective</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Review and validate the erosion and flood management approach as of 2005 described in the Kench (2005) report</td>
<td>1. Review Section 9.2 of Kench (2005): Overview of existing approach to coastal protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Validate findings through stakeholder interviews and document review</td>
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<td></td>
<td></td>
<td>3. Update findings with any recent developments (2005-2008) based on stakeholder interviews</td>
</tr>
<tr>
<td>2</td>
<td>Establish opportunities for improvement</td>
<td>1. Review Section 11.2 of Kench (2005): Programme 1: Planning Coastal Zone Adaptation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Evaluate stakeholder feedback towards formulation of recommendations for improved management strategies</td>
</tr>
<tr>
<td>3</td>
<td>Provide suggestions for an integrated decision making (IDM) process for analysis, evaluation and development of Climate Change Adaptation Strategies in Kiribati</td>
<td>1. Discuss the theoretical background to successful integrated decision making</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Review practical approaches employed internationally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Consider these approaches in the context of the Programme suggested by Kench (2005) for Kiribati</td>
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<td>4. Outline the most appropriate approach for IDM to be used and further developed throughout the remainder of this project</td>
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</table>

The Kench (2005) report prepared within Phase I of the KAP was used as the basis for the evaluation of coastal erosion and flood management strategies that currently exist in Kiribati. Kench’s (2005) review of the existing approach to coastal hazard management in Kiribati was undertaken as two components entailing a review of: i) the process whereby coastal protection works are undertaken (Section 9.2.1); and ii) the key aspects of the current erosion management system with a view to recommending strategies for future improvement (Section 9.2.2, Kench 2005).

Further, Kench (2005) provided a conceptual overview of a process that could be used to evaluate coastal impacts and both consider and implement adaptation options. The overview set the basis for an approach to modify existing coastal hazard management approaches in Kiribati. To implement the modified approach, Kench outlined two related programmes to improve coastal management/adaptation decision making while also building technical capacity in the GoK agencies to support the use of a wider range of strategies to adapt to the effects of climate change and sea-level rise. The programmes recommended by Kench (2005) were: (i) Planning Coastal Zone Adaptation; and (ii) Climate Proofing Key Public Assets. The programs proposed by Kench (2005) were evaluated in the current TA through stakeholder consultation and consideration of best practice in integrated decision-making.
Overall, to meet the objectives of Task 1 and Task 2 existing approaches to coastal hazard management in Kiribati were reviewed and validated, and approaches considered ‘Best Practice’ internationally for integrated decision-making and specifically IDM with regard to CCA were considered through an extensive literature review (Appendix B) (Figure 4). This information was subsequently used to inform development of an IDM approach for CCA in Kiribati.

![Figure 4](image.png)

**Figure 4** Approach to develop an IDM framework for CCA in Kiribati

### 2.2. Key Findings

The findings presented here refer solely to the core outcome of Task 1 & 2 – a suggested approach to achieve coordinated and integrated decision-making for the development of climate change adaptation strategies. For additional findings developed during the execution of Task 1 and 2 refer to Appendix B.

Validation of the Kench report’s findings through key stakeholder interviews confirmed the fragmented and reactive approach to coastal hazard management in Kiribati. Unfortunately, the interviews also confirmed that there had been limited progress in addressing the key aspects of the management approach.

While there has been progress in the collation of underlying coastal process information supporting coastal decision-making, most notably under the SOPAC/EU programme, there has been very few positive changes to the coastal hazard management system described by Kench (2005). Rather, the increased pressure on coastal resources, particularly in South Tarawa has resulted in increased workload for processing applications to construct coastal engineering works. This increased workload is compounded by chronic capacity constraints in the Government of Kiribati Ministry of Public Works and Utilities (MPWU), the key agency responsible for providing technical advice on applications. It appears that this created a vicious circle where the increased pressure for reactive management activities, focused on the assessment of individual sea wall applications, has meant that there is less time for...
pro-active management activities that could increase the effectiveness of on-the-ground management work.

Programme 1, as described by Kench (2005) outlined a valuable tool for coastal hazard management to plan for climate change adaptation. However, this tool, which could essentially be viewed as a vulnerability and adaptation assessment, was assessed as requiring to be considered within an IDM process for it to be successful. The review of international ‘Best Practice’ for integrated decision-making, and specifically IDM with regard to CCA, found that an effective approach to IDM should be embedded within a framework that considers three key elements, namely:

- Directional setting guidance – e.g. strategies, policies, guidelines;
- Institutional arrangements; and
- Coastal management planning.

The attributes of each of these elements were explored in detail in the full Task 1 and 2 Report (Appendix B) and are summarised in Section 3.1 below. The three elements were considered in light of the recommendations made by Kench and key stakeholders consulted throughout Task 1 and 2. This information was subsequently used to inform development of the IDM approach for CCA for Kiribati.

The resultant recommended IDM process developed through Task 1 and 2 is presented in Figure 5.

This approach essentially incorporates Kench’s recommendations, which may fundamentally be viewed as a vulnerability and adaptation assessment, within an Integrated Decision-Making (IDM) process in order to maximize the potential for success. As illustrated in Figure 5, CCA is a component of Integrated Coastal Zone Management (ICZM), rather than a standalone method to achieve an Integrated Decision-Making (IDM) process. In essence, the framework presented as the core output of Task 2 was intended to enable the Kench framework to progress from an approach to Coastal Vulnerability and Adaptation (V&A) assessment to a more holistic approach to integrated coastal decision-making.
Figure 5  Framework for integrated decision-making in Kiribati

Importantly, the outputs of Task 1 and 2 underpinned the work carried out through subsequent phases of the project. Specifically, the components of the framework shown in Figure 5 and their relationship to the ToR tasks is summarised in Table 3.

Table 3  Alignment between components to establish an Integrated Decision Making Process and ToR tasks

<table>
<thead>
<tr>
<th>IDM Component</th>
<th>ToR task</th>
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<tbody>
<tr>
<td>Direction Setting Guidance</td>
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<tr>
<td>Coastal V&amp;A (specifically risk-based methods)</td>
<td>Task 4</td>
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<td>Task 5</td>
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</table>
3. Reconfiguring institutional process and regulatory procedures

3.1. CHRDP and ICZM

The aim of Task 3 was to reconfigure institutional processes and regulatory procedures to enable a coordinated approach to CHRDP in Kiribati. CHRDP is an approach to coastal management that addresses natural hazards impacting the coast (e.g. erosion, extreme high tides, cyclone damage) and human-induced coastal hazards including climate change. Integrated Coastal Zone Management (ICZM) is a form of coastal management that applies an integrated (and coordinated) approach, regarding all aspects of the management of the coastal zone, their natural resources and human settlements. Consequently, ICZM was seen as an ideal approach to achieving a coordinated CHRDP process in Kiribati. Therefore, the method applied to meet the objectives of the current assessment was founded on best practice approaches for ICZM.

3.1.1. Integrated Coastal Zone Management

Integrated decision-making within the context of ICZM is widely advocated by coastal managers worldwide (Beatley et al., 2002; Cicin-Sain and Knecht, 1998; Clark, 1996; Hinrichsen, 1998; Kay & Alder, 2005). The principles governing this integrated process are, in general, universally accepted, facilitating wide spread consensus on what constitutes ‘Best Practice’ (Olsen et al. 1997; Olsen et al. 2002; Olsen 2003a; Olsen 2003b). Although the specifics of implementation of this integrated process may vary from place to place dependant on unique national and local circumstances, three elements are considered key, namely:

- Appropriate direction-setting guidance;
- Adequate institutional arrangements; and
- Comprehensive coastal management planning.

Each of these three key elements plays an important role in progressing towards an integrated approach to coastal zone management and consequently meeting the objectives of Task 3. Therefore, they are each discussed in brief below (see Appendix B for further information).
### 3.1.1.1 Direction Setting Guidance Elements

Effective ICZM systems have, at their core, a well-developed hierarchy of documents that provide direction and guidance. These documents (e.g. vision statements, strategies, polices, statements of management objectives, guidelines, manuals) cascade from strategic levels through to those that guide specific operational activities. These documents are referred to herein as ‘Direction Setting Guidance’ (DSG) elements.

![Figure 6: A simple hierarchy of direction setting statements in ICZM (Kay & Alder, 2005)](image_url)

In general, DSG elements provide direction to decision-making at all levels, from national-level activities through to guiding individual officers to make specific coastal management decisions, such as whether or not to approve a sea-wall application. This type of guidance at the outset of a coastal management framework is important as it establishes a clear link between high-level goals, through key objectives, to specific management actions to support effective Climate Change Adaptation (CCA) on the coast.

Effective ICZM should include consideration of each of the levels of the hierarchy shown in Figure 6 and a consideration of how best to fit these levels together (Cicin-Sain and Knecht 1998). In this sense, there is an emphasis on both ‘vertical’ integration between hierarchy levels (e.g. between GoK and Urban & Island Councils) and also ‘horizontal’ integration between agencies in the same level of government such as between GoK Ministries (Kay and Alder 2005). This ensures that policies, plans, manuals, targets and so on developed within a particular level are integrated effectively across government operations.
3.1.1.2 *Institutional Arrangements*

Effective institutional arrangements for ICZM should have a number of key attributes (Sorensen and McCreary 1990). These include, but are not limited to a basis in legislative or executive mandate and an institutional identity – it is identifiable as either an independent organization or a coordinated network of organisations linked together by functions and management strategies.

Importantly, ICZM institutional arrangements must be resilient. They must be capable of accommodating a sufficiently broad range of externally driven changes to be able to maintain the system in a long-term, sustainable manner. The development of high-level co-ordination is viewed as a critical step in enhancing ICZM. In this respect, a defined government institution should be tasked with the role of overseeing, promoting and improving ICZM.

3.1.1.3 *Coastal Management Planning*

Coastal management plans are formulated based on direction setting guidance within a set of appropriate institutional arrangements, to develop and guide the implementation of on-ground management actions for specific sections of coast. There are many different types of coastal management plan and a great deal of international experience available to guide the choice of which type and style of plan is appropriate in particular decision making contexts (e.g. Clark, 1996; Hinrichsen, 1998; Kay & Alder, 2005). An important component of effective coastal management planning systems is to develop an overall coastal management-planning framework that helps guide the choice and application of plans and their sequence of development and priority for implementation.

3.2. **Objectives**

The foregoing discussion has outlined that generation of comprehensive coastal management plans through a well-defined coastal planning framework, together with adequate institutional arrangements and appropriate direction-setting guidance, may be considered ‘Best Practice’ towards integrated decision-making and, specifically, ICZM.

The aim of Task 3 was to reconfigure the institutional processes and regulatory procedures to allow for a coordinated CHRD process in Kiribati. The following objectives were set in order to successfully complete Task 3:
1. Analyse direction setting guidance elements and suggest pathways for improvement.

2. Review institutional arrangements and make recommendations for altered institutional processes and regulatory procedures.

3. Review and make recommendations to establish a comprehensive approach to coastal management planning.

The above objectives deliberately align to the ‘Best Practice’ components of integrated decision making developed during Task 1 and 2. Through completion of the objectives:

- The current approach to decision making within Kiribati would be reviewed; and
- Recommendations to reconfigure institutional processes and regulatory procedures – to enable a coordinated approach to CHRDP – would be provided.

The approach to meet these objectives is presented in the Section 3.3.

3.3. Approach

There were three core objectives to be met to achieve the aim of Task 3. The tasks to meet these objectives are presented in
Table 4.
Table 4  Tasks undertaken to meet the objectives of Task 3

<table>
<thead>
<tr>
<th>Objective</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyse direction setting guidance elements and suggest pathways for</td>
<td>1. Review direction setting guidance elements</td>
</tr>
<tr>
<td>improvement</td>
<td>2. Interview key stakeholders involved in CHRDP</td>
</tr>
<tr>
<td>Review institutional arrangements and make recommendations for altered</td>
<td>1. Review information used to inform decision-making</td>
</tr>
<tr>
<td>institutional processes and regulatory procedures</td>
<td>2. Review the institutional arrangements for CHRDP</td>
</tr>
<tr>
<td></td>
<td>3. Interview key stakeholders involved in CHRDP</td>
</tr>
<tr>
<td>Review and make recommendations to establish a comprehensive approach</td>
<td>1. Review coastal management planning techniques</td>
</tr>
<tr>
<td>to coastal management planning</td>
<td>2. Interview key stakeholders involved in CHRDP</td>
</tr>
</tbody>
</table>

The first step was to review relevant documents that guide decision making for CHRDP. The review commenced with the Climate Change Adaptation (CCA) policy, which provided reference to Government Policy on CCA. Further, the legislation and regulation review completed during KAP Phase 1 (Ey 2005) provided insight into the core elements guiding decision making in Kiribati in regards to climate change adaptation in the coastal zone.

The second step was to identify the Ministries with key responsibility in CHRDP. Key responsibility in this context was defined through interviews with pertinent CHRDP representatives. Following identification, key stakeholders involved in CHRDP were interviewed. The aim was to determine what information and DSG elements each Ministry currently used to inform decision-making; their perceptions on the effectiveness of current institutional arrangements and regulatory procedures; and the coastal planning tools and techniques applied to inform CHRDP in Kiribati.

In the final step, the results of the document review and the interviews were analysed to determine:

- Linkages between DSG elements;
- Recommended changes to institutional structures and regulatory procedures; and
- Recommendations for improved coastal planning.

3.3.1. Communication and Review

Communication is vital to the development of an integrated approach to CHRDP. Therefore, communication with the National Adaptation Steering Committee (NASC) and key government stakeholders was fundamental to ensure the outcomes would
achieve the intended aim. For that reason, two draft reports containing proposed recommendations for changes to institutional structures and regulatory procedures were presented to key stakeholders for comment and review. The feedback received during the review periods was incorporated into the Task 3 final recommendations, presented below.

### 3.4. Results

The results are presented under headings relating to each of the primary Task 3 objectives:

- Direction Setting Guidance elements (DSG);
- Institutional Structures; and
- Coastal Management Planning.

Additional results not falling into one of the categories above are also provided. For further information, the results of the stakeholder interviews were presented in Appendix C.

#### 3.4.1. Direction Setting Guidance Elements

The key results from analysis of CHRDP Direction Setting Guidance elements were:

- Dissemination of Ministerial Operational Plans (MOP) within Ministries below the Deputy Secretary level is limited. This reduces awareness and ownership over the MOP at operational levels.
- Ministry representatives reported that they found the MOP processes difficult to comply with, in part due to reliance on external consultants for the establishment of the MOP reporting framework.
- A lack of capacity in ministries to complete the paperwork required for the MOP reporting and lack of awareness of the value of the reporting framework.
- A lack of connection between the MOPS and the Kiribati Development Plan (KDP) 2008-2011\(^2\) and CCA Strategy. Alignment between the previous National Development Plan (NDP 2004-2007) and MOPS was established in 2004, however, due to lack of implementation of the MOP reporting system,

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\(^2\) The KDS timeframe is 2008-2011 and has replaced the National Development Plan (NDP) 2004-2007
and misalignment between KDS objectives and MOP objectives, this previous alignment, does not now exist.

- Limited ability of the MFED to provide feedback to the Ministries on their MOPs due to the inconsistent reference and reporting against NDP/KDS strategies.

- To date the MOP reporting and assessment has fallen short of the anticipated quarterly reporting and annual review. The report timing changed to half yearly due to the inability of Ministries to submit their reports, including budget performance, on time. In addition, some of the Ministries were not completing their six monthly reviews, making it difficult for the MFED to complete regular, detailed reports to Cabinet. Further, those that were reporting were not providing information in a format that enabled assessment of performance against the NDS/KDS, making it difficult for MFED to provide advise back to the Ministries.

- There was limited reference to CHRDP activities within the MOPs of key ministries with responsibility in CHRDP.

- NDS/KDS indicators of progress for CHRDP are inappropriate for effective tracking of progress in CHRDP. For example, the number of seawalls constructed is the indicator for progress in the KDS. However, those interviewed recognized that there should be movement away from the reliance on hard defences in Kiribati as the primary adaptation tool (Kench, 2005).

- Lack of funding and policy guidelines to inform coastal management activities were cited as key factors inhibiting a more proactive approach to CHRDP.

- There is a lack of criteria or policy guidelines for the assessment of coastal management issues and no guidelines to inform on-ground CHRDP actions. Therefore, management decisions are largely based on expert judgment on a case-by-case basis.

3.4.2. Institutional Structures

Key results from analysis of CHRDP Institutional Structures in Kiribati are:

- The Foreshore Management Committee (FMC), the only currently functioning cross-ministerial institution for coastal management in Kiribati, has limited regulatory authority and no strategic role.
• There is limited communication between Ministries and limited data sharing for CHRDP. Inter-ministerial collaboration is generally limited to discussion on a case-by-case basis of individual application for permits (informally between GoK officers and through the FMC).

• Current responses to managing climate change impacts in the coastal zone are primarily reactionary rather than proactive. Ministries respond to coastal issues after a problem exists, with limited time and resources available to complete proactive adaptation planning.

• Ministry of Environment, Lands and Agricultural Development (MELAD) is identified as the lead agency for both integrated coastal zone management, including erosion, and the management of climate change and sea-level rise impacts on the coast (Directions Assigning Ministerial Responsibility, 5 August 2003). However, due mainly to capacity constraints, MELAD has been unable to develop robust institutional arrangements for CHRDP other than its ongoing Executive Support of the FMC. This lack of overarching coordination of CHRDP activities leads to tradeoff between Ministries and duplication of actions.

3.4.3. Coastal Planning

Key results from analysis of CHRDP coastal planning tools are:

• There are no coastal management plans in Kiribati.

• There is a very strong desire by GoK staff to develop comprehensive coastal management plans initially for priority areas of South Tarawa, then to extend coastal planning activities to the whole of South Tarawa and then the Outer Islands.

3.4.4. Additional Results

Additional results drawn from Task 3 analysis include:

• GoK Ministries have a number of information sources that can inform effective CHRDP. However, accessing and applying this information is restricted to within ministries with no systematic system or process for information sharing between ministries.

• Financial and human capacity is low in agencies with specific operational roles in CHRDP. Ministries with lead roles in CHRDP, such as MELAD,
MFMRD and Ministry of Public Works Unit (MPWU), have limited capacity and budget.

- The need for staff training and capacity building was frequently raised. There were few trained staff within the ministries that can undertake specific CHRDP tasks, although there is considerable willingness of GoK staff to receive such training.

- The funding dedicated to CHRDP is limited. In many cases, Ministries have identified a number of projects that would contribute to more effective and informed CHRDP. However, the funding to implement these programs is not available.

- There was a common perception that the level of information available on which to base decision-making could be increased through increased monitoring activities. This includes monitoring of the impact of aggregate mining, beach profile monitoring, and meteorological monitoring on the outer islands. Although Ministries currently undertake some of this work, they recognized that it could be enhanced by a substantial increase in monitoring effort, and that without such monitoring, it will be very difficult to separate impacts on the coastal zone due to climate change from those driven by either natural climate variability and human impacts.

- Community attitudes and perceptions influence Ministries' capacity to fulfill their CHRDP commitments. A key issue mentioned includes the perception of coastal land/foreshore ownership, the 'right' to undertake actions as the community sees fit, and a lack of community volunteerism to assist in monitoring environmental restoration.

- Addressing CHRDP is made problematic due to the lack of awareness at both the community and ministerial level.

3.4.5. Summary

3.4.5.1. Key Issues and Constraints

GoK Ministries operate on a limited budget and experience constant and high-levels of competing demands on their resources. In many cases, the proportion of resources focused on CHRDP is limited. Further, there is a lack of policy guidance to aid decision-making in relation to CHRDP that cascades from high-level policies/strategies such as the CCA Strategy and KDS through to the day-to-day
operations of key GoK agencies. Together, these issues create a difficult environment for proactive CHRDP. In particular, the results indicate that:

- Ministries largely rely on officer opinion to make case-by-case management decisions. They have some information that would facilitate decision-making. However, the information is not collated into a systematic data management system and is therefore difficult to access. Further, in many cases, ministerial staff are unaware of the information sources available to them.

- Ministries have established connections that have evolved through the provision of case-by-case advice and awareness raising. However, the level of systematic and coordinated information sharing between Ministries is low. This inhibits informed decision-making and increases the possibility of overlap in roles and responsibilities.

3.4.5.2 Synopsis

The results indicated the importance of CHRDP in Kiribati, identified through stakeholder interviews and analysis of previous reports. Ministries have had to act on coastal management issues, whether this is through the provision of funding and works (MFED, MPWU and OB), information and awareness raising (Ministry of Finance and Economic Development - MFMRD and Ministry of Environment, Lands and Agricultural Development - MELAD) or the provision of data (Ministry of Communication, Transport and Tourism Development - MCTTD and MFMRD). However, the results also demonstrated the reactive nature of coastal management in Kiribati where attention is only drawn to an issue once a problem exists. Ministries were well aware of this issue and have suggestions on ways this can be improved. However, the capacity to implement these recommendations, both financial and human, is severely limited. This has repercussions for the capacity to implement recommended institutional changes that would be delivered through Task 3.

Overall, the findings represented a disjuncture between the scale of the CCA and ICZM challenge, and the level of financial and human capacity available in Kiribati to address them.

3.5. Recommendations

The recommended approach to institutional and regulatory change was shaped by the results of the stakeholder interviews and the feedback received on the preliminary recommendations. The feedback indicated that capacity constraints, financial and human, would influence the implementation of recommendations.
Importantly, it is noted that previous recommendations that could enhance the institutional and regulatory environment and contribute to a more coordinated approach to CHRDP (see for example Ey 2005) had not been implemented. Contributing factors leading to the lack of implementation were not examined in detail; however results suggested that it might be attributed, in part, to a lack of:

- Capacity to implement recommended changes;
- Alignment between recommended changes and the cultural context in which the changes were to be implemented;
- Awareness, capacity or ability by decision makers to implement change; and/or
- Resources.

Consequently, it was deemed appropriate to develop a staged approach to institutional and regulatory change to enable progress in achieving a coordinated approach to CHRDP under recognised constraints. A staged approach was considered beneficial as it enables:

- Systematic progression towards achieving an end goal;
- Sets realistic expectations and goals at the outset of the program; and
- Provides guidance on the methods, tools and approaches to enable gradual and sustained improvement.

A three-staged approach to achieving integrated and coordinated CHRDP was developed to meet the objectives of Task 3. The first stage is capable of being implemented within the current capacity and resource environment\(^3\). Therefore reducing the reliance on external support to progress towards a coordinated approach to CHRDP. The subsequent stages may be implemented as capacity is built, experience is gained and additional resources become available (Figure 7). At each level, recommendations are made under the core components that contribute to a coordinated approach to ICZM analysed through Tasks 1 & 2 (see Section 2).

In addition, stakeholder consultation indicated that through increased awareness of the key barriers to co-ordination and the approaches to overcome these barriers, ministries could develop a list of targeted funding priorities. Therefore, the three

\(^3\) This current resource environment is assumed to include Technical Assistance and support that can be provided by KAP II in 2009.
staged approach presented here is encapsulated within a progression matrix. The objectives under each of the three levels of co-ordination; the actions that must be taken; and the resources that would be required to implement the recommended actions are all outlined in the progression matrix (see Appendix D). This enables explicit recognition of implementation approaches and can also be used as a reference tool to target financial support.

At each of the three levels of implementation, the core components of integration are explored. These are the integral components for achieving ICZM, and include:

- Institutional structures;
- Coastal planning;
- Direction setting guidance elements;
- Regulation and enforcement; and
- Capacity building.

Figure 7 presents the three-implementation levels for CHRDP. At each level, the core elements that contribute to effective ICZM are presented, and the recommendations for action in each element are described.
The list of core components above builds on the preliminary three components explored in Section 3.1 (institutional structures, direction setting guidance elements and coastal planning). The rationale for the inclusion of regulation and enforcement and capacity building as core components contributing to ICZM is explored below.

DSG elements are implemented within the legislative and regulatory framework of Kiribati. Therefore, the structure of this framework can have implications for the effective utilisation of DSG elements and institutional structures. As a result, a guide to improving regulation and enforcement is outlined here.
Capacity is integral in enabling implementation of an integrated approach to CHRDP. The definition of capacity development used in this report follows Morgan (1997) and states that capacity development is: “the growth of formal organisational relationships and abilities, i.e. changes in organisational behaviour, skills and relationships that lead to improved abilities of groups and organizations to carry out functions and achieve desired goals over time”. In this context, the key components of capacity development include: communication, negotiation, mediation, levels of trust and facilitation. There is a strong link between regulation and enforcement and capacity building and the two should be considered in conjunction especially given stakeholder feedback that capacity constraints are a key barrier to coordinated CHRDP in Kiribati.

The recommendations for each level of co-ordination are presented below. Although the recommendations are presented under discrete headings relating to the core components of ICZM, it is important to stress that they should be treated as integrated rather than individual ‘stand alone’ elements. The progression from Level 1 to Level 2 recommendations cannot be achieved unless there is progress throughout each of the integrated elements.

3.5.1. Level 1 Recommendations

**Figure 8 Level 1 Recommendations**

3.5.1.1 Institutional Structures

The development of high-level coordination between GoK Ministries is viewed as a critical step in enhancing ICZM. Overlap in responsibilities and trade-off between Ministries can be attributed to a lack of overall coordination in CHRDP. Therefore, at Level 1 it is suggested that a coordinating committee with the role of overseeing integrated coastal management in Kiribati be clearly identified. It is recommended that the current Foreshore Management Committee (FMC) be tasked with this role
(Figure 9). Consequently, the aim of the Level 1 institutional reconfiguration is to enhance the role of the Foreshore Management Committee (FMC) and relevant Ministries through a two-step process:

- **Step 1**: New recommended Terms of Reference for the FMC.
- **Step 2**: Amendments to the *Appointment of Ministers and Directions Assigning Ministerial Responsibility* document.

The FMC Terms of Reference should be modified to demonstrate increased roles and responsibilities. A recommended amended Terms of Reference of the FMC during Level 1 are presented in Appendix D. This indicates a broadened role of the FMC committee to lead the initial development of a coordinated approach to CHRDP in Kiribati.

The *Appointment of Ministers and Directions Assigning Ministerial Responsibility (August 2003)* document should be updated to ensure that the important role of coastal monitoring undertaken by MFMRD is made explicit.

In addition, there should be a review of the operational activities undertaken at the Ministry level for CHRDP. The review should determine what activities are currently undertaken, and those that should be conducted, but are not able to be implemented due to resources and capacity constraints. This review would enable a targeted program of training and funding provision to increase on-ground operational activities for CHRDP.

The stakeholder consultation process highlighted the need for a systematic approach to information storage and sharing, both within and between Ministries, to aid operational staff in their CHRDP decision-making processes. To increase awareness of the resources available to support institutions involved in CHRDP decision-making it is recommended that staff conduct a systematic review of the information sources available within each Ministry (for example previous reports, consultant reports, monitoring records, mapping data etc). A storage system should then be developed to enable systematic retrieval and application of available information in the decision-making process.
3.5.1.2 Coastal Planning

The key aim for Level 1 coastal management planning is to transition from the reactive, case-by-case approach to CHRDP to a plan-lead pro-active approach. It is anticipated that drafting of a coastal plan for priority issues and areas in South Tarawa would initiate this transition. Additional benefits of initiating coastal planning will be enhanced coordination and greater transparency of on-the-ground decision-making.

The stakeholder consultation process undertaken in Task 3 highlighted the critical importance of managing coastal erosion and accretion on both the lagoon and ocean sides of South Tarawa, especially in relation to the pro-active development of coastal engineering works, constructed either by Government or individual/communal landholders. As such, it is recommended that the first coastal management plan developed should be a Foreshore Management Plan (FMP) for South Tarawa with a primary focus on ‘hotspot’ problem areas. It is recommended that the hotspot areas be defined by, the Level 1 CHRDP institutions, with an emphasis on the FMC.

It is recognised that initiating the transition to a planning-lead approach to CHRDP is a significant task, especially given stakeholder feedback regarding ongoing severe capacity constraints. Consequently, it is recommended that the FMC seek the support of the proposed KAP II Technical Assistance for Risk Analysis and Design Capacity for Coastal Hazard Management (Component 2.2.1 and 2.2.2). It is recommended that the Terms of Reference (ToRs) for this Technical Assistance should be drafted specifically to provide this support to the FMC.
3.5.1.3 **Direction Setting Guidance Elements**

Direction Setting Guidance (DSG) elements provide direction to decision-making at all levels of Government. Task 3 findings suggest there is currently limited application of the DSG elements available within Ministries (i.e. CCA Strategy, KDS and MOPs) and in some cases, no DSG elements to inform operational decision-making. To ensure a coordinated approach to CHRDP it is vital that these elements are available and utilised at all levels, from informing national-level activities through to guiding individual officers to make specific coastal management decisions. Consequently, it is recommended that the following DSG elements be available within all Ministries and utilised by operational staff:

- Ministry Operational Plans (MOP);
- Policies and Regulation; and
- Operational Guidelines.

If guidelines to inform CHRDP decision-making are not available, these should be created as a priority. Such guidelines may include a seawall application review guideline for staff within the Environment and Conservation Division (ECD) of MELAD. To progress towards DSG element utilisation it is recommended that there is a review of Ministries operational activities in relation to CHRDP to ensure that an operational guideline exists for each. Further, it is recommended that training be undertaken to increase awareness of the role of the CCA Strategy, the KDS and MOP at all operational levels to demonstrate the linkages between national development priorities and on-ground action.

3.5.1.4 **Regulation and Enforcement**

DSG elements are implemented within the legislative and regulatory framework of Kiribati and the structure of the framework can have implications for effective utilization of DSG elements. In the absence of a supportive regulatory environment, many of the recommendations and policies contained within DSG elements may be difficult to implement. Therefore, it is recommended that a review be conducted of the previously prescribed changes to regulation and legislation; see for example recommendations by Ey (2005) and the Lands Management Division (2008). The review should set objectives for action to implement selected changes to regulation and legislation. These actions are the primary stepping-stones to ensuring that the operational activities conducted by each Ministry are informed by the legislative and regulatory procedures for CHRDP in Kiribati.
3.5.1.5  Capacity Building

Capacity building is critical to developing an enabling environment and ensuring progress in all other areas of institutional and regulatory change. The recommendations for capacity building at Level 1 concentrate on increasing awareness and establishing the initial actions for monitoring progress in capacity building. Therefore, the aim of Level 1 capacity building is to instil commitment to CHRDP throughout each Ministry from operational to managerial levels. A further aim is to raise awareness of the need for indicators to monitor capacity development to demonstrate progress at operational, ministerial and subsequently, national levels.

This first objective may be achieved by gauging commitment through interviews and surveys. Additional awareness raising on the role of indicators and links between operational activities and national progress may require external support. However this point is included under Level 1 due to its integral role in enabling progression in capacity development. Capacity building activities should include:

- Training programmes; and
- Activities to enhance information collection, storage and dissemination.

3.5.2.  Level 2 Recommendations

Figure 10  Level 2 recommendations

3.5.2.1  Institutional Structures

Level 2 institutional recommendations aim to increase capacity through strengthening information sharing and communication between ministries. They build on the institutional structures proposed in Level 1 and ultimately inform progression towards Level 3 institutional structures.
Following from Level 1, to increase access to and awareness of information available to inform decision-making it is recommended that operational guidelines (established in DSG elements Level 1) be updated to include reference to the information sources available within the Ministry (as established under Institutional Structures Level 1). This would increase the effectiveness of information utilisation to inform CHRDP decision-making.

Following the update of operational guidelines (Level 1), it is recommended that the performance indicators (see DSG elements Level 2 and Capacity Development Level 2) be reviewed to ensure that they are applicable under the altered decision-making process. For example, other performance indicators that more accurately represent progress in CHRDP would replace the use of the number of seawalls as an indicator for performance in CHRDP, as currently used in the KDS.

Finally, performance reviews are integral to achieving and monitoring progress in capacity development. There is currently limited awareness of CHRDP operational activities at managerial levels inhibiting the ability to provide instructive criticism to operational staff. Therefore, it is suggested that there is an increase in accountability of operational activities at the managerial level. This would require managers becoming more greatly informed about the CHRDP activities undertaken by operational staff, to enable performance reviews to be undertaken.

### 3.5.2.2 Coastal Planning

The recommended transition from Level 1 to Level 2 coastal planning is an expansion of scope of the Foreshore Management Plan (FMP) from the focussed hotspot areas in Level 1, to the entire South Tarawa shoreline (ocean and lagoon sides). It is recommended that the lessons learned from the Level 1 hotspot FMP be incorporated into the execution of the Level 2 FMP, including the required external technical support, data/information requirements, stakeholder engagement and coordination between GoK Ministries. Importantly, a key role for the Level 2 FMP should aim to develop a consensus on location-specific CHRDP strategies, such as the use of coastal engineering structures or non-structural measures such as development setbacks. Consequently, the drafting of such an FMP has the potential to develop community debate that will require both enhanced (Level 2) institutional arrangements and Direction Setting Guidance. Without such a coordinated approach to enhancing CHRDP in Kiribati, the impact of developing an FMP for South Tarawa will be significantly diminished.
External support will be required to develop the Level 2 FMP through Technical Assistance.

It is also recommended that Level 2 coastal planning should initiate the expansion of coastal plan development to the Outer Islands. As with the transition from Level 1 to Level 2 for FMP development in South Tarawa, it is recommended that Level 2 should Pilot FMPs for selected priority locations on Outer Islands. Depending on the guidance provided on this selection process by the Level 2 CHRDP institutions, this piloting process could be through the choice of a small number of complete Outer Islands, or selected hotspot locations. This selection process will also be dependant on available resources.

A recommended final component of Level 2 is the piloting of a Coastal Planning Framework to guide the transition into Level 3 activities – particularly the transition to Kiribati-wide coastal planning. A coastal planning framework considers the various types of plans available to address management action and how the plans would interact with other issues and overall management objectives to assist in achieving desired management outcomes. The issues which require consideration in its design can be broadly grouped into four main areas (Kay & Alder, 2005 - Figure 11):

- Relationship with an overall coastal management program (including the type, number and intensity of management issues and problems) and other government policies, strategies and plans;
- Choice of plan types and production styles;
- Linkages between plan types; and
- Scales and coverage of plans.
3.5.2.3  Direction Setting Guidance Elements

The results indicate a lack of criteria or policy guidelines for the assessment of coastal management issues and no guidelines to inform on-ground CHRDP actions. This results in management decisions that are largely based on GoK officer judgment on a case-by-case basis. To amend this issue, building on the recommendations outlined in Level 1, it is suggested that DSG elements are reviewed and amended (for example the CCA Strategy, MOPs and KDS) to ensure explicit recognition of CHRDP in all planning and guidance documents. For example, it is recommended that the CHRDP roles of each Ministry (as outlined in the amended ‘Ministerial Roles and Responsibility’ document, developed in Institutional Structures Level 1) are incorporated within MOPs and an updated CCA Strategy. In addition operational guidelines should make reference to relevant legislation and regulation, thus ensuring the legislation and regulation are integrated into operational actions.

Finally, stakeholder consultation identified the need for increased ownership over MOP reporting at all Ministerial levels to increase ownership over the reporting process and ensure increased compliance. It is recommended that action be taken to ensure that Ministerial staff at all levels monitor performance against indicators in the KDS and any updates to the CCA Strategy. This recommendation aligns to the Capacity Building recommendations – Level 2.

3.5.2.4  Regulation and Enforcement

It was suggested by stakeholders interviewed that the lack of alignment between legislation, policy and operational practice is hindering the uptake of integrated
CHRDP. For example, the Land Planning Act currently has no provisions for coastal setbacks, thus making it different for planners and developers to align developmental and environmental objectives. As a result, it is advised legislation be first reviewed and then updated to ensure that there are explicit links between relevant legislation and coastal adaptation approaches. Updates may be incorporated through cabinet endorsement of the legislation and regulation review (undertaken in Regulation and Enforcement, Level 1). A core advocated change is to ensure that all development (including government and private land holders) is encompassed under the same regulatory and legislative procedures, following the recommendations of Ey (2005).

In addition, staff with the responsibility for carrying out regulatory action should be given increased enforcement powers explicitly to focus on illegal and unauthorised activities on the coast, such as sand mining and seawall construction. This would help raise public awareness of the importance of coastal management and planning whilst also ensuring increased compliance.

3.5.2.5 Capacity Building

The aim of Level 2 Capacity Building is increase ownership over performance indicators at operational levels and to ensure that indicators are linked to the MOP, KDS and CCA. Linking indicators will ensure that progress at the operational level is leading to national level objectives.

To achieve this aim, indicators of capacity development, which are based on the critical functions of ministries for CHRDP, must be developed. Critical functions are the functions that must be performed effectively to allow the organization to survive and overcome major challenges and constraints, and accomplish goals. Such indicators should be linked to the KDS, CCA Stategy and MOPs and ministerial operational strategies and policies.

External funding will be required to support Level 2 Capacity Building activities.
3.5.3. Level 3 Recommendations

Figure 12 Level 3 recommendations

3.5.3.1 Institutional Structures

The recommendations for Level 3 aim to add significant robustness to the institutions managing and overseeing CHRDP. Consequently, it is advised that one agency have overall responsibility for CHRDP in Kiribati, with the lead agencies nominated for specific aspects of CHRDP (i.e. MFMRD lead agency for coastal monitoring). The agency with overall responsibility is recommended to be MELAD, as proposed under the preliminary Task 3 recommendations discussed by NASC. In addition, specialist committees should be established to facilitate the lead ministry in undertaking its important role. The Foreshore Management Committee (FMC), under an alternate mandate and structure is suggested as the new high-level strategic group. It is recommended that the FMC be chaired and provided executive support by MELAD and report through its Minister to Cabinet. The key role of the FMC under its revised mandate would be to provide national leadership in promoting sustainable management of coastal resources and ensuring that natural hazard and climate change risks are integrated into mainstream coastal management practices. To achieve this mandate, the committee members must hold senior managerial positions within their respective ministry. Therefore, the original technical staff committee members would provide support to the new senior managerial committee members. The senior managerial members are required to increase the leverage and authority of the FMC.

It is recommended a new committee, the Coastal Monitoring Committee (CMC), be convened in Level 3 to coordinate the technical work of coastal monitoring. The development of this committee would transition monitoring activities from the sole responsibility of MFMRD (as proposed under Level 1) to a broader group of stakeholders. This would ensure that this important work is a focus in Kiribati, with
increased opportunities to involve community stakeholders in the monitoring process. This may enable the development of a systematic national coastal monitoring network. In addition, other technical committees will be established as required to support the FMC in enforcing their mandate, for example a new committee may be required to fulfil the FMC's previous role of reviewing seawall applications and other day-to-day operational tasks.

The totality of committees and expert study teams recommended under Level 3, including the linkages between them, are presented in Figure 13. This arrangement is considered to provide significantly enhanced capacity in Kiribati for integrated CHRDP.

![Figure 13 Recommended institutional co-ordination to support coordinated CHRDP in Kiribati, Level 3](image)

In addition to the institutional changes, it is recommended that the efficiency of each ministry in performing their role be regularly assessed. This would be completed in conjunction with tasks in ‘DSG elements’ Level 3 and ‘Capacity Building’ Level 3.

### 3.5.3.2 Coastal Planning

The key aim for Level 3 coastal planning is to ensure that all shorelines of Kiribati are covered by some form of coastal plan. As outlined above (see Figure 11), the type, form and approach used to develop a comprehensive suite of coastal plans in Level
3 is guided by an active Coastal Planning Framework. Such a Framework is critical to ensure that the recommended suite of coastal plans, covering South Tarawa and all Outer Islands, are covered by an appropriate level and detail of coastal planning. For example, the Framework (the development of which is managed by the Level 3 institutions) may determine that hotspot FMP-style plans may be adequate for key settlement areas on Outer Islands – while the islands are also covered by strategic-level coastal plans that are not to the same level of detail required for hotspots.

Importantly, the Framework should also guide the development of either additional coastal plans, or updated plans, required for South Tarawa. Depending on CHRDP priorities determined by Level 3 institutions, these planning activities could include revising the South Tarawa FMP (recommended for development through Level 1 activities), the development of specific ‘sector plans’, such as a plan for coastal tourism development and other specific areas of the economy (or particular issues), or additional hotspot plans.

As with Level 2 coastal planning, additional external resources would be required to transition from Level 2 to Level 3 coastal planning.

3.5.3.3 Direction Setting Guidance Elements

The primary target for Level 3 DSG elements is to ensure consistency in approach to CHRDP across Ministries through the achievement of horizontal linkage between DSG elements. It is recommended that this may be achieved through review the DSG elements in Ministries with a lead role in CHRDP. The review would determine the presence or absence of alignment in objectives and actions for CHRDP across Ministries. If there is misalignment, the ‘Roles and Responsibilities’ document could be used as a reference to determine where misalignment lies. The relevant ministries would then be consulted to modify DSG elements where required.

It is recommended that the Lead Agency with responsibility for CHRDP (the FMC – see Institutional Structures Level 3) undertake the review. However, the ability to critically review the DSG elements would be dependent on ensuring that reporting mechanisms (as outlined in ‘Capacity Building’ Level 3) are established.

3.5.3.4 Regulation and Enforcement

Regulation and enforcement would be strengthened through the development of standards that meet coastal adaptation sensitive criteria. This advancement would ensure that the policy and guidelines applied in CHRDP decision-making are based on ‘best-practice’ approaches to coastal planning and management, with a strong
consideration of the potential impacts of climate change. To further this work, it is advocated that standards be reviewed at regular intervals to ensure compliance with most up-to-date climate change science and policy.

The development of adaptation sensitive criteria, and the inclusion of such criteria in decision-making process would require external assistance to ensure alignment with international best-practice.

### 3.5.3.5 Capacity Building

The focus of Level 3 capacity building is to ensure that capacity development across Ministries is progressing at a similar rate. The overriding aim is to ensure that there is equality in progress, thus making coordination between Ministries increasingly efficient.

It is advised that the overarching body responsible for CHRDP monitor progress in achieving capacity development (see Institutional Structures Level 3). Monitoring of progress will be enhanced through the anticipated alignment between organization targets for capacity building across Ministries. More specifically, it is anticipated that the capacity building targets will be aligned if the DSG elements also align across Ministries (as required under DSG Elements Level 3).

### 3.5.4. Summary

The proceeding section has presented recommendations to reconfigure the institutional processes and regulatory procedures to allow for effective CHRDP. The recommended approach, shaped by the results of the interviews and the preliminary feedback received on the first drafts of the approach, was structured as a staged approach to institutional and regulatory change.

Level 1 recommendations can be implemented under current capacity and resource constraints, while progress to Level 2 and subsequently Level 3 will occur as capacity is built, experience is gained and funding is received. The funding requirements to enable progression are explicitly outlined in the progression matrixes (Appendix D), along with recommended approaches to achieving the proposed objectives at each level.

Overall, the recommendations seek to increase co-ordination through:

- Establishing a central body with the responsibility of overseeing CHRDP activities in Kiribati;
• Building a framework for coastal planning that is applicable across Kiribati;

• Generating alignment between DSG elements that inform decision-making within and across ministries;

• Producing DSG elements that are constructed based on a legislative environment that considers social, economic and environmental objectives;

• Development of a systematic approach to the application of information sources in CHRDP decision making; and

• Building capacity and establishing ownership over indicators of capacity development.

The three-staged approach represents an iterative method of achieving integrated and coordinated CHRDP in Kiribati to ensure sustainable, long-term change. Under each level, the components that contribute to effective and coordinated CHRDP (institutions; coastal planning; DSG elements; regulation and enforcement; and capacity building) are presented. It is important to remember that the recommendations under each component should be undertaken in unison.
4. **Pilot Study Risk Assessment and Workshops**

The aim of Task 4 was to:

*Design and co-ordinate workshops with staff of key GoK agencies in order to: raise awareness of the need for coordinated assessment and planning of coastal hazards; and develop pilot studies that demonstrate the coordinated process to develop adaptation strategies to climate change.*

To achieve this aim a number of Workshops would be held to:

- Provide an overview of adaptation strategies and hazard risk diagnosis; and identify case studies and planning parameters.
- Identify and evaluate (environmental and economic) options (structural, non-structural, planning) to reduce risk over the desired planning horizon.
- Develop adaptation strategies for case studies.
- Review the coordinated approach to adaptation to coastal hazards, and present the adaptation strategies.

The primary objective of the workshop series was to instil capacity within key government agencies to coordinate and develop adaptation strategies for climate change. The approach to meet the objective is described in Section 4.1.

### 4.1. Approach

The overriding aim of the project was to instil capacity within GoK ministries to apply a coordinated process to CHRDP. To achieve this aim, a mentoring approach was taken that deliberately sought to use an action learning (“learning by doing”) approach through the application of a climate change risk assessment process to Pilot Sites. The mentoring approach was selected to ensure capacity building was achieved. Therefore, the primary objective of Task 4 was to ensure:

- Capacity was raised; and
- An enhanced understanding of the methodology to achieve coordinated CHRDP was instilled.
The development of adaptation strategies for the Pilot Study sites was an important, but nevertheless, secondary objective.

The mentoring approach was delivered through a series of Workshops (as prescribed in the ToR) combined with support provided between Workshops. There were four workshops held in total, each contributing to building capacity in key government agencies to undertake coordinated CHRDP. The timing of workshops, the activities conducted, and the alignment between proposed workshops are outlined in Table 5.

The first workshop focussed on awareness raising, establishing partnerships and commencing the CHRDP process. During the workshop, the proposed methodology to support a coordinated approach to CHRDP was presented, based on the Australian/New Zealand Risk Management Standard, and information required to commence the risk assessment process was exchanged. The risk-based framework was selected due to its long history of application in the Pacific, in particular the Comprehensive Hazard and Risk Management (CHARM) framework widely used by the Pacific Islands Applied Geoscience Commission (SOPAC) and applied in Kiribati through KAP I. In addition, this approach is now widely being adopted in Australia through the Australian Government publication *Climate Change Impacts & Risk Management - A Guide for Business and Government* (2007).

Throughout the remaining workshops the framework was applied to co-ordinate CHRDP for key asset groups. Two Pilot Sites were selected based on advice provided by the KAP Project Management Unit (PMU) to ensure alignment with other KAP components. The sites, Bikenibeu and Temaiku, incorporated a number of important assets, such as government housing, government schools, the government-owned hotel, industrial development, community infrastructure (maneabas and churches) and a proposed future urban development site (see Figure 14). The sites enabled progression of CHRDP beyond focusing on one particular asset class, and enabled a more strategic review of climate change adaptation risks and response strategies. This was seen as vital to ensure co-ordination between agencies and to move beyond a reactionary response to coastal hazard problems as they are expressed at the local scale.

To support the mentoring approach through the Workshop series, two handbooks for climate change risk assessment were produced and delivered to Workshop participants (Appendices H and I). In addition, a Coastal Zone Working Group of GoK officers was established to undertake the risk assessment and develop adaptation
strategies. The contents of the handbooks and the role of the Coastal Zone Working Group are further explored in Section 4.2.

**Figure 14** Pilot Study Risk Assessment sites

![Map of Tarawa and Bikenibeu Assessment Zones with zones labeled.]
### Table 5  Task 4 Workshops

<table>
<thead>
<tr>
<th>ToR Workshop Description</th>
<th>Workshop Date and Approach</th>
</tr>
</thead>
</table>
| Provide an overview of adaptation strategies and hazard risk diagnosis; and identify case studies and planning parameters. | **February 2008:** Focussed on awareness raising, establishing partnerships and commencing the Risk Assessment process. Outlined a proposed methodology to support a coordinated approach to CHRDP, facilitated the exchange of information and commenced the first step in the Risk Assessment process. The specific tasks undertaken included:  
  - Provision of information on climate change latest findings  
  - Overview of the selected Risk Management process designed to facilitate a coordinated approach to CHRDP  
  - Pilot Sites for the Risk Assessment selected  
  - Success criteria established  
  - Stakeholder identification reviewed  
  - Data collection tasks assigned to workshop participants |
| - | **May 2008:** This was an additional workshop, not directly relating to the Workshops prescribed in the ToR. It was held to ensure data and methods that would contribute to the completion of the Risk Assessment were received. Further, it enabled alignment between additional components of the KAP II program. Specific tasks undertaken during the workshop included:  
  - Training in application of the coastal calculator to determine predicted climate changes (New Zealand Institute of Water and Atmospheric Research (NIWA) output, KAP II Component 1.4.0: NIWA, 2008a)  
  - Development of climate change scenarios and timeframes for analysis for use in the Risk Assessment  
  - Creation of climate projections for inclusion in Risk Assessment (running the coastal calculator)  
  - Data collection (followed from Workshop 1). Participants brought along data as identified in Workshop 1.  
  - Coastal Zone Working Group established |
| Identify and evaluate (environmental and economic) options (structural, non-structural, planning) to reduce risk over the desired planning horizon. GoK Agencies should report on results of risk analysis. | **September 2008:** The two proposed workshops under the ToR were combined into a 3-day workshop program to ensure continuity in process and clearly demonstrate the links between risk assessment, prioritising adaptation options and the development of adaptation strategies. During the Workshop, the Risk Assessment results provided by the Working Group were applied to complete risk evaluation, and then set tasks were followed to enable the development of an adaptation strategy. The set tasks included:  
  - Convert levels of loss recorded in Risk Analysis to a level of consequence  
  - Combine consequence and likelihood to determine risk levels  
  - Evaluate adaptation options based on Risk Prioritisation  
  - Set timeframes for implementation and develop adaptation measures aligned to selected options  
  - Create short term implementation plan (adaptation strategy) with actions/tasks and timeframes assigned to short term measures |
| Develop adaptation strategies for case studies. GoK agencies to report on results option evaluation and analysis. | **November 2008:** The presentation of adaptation strategies and implementation plans to the NSMRU was made. Additional presentations |
4.2. **Key Findings**

The outcomes derived through the workshop series are presented below. The outcomes are presented in brief. However, full outcomes were presented in the Workshop Reports located on the Appendix CD (Workshop I Report - Appendix E; Workshop II Report - Appendix G; Workshop III Report - Appendix K, Workshop IV – Appendix L).

4.2.1. **Workshop 1**

The opening Workshop was designed to: provide an overview of the project; outline the methodology; and commence the Risk Assessment Process. A series of sessions detailed:

1) Climate change latest scientific findings;
2) The Risk Management Process;
3) Pilot Sites to demonstrate the coordinated CHRDP process;
4) Establishing Success Criteria; and

The workshop commenced with a presentation on the latest climate change scientific findings for the Kiribati region, produced by NIWA, under commission of the KAP II program (Component 1.4) (NIWA 2008a, b). NIWA applied climate change scenarios, based on the IPCC 2007 data, to produce detailed information on waves, water levels and storms that could be used in the Pilot Study Risk Assessments. The NIWA work represents the most up-to-date climate change science for Kiribati.

Following presentation on the latest climate change scientific findings the risk assessment process and frameworks were discussed, concentrating on the application of the selected framework in Kiribati and the modifications that had
occurred to ensure that the framework suited the collaborative and mentoring approach applied in the workshop series.

The selected Pilot Sites (see Section 4.1) were presented and group work was conducted to establish the sensitivity of the Pilot Sites by collating and recording collective local knowledge on the physical, social and ecological character of the sites. Also, data sources across ministries that could be applied in the risk assessment to quantitatively assess sensitivity, and subsequently risk, were established. Once current features and priorities were identified the groups established Pilot Site sensitivity. The aim was to draw on participant knowledge of site sensitivity by discussing historic events and the impacts that these events have had on each of the Pilot Sites. This ensured that a conceptual understanding of Pilot Site sensitivity was developed. Full workshop outputs are presented in the Workshop Report (Appendix E).

At the completion of Workshop 1, a field report was produced that further qualified the outcomes of the workshop. The field report provided background information on the physical and social attributes of two sites, Temaiku and Bikenibeu, with the intention of providing baseline information on the physical setting in conjunction with a conceptual assessment of existing sensitivity to current environmental conditions. The assessment was compiled from satellite imagery analysis, discussions held during Workshop 1 and a field visit carried out immediately following the Workshop. The field report is presented in Appendix F.

4.2.2. Workshop 2

Workshop 2 was an additional workshop, not directly prescribed in the ToR. The workshop added considerable value to the project as it ensured alignment between Component 1.4.0 of the KAP II and enabled detailed exploration of climate scenarios and timeframes for analysis. In addition, the Field Report based on outcomes of Workshop 1 was delivered to the participants for application in the risk assessment.

The workshop commenced with presentation of climate change science and an introduction to the Coastal Calculator prepared by NIWA (KAP II Component 1.4.0 – NIWA 2008a, 2008b), an Excel-based tool that takes the IPCC scenarios and links them with regional oceanographic conditions. A hands-on session was then conducted where participants ran through a pre-prepared exercise to use the Coastal Calculator to calculate potential inundation levels in Tarawa under different climate change scenarios and extreme event (storm) recurrence intervals. Training in
application of the Coastal Calculator enabled the participants to apply the Coastal Calculator to determine inundation levels for the selected Pilot Sites, and thus develop scenarios for use in the risk assessment.

Specific tasks undertaken during the workshop included:

- Training in application of the coastal calculator to determine predicted climate changes (KAP II Component 1.4.0: Information for Risk Management);
- Development of climate change scenarios and timeframes for analysis for use in the Risk Assessment;
- Creation of climate projections for inclusion in the Risk Assessment (running the coastal calculator);
- Data collection (followed from Workshop 1). Participants brought along data as identified in Workshop 1; and
- The Coastal Zone Working Group was established.

The primary outputs were selected timeframes for analysis, selected climate change scenarios and inundation projections for the case study sites (see Appendix H for full Workshop Report). Low (B2), medium (A2) and high (A1Fi) scenarios were chosen, to cover a broad range of potential future pathways. Participants decided that the A2 scenario (for use as an intermediate case) best reflected a development pathway for Pacific Island nations.

Importantly, the timeframes chosen for the scenarios were based on human generations to ensure ease of communication with local communities (Table 6). Two criteria were used to choose the timeframes:

1. Generations: The participants summarised this criteria as: “the first scenario should be when we are all old men and women and our children have children”. Subsequent scenario periods should take the perspective of each subsequent generation.

2. Terms of government: Under the Kiribati constitution, terms of government are four years. A president is only allowed to serve three consecutive terms – or 12 years. Hence, a scenario period of 24 years would mean that at least two presidents have served.

| Table 6 – Timeframes for Chosen Climate Change Scenarios |
At completion of Workshop 2, the Coastal Zone Working Group was established (referred to herein as the Working Group). Ms Kabure Yeeting, (Assistant Minerals Officer, Minerals Unit, MFMRD) chaired the Working Group. The Working Group was tasked with undertaking the risk assessment through the mentoring process. A Risk Assessment Handbook (Appendix H) was provided to facilitate this process, along with a task list that itemized actions within the handbook to enable completion of the risk assessment. However, there was the need for increased guidance with specific reference to the data and resources available to the Working Group members. Consequently, an additional Technical Handbook was developed (Appendix I) that outlined a step-by-step approach to complete the first two components of the risk assessment methodology outlined in the Risk Assessment Handbook, namely:

- Risk Identification; and
- Risk Analysis.

Between Workshop 2 and Workshop 3, the Working Group applied the Technical Handbook to complete the risk assessment. Tasks and actions were assigned to Working Group members. The members of the Working Group are shown in
Table 7. The cross-sectoral assignment of tasks and actions aimed to instil capacity within all members of the Working Group to undertake a risk assessment. Further details on the technical methods to complete the remaining phases of the risk assessment were explored during Workshop 3 (see Section 4.2.3).
<table>
<thead>
<tr>
<th>Members</th>
<th>Organisation</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Tiaontin Enari</td>
<td>Lands Division (MELAD)</td>
<td>Phase I: Erosion and inundation maps</td>
</tr>
<tr>
<td>Ms Kabure Yeeting</td>
<td>Minerals Unit (MFMRD)</td>
<td>Chairperson, Risk assessment</td>
</tr>
<tr>
<td>Riibeta Abeta</td>
<td>ECD (MELAD)</td>
<td>Risk assessment</td>
</tr>
<tr>
<td>Farran Redfern</td>
<td>ECD (MELAD)</td>
<td>Risk assessment</td>
</tr>
<tr>
<td>Bauro Ukitoori</td>
<td>Lands Division (MELAD)</td>
<td>Risk Assessment</td>
</tr>
<tr>
<td>Taebo Nakibwae</td>
<td>Lands Division (MELAD)</td>
<td>Risk Assessment</td>
</tr>
<tr>
<td>Ms Titeem Auatabu</td>
<td>Minerals Unit (MFMRD)</td>
<td>Risk Assessment</td>
</tr>
<tr>
<td>Tierata</td>
<td>Works (MPWU)</td>
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</tr>
<tr>
<td>Kaiarake Taburuea</td>
<td>KAPII</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Kautuna Kaitara</td>
<td>KAPII</td>
<td>Project Coordinator</td>
</tr>
</tbody>
</table>

### 4.2.3. Workshop 3

The aim of Workshop 3 was to take the results of Risk Analysis, produced by the Working Group, and complete the remaining phases of the risk assessment process. In addition, Adaptation Planning was undertaken. Workshop 3 was run as a three-day event with a series of sessions dealing with:

- Risk Assessment Results (presented by the Working Group);
- Finalising the Risk Assessment and undertaking Risk Evaluation;
- Selecting and Prioritizing Adaptation Options; and
- Developing an Adaptation Strategy.

Ms Kabure Yeeting presented the results on behalf of the Working Group. She outlined the tasks undertaken, the materials used and the lessons learned from the risk assessment process, including a valuable list of problems and issues that focussed on capacity constraints within GoK Ministries, particularly in terms of existing workload of key staff. The risk assessment results produced by the Working Group were presented in a document entitled, *Workshop 3 Handout Supplement: Risk Assessment Results Tables*, for use during the Workshop. The maps produced by the Working Group were also provided in electronic and hardcopy format for use in the Workshop. Examples of the inundation maps taken from each of the Pilot Study areas are shown in Figure 15 and Figure 16. These figures show the mapping...
of inundation from the 2030 Low and 2070 High Scenarios from the combined impact of sea-level rise and a 1-in-10 year storm (10% annual recurrence interval).

Electronic copies of all maps are provided in Appendix J.
Figure 15  Bikenibeu Inundation Zone 1
Figure 16 Temaiku Inundation Zone 1
During the Workshop, the outputs of the Risk Analysis phase were evaluated. To complete evaluation, the consequence and likelihood of erosion and inundation in each case study area was analysed to produce a risk rating (or risk prioritisation). The risk rating was the basis for the development of adaptation strategies, as describe below.

4.2.3.1 Applying the Risk Framework to Assign Adaptation Strategies

The Risk Assessment framework applied in the project operates in a strategic ‘top down’ manner to address key adaptation questions:

- What is the risk?
- How can we treat it?
- How can we decide which option is appropriate?
- Having decided on an option, what will this entail?
- Who is responsible for carrying out these tasks and when should they be carried out?

The top down approach involves consideration of the outputs from risk prioritisation (risk rating) to inform the selection of a broad range of adaptation options that could be implemented to treat the identified risks. The adaptation options are related to the categories of risk priority (low, medium, high, extreme priority risks). Subsequently, the applicability of each option is assessed to inform the decision making process.

Finally, a relevant series of implementation measures are established in conjunction with an assignment of responsibility for discrete measures and timeframes for their completion. This process is presented in Figure 17.

The steps involved in this process include:

- Step 1: Evaluate risk treatment options.
- Step 2: Identification of specific actions to allow implementation of the treatment options evaluated in Step 1.
- Step 3: Formulation of a risk treatment plan for the Government of Kiribati case study sites.

Workshop 3 explored each of these steps in turn to formulate a risk treatment plan/adaptation strategy, for the Pilot Sites. To complete these steps, a number of tasks were completed during Day 2 of the Workshop, including:
• Establishing adaptation options for evaluation;
• Gaining consensus on success criteria;
• Completing the Adaptation Decision Matrix (ADM);
• Evaluating barriers to implementation; and
• Aligning adaptation options to case study areas.

The approach and outputs from each task are presented in the Workshop Report (Appendix L).

Figure 17  Top-down model for Risk Treatment

The adaptation options aligned to case study areas were further analysed to set adaptation measures against timeframes for implementation. The final output was an adaptation strategy for the case study sites (Table 8).
In reflecting on the process, participants were reminded that the outputs of the assessment carry some limitations, specifically relating to the quality of the information on which the erosion and inundation values were generated. Therefore, while the adaptation actions developed are extremely valuable in their strategic nature, a key future step for the GoK may be to complete actions to increase the certainty of the results (see the Adaptation Implementation Plan, ID 9 and ID 8).

The adaptation strategies and implementation plan developed during Workshop 3 were presented to the NSMRU in November 2008. Additional presentations were also made to the KAP Mid Term Review Mission during this period, which included a presentation of results by the Chair of the Working Group, Ms Kabure Yeeting. The feedback received on both presentations was very positive and focussed on the positive benefits that the process had produced. Importantly, feedback received was that an extension of training activities during 2009 would be of benefit to embed and deepen understanding of the climate change risk assessment process.
<table>
<thead>
<tr>
<th>Option</th>
<th>ID</th>
<th>Measure</th>
<th>Tasks</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Responsible Ministry</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Develop a climate change communication strategy</td>
<td>Propose an agenda item for the Climate Change Study Team (CCST)/NASC to initiate discussion on how to formulate a strategy and to agree development mechanism, including lead agency &amp; funding requirements (&amp; need for TA) through agenda item</td>
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<td></td>
<td></td>
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<td>MELAD &amp; OB</td>
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<td></td>
<td></td>
<td></td>
<td>On approval by CCST/NASC seek funding for TA to develop strategy (lead agency approved by NASC)</td>
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<td></td>
<td></td>
<td>As nominated by NASC</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Recruit TA &amp; execute</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>As nominated by NASC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Review draft strategy by NASC &amp; key stakeholders</td>
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<td></td>
<td>X</td>
<td>As nominated by NASC</td>
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<td></td>
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<td></td>
<td>Cabinet approval of strategy</td>
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<td>Cabinet</td>
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<td>As nominated by Cabinet</td>
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<td>Community Leaders awareness program</td>
<td>Communicate with EYC (Environment Youth Club) regarding the need to establish a committee of Community Leaders</td>
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<td>MELAD &amp; MISA</td>
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<td>Establishing a committee of Community Leaders to lead awareness program at the community level</td>
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<td>Hold a Workshop to initiate two-way dialogue between Community Leaders &amp; experts</td>
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<td></td>
<td></td>
<td></td>
<td>Integrate workshop outcomes with Communication Strategy (ID 1)</td>
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<tr>
<td>3</td>
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<td>Curriculum review to incorporate climate change awareness,</td>
<td>Monitor outcomes of the KAP Curriculum Development Resource project for climate change modules</td>
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<td>4</td>
<td></td>
<td>Pilot of curriculum development</td>
<td>Following module development (see ID 3)</td>
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<td>5</td>
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<td>Engage the community to inform them about research and structural (soft) options</td>
<td>Ensure linkage into Communication Strategy development (see ID 1)</td>
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<tr>
<td>Research</td>
<td>6</td>
<td>Seek funding to increase data sources for coastal</td>
<td>Send proposal to Foreign Affairs department to access funding for coastal data and resources - with priority on land height</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>MFMRD Secretary</td>
</tr>
</tbody>
</table>

4 A = Stage 1 Works, 0-3 months; B = Stage 2 Works, 3-9 months; C = Stage 3 Works, 8 – 18 months; D = Stage 4 Works, 18-36 months
<table>
<thead>
<tr>
<th>Option</th>
<th>ID</th>
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<th>Tasks</th>
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<th>Responsible Ministry</th>
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<tbody>
<tr>
<td>7</td>
<td></td>
<td>Complete research into the social and cultural aspects of climate change</td>
<td>Send a letter to SOPAC requesting land height data</td>
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<td>On approval by Foreign Affairs department, purchase required data</td>
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<td></td>
<td>Undertake training and increase resources (computer software) to increase capacity in GoK to analyse, store and share new data</td>
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<td>Propose CCST/NASC initiate discussion on the need for further assessment on the social and cultural impacts of climate change (&amp; need for TA) through agenda item</td>
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<td>MFMRD Secretary</td>
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<td>On approval by CCST/NASC seek funding for TA to develop strategy (lead agency approved by NASC)</td>
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<td>As nominated by NASC</td>
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<td>Recruit TA to undertake an assessment of the cultural aspects of climate change. The assessment would build on the baseline assessment undertaken by KAP (Social Assessment Report) and complete follow up assessment of climate change to monitor social changes, attitudes, perceptions and interactions.</td>
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<td>As nominated by NASC</td>
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<td></td>
<td>Review draft report NASC &amp; key stakeholders</td>
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<td>As nominated by NASC</td>
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<td>Information paper to cabinet regarding the study outcomes</td>
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<td>Implementation</td>
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<td>8</td>
<td></td>
<td>Design of coastal monitoring programme</td>
<td>Propose CCST/NASC initiate discussion on the development of a coastal monitoring program for Kiribati, including lead agency &amp; funding requirements (&amp; need for TA) through agenda item</td>
<td>X</td>
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<td>MFMRD &amp; OB</td>
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<td>On approval by CCST/NASC seek funding for TA to develop and design coastal monitoring program (lead agency approved by NASC)</td>
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<td>Recruit TA &amp; execute</td>
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<td>As nominated by NASC</td>
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<td>Review of draft monitoring program by NASC &amp; key stakeholders</td>
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<td>Cabinet approval of monitoring program</td>
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<td>9</td>
<td></td>
<td>Data collection to improve certainty of the Pilot Risk Assessment results</td>
<td>Follow up with SOPAC to request access to Kiribati shoreline shapefile</td>
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<td>Working Group</td>
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<td>Update coastal calculator with outputs from the coastal surveys completed by the Lands Department</td>
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KAP II Component 1.3.2 Draft Final Report
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<td>Shoreline recession values for Temaiku may be gathered from SOPAC and</td>
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<td>compared to those for Bikenibeu to validate the values used. If they</td>
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<td>differ greatly, the erosion assessment could be re-completed for</td>
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<td>Undertake Risk Assessment using the updated data sources</td>
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<td>Review progress of KAP consultant in undertaking the enforcement</td>
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<td>Communicate with the public to determine appropriate enforcement</td>
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<td>tools that would increase voluntary compliance</td>
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<td>Outcomes of review will inform whether or not we would complete the</td>
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<td>Investigate the needs and constraints on enforcement officers based</td>
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<td>on their experiences. This could be undertaken in a workshop or by a</td>
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<td>Stages as above for approval by NASC (ID 1). The NASC would advise</td>
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<td>whether a workshop led by a selected Ministry or TA would be required</td>
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<td>to undertake this investigation.</td>
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<td>community, increased community service</td>
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<td>Seek funding to support implementation of the identified tools</td>
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<td>Put the request for funding on the agenda for the NASC to support the</td>
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<td>broadened scope of the Biodiversity Group</td>
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<td>Review the mandate of the biodiversity group to broaden the scope of</td>
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<td>the biodiversity group to integrate other aspects of coastal</td>
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<td>management, such as climate change. This would ensure increased</td>
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<td>access to financial support. At the same time, design a plan of</td>
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<td>action for that funding - so that this can be shown to potential</td>
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<td>Request funding to support a broadened role for the Biodiversity</td>
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<td>Increase communication with international NGOs to increase support</td>
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<td>for mangrove planting</td>
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<td>Ensure the importance of community involvement in mangrove planting</td>
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<td>is incorporated within the communication strategy (Links to ID 1)</td>
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<td>Design a program to encourage planting of</td>
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<td>Financial support may be provided through the broadened mandate of</td>
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<td>the Biodiversity Committee (see task above, ID 11)</td>
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<td>indigenous coastal vegetation</td>
<td>Seek financial, technological (e.g. facilities for nursery etc) and technical support for the Biodiversity Committee</td>
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<td>Provide support to the biodiversity committee to design a program for planting</td>
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<td>13</td>
<td></td>
<td>Technical review of the effectiveness of soft structural measures within different environments</td>
<td>Use the outcomes of the Kench (2006) KAP report (pg 13) as a means for reviewing the effectiveness of soft structural measures within different coastal environments</td>
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<td>Propose CCST/NASC initiate discussion on the need to undertake a technical review on the effectiveness of soft structural options, including lead agency &amp; funding requirements (&amp; need for TA) through agenda item</td>
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<td>On approval by CCST/NASC seek funding for TA to undertake the review (lead agency approved by NASC)</td>
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<td>Recruit TA &amp; execute</td>
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<td>Review draft report by NASC &amp; key stakeholders</td>
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<td>Implement results of the review to aid decision making for coastal management and planning</td>
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<td>14</td>
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<td>Review recent recommendations for regulatory change and develop plans for regulatory change as required.</td>
<td>Submit agenda item to CCST and NASC to review the previous reports and outlines recommendations for implementation</td>
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<td>Minerals Unit</td>
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<td>CCST and NASC review the previous reports and outlines recommendations for implementation</td>
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<td>NASC</td>
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<td>15</td>
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<td>Strengthen enforcement resources (including aggregate mining, reef blasting and Environmental Impact Assessment (EIA) including guidelines)</td>
<td>Links to Strengthening Enforcement (see above - research), but relates specifically to increasing resources</td>
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<td>Submit proposal to finance department to seek funding</td>
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<td>Obtain funding from finance department and/or other available sources (i.e. international support)</td>
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<td>16</td>
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<td>Established training program for enforcement officers</td>
<td>Funding to be obtained through same process as above - request to finance department</td>
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<td>Links to the Strengthening enforcement (RESEARCH). At the end of these tasks, training would be provided on the identified tools.</td>
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<td>17</td>
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<td>Climate change is integrated into new urban development</td>
<td>Climate change is integrated into the Pilot Resettlement project (already underway).</td>
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<td>A requirement of the EIA process is to ensure that developments account for climate change. Therefore, this relates to ensuring that the EIA is enforced appropriately</td>
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<td>Increase training of EIA enforcement officers - develop set guidelines for EIA officers to ensuring climate change is incorporated into all planning requests</td>
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<td>18</td>
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<td>Spread the Risk</td>
<td>Request technical support from regional organisations (i.e. SPREP, SOPAC) to develop guidelines for the EIA enforcement officers</td>
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<td>Obtain support</td>
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<td>Implement guidelines and training</td>
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<td>19</td>
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<td>Establish program to investigate potential internal resettlement</td>
<td>Contact Kiribati Insurance Commission to request review initiation</td>
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<td>NASC</td>
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<td>Assist KIC obtain TA to undertake review (TA steps as per above)</td>
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<td>NASC request MISA convene an inter-Ministerial Working Group to investigate program development</td>
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<td>MISA</td>
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<td>MISA send request to OB seeking approval &amp; financial support</td>
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<td>MISA Working Group seek TA (see steps)</td>
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<td>Execute project by Working Group</td>
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<td>Report back to NASC and brief Cabinet</td>
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<td>20</td>
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<td>Avoidance</td>
<td>Enhance capacity of GoK agencies to enable investigation of high risk areas</td>
<td>Request NASC to support the Coastal Zone Management Working Group by providing additional technical assistance (for mapping, data management and methods) &amp; support to GoK staff for after hours work</td>
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<td>Request TA (as per steps above)</td>
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<td>21</td>
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<td>Enhance communication to the community for climate hazards</td>
<td>Include in Communications Strategy (see above)</td>
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<td>22</td>
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<td>Structural (hard)</td>
<td>Investigate design and costing of protection measures including guidelines established for review and approval of hard structural options</td>
<td>Request KAP Component 2.2.1/2.2.2 (Coastal Engineer) work with FMC to review existing draft seawall guidelines &amp; work with key GoK agencies (MELAD, PWU, MFMRD) to review existing protection measures</td>
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<td>KAP Coastal Engineer &amp; FMC &amp; key GoK agencies develop guidelines</td>
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<td>FMC approve guidelines</td>
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<td>Request/ initiate technical support for the development of a foreshore management plan</td>
<td>Request KAP Component 2.2.1/2.2.2 (Coastal Engineer) work with FMC to initiate</td>
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<td>FMC approve plan</td>
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4.2.4. Workshop 4 (through completion of Task 5)

The final Workshop was run as a one-day event on 10 December 2008 to review the coordinated approach to CHRDP and to present the adaptation strategies and implementation plan for the Pilot Study risk assessments. The Workshop was divided into a series of sessions addressing:

- Findings from the Task 1 & 2 report: Towards an Integrated Decision Making Process for Climate Change Adaptation: A Review of Existing Processes and Suggestions for Future Approaches for Kiribati

- Findings from the Task 3 report: Achieving a coordinated approach to Coastal Hazard Risk Diagnosis and Planning in Kiribati Developing an Adaptation Strategy

- Outcomes from Task 4: Pilot Study Risk Assessment Process, including a reflective session on lessons learned and discussion of potential next steps

Details of the Task 5 Workshop are provided in the Workshop Report shown in Appendix L.

4.2.4.1 Feedback Received on Tasks 1, 2 and 3

There was clear support from participants for the Integrated Decision Making (IDM) model presented as an outcome of Task 1&2 and strong support for the three-stage approach to improve IDM and coordination for coastal hazard risk assessment, planning and adaptation (Task 3). Participants discussed that:

- The actions recommended from Task 3 could start to be implemented as soon as possible in 2009, and that Government should be informed of the recommendations formally through the NASC at its next meeting in January 2009.

- To implement the Level 1 institutional strengthening of the Foreshore Management Committee (FMC), there would be the requirement for additional resources to be provided to the Lands Division, for one more staff member as executive support to the Committee.

- Any transition from Level 1 to Level 2 and Level 3 would require very close examination of the statutory basis of the FMC – especially as it related to statutory land-use planning and the statutory roles of the Land Planning Boards.

- Suggestions were made regarding minor modifications to the recommended Terms of Reference for the Foreshore Management Committee (during Level 1 only).
4.2.4.2 Lessons Learned from the Pilot Studies

The final session of the Workshop discussed and then reflected on the lessons learned, which are described and analysed below. This session also summarised the outcomes of discussion sessions held through the Workshop.

The delivery of Task 4 (Pilot Study Risk Assessments) through a mentored process, revealed a number of important lessons. In her presentation on lessons learned, Ms Kabure Yeeting, Chair of the Working Group, stated that:

- Production of Coastal maps for erosion and inundation can be completed in Kiribati.
- Useful technical skills that may be applied in future assessments have been developed.
- The integrated cross-ministry approach is successful.
- The primary focus of the Pilot Risk Assessments was on impacts on infrastructure – in future assessments the group would like to broaden the assessment to include social and ecological impacts.
- Incorporating bottom-up feedback into the assessment would have been good.
- The Working Group learned a lot from the risk assessment exercise.

Further, in her conclusions Ms Yeeting stated that:

- The exercise has demonstrated that Kiribati now have the skill to conduct coastal hazard risk assessments.
- To ensure replication of the process for whole of Kiribati refresher training will be required in 2009. This will also enable an update of input data to re-challenge the original assumptions made.
- While there is data for South Tarawa there will be the need to review data availability for the Outer Islands in order to extend the risk assessment process to these regions in the future.

Key recommendations made at the Workshop for improving future climate change risk assessments include:
• The Working Group structure should be maintained to assist in cross-ministry cooperation and to help with data collection.

• The Working Group should be embedded within the GoK through its incorporation under the FMC as a technical support group.

• Ensure the tasks allocated to the Working Group are recognised under the Ministerial work programme, through MOPs and if possible the KDS. This would ensure that this role is clearly understood by senior managers in the respective agencies.

• Attention should be given to the payment of incentives to Working Group members and this should be addressed in relation to the allocation of work within Ministries during normal working hours, through increasing the importance placed on this work by Senior Managers.

• Consideration should be given to supporting a centralised data management system, for mapping data in particular, but also other data held by GoK agencies that supports climate change adaptation planning. This should also enhance the ability to share data between agencies.

• Strengthen the Geographic Information System (GIS) User Group and provide additional technical training in the use of GIS/computer mapping in supporting risk assessments.

• Upgrading the GIS software and hardware would both increase productivity and also ensure standardisation across government.

• Members of the Working Group should have access to email facilities to enhance communication and information sharing.

• A coordinating Ministry should be identified to bring together future activities of the Working Group, both at a technical level and also to coordinate activities.

The Workshop concluded with remarks that the Pilot Study process was extremely valuable for those that participated. There is a strong will to continue the process, however this would require further training of staff together with an increased commitment from senior managers within ministries to ensure staff time is allocated to such tasks.
5. Conclusions and Recommendations

The overall conclusions from the completion of Component 1.3.2 are outlined below, followed by recommendations for further action under the KAP II in 2009. Additional conclusions from the delivery of individual Tasks are included in the respective Task Reports in the Report Appendices.

5.1. Conclusions

At the commencement of the TA, an uncoordinated, fragmented and reactive approach to CHRDP was apparent in Kiribati (Task 1 & 2). This approach, as described by Kench (2005), was inhibiting coordinated and mainstreamed climate change adaptation. As a result, management is focused on a single solution (seawalls) to coastal management problems as they appear at the local scale.

Unfortunately, Task 1 & 2 confirmed while there has been progress in the collation of underlying coastal process information supporting coastal decision-making, most notably under the SOPAC/EU programme, there has been very few positive changes to the coastal hazard management system described by Kench (2005). Rather, the increased pressure on coastal resources, particularly in South Tarawa has resulted in increased workload for processing applications to construct coastal engineering works. This increased workload is compounded by chronic capacity constraints in the Government of Kiribati Ministry of Public Works and Utilities (MPWU), the key agency responsible for providing technical advice on applications. It appears that this created a vicious circle where the increased pressure for reactive management activities, focused on the assessment of individual sea wall applications, has meant that there is less time for pro-active management activities that could increase the effectiveness of on-the-ground management work.

Research and analysis activities undertaken in Task 1&2 indicated that redesigning the coastal management approach to facilitate integrated decision-making for CHRDP in Kiribati must focus on improvement in five inter-linked areas:

- Institutional structures;
- Coastal planning;
- Direction setting guidance elements;
- Regulation and enforcement; and
• Capacity building.

This approach sought to incorporate Kench’s recommendations within an Integrated Decision-Making (IDM) process in order to maximize the potential for success. The framework presented as the core output of Task 2 was intended to enable the Kench framework to progress from an approach to Coastal Vulnerability and Adaptation (V&A) assessment to a more holistic approach to integrated coastal decision-making.

The outputs of Task 1 and 2 underpinned the work carried out through subsequent phases of the project. Therefore, recommendations for redesign of institutional and regulatory processes (Task 3) focussed on an IDM-based approach to CHRDP - Integrated Coastal Zone Management.

Research undertaken in Task 3 revealed considerable problems with all five inter-linked areas for IDM improvement in Kiribati, including:

• There are considerable problems with the process and dissemination of Ministerial Operational Plans (MOP) including lack of awareness of the value of the reporting framework and insufficient linkage with the Kiribati Development Plan (KDP) and CCA Strategy. There is also limited reference to CHRDP activities within the MOPs of key ministries with responsibility in CHRDP.

• KDS indicators of progress for CHRDP are inappropriate for effective tracking of progress in CHRDP.

• Lack of funding and policy guidelines to inform coastal management activities were cited as key factors inhibiting a more proactive approach to CHRDP.

• There is a lack of criteria or policy guidelines for the assessment of coastal management issues and no guidelines to inform on-ground CHRDP actions.

• The Foreshore Management Committee (FMC), the only currently functioning cross-ministerial institution for coastal management in Kiribati, has limited regulatory authority and no strategic role.

• There is limited communication between Ministries and limited data sharing for CHRDP.

• Current responses to managing climate change impacts in the coastal zone are primarily reactionary rather than proactive.

• MELAD is identified as the lead agency for both ICZM, including erosion, and the management of climate change and sea-level rise impacts on the coast. However,
due mainly to capacity constraints, MELAD has been unable to develop robust institutional arrangements for CHRDP other than its ongoing Executive Support of the FMC. This lack of overarching coordination of CHRDP activities leads to tradeoff between Ministries and duplication of effort.

- There are no coastal management plans in Kiribati.
- There is a very strong desire by GoK staff to develop comprehensive coastal management plans initially for priority areas of South Tarawa, then to extend coastal planning activities to the whole of South Tarawa and then the Outer Islands.
- GoK Ministries have a number of information sources that can inform effective CHRDP. However, accessing and applying this information is restricted to within ministries with no systematic system or process for information sharing between ministries.
- Financial and human capacity is low in agencies with specific operational roles in CHRDP. Ministries with lead roles in CHRDP, such as MELAD, MFMRD and MPWU, have limited capacity and budget.
- The need for staff training and capacity building was frequently raised. There were few trained staff within the ministries that can undertake specific CHRDP tasks, although there is considerable willingness of GoK staff to receive such training.
- The funding dedicated to CHRDP is limited. In many cases, Ministries have identified a number of projects that would contribute to more effective and informed CHRDP. However the funding to implement these programs is not available.
- There was a common perception that the level of information available on which to base decision-making could be increased through increased monitoring activities. This includes monitoring of the impact of aggregate mining, beach profile monitoring and meteorological monitoring on the outer islands.
- Community attitudes and perceptions influence Ministries’ capacity to fulfill their CHRDP commitments.
- Addressing CHRDP is made problematic due to the lack of awareness at both the community and ministerial level.

Overall, Task 3 findings represented a disjuncture between the scale of the CCA and ICZM challenge in Kiribati, and the level of financial and human capacity available to address them.
In order to explicitly recognize the above constraints in GoK a staged approach to improvement in each of these five areas was developed. A staged approach was considered beneficial as it enables:

- Systematic progression towards achieving an end goal;
- Sets realistic expectations and goals at the outset of the program; and
- Provides guidance on the methods, tools and approaches to enable gradual and sustained improvement.

Three stages in the approach was necessitated by feedback received by key stakeholders, most notably members of the NASC, in concluding that a long term ‘roadmap for improvement’ was essential, but that equally important were short term implementable measures that could ensure positive, although small, improvements that were ‘heading in the right direction’. This gradual approach to sustained improvement was strongly supported by GoK operational staff, as demonstrated in the Final (Task 5) Workshop with a recommendation made to take the recommended staged approach to Government through the NASC for implementation of Level 1 recommendations as soon as possible in 2009.

A component of the recommended approach to CHRDP (Coastal Vulnerability and Adaptation Assessment) was trailed through completion of Pilot Study risk assessments (Task 4). The assessments were deliberately designed to mentor GoK staff through the risk assessment process, through a series of workshops; the drafting of technical handbooks; and on-line and telephone support. The mentoring approach showed very positive results, especially given that it was the first time such an approach had been used in Kiribati. In particular, the formation of a cross-Ministry Working Group proved extremely valuable in promoting a whole-of-government approach.

In her presentation on lessons learned to the final project workshop (through Task 5), Ms Kabure Yeeting (Minerals Officer, MFMRD), Chair of the Working Group, stated that:

- Production of Coastal maps for erosion and inundation can be completed in Kiribati.
- Useful technical skills that may be applied in future assessments have been developed.
- The integrated cross-ministry approach is successful.
• The primary focus of the Pilot Risk Assessments was on impacts on infrastructure – in future assessments the group would like to broaden the assessment to include social and ecological impacts.
• Incorporating bottom-up feedback into the assessment would have been good.
• The Working Group learned a lot from the risk assessment exercise.

Further, in her conclusions Ms Yeeting stated that:

• The exercise has demonstrated that Kiribati now have the skill to conduct coastal hazard risk assessments.
• To ensure replication of the process for whole of Kiribati refresher training will be required in 2009. This will also enable an update of input data to re-challenge the original assumptions made.
• While there is data for South Tarawa there will be the need to review data availability for the Outer Islands in order to extend the risk assessment process to these regions in the future.

In summary, at TA completion, considerable progress towards a more coordinated approach to CHRDP has been delivered. Key progress is apparent through:

- The development of an inter-ministerial group that has the skills and knowledge to complete coastal risk assessments and develop climate change adaptation strategies for Kiribati.
- The development of a three-staged approach to institutional and regulatory change, in which the first stage of works can be implemented under current capacity and resource constraints.

The importance of climate change adaptation is understood by all those I-Kiribati engaged in the execution of the tasks described in this report. This is matched by a heightened level of awareness of the chronic capacity constraints faced by Government of Kiribati Officials and key stakeholders in being able to complete the technical tasks required to assess climate change risk from coastal erosion and inundation and then develop robust and implementable adaptation strategies. There is a very high degree of willingness and enthusiasm to both learn and implement the required methods, tools and techniques for climate change risk assessment.
5.2. **Recommendations for further action under KAP II in 2009**

Despite considerable progress, there are a number of remaining challenges that must be addressed before a mainstreamed coordinated approach to CHRDP will be embedded in Kiribati; including:

- Broadening recognition of the importance of achieving an integrated approach to coastal management in Kiribati. Operational staff involved in the TA are acutely aware of the benefits that may be achieved through mainstreaming the coordinated approach to CHRDP, which was piloted through the TA. However, there is the need for increased recognition at the national and senior ministerial level.

- Resources allocated to CHRDP are limited. National recognition is required to ensure that funding and resources are allocated to CHRDP. A key challenge is to increase the incorporation of CHRDP in the National Development Plan and subsequently, Ministerial Operational Plans.

- Piloting the risk assessment process has demonstrated the need to further deepen the understanding of the detailed steps in undertaking risk assessments to embed the process into decision-making processes of Government.

The outcomes of Component 1.3.2. offer a valuable approach to achieving coordinated and mainstreamed CHRDP, with recommended strategies to overcome the barriers listed above. However, without additional support to GoK ministries, the valuable recommendations are unlikely to be implemented. Consequently, as recommended during the final project Workshop there is a strong need to further embed and mainstream the work undertaken in delivery if Component 1.3.2 to ensure that valuable skills and knowledge are harnessed and expanded upon. Therefore, it is recommended that additional work under KAP II be undertaken during 2009 to enable leverage of the Pilot Study risk assessment work undertaken with the GoK Working Group. Recommended additional activities to harness the outcomes of Component 1.3.2. include, further training, mentoring and support activities.

A “cascaded” training and development model is recommended to embed change risk assessment competencies within the existing Working Group members (with selected additional staff from key agencies).

The outcomes of the training program would be enhanced by establishing the Working Group as an advisory committee to the Foreshore Management Committee. This is essentially a recommendation for a “training the trainers” approach, by undertaking a small number of additional Pilot Study risk assessments through a blended workshop/mentoring...
approach. Through the implementation of this approach trainers (Working Group members) will then be able to support their colleagues within GoK agencies, ensuring that training is sustainable and that it meets the demand for in-country training provision.

Further, it is recommended that KAP II consider additional activities to support NIWA training on their Rainfall/Drought and Coastal Calculators. The calculators are a valuable tool that can increase the certainty of risk assessment outcomes; thus translating to more efficient long-term coastal planning. Therefore, it is recommended that additional training in application of the coastal calculator is undertaken. A valuable outcome of the additional training could be a standard suite of inundation levels for use in land use planning for the whole of South Tarawa. The intention of this activity would be to ensure that operational staff involved in day-to-day land use planning, which are unlikely to have the competencies to use the calculator or the risk assessment techniques, are able to apply the outputs of these tools in day-to-day decision-making processes. In this way, the outputs of the activities completed by the smaller number of advanced users could be collated into a handbook of results (based on agreed scenarios, timeframes and input parameters developed through the training program). The results handbook would be of considerable value to operational staff for day-to-day decision-making processes. Applying such a tool in day-to-day decision making will be the first step towards mainstreaming climate change adaptation.

Guidelines for a TA to deliver on these recommendations are described in Box 1 below.

**Box 1: Embedding the outcomes of Component 1.3.2: Recommended approach.**

Undertake two visits to South Tarawa in the first half of 2009, linked with on-going mentoring activities. The purpose of the first visit, targeted for mid-March 2009, is to complete:

1. Risk Assessment Study Site selection (anticipated to be two sections of South Tarawa).
2. Working Group member establishment and working arrangements, including clarification of Working Group staff management issues, including letters of permission, compensation issues and a clear mandate for participation from senior managers within each agency.
3. Establishment of mentoring systems
4. Data updates – collection of updated infrastructure data from respective GoK agencies into one database
5. Commencing training in creation of risk maps with mapping-specialists within the Working Group (anticipated to be MFMRD, MELAD Land Management Division and ECD)
6. Establishment of a work programme, task allocation to the Working Group and timeframes for Risk Assessment Workshop

It is suggested that the first visit be timed to coincide with additional NIWA training to ensure the outputs of the Coastal Calculator are focussed on the case study areas applied in the training program, and further to ensure that all Working Group members participate in the training.

The purpose of the second visit targeted for late May 2009 is to:

1. Conduct a Risk Assessment Workshop through a classroom style set of activities – to complete the risk
assessment process (2-3 day workshop) as small group activities using laptop computers to develop the risk ratings & final risk assessment results

2. Conduct an Adaptation workshop that would develop adaptation strategies and implementation plans for the study sites (2-3 day workshop)

3. Undertake review and lessons learned activities to reflect on the Component activities and to prepare for additional KAP II initiatives

4. In collaboration with NIWA, prepare a handbook/guideline for the use of the Calculators by GoK operational staff

5. In collaboration with NIWA prepare a results guidebook for use by GoK operational staff

6. Preparation of final report

Through completion of the TA, it is anticipated that the GoK staff involved in the training program will have the skills and knowledge to apply the risk assessment process in their standard operational planning processes. This can be seen as the first step in mainstreaming the recommended coordinated approach to CHRDP as outlined in Component 1.3.2.

In addition, it is recommended that KAP II actively support the recommendations for improved coordination in ICZM and climate change adaptation through support of the Level 1 improvements (Task 3 output). In this regard, it is recommended that the immediate first steps for tangible improvement should be to focus on the Institutional Structures and Coastal Management Planning Components component of Level 1 in 2009, namely to:

- Implement the recommended Terms of Reference for the Foreshore Management Committee (FMC).
- Make amendments to the Appointment of Ministers and Directions Assigning Ministerial Responsibility document.
- Assist the FMC to develop a Foreshore Management Plan (FMP) for South Tarawa with a primary focus on ‘hotspot’ problem areas through the KAP II TA for Risk Analysis and Design Capacity for Coastal Hazard Management (Component 2.2.1).

Implementation of these recommendations is vital to moving towards a mainstreamed approach to climate change adaptation in Kiribati. Implementation of additional training activities (Box 1), without progress in Level 1 improvements, particularly institutional structures and coastal management planning, will impede significant progress in mainstreaming climate change adaptation.

Finally, there is the opportunity for KAP II during 2009 to integrate any future work undertaken under Component 1.3.2 and Component 1.4 (Information for Climate Risk Management) to provide the best possible and most up-to-date scientific information on climate change risks on coastal zones in Kiribati. Through further integration with the
Participation and Awareness Process components of KAP II there is the opportunity to significantly enhance community-level engagement in Kiribati while at the same time contributing to international-level climate change negotiations.
6. References


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All such reports are available electronically as a CD Appendix and are also stored on the KAP Office computer network.