



## ADAPTATION FUND

AFB/PPRC.14-15/2  
4 June 2014

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Adaptation Fund Board  
Project and Programme Review Committee

## PROPOSAL FOR FIJI

## Background

1. The Operational Policies and Guidelines (OPG) for Parties to Access Resources from the Adaptation Fund (the Fund), adopted by the Adaptation Fund Board (the Board), state in paragraph 45 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US\$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the endorsement of the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would ultimately require the Board's approval.

2. The Templates approved by the Board (OPG, Annex 4) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

*For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:

1. Country Eligibility,
2. Project Eligibility,
3. Resource Availability, and
4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:

5. Implementation Arrangements.

5. In its seventeenth meeting, the Board decided (Decision B.17/7) to approve "Instructions for preparing a request for project or programme funding from the Adaptation Fund", contained in the Annex to document AFB/PPRC.8/4, which further outlines applicable review criteria for both concepts and fully-developed proposals.

6. Based on the Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on 8 April 2010.

7. In its twenty-third meeting, the Adaptation Fund Board (the Board) discussed a recommendation made by the Project and Programme Review Committee (PPRC) of the Board, on arranging intersessional review of project and programme proposals. Having considered the comments and recommendation of the PPRC, the Board decided to:

- (a) *Arrange one intersessional project/programme review cycle annually, during an intersessional period of 24 weeks or more between two consecutive Board meetings, as outlined in document AFB/PPRC.14/13;*
- (b) *While recognizing that any proposal can be submitted to regular meetings of the Board, require that all first submissions of concepts and fully-developed project/programme documents continue to be considered in regular meetings of the PPRC;*
- (c) *Request the secretariat to review, during such intersessional review cycles, resubmissions of project/programme concepts and fully-developed project/programme documents submitted on time by proponents for consideration during such intersessional review cycles;*
- (d) *Request the PPRC to consider intersessionally the technical review of such proposals as prepared by the secretariat and to make intersessional recommendations to the Board;*
- (e) *Consider such intersessionally reviewed proposals for intersessional approval in accordance with the Rules of Procedure;*
- (f) *Inform implementing entities and other stakeholders about the new arrangement by sending a letter to this effect, and make the calendar of upcoming regular and intersessional review cycles available on the Adaptation Fund website and arrange the first such cycle between the twenty-third and twenty-fourth meetings of the Board;*
- (g) *Request the PPRC to defer to the next Board meeting any matters related to the competencies of the Ethics and Finance Committee that may come up during the intersessional review of projects/programmes and to refrain from making a recommendation on such proposals until the relevant matters are addressed; and*
- (h) *Request the secretariat to present, in the fifteenth meeting of the PPRC, and annually following each intersessional review cycle, an analysis of the intersessional review cycle.*

**(Decision B.23/15)**

8. The Board also decided:

- (b) *That the deadline for submissions for the intersessional project/programme proposal review cycle between the twenty-third and twenty-fourth meetings will be 14 April 2014.*

**(Decision B.23/28 (b))**

9. The following fully developed project titled “Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji” was submitted by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund, on behalf of the government of Fiji. This is the fifth submission of the proposal. It was submitted as a concept to the twelfth and fourteenth meetings of the Adaptation Fund Board, and was endorsed by the Board in the latter, in June 2011. It was then submitted as a full proposal to the eighteenth Board meeting, and the Board decided to:

- (a) *Not approve the project document, as supplemented by the clarification response provided by the United Nations Development Programme (UNDP) to the request made by the technical review;*
- (b) *Suggest that UNDP reformulates the proposal taking into account the following:*
  - (i) *The project must demonstrate how it goes beyond plans and studies to reducing vulnerability at the community and beneficiary level and it is recommended that the implementation, application and mainstreaming of the proposed capacity-building activities be further described and clarified;*
  - (ii) *While it has been demonstrated that communities will be engaged throughout the lifetime of the project, the proposal should provide more details on the scope and outcome of community consultations in regards to the design of the proposal, specifically emphasizing how community participation had informed the prioritization of activities; the number of beneficiaries cannot be determined at the inception phase and should be provided in the proposal, even if only approximately, for the various components, and particularly for the investments at the community level;*
  - (iii) *The proposal should elaborate on measures to preempt potential land-use conflicts such as agreements based on the outcomes of community consultations;*
  - (iv) *The proposal should justify the project based on the cost evaluation of alternative options to the proposed interventions; and*
  - (v) *The budget should provide budget notes explaining each budget line.*
- (c) *Request UNDP to transmit the observations referred to in paragraph (b) above to the Government of Fiji.*

*(Decision B.18/16)*

10. The proposal was then submitted to the nineteenth meeting of the Board but was withdrawn by the proponent following the initial technical review for that meeting

11. The current submission was received by the secretariat in time to be considered for the intersessional project/programme proposal review cycle between the twenty-third and twenty-fourth meetings.

12. The secretariat carried out a technical review of the project proposal, using the diary number FJI/MIE/DRR/2010/3, and completed a review sheet. In accordance with a request to the secretariat made by the Board in its 10th meeting, the secretariat shared this review sheet with UNDP, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

13. The secretariat is submitting to the PPRC the summary and, pursuant to decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final submission of the proposal in the following section.

## Project Summary

Fiji – Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji

Implementing Entity: *UNDP*

Project/Programme Execution Cost: USD 499,000

Total Project/Programme Cost: USD 5,280,000

Implementing Fee: USD 448,800

Financing Requested: USD 5,728,800

### Programme Background and Context:

The objective of the project is to reduce the exposure and increase the adaptive capacity of communities living in the Ba catchment in Fiji, which is vulnerable to drought and flood-related climate and disaster risks. The proposed project would address these risks in an integrated way, i.e., through Integrated Water Resources Management (IWRM), combining concerted efforts at the community and household levels in the Ba watershed area to increase local resilience to flood and drought risks and hazards through implementation of on-the-ground adaptation measures. The framework for this project strategy includes an integrated and climate-sensitive flood and drought management plan, specifically developed for the Ba watershed area, through community consultation processes, involving national and local authorities and backed by technical expertise and assessments

This objective would be addressed through the realization of the following outcomes:

- Reduced exposure to flood and drought related risks and hazards in the Ba catchment area
- Increased adaptive capacity of communities in the Ba watershed to flood and drought related risks and hazards
- Strengthened institutional capacity to integrate climate change and disaster risks into sectoral policies and management practices
- Strengthened awareness and ownership of adaptation and climate risk reduction processes at local levels

### Component 1: Climate early warning and information systems (USD 574,500)

Through this component, the Government of Fiji through the Fiji Meteorological Services (FMS), Water Authority of Fiji (WAF), Department of Agriculture (DoA) and National Disaster Management Office (NDMO) would endeavor to reduce exposure to climate-related risks, particularly to life and livelihoods and public and private economic assets. The focus of this component would be on flood and drought early warning and information systems as there is an urgent need for FMS to obtain real-time data, to allow it to effectively carry out assessments and give out an early warning to the vulnerable communities. The early warning system would be developed in the context of a Flood Disaster Management Plan, the objectives of which would include saving lives, minimizing damages and supporting early recovery. The still existing JICA supported EWS that was implemented from 2010-2013 has remaining challenges and gaps and significant work remains to be done in order to establish an integrated catchment wide flood EWS along the Ba Catchment. The project would build on the JICA initiative and address the gaps and challenges as described in succeeding paragraphs. There are no ongoing initiatives related to drought EWS.

Component 2: Community-based adaptation to flood and drought related risks and hazards (USD 3,504,000)

This component would develop and integrated and climate-sensitive Ba Catchment Management Plan and supporting governance structure, including establishment and capacity building to a Ba Catchment Committee, conducting biophysical and technical assessments and surveys considering alternative climate scenarios and mapping of hazards, systematically reviewing existing flood control, water management, land use and related plans and the application of national laws and policies, and preparation the Catchment Management Plan through consultative processes. It would also rehabilitate and sustainably manage the Ba watershed through community level actions, such as establishment of community forests, and forest belts on steep sloping lands to reduce erosion, reforesting mangrove to stabilise coastal areas, and establishing 4 centralized nurseries. The component would put in place integrated climate-resilient flood-preparedness and protection measures implemented at the community level through river bank stabilization, enhancement of existing flood management structures, and construction of village level emergency flood evacuation centers. It would also promote climate-resilient agriculture through development of climate-resilient (flood-tolerant and drought-tolerant) crop varieties, simulation of climate impacts on sugar cane farming, and adoption of integrated soil and water conservation farming techniques. The component would also enhance water supply capacity of communities under conditions of changing climate.

Component 3: Institutional strengthening to support climate- and disaster-resilient policy frameworks (USD 368,000)

This component would integrate climate change and disaster risks and resilience into sectoral policies and planning frameworks at the national and sub-national levels. It would also train policy makers at the national, provincial and district offices, institutions and extension services to implement climate-sensitive policies and plans, and empower local communities to improve resilience to climate impacts.

Component 4: Awareness raising and knowledge management (USD 334,500)

This component would capture lessons learned and generate best practices, and distribute them to other communities, civil society, policy makers in government and globally through appropriate mechanisms. It would also develop and implement climate change awareness and education programmes for schools and technical centers employing various forms of media



ADAPTATION FUND

## ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regular-sized Project

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Country/Region: **Fiji**  
 Project Title: **Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji**  
 AF Project ID: **FJI/MIE/DRR/2010/3**  
 IE Project ID: **UNDP PIMS ID 4572** Requested Financing from Adaptation Fund (US Dollars): **5,728,800**  
 Reviewer and contact person: **Mikko Ollikainen** Co-reviewer(s): **Daniel Gallagher**  
 IE Contact Person: **Jose Erez Padilla**

Review Criteria	Questions	Comments on 5 May 2014	Comments on 26 May 2014
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.	
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	The proposal contains an endorsement letter dated 10 August 2012, which was issued for a previous version of the proposal. A new endorsement letter is needed for each resubmission. <b>CAR1:</b> Please submit a new endorsement letter using the standard template.	<b>CAR1:</b> Addressed. An endorsement letter dated 8 May 2014 and signed by the designated authority has been provided.

	<p>2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?</p>	<p>Generally, yes. <b>CR1:</b> With regard to the structural works and the Early Warning System (EWS), please provide a map of the locations of the current and proposed new and upgraded early warning equipment in the Ba watershed, and river bank stabilization measures.</p>	<p><b>CR1:</b> Addressed. A map has been provided in Annex 11.</p>
	<p>3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?</p>	<p>The proposed project has potential to deliver economic, social and environmental benefits. However, the gender considerations of these benefits have not been discussed, apart from a few sporadic remarks. <b>CR2:</b> Please explain how gender considerations have been taken into account in setting the project targets in terms of benefits.</p>	<p><b>CR2:</b> Not adequately addressed. The proponent has stated that women are not equally able to participate in decision-making processes due to existing gender context. However, the proposal does not explain how the project would aim to address the specific needs of women and provide benefits to them.</p>
	<p>4. Is the project / programme cost effective?</p>	<p>The proposal appears generally cost effective.</p>	

	5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	Yes.	
	6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	Yes.	

	7. Is there duplication of project / programme with other funding sources?	<p>The project builds upon experiences from a recent Integrated Water Resources Management project of the Nadi watershed, also implemented by UNDP. It also aims to upgrade equipment installed in the Ba watershed as part a of JICA-funded community-based disaster risk reduction project. The proposed project appears to be additional to these closely related interventions. The proposal mentions (p. 9) the EU funded HYCOS Project that will upgrade the Rewa River Flood Forecasting and Warning System but does not outline how the project would avoid overlap and build synergies with it.</p> <p><b>CR3:</b> Please explain how the project would avoid overlap and build synergies with the EU funded HYCOS Project.</p>	<b>CR3:</b> Addressed.
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes.	

	9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	The proposal has been preceded by multiple rounds of consultation over the last 3-4 years. However, it is not clear whether the consultations have been informed by an assessment of the environmental and social risks of the project. <b>CR4:</b> Please explain whether the consultations with communities and other stakeholders have been informed by an assessment of the environmental and social risks involved in the project.	<b>CR4:</b> Not adequately addressed. The response states that the community members “were informed of environmental and social principles that the proposed project” (sic). This is ambiguous and does not explain whether community members have been made aware of possible risks of the project, including temporary worsening of water quality resulting from construction work.
	10. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Yes.	
	11. Is the project / program aligned with AF's results framework?	Generally, yes.	
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	<b>CR5:</b> As requested previously, please clarify what level of community-level buy-in currently exists for proposed activities, i.e. if there exists an expression of commitment from traditional village management bodies to manage forests sustainably?	<b>CR5:</b> Not addressed in the project proposal. An informal response sheet claimed that there is verbal commitment from communities to provide in-kind contributions to most activities. The response also explained that a written commitment could not be achieved before project approval.
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified?	No. The section on overview of environmental and social impacts/risks, including screening and categorization of the project in accordance with the environmental and social policy of the AF, is missing. <b>CAR2:</b> Please include in the proposal the sections on environmental and social impacts / risks, using the latest template of request of funding from the Adaptation	<b>CAR2:</b> Addressed. The revised proposal uses the new template. An overview of environmental and social risks has been provided. According to agency screening, the project falls into Category B. However, please see comment on gender equity below.

		Fund, which includes a section on compliance with the Environment and Social Policy. Relevant documentation can be found here: <a href="https://www.adaptation-fund.org/page/proposal-submission-materials">https://www.adaptation-fund.org/page/proposal-submission-materials</a>	
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes.	
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	Yes.	
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	Yes. Please see comment below on references to UNDP execution.	
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes.	

Implementation Arrangements	<p>1. Is there adequate arrangement for project / programme management?</p>	<p>Requires clarification. The proposal continues to suggest (p. 65) that in addition to the implementation function, UNDP would be able to charge the project directly for Execution Support Services. Please note that the Adaptation Fund Board decision B.18/30, communicated to UNDP on August 23, 2012, confirmed, "[...] as a principle, the separation between implementing and execution services. Execution services will only be provided by Implementing Entities on an exceptional basis and at the written request by the recipient country, involving designated authorities in the process, and providing rationale for such a request. The responsibility for these services shall be stipulated, their budget estimated in the fully developed project/programme document, and covered by the execution costs budget of the project/programme".</p> <p><b>CR6:</b> If this proposal is subject to such an exceptional basis as referred to in AFB decision B.18/30 then a revised version of the full proposal should be submitted specifying all such services to be provided by UNDP and their respective budgets, detailed to a level similar to the other parts of the project budget. If such services are to be included in the proposal then the revised proposal should be accompanied by a letter from the Designated Authority requesting UNDP to do so, and providing the rationale for the exceptional basis that warrants such a request. Also, in such a case, the execution costs would be capped at 1.5% of the total project budget.</p>	<p><b>CR6:</b> Not fully addressed. Annex 2 continues to state: <i>"If the national entity carrying out the project requests additional Implementation Support Services (ISS), an additional fee will apply in accordance with UNDP fee policy regarding ISS and would be charged directly to the project budget."</i> Section on implementation arrangements continues to state <i>"Once the project is approved and an operational annual work plan is prepared, the UNDP Multi-Country Office in Fiji will be able, in those specific cases agreed to with project counterparts, to charge the project directly for Execution Support Services, based on transactions and employing a universal price list."</i> Inclusion of such statements is in contradiction with the informal response stating that such services would be covered by the IE fee; they are not acceptable and should be deleted.</p>
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		<b>CR7:</b> Footnote 22 on p. 18 states: “Further details on the types of specialized technical support services which may be provided are articulated in the table provided to the AFB Secretariat on 14 May 2010 (as annexed).” Please clarify this sentence or delete it.	<b>CR7:</b> Addressed.
	2. Are there measures for financial and project/programme risk management?	Yes.	

	<p>3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund? Does the proposal describe how the Implementing Entity will ensure that executing entities are fully aware of their responsibilities with regards to the provisions of the Environmental and Social Policy of the Adaptation Fund, including the promotion of human rights, where applicable, and how the executing entities and direct beneficiaries are made aware of the grievance mechanism available in the country and of the complaint handling mechanism of the Fund, in case of non-compliance?</p>	<p>No. The proposal has not filled in the section on environmental and social risk management (Section III.C of the project proposal template updated in November 2013). Only a separate UNDP environmental and social screening template has been provided as an annex. A comprehensive explanation on E&amp;S risk management would need to be included in the proposal. <b>Among other things</b>, it should address the following:  <b>CR8:</b> Please explain, whether coastal mangrove reforestation would lead to resettlement of people or relocation of their livelihoods.  <b>CR9:</b> It is stated that EIA clearance has been secured by LWRM for two weirs proposed under activity 2.3.2. Please provide a copy of EIA report. Please explain whether the communities in the two sites have been consulted with relation to the weirs, and whether those consultations have been informed by the environmental assessments. It is said on p. 54 that the change in design will require an EIA and it is suggested that this EIA would be done during project implementation. In accordance with the E&amp;S policy, please provide a timeline for completing the environmental and social assessment before construction begins.  <b>CR10:</b> The proposal mentions (p. 46) that instead of past focus on dredging, the proposed project would undertake “more integrated approaches”. Please explain whether dredging is included in those integrated approaches, and if yes, how environmental aspects have been addressed.</p>	<p><b>CR8:</b> Addressed.</p> <p><b>CR9:</b> Not fully addressed. A memorandum of EIA (though not the EIA report) dated 14 May 2010 has been provided as annex. It is not clear whether communities have been effectively consulted. A plan has been presented to complete EIA during the first year of project implementation.</p> <p><b>CR10:</b> Addressed. The integrated approaches do not include dredging.</p>
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		<p><b>CR11:</b> The text refers (p. 46) to small-scale dams to be built in the project, and that EIAs were (this text has not changed since 2012) undertaken. Please explain the environmental impacts of these dams and provide EIAs, if available.</p> <p><b>CR12:</b> The proposal mentions different ethnic groups, and indigenous peoples. In the analysis to be included in the revised proposal, please address related vulnerability considerations.</p> <p><b>CR13:</b> Please clarify how UNDP would ensure that the executing entity is fully aware of their responsibilities with regards to the provisions of the Environmental and Social Policy of the Adaptation Fund, including the promotion of human rights, where applicable, and how the executing entity and direct beneficiaries would be made aware of the grievance mechanism available in the country and of the complaint handling mechanism of the Fund, in case of non-compliance.</p> <p><b>CR14:</b> The environmental screening notes (Table 4.1) that the project would not result in the conversion or degradation of habitat. Please explain, whether the construction of weirs would not cause degradation of the river habitat.</p>	<p><b>CR11:</b> Addressed: the terms weirs and dams have been used interchangeably.</p> <p><b>CR12:</b> Addressed.</p> <p><b>CR13:</b> Not fully addressed. While the proposal explains that in the project inception workshop, the executing entity and direct beneficiaries would be made aware of the Environmental and Social Policy of the Fund, and of the grievance mechanism available in the country, the proposal has not provided information on what the available grievance mechanism is and how it works.</p> <p><b>CR14:</b> Not addressed in the proposal. The informal response sheet says that the project would comply with the EIA memorandum. These would need to be stated in the project proposal.</p> <p><b>CR18 (New finding):</b> Following the information provided on environmental and social risks in the revised proposal, there is a concern related to land tenure. This had been identified in the risk management table (Section III B) as a mid-level risk. However, the environmental and social screening had not identified access and equity principle to be applicable (which mentions land rights) to be applicable. It is unclear whether the EIA and E&amp;S management plan would address this so that also these risks could be monitored during implementation.</p>
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	4. Is a budget on the Implementing Entity Management Fee use included?	Yes.	
	5. Is an explanation and a breakdown of the execution costs included?	Yes.	
	6. Is a detailed budget including budget notes included?	Yes. However, the budget figures differ within the proposal, e.g. components table (p. 18) and output level budget (Annex 5). <b>CR15:</b> Please harmonize the budget figures throughout the proposal.	<b>CR15:</b> Addressed.

	<p>7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&amp;E plans and sex-disaggregated data, targets and indicators?</p>	<p>Requires clarification. As noted above, gender considerations in terms of project benefits have not been explained clearly. Also, it is not clear why the project sets the target for participation of women, combined with youth, at only 30 percent of total beneficiaries (women would have less than 50% chance compared to men to benefit from the project).  <b>CR16:</b> Please reconsider the percentage of beneficiaries that are women, and clarify. Please disaggregate between women and youth.</p>	<p><b>CR16:</b> Not addressed. The target included in the proposals remains as 30 per cent of the beneficiaries being women. A separate response sheet explained that this would be raised to 35%, but that “the project intends to be sensitive of existing status of gender context in Fiji” in which “indigenous hierarchies in communities, especially in rural areas, have remained and male members may still lead key decision-making processes within communities”. While the response sheet states that “potential for going beyond this target will be assessed periodically, notably during mid-term evaluation and beyond project life during the terminal evaluation”, it remains unclear how the target relates to baseline, and unjustified why the project could not aim to reach equitable distribution of beneficiaries. Given the issues referred to in the response sheet, the project would need to explicitly seek out ways to ensure more equitable distribution.</p>
	<p>8. Does the M&amp;E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&amp;E function?</p>	<p>Yes.</p>	

	<p>9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?</p>	<p>Requires clarification. In the alignment table, the correspondence of the fund level and project level deliverables and indicators is not clear, as they are pooled together. <b>CR17:</b> In the results alignment table, please distinguish which project deliverables and indicators correspond to which fund deliverables and indicators.</p>	<p><b>CR17:</b> Addressed.</p>
	<p>10. Is a disbursement schedule with time-bound milestones included?</p>	<p>Yes.</p>	

<p><b>Technical Summary</b></p>	<p>The proposed project intends to reduce the exposure and increase the adaptive capacity of communities living in the Ba catchment in Fiji, which is vulnerable to drought and flood-related climate and disaster risks. The proposed project would address these risks in an integrated way, i.e., through Integrated Water Resources Management (IWRM), combining concerted efforts at the community and household levels in the Ba watershed area to increase local resilience to flood and drought risks and hazards through implementation of on-the-ground adaptation measures. The framework for this project strategy includes an integrated and climate-sensitive flood and drought management plan, specifically developed for the Ba watershed area, through community consultation processes, involving national and local authorities and backed by technical expertise and assessments.</p> <p>The project is comprised of the following four components:</p> <ol style="list-style-type: none"> <li>1. Climate early warning and information systems</li> <li>2. Community-based adaptation to flood and drought related risks and hazards</li> <li>3. Institutional strengthening to support climate and disaster resilient policy frameworks</li> <li>4. Awareness raising and knowledge management</li> </ol> <p>The proposal states that the outputs and activities to be implemented to attain its outcomes are not sequential; they are linked and supportive of each other. While the focus is on community-based adaptation measures, the early warning system and the institutional strengthening components are designed to provide the enabling environment that would allow the systematic development and implementation of on-the-ground measures within an integrated watershed development plan, supported by adequate instruments and user-tailored climate</p>
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information services. The knowledge management component is aimed at allowing the capturing of good practices and lessons learnt both from the policy processes and community-based adaptation implementation, ensuring that the experience generated will support longer-term adaptation processes and future generation of professionals and practitioners, as part of the project sustainability strategy.

The initial technical review found that there were two issues that the proponent needed to be addressed, in order to ensure eligibility of the proposal, and had made the respective corrective action requests:

**CAR1:** Please submit a new endorsement letter using the standard template.

**CAR2:** Please include in the proposal the sections on environmental and social impacts / risks, using the latest template of request of funding from the Adaptation Fund, which includes a section on compliance with the Environment and Social Policy. Relevant documentation can be found here: <https://www.adaptation-fund.org/page/proposal-submission-materials>

In addition to these issues, the initial technical review had made a number of clarification requests, that would need to be addressed:

**CR1:** With regard to the structural works and the Early Warning System (EWS), please provide a map of the locations of the current and proposed new and upgraded early warning equipment in the Ba watershed, and river bank stabilization measures.

**CR2:** Please explain how gender considerations have been taken into account in setting the project targets in terms of benefits.

**CR3:** Please explain how the project would avoid overlap and build synergies with the EU funded HYCOS Project.

**CR4:** Please explain whether the consultations with communities and other stakeholders have been informed by an assessment of the environmental and social risks involved in the project.

**CR5:** As requested previously, please clarify what level of community-level buy-in currently exists for proposed activities, i.e. if there exists an expression of commitment from traditional village management bodies to manage forests sustainably?

**CR6:** If this proposal is subject to such an exceptional basis as referred to in AFB decision B.18/30 then a revised version of the full proposal should be submitted specifying all such services to be provided by UNDP and their respective budgets, detailed to a level similar to the other parts of the project budget. If such services are to be included in the proposal then the revised proposal should be accompanied by a letter from the Designated Authority requesting UNDP to do so, and providing the rationale for the exceptional basis that warrants such a request. Also, in such a case, the execution costs would be capped at 1.5% of the total project budget.

**CR7:** Footnote 22 on p. 18 states: "Further details on the types of specialized technical support services which may be provided are articulated in the table provided to the AFB Secretariat on 14 May 2010 (as annexed)." Please clarify this sentence or delete it.

**CR8:** Please explain, whether coastal mangrove reforestation would lead to resettlement of people or relocation

of their livelihoods.

**CR9:** It is stated that EIA clearance has been secured by LWRM for two weirs proposed under activity 2.3.2. Please provide a copy of EIA report. Please explain whether the communities in the two sites have been consulted with relation to the weirs, and whether those consultations have been informed by the environmental assessments. It is said on p. 54 that the change in design will require an EIA and it is suggested that this EIA would be done during project implementation. In accordance with the E&S policy, please provide a timeline for completing the environmental and social assessment before construction begins.

**CR10:** The proposal mentions (p. 46) that instead of past focus on dredging, the proposed project would undertake “more integrated approaches”. Please explain whether dredging is included in those integrated approaches, and if yes, how environmental aspects have been addressed.

**CR11:** The text refers (p. 46) to small-scale dams to be built in the project, and that EIAs were (this text has not changed since 2012) undertaken. Please explain the environmental impacts of these dams and provide EIAs, if available.

**CR12:** The proposal mentions different ethnic groups, and indigenous peoples. In the analysis to be included in the revised proposal, please address related vulnerability considerations.

**CR13:** Please clarify how WFP would ensure that the executing entity is fully aware of their responsibilities with regards to the provisions of the Environmental and Social Policy of the Adaptation Fund, including the promotion of human rights, where applicable, and how the executing entity and direct beneficiaries would be made aware of the grievance mechanism available in the country and of the complaint handling mechanism of the Fund, in case of non-compliance.

**CR14:** The environmental screening notes (Table 4.1) that the project would not result in the conversion or degradation of habitat. Please explain, whether the construction of weirs would not cause degradation of the river habitat.

**CR15:** Please harmonize the budget figures throughout the proposal.

**CR16:** Please reconsider the percentage of beneficiaries that are women, and clarify. Please disaggregate between women and youth.

**CR17:** In the results alignment table, please distinguish which project deliverables and indicators correspond to which fund deliverables and indicators.

The final technical review found that while the proponent had addressed both corrective action requests, and several of the clarification requests raised in the initial review. However, few issues would still need to be clarified:

1. The proposal should more clearly describe gender-related vulnerability in the target communities, and how the project would include specific interventions and targets that would help address underlying gender inequality and provide benefits to women that would reduce their vulnerability to climate change.
2. The proposal should more clearly explain how the level of ambition in terms of female compared to male beneficiaries is justified in relation to the baseline situation, and it should seek ways to reach equitable

	<p>distribution of benefits between women and men.</p> <ol style="list-style-type: none"><li>3. The proposal should explain how community members have been made aware of possible risks of the project, including temporary negative impacts, and how that information has been reflected in consultations with the communities.</li><li>4. The proposal should clarify the risks related to land tenure (rated as mid-level risk), and how the EIA and environmental and social management plan would address those so that they could be monitored during implementation.</li><li>5. The proposal should explain which kind of grievance mechanism would be available in the country for affected project stakeholders.</li><li>6. The proposal should clarify the execution arrangements of the project by removing references to execution services to be provided by the implementing entity, if such execution services are indeed not planned to be provided.</li><li>7. The proponent should ensure that all information provided informally through a response sheet is included in the project proposal.</li></ol>
Date:	22 May 2014



## ADAPTATION FUND

# PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

## PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	<b>Regular project</b>
Country/ies:	<b>Fiji</b>
Title of Project/Programme:	<b>Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji</b>
Type of Implementing Entity:	<b>MIE</b>
Implementing Entity:	<b>United Nations Development Programme (UNDP)</b>
Executing Entity/ies:	<b>Ministry of Foreign Affairs and International Cooperation (MOFA), Government of Fiji</b>
Amount of Financing Requested:	<b>5,728,800</b> (in U.S Dollars Equivalent)

### **Project / Programme Background and Context:**

#### ***Geography and Climate***<sup>1</sup>

The Republic of Fiji is located in the southwest Pacific Ocean between latitudes 15° and 22° South. Fiji's Exclusive Economic Zone (EEZ) of 1.3 million square kilometres contains approximately 330 islands, of which about a third are inhabited. The Fiji Group contains two major islands, Viti Levu and Vanua Levu, with land areas of approximately 10,500 and 5,500 km<sup>2</sup> respectively. Other large islands are Taveuni (470 km<sup>2</sup>), Kadavu (411km<sup>2</sup>), Gau (140km<sup>2</sup>) and Koro (104km<sup>2</sup>). The Republic includes the island of Rotuma (43km<sup>2</sup>), located 650 kilometres northwest of Suva.

The two major islands make up 87% of the total land area and are of volcanic origin. The numerous smaller islands are a mixture of volcanic, low-lying atolls, and elevated reefs. The largest islands have a diverse range of terrestrial ecosystems, including extensive areas of indigenous forest. Coastal ecosystems include mangroves, algae and sea-grass beds in shallow reef and lagoon areas, and various reef types such as barrier, fringing platform and atoll or patch reefs.

Fiji has an oceanic tropical climate. The high islands have distinct wet and dry sides due to prevailing wind patterns; rainfall is typically 60% higher in SE Viti Levu than it is on the west and NW of the island. The South Pacific Convergence Zone (SPCZ), a zone associated with high rainfall, fluctuates northeast to southwest of Fiji. The SPCZ has a strong influence on both seasonal and inter-annual variations in climate, particularly rainfall. The El Nino-Southern Oscillation (ENSO) phenomenon influences the SPCZ and strongly affects rainfall patterns.

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<sup>1</sup> Fiji's First National Communication Under the UN Framework Convention on Climate Change, 2005

Fiji lies in an area normally traversed by often severe tropical cyclones which occur mostly during the November-April wet/cyclone season. Cyclones bring about severe flooding and landslips which destroy assets, disrupt agriculture and commerce, interrupt essential social services, and contribute to disease. While the prevailing wind is from the southeast, tropical cyclones and depressions tend to track from the north and west. Thus, although the west of Viti Levu is drier on average it can experience very heavy rainfall events and associated flooding. Cyclones, however, are not the only cause of floods in Fiji. It is estimated that historically only about 60% of floods in the west of the main island have been associated with cyclones; the rest were triggered by isolated severe rainfall events.

During an ENSO event, conditions are usually drier and hotter than normal, and these can be expected from December to February and drier and cooler conditions from June to August. El Niño events, which lead to a northeast positioning of the SPCZ, are the major cause of drought in Fiji.

### ***Economy***

Fiji's gross domestic product (GDP) grew from about F\$2.4 billion in 1995 to about \$2.9 billion in 2007 in constant dollars, equivalent to a real annual growth rate averaging 1.8% over the period.<sup>2</sup> Within this growth, the share of agriculture, including fisheries and forestry, declined in both proportional and absolute terms from 19% in 1995 to about 14% in 2007. The share of the sugar industry, a traditional mainstay of the economy, declined from 11% in 1995 to about 5% in 2007, in real terms, due to declining productivity. The decline in agriculture, however, was more than made up by growth in manufacturing (13% of GDP in 1995 increasing to 14% in 2007) and services (67% increasing to 71%). Tourism (included in the services sector) contributed close to F\$500 million in export revenues to the economy in 2001, or about 19.2% of GDP at that time, and remains an economically significant growth sector<sup>3</sup>.

### ***Population<sup>4</sup>***

The current population of Fiji is approximately 840,000 (2007 Census) of which more than 670,000 (or more than 80%) live on the main island of Viti Levu. The Western Division, comprising the south-eastern, western, and north-western half of Viti Levu and including the urban areas of Nadi, Lautoka, Ba, Tavua, and Rakiraki, has a population of about 330,000, of which about 15,000 live in and around the Ba catchment area. By a recent estimate based on a review of the 2008/2009 Household Income and Expenditure Survey (Wadan Narsey<sup>5</sup>), one-third of the national population or about 270,000 people are living in poverty. Poverty is particularly acute in rural agricultural areas, including the Ba region.

### ***Governance***

Fiji is normally governed in the framework of a parliamentary representative democratic republic, whereby the Prime Minister of Fiji is the head of government, the President the head of state, and of a multi-party system. Executive power is exercised by the government. Legislative power is vested in both the government and the Parliament of Fiji. The Judiciary is independent of the executive and the legislature. Citing corruption in the government, Commodore Frank Bainimarama, Commander of the Republic of Fiji Military Forces, staged a military takeover on the 5 December 2006. In his New Year's address, Commodore Bainimarama had also announced the nationwide consultation process leading to the new Constitution under which the

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<sup>2</sup> Reserve Bank of Fiji, *Quarterly Review* June 2010

<sup>3</sup> *Fiji's Sugar, Tourism, and Garment Industries: A Survey of Performance, Problems, and Potentials*, Narayan, Paresh and Prasad, Biman, Fijian Studies, Fiji Institute of Applied Studies

<sup>4</sup> Fiji Bureau of Statistics, Census 2007

<sup>5</sup> Radio Australia Pacific Beat Story: Fiji Poverty Statistics Paint a Disturbing Picture, 2010

2014 elections will be held. The Fijian government is now committed to holding General Elections in 2014.

Fiji efforts on establishing institutional frameworks for climate change planning is progressing, with the establishment of the Republic of Fiji National Climate Change Policy in 2012 and Joint National Action Plan for Disaster Risk Reduction and Climate Change Adaptation (JNAP) under development. Furthermore, Fiji Government has embarked on a Climate Public Expenditure and Institutional Review (CPEIR) in 2014 as well as preparing for Green Climate Fund readiness activities.

In terms of other climate change related activities, the Forest Decree of 1992, for instance, has undergone extensive review with stakeholders with the need to review stemming from the endorsement of the Fiji Forest Policy in November 2007. Current revisions show a shift of focus from timber production to sustainable forest management. Conventional forestry practices are being reviewed to ensure the protection of forest ecosystems and the sustainable economic development of the forestry sector. The revised legislation will be forward-looking and will encompass current and emerging issues such as forest carbon trading.

For the Fijian Administration structure, the Province is administered by a Provincial Council, headed by the *Roko Tui* and assisted by the Assistant *Roko Tui* under the Ministry of *iTaukei* Affairs (previously known as the Ministry of Fijian Affairs). Each village sends a representative to the *Tikina* Council (District Council), two members of which represent the *tikina* (district) to the Provincial Councils (see Figure). The heads of the various village committees are selected by the village council members and may comprise those respected members of society including retired academics, civil servants, and businessmen and so on. The structure provides the basis for the villages to devise and implement their own corporate development plan and projects towards the achievement of self-reliance.

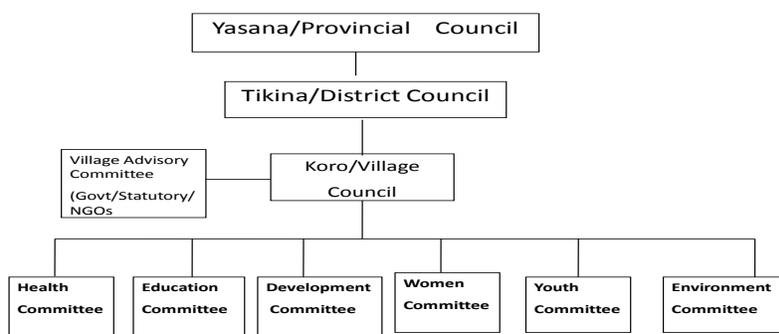


Figure 1: Fijian Administration Structure

### **The Ba Province**

The Ba Province is one of 14 provinces in the nation (and one of the eight based in the main island of Viti Levu). It is Fiji's most populous province with approximately 232,000 people – more than a quarter of the nation's total population. The Ba Province covers a land area of approximately 2,600km<sup>2</sup> and is the second largest of any province. The province includes the towns and districts of Ba, Magodro, Nadi, Nawaka, Tavua, and Vuda. The city of Lautoka and the Yasawa Archipelago, off the western coast of Viti Levu, are also in Ba Province. Notable residents of Ba Province include Fiji's former President, and Prime Ministers of two previous governments. Vuda Point, in Ba Province, is the traditional landing of the canoes that brought the Melanesian ancestors of the Fijian people to the islands. The nearby village of Viseisei

(former President's hometown) is traditionally considered to be the oldest in Fiji. The province is governed by a Provincial Council.

### **Ba Catchment Area<sup>6</sup>**

The catchment area is home to approximately 18,000 inhabitants<sup>7</sup>. The Ba River drains an area of 937 km<sup>2</sup> on the north-west side of Viti Levu (SOPAC, 2000). The river originates a distance of 83 km from the sea, with an average steepness of about 1 in 75, with marked contrasts between the upper reach (1 in 20) and lower reach (1 in 300) (JICA, 1998). Steep valleys like that of the upper Ba River promote particularly rapid-rising floods during heavy rain. Downstream of Ba, the flat land broadens into a large delta. The Ba River Valley contains substantial areas of forest, approximately 43% of the catchment area (JICA, 1997). The dominant land use in the lower valley is sugar cane cultivation, which occupies more than 150 km<sup>2</sup> (16%) of the valley. Grassland utilised for grazing is the main land use in the remainder of the valley. According to records kept by the sugar industry in Ba covering a period of 111 years, flooding has always affected areas adjacent to the Ba River (Yeo, 1998). Major floods occur in the area once in 4 years on average. The first known flood was recorded in 1871, the most disastrous one occurring in 1931. Improved watershed management is essential for the mitigation of flood peaks, but at least as important for the reduction of flood damages is the strengthening of measures to control development on floodplains and to effectively warn those who live and work in flood-liaible areas<sup>8</sup>.



Figure 2: Map of Fiji and the Ba Catchment

<sup>6</sup> Ba Community Flood Preparedness Project: Final Report, Yeo, Stephen, April 2000, SOPAC Technical Report 309

<sup>7</sup> Fiji Islands Bureau of Statistics - Key Statistics : June 2010

<sup>8</sup> From Flooding in Fiji: Findings from a 100-Year Historical Series, Yeo, Stephen; Blong, Russell; and McAneney, John

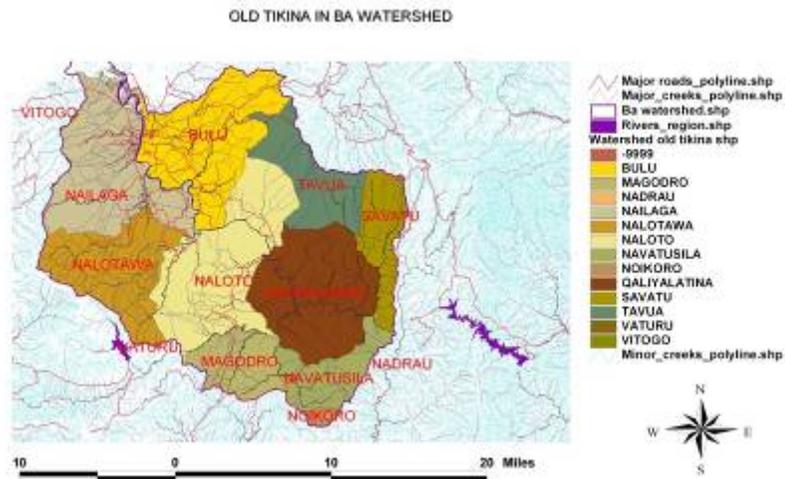


Figure 3: Old Tikina in Ba Watershed

### **Climate change vulnerabilities, impacts and risks<sup>9</sup>**

Climate scenarios were developed for Fiji using two global climate models, each under two greenhouse gases (GHG) emissions scenarios as part of its Initial National Communications (PICCAP, 2005). These scenarios include the B2 and A2 scenarios of the Special Report on Emissions Scenarios (SRES) and are assumed to represent mid-range and extreme cases, respectively (PICCAP, 2005). Fiji's INC projects that sea-level will rise by 11cm in 2025; 23cm in 2050; and 51cm by 2100 while annual rainfall is likely to change by 0.4% by 2025, 0.6% by 2050, and 1.6% by 2100. Maximum wind gusts are likely to change by 3.4% by 2025, 6.8% by 2050, and 13.4% by 2100 and temperatures are expected to increase by 0.3°C by 2025, 0.7°C by 2050, and 1.4°C by 2100 in Fiji. This projection of systematic changes of average climate presents a significant increase in the frequency of extreme high sea levels, temperatures and winds which are highly likely in the Fiji area in the coming decades.<sup>10</sup>

Fiji is subject to highly destructive cyclones, intense rainfall events, and devastating droughts. The Western Division including Nadi and the Ba region are particularly hard hit by flood and drought, due to their paradoxical location on a common cyclone path and within Viti Levu's "rain shadow" (which makes the areas drier than the eastern part of the island on average). These effects will be exacerbated by climate change: as the climate warms, droughts are expected to increase in frequency and severity, rainfall is expected to become more concentrated but more intense (and destructive) rainfall events, cyclones may increase in frequency, and variability will increase as El Nino-related oscillations are likely to become more extreme.

### **Droughts**

A scientific analysis of historical droughts was undertaken by Deo (2011)<sup>11</sup> for the period 1949–2008 using tools such as the Standardized Precipitation Index (SPI), modified Mann–Kendall

<sup>9</sup> Fiji's First National Communication

<sup>10</sup> Scenario Summary Table (Page 23-24) of Fiji Initial National Communication, 2005. PICCAP, 2005. Climate Change, The Fiji Islands Response: Fiji's First National Communication Under the Framework Convention on Climate Change. Pacific Islands Climate Change Assistance Programme (PICCAP) & Fiji Country Team, Suva, Fiji islands.

<sup>11</sup> Deo, Ravinesh C. (2011) *On meteorological droughts in tropical Pacific Islands: time-series analysis of observed rainfall using Fiji as a case study*. Meteorological Applications, 18 (2). pp. 171-180. ISSN 1350-4827

test and Sen's Slope. The results show statistically significant decreases in annual rainfall ranging from ~13 to 47 mm/year. Based on the SPI, drought duration and severity was non-uniform across stations over the 60 year period. The strongest impacted stations were located in western and northern Fiji where rainfall deficiency for the period 1969–1988 led to a dramatic increase in moderate and severe droughts. The Ba Catchment is located in the northwest part of the main island of Viti Levu. The return periods of annual rainfall were much longer at these stations relative to those in outer-lying islands. While rainfall increased over the period 1989–2008, the actual amounts did not exceed 1949–1968 totals, confirming a net shift towards drier conditions since the 1950s. More recent events confirm this finding and these could be associated with global warming from climate change.

The ENSO of 1997, for example, was the worst since 1905. In September of 1997, most parts of the country recorded rainfall 20% to 50% below the average. The western parts of the country recorded less than 10 mm of total rainfall, that is, 93% below the average. In December, all sites recorded rainfall 50% to 90% below average. All coastal sites in Viti Levu and parts of Vanua Levu recorded lowest-ever rainfall totals for the period of 8 consecutive months from September 1997 to April 1998. Agriculture in general and the sugar industry in particular was devastated by this drought. The drinking water supply in many villages was greatly imperilled. It is estimated<sup>12</sup> that the droughts caused a 50% decrease of the sugar cane crop, though from those that remained, 25% were wiped out. Most other crops were severely affected, including economically important traditional crops such as yaqona, coconuts and cocoa. The national production loss was estimated at 50% (FJ\$104 million), much greater than the losses from the previous six Fijian droughts and cyclones. The drought has driven the Fiji economy into its worst recession.

In October the Fiji weather office reported that rainfall was 40-percent less than normal, and was insignificant in the preceding month. The lack of precipitation has disrupted activities in the entire country. For instance, it was reported that one school in the western Yasawa group of islands has closed because water supply shortage although the department of education ferried water to other schools to prevent closure. Up to 30-percent of crops were lost around the western district of Lautoka (near the Ba Catchment), and Suva residents were told to conserve as much water as possible.

More recently, the country was again in the midst of a drought when the country faced almost three dry seasons back-to-back from May 2009 and the situation remained very critical all over Fiji, and the water tables, rivers, lakes, water holes and streams were in a much stressed situation. During this period, Fiji has experienced three seasons of below average rainfall that devastating crops and jeopardized clean water supplies though it did not last as long to have the same magnitude as the 1997-1998 calamity.

In the Ba Catchment, villages and settlements in the upper and mid catchments are experiencing water shortages during dry seasons. This has not only affected their livelihoods but has led to serious public health concerns. For example, in the Nanoko Village located in the upper catchment of Ba, a typhoid outbreak with more than 42 cases was recorded in 2012 due to poor water and sanitation conditions particularly during the dry season<sup>13</sup>.

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<sup>12</sup>Lightfoot, C. 1999. Regional El Nino Social and Economic Drought Impact Assessment and Mitigation Study. South Pacific Geoscience Commission (SOPAC). 59 pp.

<sup>13</sup> <http://www.fijitimes.com/story.aspx?id=190152>

Based on the above information, it is apparent that droughts are occurring with greater regularity. It is expected that the intervals will become shorter and the drought events will become more intense due to continued global warming. The IPCC (fourth assessment) report stated that the projected impacts of climate change include extended periods of drought and, on the other hand, loss of soil fertility and degradation as a result of increased precipitation, both of which will negatively impact on agriculture and food security and other sectors. Studies suggest that likely changes in the hydrological cycle (more intense storms separated by longer droughts) will produce higher year-to-year variability in sugarcane yields, with a net decrease in production of 25%. This would result in significant unemployment and even deeper impoverishment for many of the tens of thousands of smallholder farmers in Fiji. In addition, tourism will likely suffer due to coastal erosion and coral bleaching.

The SOPAC report on the 1997/98 droughts underscored the following recommendations, most of which have been incorporated in this proposed project:

- a) Planning: (i) Effective drought response strategy; (ii) Better dissemination of forecasts; (iii) Education of community in appropriate responses to drought; (iv) Appropriate and timely alleviation plans
- b) Water and Environment: (i). Improved household self-reliance for drinking water; (ii) Better management of the reticulated water system; (iii) Identification and mapping of groundwater resources; (iv) Clearer understanding of the impact of pine plantations on stream flows; (v) More active management of the various watersheds
- c) Income and Production: (i) Improved understanding of drought-tolerant crops; (ii) Better understanding of where and when to plant; (iii) Procedures for moving stock out of drought-affected areas

## **Floods**

In the first week of January 2009, severe flooding took place in Viti Levu (SOPAC 2009<sup>14</sup>). The Nadi, Ba and Sigatoka rivers broke their banks, leading to destructive flooding in the surrounding towns and countryside. Eleven people lost their lives in the floods, and the Government of Fiji declared a state of disaster. The Ba area inundated by flood waters suffered losses of over F\$86 million. Of this total, businesses lost an estimated F\$31 million and households lost almost F\$56 million, in the form of structural damage, lost possessions, lost business, and destroyed assets.

As is common during major flooding events, the 2009 floods disrupted utilities and basic services. On average, it took approximately 16 days before basic services were restored. Water quality was reported to have deteriorated significantly during the floods and, weeks later, many families continued to report that the water in their taps or in the river was not safe to drink. A large proportion of businesses and householders around Ba stated that they did not receive warnings that floods were imminent, that the warnings of imminent flooding (and what to do) came too late, and/or that (for some) the radio warnings were too technical to follow.

Serious flooding in the Ba region has historically caused loss of human lives and damage to property and infrastructure. Social and economic activity is often stopped or severely impeded for weeks or months following these. In turn, flood hazards are putting major pressure on current and planned developments. The flooding, and some of the factors worsening the severity of flooding such as land erosion and channel sedimentation, has also had significant impacts on river and ecosystem health and biodiversity, as well as on the estuary and coastal regions of Ba.

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<sup>14</sup> Ba Floods Economic Costs January 2009, SOPAC Technical Report 425, September 2009

While flooding has been a significant problem in the past, the frequency and severity of these floods appears to be increasing (SOPAC 2010<sup>15</sup>). This was evident in the 2 most recent Fiji flash flooding which happened consecutively in 2012 during the months of January and March. The severity of both floods was devastating across all sectors including agricultural, business, health and even the education sector.

The Agricultural assessment from the January flood was made available through Progress Reports provided by the Economic and Planning Section of the Department of Agriculture. It was noted from the 30<sup>th</sup> January Flood Damage Assessment Progress Report<sup>16</sup> that after the Final Damage Assessment for the Flash Flood affected areas was conducted, the total cost of damage stood at F\$7,214,497 with 3,723 affected farmers in a total area of 1,176 ha.

Government declared the western Division as a state of Natural Disaster. Specific areas were gazetted in the Ra Province, Tavua District, Ba District, Lautoka District, Nadi District and Nadroga Province. The declaration was effective for 15 days from the 25th of January, 2012.

As stated in the recommendation section of the Progress Report, the Department of Agriculture seriously looked into mitigation issues and most importantly dissemination of information on sustainable agricultural practices to the farming community. The extent of soil erosions and landslides in the Drasa, Lolo, Nalotawa, Toge to name a few areas suffered greatly from extreme soils erosion.

- Rehabilitation to only start when the silts on the fields dry out.
- Food security will remain the priority of the rehabilitation program
- Community outreach on sustainable, integrated farming practices should be encouraged
- Food ration distribution to be determined by the extent of damage sustained in respective *tikinas*

According to NDMO's consolidated flood damage assessment report, the damage caused by the March 2012 floods were even greater, with estimated costs of F\$89 to 95 million compared to approximately \$40 million for the January floods. Estimated flood damage cost by sector is included below:

Agency	Estimated Damage	
	January 2012	March 2012
Department of Agriculture	F\$7.2 million	F\$17.4 million
Ministry of Sugar	F\$10.1 million	F\$16.68 million
Prime Minister's Office	F\$19 million	F\$ 17.95 million
Ministry of Works	N/A	F\$ 0.41 million (Estimated damage for Ba was F\$19,000)
Ministry of Health	F\$0.207 million	F\$0.37 million (Estimated damage for Ba was F\$123,000)
Ministry of Education	F\$ 0.755 million (Estimated damage for Ba: 20 schools / F\$554,000)	F\$3.2 million (Estimated damage for Ba: 77 schools / F\$ 1,680,000)
Ministry of Local Government	F\$2.37 million	F\$ 18.06 million

<sup>15</sup> Integrated Flood Management in the Pacific, A Pilot Project for Nadi (Project Concept Note), SOPAC 2010

<sup>16</sup> Flash Flood- Final Cost Damage Assessment Report – Brief No. 5 Date: 30-1-12 Progress Report, 2012

Estimated Damage		
Agency	January 2012	March 2012
	(Estimated damage for Ba: F\$ 2,080,000)	(Estimated damage for Ba: F\$ 13,500,000)
Ministry of Provincial Development	N/A	F\$ 6.8 million
Water Authority of Fiji (WAF)	F\$1.3 million	\$10.61 million
Telecom Fiji Limited	N/A	F\$ 0.152 million
Fiji Electricity Authority	F\$0.2 million	F\$4.0 million
TOTAL	F\$ 41.13 million	F\$ 95.63

\*Damage costs from: NDMO, 2012. Consolidated Damage Assessment and Rehabilitation Requirements by Sector. and <http://fijilive.com/news/2012/05/march-floods-cost-govt-90m/42694.Fijilive>

Climate change and climate variability and the associated expected intensification and frequency of high rainfall/cyclone events and increased sea levels (reducing the ability of flood waters to drain from low lying areas) is a critical issue that greatly increases the need for an integrated approach. In the future, flood waters can be expected to stand for longer periods with flood levels much higher than at present. Consequently, progressive pressures are likely to cause the impacts of floods to become worse in the future for the Ba catchment area.

Failure to address the impact of flooding occurs because responsibilities for land and water management in the catchment are fragmented, technical assessment capacity has been unable to identify the impacts of development proposals, and assessment of development occurs on an individual project basis without reference to an integrated flood or catchment plan. Institutions usually have geographical and functional boundaries; often this is coped with by developing larger institutions with wider geographical and functional boundaries. This can create clumsy and inefficient organisations, out of touch with local situations. There is a need to cut across institutional boundaries and to integrate the work of such institutions with local community plans and actions. Under present circumstances, the “legs” of flood management in Ba (the communities) are cut off from the “head” (government technical, resource management, early warning and support services) with neither learning much from the other.

Previous work in Ba town on Community Flood Preparedness (SOPAC 2000<sup>17</sup>) has highlighted the need for better interagency coordination, mainly between the Fiji Meteorological Service and the Public Works Department (Hydrology) for the installation of automatic monitoring equipment, and between Fiji’s National Disaster Management Office (NDMO), Ba Police, and Ba Town Council for the establishment of best possible flood warning and emergency response measures at the local level. The Government of Fiji is currently committed to install flood warning systems within the Ba and Nadi River Basins. The EU funded HYCOS Project will upgrade the Rewa River Flood Forecasting and Warning System (in the SE part of Viti Levu) to reduce flood risks for communities on the Rewa floodplain.

Responses to flood and drought risks in the Pacific have been largely ineffective, being commonly reactive and tactical rather than proactive and strategic. In Fiji, there is no strategic flood management framework including a “Flood Early Warning System”, as an identified gap in its NDMO programme, to help direct the allocation of scarce government resources towards a risk reduction approach. Historically, dredging has been the common flood mitigation measure although there is little evidence that it has any significant impact on the destructiveness of flood

<sup>17</sup> Ibid., footnote 5

events (UNDP 1973, JICA 1998, SOPAC 2008e<sup>18</sup>). There is an absence of a strategic and integrated risk based approach coupled with an absence of a capacity to strategically assess its effectiveness. Effectively addressing both flood and drought risks, increasing due to climate change, will require such an integrated approach and strategic capacity.

***Preferred solutions for climate change adaptation (normative situation):***

Ideally, adaptation measures are implemented systematically throughout the Ba Catchment Area, treating in an integrated way the villages' river, coastal, agriculture and forestry land areas with a holistic watershed approach. This is necessary as the problems caused by worsening climate change induced risks and pressures requires solutions that modify current flood control, agricultural and forest use practices. In a normative situation, the planning and implementation of the adaptation measures should be in the context of a broader framework such as through catchment-level management, through integrated water resources management (IWRM). In the Ba Catchment Area, water is the medium through which climate change impacts are manifested. It is either through increased precipitation over a short period time causing floods, or too little precipitation over prolonged periods causing droughts. IPCC<sup>19</sup> in its earlier assessments has already recognized that *integrated water resources management (IWRM) increasingly is regarded as the most effective way to manage water resources in a changing environment. "IWRM is a process which promotes coordinated management and development of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"* (Global Water Partnership 2000). The climate change adaptation (CC-A) measures that are proposed are identified in the context of an overarching IWRM framework.

It is fully informed through climate information services tailored to flood and drought disaster risk management, agricultural and forestry applications and packaged in user-friendly ways for community practitioners who have the capacity to understand and use these. Communities also have the capacity to collaborate in monitoring impacts of climate change in coastal, riparian, and terrestrial ecosystems and related natural resources use, and can plan and implement effective community-based adaptation projects. The integration of climate risks and resilience into flood and drought protection is dealt with comprehensively through water use and agricultural practices, harnessing traditional knowledge. The implementation of community-based adaptation measures is supported by an enabling environment at the national policy level, with line departments and the Met Service having sufficient capacity to generate climate information, assess climate risks and support communities and businesses to translate these to sustainable climate resilient livelihood practices. Policies and related legal frameworks, instruments, corporate plans and budgets in the agriculture, water supply, and forestry sectors are strengthened to integrate climate risks and resilience, and supported through enhanced coordination with national entities linking effectively to village councils and community stakeholders. The experience and lessons learnt generated through adaptation activities in different sectors are systematically captured, analysed and disseminated using different communication channels and media suited to the technical capacity and needs of different user groups (e.g. government officials, community leaders, farmers, educators, and businesspeople, etc.). Past and ongoing climate change awareness and education programmes are updated and upgraded using the latest climate change science and adaptation lessons learnt, and their outreach is further expanded in Fiji urban and rural communities. Adaptation lessons learnt are

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<sup>18</sup> **JICA (1998):** The Study of Watershed Management and Flood Control for the Four Major Viti Levu Rivers in the Republic of Fiji Islands. Final Report; **UNDP (1973):** Preliminary Study of Flood Problems in the Rewa Delta; **SOPAC (2008):** SAMOA - Flood Management Action Plan 2007-2012, with specific reference to Vaisigano River.

<sup>19</sup> IPCC (2001): Climate Change 2001: Impacts, Adaptation, and Vulnerability. Cambridge University Press

widely shared across the Pacific region and amongst other SIDS, and within the broader international adaptation community.

***Current barriers to climate change adaptation, needs and gaps in adaptive capacity***

Limited awareness, lack of information and capacity to assess flood and drought-related climate and disaster risks and implement integrated climate change adaptation measures in the villages of the catchment area, related to commercial agriculture and subsistence food production, land use, and watershed management practices are the major barriers to adaptation.

In regard to the 2009 floods, common perceptions were that poor drainage and lack of river dredging caused the flooding. Consequently local communities strongly believed the government should tackle these issues in the area. However, localised studies dating back to 1973 (UNDP 1973, JICA 1998, SOPAC 2008<sup>20</sup>) have documented that river dredging has limited impact on flood control. Currently, there is limited awareness and knowledge of community-based and integrated adaptation approaches that in the long run can have a much more telling effect than river dredging alone. Such typology of responses is expected by the Government of Fiji to be effective in terms of enhancing communities' resilience to floods and their ability to spring back from increasingly periodic climate change induced events (i.e. resilience). There is a great deal that communities themselves can do to ameliorate flood damage and to protect against droughts, including more informed land use and farming practices to minimise run-off, river bank protection through appropriate planting projects, sea coast protection with mangroves and similar techniques, water storage, and generally heightened community and household preparedness for flood and drought conditions. In the case of flood, localised assessments conducted by CROP agencies such as SOPAC have indicated that early warning systems will be an instrumental part of empowering communities to minimise or avoid damages (SOPAC 2000<sup>21</sup>).

For community-based adaptation to be effective, public awareness of the linkages between climate change and non-climatic factors underlying floods needs to be improved. Integrated water management projects that communities can actively lead and participate in need to be identified and implemented. More generally, awareness of flood risks in Ba needs to be increased, given that around 50 per cent of the community in Ba were found to be unaware in 2009 that they lived in a flood risk area. Such awareness raising could include increased community meetings (especially during cyclone season), the distribution of posters and pamphlets, and the delivery of advertisements on local radio.

Fiji forms part of the Pacific Adaptation to Climate Change (PACC) regional project, financed through GEF and being implemented by UNDP in partnership with SPREP. The Fiji component is focusing on adaptation in agriculture and related flood-plain management in the Nausori area, close to the capital city of Suva. The project, currently in its initial stages of implementation, has been focusing so far largely on dredging of drainage canals and enhancing related infrastructure (like flood gates). A need for an integrated approach, with more active community participation and community-based measures, has been requested by village representatives following recent project activities.

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<sup>20</sup> **JICA (1998)**: The Study of Watershed Management and Flood Control for the Four Major Viti Levu Rivers in the Republic of Fiji Islands. Final Report; **UNDP (1973)**: Preliminary Study of Flood Problems in the Rewa Delta; **SOPAC (2008)**: SAMOA - Flood Management Action Plan 2007-2012, with specific reference to Vaisigano River.

<sup>21</sup> Ibid.

An IWRM regional project, funded through GEF-UNDP and implemented by SOPAC, is also executed in Fiji by the Land and Water Resources Department. This project focuses on the Nadi catchment area. The IWRM initiative aims to improve water resource and wastewater management and water use efficiency in order to balance overuse and conflicting uses of scarce freshwater resources. This is pursued through policy and legislative reform and implementation of applicable and effective Integrated Water Resource Management (IWRM) and Water Use Efficiency (WUE) plans'. Fiji's component focuses on an Environmental and Socio-Economic Protection through Integrated Flood Risk Management in the Nadi River Basin with the purpose of improving flood preparedness and integrating land and water management planning within the Nadi Basin using an integrated flood management approach. The IWRM initiative is closely related to the objective of the proposed AF project. The AF project will scale up the tested and successful measures, institutions, and infrastructures of community-based water resource management and catchment-wide Early Warning System of the IWRM project in the Nadi River in the Ba catchment with the added difference that this new initiative will fully integrate climate change considerations as they relate to both flood and drought risks.

A number of programmes and projects have aimed at implementing demonstrations at the village level to improve land use and agricultural production practices in Fiji, but without integrating information and responses to address the additional risks caused by climate change. An example of these projects was the Drawa Sustainable Land Management (SLM) demonstration project in Vanua Levu. Drawa is a forested area in the middle of Vanua Levu which straddles across the border of Macuata and Cakaudrove provinces. One of the main project goals was to capacity build the community so that they can make informed decision related to the sustainable use of their natural resources.

For example, a GEF financed SLM project addresses land management issues that will assist in mitigating land degradation problems and minimize the degradation or destruction of Fiji's land resources. As well as initiating practical on-farm sustainable land management technologies, strengthening and reinforcing institutional capability, capacity building of human resources, resource information technology development and national land use planning will be an integral part of this project. Nevertheless, climate change risks need to be incorporated into SLM activities, to ensure long-term sustainability is not jeopardized by changing climatic effects.

There are a number of community-based adaptation projects, like the Tikina-Wai project focusing on mangrove and reef conservation implemented through WWF and SGP, and a series of pilot projects addressing river bank protection and water supply issues in 6 villages, implemented through the University of South Pacific (e.g. in Buretu, Rewa delta). These projects provide very valuable experiences in participatory adaptation planning processes and ecosystem-based adaptation approaches, but remain at pilot levels, with need to systematically replicate in other vulnerable areas and communities, including the Ba area. USP is planning to extend these pilots, through AusAid funding, but the impacts of such projects is still limited unless scaled up to benefit communities in larger areas.

To date, JICA has completed its Technical Cooperation Project "The Strengthening Community-Based Disaster Risk Management Project in The Pacific Region" in 2013 which enhanced community-based disaster risk management capacities in pilot communities in the Ba Catchment. The project provided simplified early warning systems in communities comprising of automatic and simple rain gauges, water level gauges and hand sirens. Furthermore, 4 communities developed community-based disaster management plans and were trained for evacuation. Although project was successful in raising awareness of disaster risks and providing basic equipment and training in the pilot communities, gaps remain in establishing an

integrated, basin wide strategy and system for better disaster mitigation and adaptation through an integrated water catchment wide management approach. These are discussed further in succeeding sections (Component 1).

**Limited technical resources and human capacities to provide tailored information on climate change trends and associated flood and drought risks, as well as monitoring of climate impacts on natural resource base, in order to make informed decisions in water use and agriculture-related sectors**

The Fiji Meteorological Service has been progressively developing its capacity to provide early warning and climate information services, but is relatively under-staffed and lacks the adequate technical foundations for an effective system (e.g. complete data bases of information on where people live and the risks they face as well as likely to emerge, observation stations and other hard- and software needs), considering spatial diversity of the country in terms of climatic factors and vulnerabilities in different parts of its main islands and many smaller island groups. There is a need to provide further training to strengthen the skills of Meteorology Service Staff.

The Australian-funded Pacific Climate Science Support Programme (PCSSP-ICCAI) provides capacity building to Pacific Meteorological offices, including Fiji. However the current support programme provides information that is general climate projections, and needs to be further customized in order to be applied to manage risks in key sectors in the country.

The Fiji Meteorology Service regularly collects rainfall data. However, there is only one manual observation station at the mouth of the Ba River, close to town. Data is being recorded by Fiji Sugarcane Cooperation staff. There is a Government plan to supplement it with automated rain gauges for near real time data access. There is also a Government recognized need to install fully automated climate stations (including rain fall, temperature, radiation, soil temperature, air temperature, relative humidity), at selected locations of the catchment area, especially in agriculturally intensive zones, and at least in mid-section and uphill areas of the river source (3-5 stations). The expectation by local experts is that the information generated by these instruments is essential in providing drought and flood early warning and climate information for agricultural production.

The Fiji Meteorology Service has a functioning database, called CliCom, to capture the rainfall data. However, this pre-dates-Windows and is a DOS system established in 1995. This creates problems with more recent technologies for monitoring and forecasting ranges of possibilities. The database needs to be upgraded and reformed in a user-friendly way to capture real time data with networking functions. This is essential in order to process information for effective drought and flood early warning and climate information services.

The historical climate and meteorology data is not digitized (1930-1970). This record is a critical piece of information for calibration purposes including for climate forecasting, and risk mapping. There has been a project supporting re-arranging records, enhancing inventories, and identifying data storage options (Pacific Island Climate Data Rescue – funded by AusAid). However it does not provide resources for the digitization of data.

The Fiji Meteorology Service provides the following climate information services:

- Monthly climate summary report (with seasonal forecasts)
- Monthly rainfall outlook
- Bulletin for renewable energy sector (hydro) – provided to Fiji Electricity Authority
- Fiji Sugar Cane Rainfall Outlook, provided to Fiji Sugar Cane Corporation (this was funded through the Pacific Islands Prediction Project by AusAid in 2005)

In the agriculture sector climate information services are only available for sugarcane production, distributed by the Fiji Sugar Cane Corporation to farmers in only in printed format, given their limited Internet access. There is a need to extend climate information to other types of agricultural production and practitioners, based on assessment of user needs (different type of farmers, like vegetable, rice, fruit) and crop requirements.

As determined through Fiji's National Capacity Self-Assessment exercise, the Fiji Agriculture-Land Use and Water Management Section lacks dedicated and qualified agro-meteorologists to analyse data and provide tailored information to different types of agricultural users specifically aimed for preparation of sensitive areas against adverse effect of climate change. This function needs to be supported by a data-base developer and administrator.

There has been past initiatives to establish flood early warning system, such as the current system at the Navua River. However, there have been various problems and constraints occurring with the maintenance of the system, especially with the communication network and data management and storage, hindered by government restructuring processes. Flood and drought early warning information is handled by NDMO, based on forecasts advised by the Fiji Meteorology Service. Yet, there are capacity gaps in terms of accurate drought and flood predictions and communication of information to communities and users. An example of the absence of climate information to ensure adaptive capacity in flood protection was experienced in the severe flood of early 2009, as discussed above. The households and businesses in the affected area were almost wholly unprepared for this occurrence and hence suffered massive property losses, loss of business and wages, and substantial loss of life. Had relevant climate information been made available, it is hypothesized that the communities would have been better prepared and subsequently been able to carry out a more strategic adaptive response.

Flood early warning systems are currently being addressed through the IWRM project in the Nadi pilot catchment area, including the establishment of hydro-met stations, community coordination and capacity building. Climate change has been just recently been introduced as a smaller component in this initiative, and the process underpinning the implementation of this project is not fully informed by climate change related risks.

None of the above projects address drought early warning, and related monitoring of groundwater resources, information systems for farmers for preparedness and response measures. Currently, the Department of Hydrology does not have the capacity to monitor groundwater capacity, starting from measurement of water resources extracted through boreholes. A database and information system is absent. Hydrological information currently is handled in a fragmented way by a number of departments (Water, Land and Water Resources Management, Mineral Resources). There is a need to harmonize this information by establishing a central database and information management system to consolidate information from various data collection and research agencies on the existing hydrological systems, supply and use of national water resources, effects of climate change on water quantity and quality, sanitation and the ecosystem. In order to develop this centralized system and data sharing mechanisms, there is a need to undertake a thorough data gap analysis, and institutional capacity assessment.

Currently there is very limited information available on crop agronomical and water requirements, crop and forestry models that incorporate existing and potential climate change risks. There is a lack of information for extension officers and farmers on crop and forest species suitability according to soil properties, vegetation, topography and land use information overlaid with climate information. There is a need to establish a GIS-based system that brings together currently fragmented information, complete with information layers on climatic

conditions under different possible scenarios, in a coordinated fashion between the Fiji Meteorology Service and line departments, with related training activities. As determined through Fiji's National Capacity Self-Assessment exercise, the Agriculture-Land Use and Water Management Section lacks dedicated and qualified staff to conduct assessments of impact of climate change on drought as well as the ability to project impacts in order to inform farmers for drought prone areas such as the in the Western Division that includes the Ba catchment area.

Above all, the Ba catchment area can serve as a good demonstration ground for the development and implementation of the above-mentioned integrated information systems, integrating climate and disaster risks.

**Lack of capacity to integrate climate risk and resilience into watershed management, agriculture, and forestry sector related policies, strategies and instruments.**

The Government of Fiji has started to address climate change systematically in the national policy context recently, through reviving its National Climate Change Country Team (NCCCT) (endorsed by the Cabinet on 12<sup>th</sup> October, 2010), establishing a Climate Change Unit with corresponding budget allocated, within the Ministry of Foreign Affairs and International Cooperation (MOFA).

Through these recently established mechanisms, the National Climate Change Policy (NCCP) was endorsed by Cabinet and launched on March 1<sup>st</sup>, 2012. While climate change is recognized in some policy frameworks (like the Environment Management Act (EMA) - 2005, the Strategic Development Plan 2007-2011, Rural Land Use Policy for Fiji - 2006, and the Fiji Forest Policy Statement - 2007), there is a lack of national capacity to mainstream climate change into policy instruments and implement them effectively. Fiji needs support for implementation of climate change policies and strategies at the overall national and sectoral levels.

There is growing recognition on the need to integrate climate change into sectoral policies and related legal instruments. For example, Fiji's Initial National Communication outlined the need for a standard code for coastal management i.e. an integrated coastal management plan (ICMP), integrating all aspects of conservation and environmental protection with climate change risks. The ongoing UNDP-GEF PACC Project recently established a target to review the Drainage Act, currently largely outdated, in order to broaden its scope, better link with other legal frameworks (e.g. labour regulations, land use) and integrate climate change considerations. Similarly, there is recognition of the need to revise the National Water Resources and Sanitation Policy to integrate climate risks, and enact a National Water and Sanitation Code revising and compiling the laws governing ownership, utilization, and protection of water resources and climate change risks. Fiji's Town Planning Act (Cap 139) was designed with specific conditions for EIA approvals prior to passing of survey and master plans of project developments. This policy however lacked a lot of basis to begin implementing necessary climate change adaptation options, for example in the area of coastal engineering for protection of coastal zones. Town and Country planning acts are old and outdated with very little reference to conservation and sustainable development, now utilizes provisions of the Environmental Management Act on Environmental Impact Assessments.

To undertake effective climate change mainstreaming processes based on thorough risk assessments, there is a need to train policymakers and planners in the Land and Water Resources Management Division, Department of Environment, Department of Agriculture, Ministry of Foreign Affairs and International Cooperation, Department of Forestry, National Disaster Management Office, Water Authority, Fiji Meteorological Service. This AF financed

initiative can directly support mainstreaming processes, through its integrated approach linking policy level work and on-the-ground implementation in the Ba catchment cross various sectors.

A number of projects and policy frameworks currently address sustainable land use, watershed management and forestry in Fiji (e.g. SLM, IWRM) but without systematically incorporating climate change risks and adaptation measures. This is primarily the result of current capacity shortages in the relevant Departments to use climate information, risk assessment techniques and modify strategies and policy instruments accordingly. The absence of harmonized and integrated information management systems, approaches and related government capacity, as described in the section above, presents a serious impediment to climate risk analysis and consequent adaptation planning.

Moreover, the vision of the NDMO is to build the nation's resilience to disasters and build capacity of communities by accelerating implementation of disaster risk reduction and disaster management policies, planning and programmes to address current and emerging challenges.

Despite the current capacity and programs being implemented through the NDMO, key policy gaps relevant to this AF initiative include the lack of an emergency climate information system, drought support plans, flood early warning systems and emergency management volunteer services.

#### **Lack of systematically analysing and disseminating cross-sectoral adaptation experience in order to support integrated adaptation measures in communities**

While ongoing projects related to adaptation (like PACC) or sustainable natural resource use (like IWRM, SLM) do have knowledge management components, they mainly deal with single-sector applications, sustainable resource use, and flood management practices without addressing cross-sectoral experience related to climate change adaptation assessments and measures. These projects are in their initial stages of implementation, with lessons learnt, good practices and related knowledge products expected to be generated in future stages (e.g. through projects' communications and action plans). The early community-based adaptation experiences developed through UNDP/GEF and USP projects in Fiji has been analysed, and shared to some extent through integrating into USP courses, or through the regional MAP-CBA-SGP project (e.g. the Tikina Wai case study has been presented by WWF at the launch workshop of this regional programme). Despite these studies, there are rather limited impacts to influence community-level development work, agricultural and water use practices within Fiji and the broader Pacific region. There is a need to capture, analyse and disseminate climate change adaptation good practices and lessons learned in the setting of integrated village development processes in a more systematic way. There is also a need to make available the country's adaptation experience on the policy and implementation front more broadly in the Pacific and other SIDS regions.

## **Project / Programme Objectives:**

### ***Project Objectives***

The overall objective of the project is to reduce the exposure and increase adaptive capacity of communities living in the Ba catchment area to drought and flood-related climate and disaster risks.

The proposed project will contribute towards the two objectives of the Adaptation Fund Strategic Results Framework (AFSRF) (AFB/EFC.2/3 from 31 August 2010), through the following outputs:

*Output 1.1: Risk and vulnerability assessments conducted and updated at national level*

*Output 1.2: Strengthened capacities of national and regional centers and networks to rapidly respond to extreme weather events*

*Output 1.3: Targeted population groups covered by adequate risk reduction systems*

*Output 1.4: Targeted population groups participating in adaptation and risk reduction awareness activities*

*Output 2.2: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability*

*Output 2.4: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability*

### ***Project Strategy***

The proposed project will address the above-mentioned barriers and needs in a highly integrated way, i.e., through IWRM, combining concerted efforts at the community and household levels in the Ba watershed area to increase local resilience to flood and drought risks and hazards through implementation of on-the-ground adaptation measures. The framework for this project strategy includes an integrated and climate-sensitive flood and drought management plan, specifically developed for the Ba watershed area, through community consultation processes, involving national and local authorities and backed by technical expertise and assessments.

The outputs and activities to be implemented to attain the outcomes listed below are not sequential; they are inherently linked and supportive of each other. While the focus is on community-based adaptation measures, the early warning system and the institutional strengthening components are designed to provide the enabling environment that would allow the systematic development and implementation of on-the-ground measures within an integrated watershed development plan, supported by adequate instruments and user-tailored climate information services. The knowledge management component is designed to allow the capturing of good practices and lessons learnt both from the policy processes and community-based adaptation implementation, ensuring that the experience generated will support longer-term adaptation processes and future generation of professionals and practitioners, as part of the project sustainability strategy.

## **Project / Programme Components and Financing:**

<b>Project/Programme Components</b>	<b>Expected Concrete Outputs</b>	<b>Expected Outcomes</b>	<b>Amount (US\$)</b>
<b>1. Climate early warning and information systems</b>	<ul style="list-style-type: none"> <li>• Drought and flood management plan prepared and Early Warning Information System established</li> <li>• Enhanced capacity of responsible government agencies including FMS, WAF, NDMO and other national and provincial agencies in drought management</li> <li>• Ensured sustainability of flood and drought early warning system</li> </ul>	Reduced exposure to flood and drought related risks and hazards in the Ba catchment area	<b>574,500</b>
<b>2. Community-based adaptation to flood and drought related risks and hazards</b>	<ul style="list-style-type: none"> <li>• Integrated and climate-sensitive Ba Catchment Management Plan and supporting governance structure</li> <li>• Ba watershed rehabilitated and sustainably managed through community level actions</li> <li>• Integrated climate-resilient flood-preparedness and protection measures implemented at the community level</li> <li>• Climate-resilient agriculture promoted</li> <li>• Water supply capacity of communities enhanced under conditions of changing climate</li> </ul>	Increased adaptive capacity of communities in the Ba watershed to flood and drought related risks and hazards	<b>3,504,000</b>
<b>3. Institutional strengthening to support climate- and disaster-resilient policy frameworks</b>	<ul style="list-style-type: none"> <li>• Climate change and disaster risks and resilience integrated into sectoral policies and planning frameworks at the national and sub-national levels</li> <li>• Policy makers at the national, provincial and district offices, institutions and extension services trained to implement climate-sensitive policies and plans</li> </ul>	Strengthened institutional capacity to integrate climate change and disaster risks into sectoral policies and management practices	<b>368,000</b>
<b>4. Awareness raising and knowledge management</b>	<ul style="list-style-type: none"> <li>• Lessons learned and best practices generated are captured and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms.</li> <li>• Climate change awareness and education programmes developed and implemented for schools and technical centers employing various forms of media</li> </ul>	Strengthened awareness and ownership of adaptation and climate risk reduction processes at national and local levels	<b>334,500</b>
6. Project Execution cost			<b>499,000</b>
7. Total Project Cost			<b>5,280,000</b>
8. Project Cycle Management Fee charged by the Implementing Entity			<b>448,800<sup>22</sup></b>
<b>Amount of Financing Requested</b>			<b>5,728,800</b>

<sup>22</sup> On the request of the Government of Fiji, the project will be implemented by UNDP using the MIE modality. UNDP is able to provide the following implementation services through its country office, regional and headquarters networks: project identification, formulation, and appraisal; determination of execution modality and local capacity assessment of the national executing entity; briefing and de-briefing of project staff; oversight and monitoring of AF funds, including participation in project reviews; receipt, allocation and reporting to the AF Board of financial resources; thematic and technical capacity building and backstopping; support with knowledge transfer; policy advisory services; technical and quality assurance; and troubleshooting assistance to the national project staff.

## Projected Calendar:

<b>Milestones</b>	<b>Expected Dates</b>
Start of Project/Programme Implementation	October 2014
Mid-term Review (if planned)	September 2016
Project/Programme Closing	September 2018
Terminal Evaluation	3 <sup>rd</sup> quarter of 2018

## PART II: PROJECT / PROGRAMME JUSTIFICATION

- A. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

### Component 1: Climate early warning and information systems

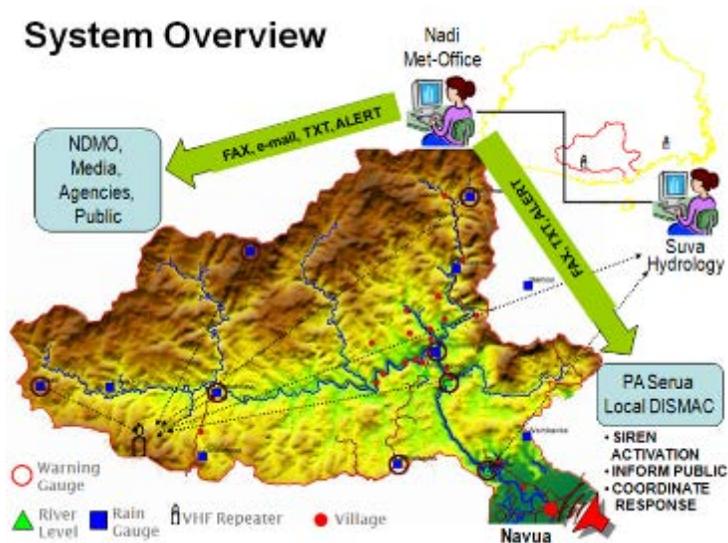
Through this component, the Government of Fiji through the Fiji Meteorological Services (FMS), Water Authority of Fiji (WAF), Department of Agriculture (DoA) and National Disaster Management Office (NDMO) endeavours to reduce exposure to climate-related risks, particularly to life and livelihoods and public and private economic assets. Roles and responsibilities of the aforementioned are tabulated below:

Organisation/ Department	Roles/Responsibilities
FMS	The FMS is a government department responsible for conducting climate monitoring and providing weather forecasts and tropical cyclone warnings. It's role is to supply Fiji's need for weather and climate data, archive and analyse these data and based on this, issue forecasts, warnings and other information required. The Hydrology Section was moved from WAF to FMS in October 2012. The Hydrology Division monitors water levels and these information can be utilized to advise NDMO in advance to issue a public warning of a rise in water level
WAF	Water Authority of Fiji is responsible for providing effective water and wastewater services in Fiji. The Hydrology Section under the WAF is responsible for deriving better hydrological information was moved from WAF to FMS in October 2012.
DoA	Through the Department's Extension offices and staffs that are based in the fields, DoA conduct pre- and post-disaster agriculture assessment and with relevant information; inform and/or disseminate information on best practices.
NDMO	The NDMO within the Ministry of Provincial Development is the section responsible for the day to day operations of disaster management. The office is charged with the responsibility to carry out the policies of the NDMC with regard to disaster preparedness, mitigation, prevention and actual emergency operations, relief and rehabilitation during disasters

The current institutional arrangements will be further strengthened through the AF project, e.g. in the event of floods, the FMS and WAF are responsible for hydrological services while for dry spells and droughts, FMS with DoA (FMS will take lead as this is a pilot drought monitoring station) advises NDMO on the current situation (meteorological drought status). NDMO in turns initiates a flood/drought steering committee meeting to report back on situations. Procedures applied in the existing Tropical Cyclone Warning System will be also adapted, where alerts and warning are issued through a coordinated way and special bulletins are issued for Public, Marine and Aviation services which is communicated to media outlets and the national Disaster Management Office, for response and activation of its arms of national and local Disaster Management Committees, as appropriate. The flood early warning systems currently piloted,

successfully tested, and going through further improvements at the Rewa River, Navua River and Nadi Basin (UNDP/UNEP/GEF/SOPAC IWRM project), will be applied and further enhanced in the Ba watershed area.

Figure 4: Overview of the flood EWS being piloted at the Navua river:



*Outcome 1: Reduced exposure to flood and drought related hazards and threats in the in the Ba catchment area*

The focus of this component will be on flood and drought early warning and information systems as there is an urgent need for FMS to obtain real-time data, to allow them to effectively carry out assessments and give out an early warning to the vulnerable communities. The early warning system will be developed in the context of a Flood Disaster Management Plan, the objectives of which include saving lives, minimizing damages and supporting early recovery. The still existing JICA supported EWS that was implemented from 2010-2013 has remaining challenges and gaps and significant work remains to be done in order to establish an integrated catchment wide flood EWS along the Ba Catchment. The project will build on the JICA initiative and address the gaps and challenges as described in succeeding paragraphs. There are no ongoing initiatives related to drought EWS.

***Output 1.1: Flood and Drought Management Plan prepared and Early Warning Information System established***

A flood and drought management plan will be developed to anticipate the occurrence of both flood drought and to minimize the impacts on agriculture and livelihoods and to secure water supply for domestic use. The activities will contribute to reduce the exposure and vulnerabilities of communities in the Ba catchment to flood and drought-related hazards, allowing effective preparedness and response measures, reducing hazard damages to assets and life, and supporting informed decision making for the development of an integrated flood and drought management plan, the design and implementation of the community-based flood protection, agriculture and forestry adaptation measures, proposed to be implemented under this project.

Activity 1.1.1: Prepare flood and drought management plans – A flood and drought management plan will be prepared with the early warning system as the key investment. In addition, with the existence of a national flood and drought response plan in place with NDMO, FMS will draw from experiences in the implementation of the response plan and also from divisional stakeholder consultation process to derive a robust flood and drought management plan for the Ba Catchment. Furthermore, the plans will incorporate the Community-based disaster management plans for pilot sites supported by JICA as well as adopt and enhance the Nadi Basin Flood Management Plan that have been developed by the IWRM project to suit the conditions in Ba.

Like any management plan, the drought management plan's main objective would be to save lives, minimize impacts of droughts on livelihood of the communities and also for early recovery.

This activity will heavily involve relevant stakeholder consultation, including women and youth as flood and drought will have impacts on their role in the household (e.g., fetching water) and in agriculture. The plan will recognize the special needs of women and children. In addition, community visits will need to take place in order to gauge past experiences of the Ba Catchment Community. This will facilitate in preparing a proactive flood and drought management plan. Moreover, resource preparation is just as important including data collection.

Activity 1.1.2: Design and establish fully-automated systems for flood and drought monitoring and early warning

In terms of drought, FMS recommended the establishment of two fully automated climate stations to ensure that the project has reliable drought data representative of the whole Ba catchment area that would provide sufficient basis for drought forecasting and management.

In terms of flooding, the project aims to upgrade, adjust, and build upon JICA's flood early warning interventions in the Ba Catchment, which was completed in December 2013. Through the Strengthening Community-Based Disaster Risk Management Project, JICA has installed the following equipments:

Location	Equipment & Intervention
Votua	Simple Warning Rain Gauge
Nawagarua	Simple Warning Water Level Gauge
Votutu	Hand Siren
Nasolo	Community-based disaster management plans
Ba Bridge	Automatic Water Level Gauge (with Solar, Data Logger)
Toge	Automatic Water Level Gauge (with Solar, Data Logger) Automatic Rain Gauge (with Solar, Data Logger)
Koro	Automatic Rain Gauge (with Solar, Data Logger)
Nalotawa	Automatic Rain Gauge (with Solar, Data Logger)

Currently, the community-based flood warning system in Ba supported through the JICA is not yet functioning due to the following challenges:

- System Integration Challenge: The equipment, and data gathering/transmission/storing system along the Ba River is a unique system that differs from equipment and systems installed in the other flood EWS in Rewa, Nadi, and Navua. The Rewa, Nadi and Navua systems are supported by NIWA, where data is transmitted through VHF radio or satellite to

FLOSYS and/or NEON where data can be accessed in both Nadi and Suva FMS offices. On the other hand, the system that is put in place in Ba through JICA support currently runs on equipment procured in Japan, which runs on a telecom (Vodafone) data transmission system where the data is stored and monitored in a separate server in Nadi FMS (neither FLOSYS nor NEON). The project will analyse and support the integration of , the existing Ba Catchment system will into the other flood early warning systems in Fiji.

- Coordination Challenge: Coordination between national government departments, donor agencies, and technical institutions needs to be strengthened in order to collectively and comprehensively discuss the integrated system design for flood and drought early warning system for the Ba Catchment. There is a strong need for NDMO (implementing partner for the JICA project), FMS (implementer of flood EWS in Nadi, Rewa and Navua), JICA, NIWA, SOPAC, UNDP and any other key stakeholders working on EWS in Ba to meet regularly to discuss ways of further coordination.

In order to overcome existing challenges, the AF project will align the existing Ba flood EWS with existing technology, systems and procedures adopted in other river basins that have been vulnerable to flooding. Specifically, Existing automated water level gauges at Ba Bridge and Toge, and automated river gauges in Toge, Koro, and Nalotawa will be upgraded and/or integrated to be compatible with the existing national flood EWS. In addition, based on the recommendation of FMS, additional 6 water level stations and 6 rain gauges will be installed in the following sites: Navala, Natutu, Nadrugu, Nanoko, Varaciwa and Balevuto. The set-up of these additional and/or upgraded stations will allow FMS access to real-time data and eventually allow dissemination of efficient hydrological information to NDMO and hence will decrease response time of issuance of flood warning to vulnerable communities. A map that illustrates the location of the proposed enhanced and/or additional EWS system is included in Annex 1.

Furthermore, the design of the Ba early warning and monitoring systems will be guided by an assessment of alternative early warning systems for droughts available globally. This will involve research referencing reports from stakeholders using different warning systems and also utilizing knowledge-sharing databases or wider stakeholder network to gauge feedbacks on any early warning systems that have been utilized. This project will incorporate the strengths, while improving the weaknesses of the Nadi EWS implemented and tested through the IWRM project, as well as the ongoing flood EWS efforts in Rewa and Navua Rivers.

This activity will involve staff from FMS and relevant government departments (NDMO, Agriculture, Hydrology, and Planning) to undertake assessments to identify 2 suitable sites for the installation of the agro-climatic stations as this will be the first automated agro-climate station to be installed in Fiji. The exact location of the 2 stations will be confirmed after the technical and environmental assessments. The survey will also take into account land tenure of chosen sites and also security measures to account for the safety of the equipment. On the other hand, locations of the set-up of water level systems and rain gauges have been confirmed by FMS based on their available data and data assessment reports.

For the agro-climatic system, the equipment proposed for the project is derived from that employed by NIWA (National Institute of Water and Atmospheric Research of New Zealand) within the extensive monitoring networks (approx. 1200 sites) that it operates in New Zealand and in several Pacific island countries, including Fiji. The Automated Weather Stations, or NIWA EWS, is capable of measuring and transmitting the following parameters: Wind speed & direction, Air Temperature, Relativity Humidity, Solar Radiation, Sunshine, Grass & Earth temperature, Rainfall, and Soil Moisture.

The NIWA-supported system collects data every 3 seconds from the weather stations and records the data on the Neon data logger every 10 minutes. . Data is usually reported hourly but 10 minute updates can be requested. Stations have been designed to minimise the need for site visits for maintenance and calibration checks. The FMS data capture systems use NIWA's FIOSYS client/server software for data retrieval and carrying out tasks such as processing alarms generated when data values fall outside a pre-programmed range at any of the remote monitoring stations<sup>23</sup>.

The FLOSYS telemetry management system is operated by the FMS at their Nadi Monitoring Centre and the Neon WEB-based communications server is located in New Zealand in NIWA's secure server farm (Unidata is a subsidiary organisation of NIWA). Both telemetry options are capable of hosting the required data collection and reporting for the project.

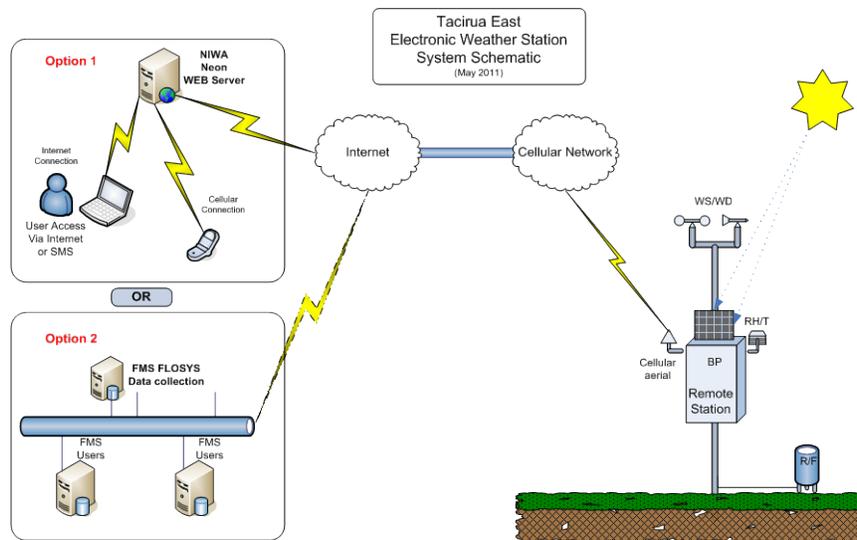
The project will not duplicate efforts, but rather build on the work of the Pacific HYCOS Project, which was implemented from 2007 to 2010 through the funding of the European Union and management of SOPAC. The Fiji, Meteorological Service (FMS) was involved to develop their water resource management system in the Navua and Rewa catchments. 5 automated water level and rain gauges were installed in the Rewa catchment, and 3 water level and rain gauges in the Navua Catchment. As the system installed operate on HFS radio, FMS is currently upgrading the system into a satellite-based system with its own financial resources and technical support from NIWA. The proposed system in Ba Catchment will build on the efforts of the HYCOS project through alignment with the current updates, and applying lessons learned from, the HYCOS project to the Ba Catchment.

A schematic of the operating concept for the station is shown below, including delivery to Neon web server or to FMS.

The proposed system includes Unidata's NRT (Neon Remote Terminal) metering module as the central data logger. The NRT unit provides data recording and remote communication to enable routine reporting to be established. All logger programmes can be remotely updated using the cellular communications.

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<sup>23</sup> <http://www.niwa.co.nz/publications/isu/instrument-systems-update-18/reinforcing-fiji%E2%80%99s-weather-monitoring>



**Figure 5: Concept schematic – Tacirua East EWS**

**Activity 1.1.3: Develop and implement mechanisms for dissemination of timely information to all stakeholders, including farmers, households and researchers:** - The timely dissemination of information to all stakeholders will involve everyone working together. The timeliness of this activity will involve close monitoring (by FMS) of data from the agro-climatic stations, interpretation of data, message construction and medium of communication.

Similar to the currently used information dissemination method for flood early warning system, the timely dissemination of information on droughts will also see through the same process. FMS and DoA (FMS Hydrology for flood), with their technical capacity, will closely monitor and interpret the data generated from the agro-climate stations. NDMO and FMS both will have the responsibility in disseminating early warning information to the public and hence both departments have institutional arrangements of disseminating information to the public. For general warning, information may be disseminated timely through radio, television, news bulletin, internet, notice boards and newspapers whilst specific (urgent) warnings could be disseminated in a quicker way through sirens, telephone, mobile phones, facsimile, computers, hailers, door-knocking etc. Successful examples of flood early warning communication have been tested for the Nadi basin, such as establishment of partnership with mobile companies to develop and disseminate three-levels of short warning messages in three languages (Fijian, Hindi and English), which will be improved and scaled to the Ba Catchment.

***Output 1.2: Enhanced capacity of responsible government agencies, including the FMS, WAF, NDMO, DoA and other national and provincial agencies in drought management***

In most sectors, in particular, the weather/climate data sector, despite significant improvements after the 2012 floods, there are still significant gaps in Fiji in regard to the technical capacity to review, analyze and report on weather/climate data. Capacity enhancement of the Fiji Metrological Service, NDMO and line Ministries involved at different levels will be undertaken in the fields of weather and climate data recording (observation capacity) and processing (database and information system management), analysis and communication processes.

**Activity 1.2.1: Support effective institutional arrangement for early warning systems and disaster management** – This activity will take into account and support existing institutional arrangement

for early warning system and disaster management. Close monitoring of climatic data will be done by relevant government departments such as FMS and WAF (water level) and DoA (drought data) with FMS. With any risk of any natural disaster, these data monitors will issue a caution/warning to FMS; who in turns further disseminate the information to NDMO for public distribution. The implementation of the drought management plan will also follow the same institutional arrangement.

The above institutional arrangement (also described in Activity 1.1.3) applicable at the national level will be assessed as it applies at the catchment level and recommendations will be made on strengthening institutional responsibilities. Activities 1.1.3 and 1.2.1 will be undertaken closely.

Activity 1.2.2: Assess and enhance technical capacity through applied training on the application of the flood and drought early warning system – In order to enable user groups to interpret climate information and derive effective early warnings, training and consultation activities, supported by technical experts, will be undertaken. Capacity assessments will be undertaken at the outset to identify training needs and priorities of all relevant government agencies, including FMS, WAF, DoA, NDMO, among others.

Capacity building and training activities will involve technical workshops on the establishment, maintenance and use of climate early warning system, including the interpretation and application of tailored climate information services, targeting meteorologist and climatologist staff at Meteorology Service, community members of the voluntary emergency services, as well as farmers.

To facilitate the application of climate information amongst agriculture sector users, the programme will support the development of climate-sensitive crop suitability and cultivation guidelines and manuals, with user-friendly information packages, customized to the climate and landscapes, and different crop varieties and forest types of the Ba watershed area.

The enhancement of observational and data collection capacity of the Fiji Metrological Service, will be conducted through installing rainwater gauges and automated climate stations (to measure rainfall, temperature, radiation, soil temperature, air temperature, relative humidity), at selected locations of the Ba catchment area, especially in agriculturally intensive zones, and at least in mid-section and uphill areas of the river source.

Data management and interpretation (modelling) capacities will be enhanced through upgrading the current CliCom database, in order to capture real time data with networking functions, from the enhanced climate stations and gauges, and prepare a user-friendly interface. A GIS-based agro-meteorological information system will be established as basis for climate information services in agriculture sector (overlying soil, crop, topography and land-use, with climate variables). The agro-metrological information will be extended to different types of crops, like vegetables, rice, fruits, beyond the current focus on sugarcane.

It will also support the development of enhanced climate and weather information products and services, tailored particularly for flood and drought preparedness and agriculture sector users (local government officials, farmers, communities, extension services). Trainings will be coordinated and actively engage other agencies and development partners working with the Fiji Government on Early Warning and disaster risk management, including but not limited to, SOPAC, SPC, NIWA and JICA.

Activity 1.2.3: Establish linkages with similar systems in other catchments in Fiji as well as other countries for technical exchanges – In this activity, FMS will set up and establish linkages with similar systems running in other countries. Knowledge-sharing and lessons learned in the efficiency and effectiveness of the system will be shared with other catchments in Fiji, particularly that of the Nadi River Catchment. Furthermore, knowledge and lessons sharing from similar countries through an established network of emails information portals etc. Technical exchanges will serve to build capacity of local staff.

### ***Output 1.3: Ensured sustainability of flood and drought early warning system***

Under this output, activities will ensure maintenance and sustainability of both the early warning system to guarantee production of reliable data to facilitate continued climate resilience of communities and their agriculture-dependent livelihoods. It is noted that the project will also cover for the flood EWS as there is currently minimal budget allocated for its maintenance. This output will, ensure continuing climate resilience of communities and their agriculture-dependent livelihoods to climate-induced floods and droughts.

Activity 1.3.1: Incorporate operating, repairs and maintenance expenses of the system in annual national and provincial budgets – The update and maintenance of the flood and drought early warning system will be ensured through institutional, communication and coordination arrangements involving the NDMO, national and local Disaster Management Committees (DISMAC), FMS, WAF and DoA (for droughts). The project will work with all these agencies to incorporate the costs of maintaining the flood and drought EWS into their respective yearly corporate plans and budgets.

Activity 1.3.2: Explore and establish public-private partnerships – This activity will allow NDMO and FMS to explore and establish available public and/or private partnerships. This will include, and not limited to; exploring to expand existing partnership with two of Fiji's great mobile network – Digicel and Vodafone – to facilitate wider distribution of early warnings about droughts and its extent to farmers through texts, in any case of drought that is to happen.

In addition, communication and coordination will be enhanced by organizing provincial, district and village level consultations, linked with awareness raising events on climate-related risks and hazards, involving provincial, district and village level authorities, representatives of other government departments, agriculture extension services, and village leaders.

## **Component 2: Community-based adaptation to flood- and drought-related risks and hazards**

### **Outcome 2: Increased adaptive capacity of communities in the Ba watershed to flood and drought related risks and hazards**

Usually, the vulnerabilities and risks faced by communities from climate-induced floods and drought depend on the following: location within the watershed; primary source of livelihood; available household and village-level coping mechanisms; knowledge about risks among others, as shown in the matrix below. The proposed CC adaptation measures described below takes into account the range of risks and hazards of villages across the watershed and implemented only to vulnerable communities. In addition, coping strategies are proposed to be formulated for the entire watershed (refer specifically to Output 2.1).

Community Location	Biophysical characteristics	Major economic activities
Upstream	Riverine forests with the sides of the valley very steep. The catchment is covered by tropical rainforest, although most of this is commercial forest (Pine and Mahogany)	Cash-crop farming (vegetables), employment at the Monasavu and Nadarivatu hydro dam
Midstream	Patches of riverine forest are interspersed with areas of pasture land, cultivated land, abandoned cultivation and secondary scrub	Sugar-cane farming, cash-crop farming (vegetables)
Downstream /coastal	Mostly mangrove vegetation and marshy land as all downstream communities are nearer to the river mouth, good road condition,	Fishing, handicrafts, cash-crop farming, employment at Rarawai sugar mill

**Output 2.1: Integrated and climate-sensitive Ba Catchment Management Plan and supporting governance structure**

The project area is not managed based on the watershed (or ecosystem) boundaries but on the existing geopolitical structure in the country. It is part of Ba province which is part of the Western Division together with three (3) other provinces and is headed by a Commissioner. Government services are organized around the entire division and delivered to the various provinces, districts, communities and villages. Integrated planning with regard to a climate-sensitive flood and drought management plan is important as this aligns resources within both; provincial and national priorities and in addition it also contains and reduces costs.

Activity 2.1.1: Establishment of a Ba Catchment Committee and comprehensive capacity building – The project will support the establishment of a Ba Catchment Committee (similar to the Nadi Catchment Committee in the UNDP/UNEP/SOPAC IWRM project supported by GEF), possibly with several sub-committees: Planning & Governance; Technical; Community Liaison and Land & Water Use. The Ba Catchment Committee will also coordinate the development and implementation of the flood and drought management plan as components of the overall catchment management plan, ensure effective links with district and village level authorities, and coordinate with national agencies. This institutional mechanism has been endorsed by Government and the project will follow a similar set up.

The Ba Catchment Committee will comprise of district (*tikina*) representatives. The roles and responsibilities of the Catchment Committee will be finalized through consultations and through decisions of the Committee itself after it is in place. The representation of women and the youth as separate sectoral representatives will be explored. In addition, adequate representation by qualified women of communities and government agencies will be tackled in the formation of the Committee.

Similar to the Nadi Catchment Committee, after its establishment, one of the key functions of the Ba Catchment Committee will be to serve as the Project Steering Committee. Furthermore, linkages and integration of the Ba Catchment Committee with the Nadi Catchment Committee will be further explored and proposed at the project inception as many of the committee members of the Nadi Catchment Committee may be similar to that of the Ba Catchment Committee at the national and subnational levels, as well as in order to foster further learning and synergies between the two catchments.

Activity 2.1.2: Biophysical and technical assessments and surveys considering alternative climate scenarios and mapping of hazards – Technical and scientific assessments and surveys considering alternative climate scenarios will aim at a comprehensive analysis and mapping of hazard impacts on land use, infrastructure, water resources and socio-economic assets. This is the scientific basis of the Ba Catchment Management Plan, the formulation of which is described in Activity 2.1.4. The surveys will include collection of demographic and socioeconomic data all of which will form part of the project baseline.

Activity 2.1.3: Systematic review of existing flood control, water management, land use and related plans and the application of national laws and policies – The Catchment Management Plan will be based on a systematic review of existing flood control, water management, land use and related plans (i.e. Ba river dredging master plan) and the application of national policies and laws in the Ba area, such as the Town and Country Act, Water and Sanitation Policy (water delivery systems, legal and financial measures and incentives, water allocation and use). The review will also cover the functions of current water supply systems and flood management structures (like community water storage facilities, reticulated systems, drainage canals, dams, reservoirs, dikes, levees, flood gates, and flood embankments). The review will enable policy makers and planners to ascertain vulnerabilities and implications under alternative climate scenarios.

Activity 2.1.4: Preparation of Ba Catchment Management Plan through consultative processes, implementation and subsequent review – The Plan will be formulated through a series of community consultations and participatory adaptation and disaster risk reduction planning, to identify a set of suitable options for the specific districts and villages under alternative climate scenarios (detailed cost-benefit analysis of adaptation options). It will integrate all existing sectoral plans into a catchment-level management plan thus providing coherence to the plethora of plans initiated by various government agencies at the local and national levels.

The main components of the plan will cover flood plain zoning, land use plan, water use and safety plan (pollution control, water distribution and rationing), preparedness and post flood and drought recovery processes, supported with adjusted regulations that recognize emerging climate change risks. Importantly, the plan will include a community-based monitoring system on land-use, water use, flood control measures, and conservation of related ecosystems (e.g. mangroves, forests), coupled with review and feedback mechanism to integrate experiences on an ongoing/periodic basis. The preparation of the management plan will build on the lessons learned from the Nadi catchment activities initiated through funding from the UNDP/GEF/SOPAC IWRM project.

The Ba Catchment Management Plan is envisioned to serve as the overall development and management document for the entire catchment in the long-term and in the context of a changing climate. It is not a pre-requisite for initiating any of the concrete adaptation measures that are proposed in this project as most of these have been identified as urgent needs in light of the recent flooding and drought events in the project area and from similar initiatives in other parts of Fiji and elsewhere. As mentioned, the Plan will consolidate all existing sectoral plans, most of which have not incorporated climate change. Implementation will start after its completion toward the end of the second year through resources that will be mobilized through the Ba Catchment Committee (BCC). It is expected that the AF support will be used to leverage financing for related activities and such will be reported in the annual report for the project.

Activity 2.1.5: Monitoring and Evaluation of the Ba Catchment Management Plan – A monitoring

and evaluation plan will be developed as part of the Ba Catchment Management Plan for assessing the progress towards desired conditions. Monitoring and evaluation of the Ba Catchment Management Plan will facilitate the tracking of results and progress made towards the Plan's objectives. It will use both traditional and governmental institutional arrangement for the actual monitoring and feedback to the Catchment Committee for action. The action will be for sharing of best practices and lessons learnt to other catchment communities. The results obtained from this activity will serve to guide the review and revision of the Catchment Management Plan that is part of Activity 2.1.4.

### ***Output 2.2 Ba watershed rehabilitated and sustainably managed through community level actions***

Climate-induced floods and droughts lead to the degradation of the natural environment and exacerbate the impacts of anthropogenic drivers on the same natural ecosystem (discussed further below). More intense precipitation and floods cause landslides and water stress brought about by droughts lead to deterioration of the watershed. Both climate-related and anthropogenic drivers act in a mutually re-enforcing manner on natural ecosystems. The deterioration of these ecosystems reduces the ability of the communities to cope with the impacts of climate change. To improve resilience, the project proposes reforestation and ecosystem rehabilitation as part of an ecosystem-based adaptation. A well-managed watershed will have better resilience to drought and floods that will also benefit the people and their livelihoods through the ecosystem services that these provide. These interventions are part of an integrated adaptation approach that is the cornerstone of the proposed project.

The main drivers<sup>24</sup> of deforestation in Fiji, as well as the Ba watershed area includes, but not limited to the following:

- *Unsustainable logging.* The current arrangements in Fiji enable landowners to obtain right-to-log licences from the government to harvest the trees themselves or sell the standing trees to companies for felling, extraction and processing. By law, the Native Land Trust Board (NLTB) and the Department of Forestry regulate all logging activities. However, logging usually occurs much earlier than the optimal cutting period considering the monetary needs of resource owners. Illegal logging occurs when payments are made directly with the landowners and not through the NLTB as these bypass government regulatory processes. Sustainable forest management as practised in Fiji has been doubtful in the absence of baseline data, lack of active management and verification. All these commercial-level logging contribute to accelerated deforestation. Household consumption of timber and non-timber forest products also contributes to deforestation. Trees are cut down for use as fuelwood or the production of charcoals for cooking and heating.
- *Forest conversion.* Forests (including mangrove forests) have been cleared for agriculture, construction of tourism facilities, settlements, public infrastructure, mining and other purposes. The biggest threat has been conversion for agriculture which requires larger land area to produce food for an increasing population and tourists. The government has, in the past, actively promoted the expansion of highly-subsidized agriculture that provided the impetus for agricultural expansion. With extensive agricultural technologies, more land is needed to increase production. The incentive

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<sup>24</sup> Report prepared by Deborah Sue, of Indufor for the UN Forum on Forests dated 2010 (<http://www.un.org/esa/forests/pdf/ahég/ahég1/Fiji.pdf>).

structure does appear to adequately promote increasing productivity in existing agricultural lands.

- *Forest fires.* Stressed forest ecosystems brought about by forest degradation from anthropogenic activities and from natural calamities such as from more intense cyclones due to climate change are more susceptible to forest fires. This is illustrated by the indiscriminate fires during the hot and dry season that followed cyclone Mick in 2009. The debris from the cyclone fuelled the fires. Forest fires are primarily climate-related as these are brought about by droughts.

The ecological restoration of the Ba watershed is vital to soil and water conservation in the entire watershed to minimize the impacts of increasingly intense and more frequent climate-induced floods and droughts. The approaches will address the above drivers to ensure that their climate adaptation impacts are sustained over time. The focus of the proposed activities under this output is based around establishment of community forest areas, forest belts and mangrove reforestation. These activities will allow for the re-establishment of forests for the purpose of having a healthy and sustainable watershed.

Activity 2.2.1: Establishment of community forests – All communities in the watershed will be supported by the project to establish community forests adjacent to settlements that will eventually provide sources of fuelwood, charcoal and other minor forest products. This is the primary objective of the community forests which will reduce degradation of the existing forest and of the planned forest belts (described in Activity 2.2.2) whose primary function is for watershed conservation and protection. The community forests are expected to provide co-benefits such as for recreation, biodiversity conservation, fruit production as well as soil and water conservation in the watershed that will moderate floods and droughts.

Technical assistance will be provided to determine species mix, identification of area within each village and total area to be established corresponding to the needs of the village population and the role of women and children in gathering fuelwood and their needs in recreation. Material inputs including seedlings, fertilizers and small implements will also be provided by the project. The communities will designate the land for the community forests and to provide labor for planting and nurturing of the trees. The project will work out appropriate agreements with the communities to keep the forests in perpetuity. The project will work with NGOs, the forestry department and the tikinas in undertaking this activity. Community consultations will be facilitated by the project.

Activity 2.2.2: Establishment of 'forest belts' in steep sloping lands to reduce erosion and moderate downstream water flows – Establishment of forest belts will be for those communities and/or villages closer to the embankment of the main Ba River and other tributary rivers. In addition the belts will extend to slopes for stabilization and erosion control. Based on the preliminary assessment of the Forestry Department, forest belts will be established in a total of 16 communities (10 upstream and 6 midstream communities). The different communities are tabled below against its relevant area to be planted as a forest belt as shown below.

Forest belts will involve contour planting at mid slopes of a belt of 10 rows at spacing of 6 x 6m (making the width of the belt at approximately 54m). This belt will function mainly to shade the water source and act as a bank stabilizer. Trees to be planted within the belt are large native tree species that grow fast and can quickly act to perform these ecological functions and also those that add fertility to the soils as nitrogen fixing species (e.g. *Accasia mangnium*, *calliandra* and *gliricidia*). These species are also good for bee-rearing and source of fodder for cattle and goats. In the gullies & river banks fruit tree species will be planted for e.g. Tahitian chestnut

(*Inocarpus fagifer*) (*Tahitian chestnut*), breadfruit (*Artocarpus altilis*), dragon plum (*Dracontomelon vitiensis*) etc. These species will also augment food requirements for the communities.

Based on the preliminary assessments of the forestry department, the area that would require immediate reforestation is estimated at 360 ha in the upstream and midstream communities as indicated in the table below. These are areas that will be critical in restoring the protective functions and conservation of soil and water in the entire watershed.

The current unit cost for planting forest belts as provided by the Forestry Department is FJ\$3600/ha<sup>25</sup> (equivalent to about US\$2,000/ha), which is based on a similar forest replanting programme at the Nadi catchment area supported through the UNDP/UNEP/SOPAC project. The total budget allocated for this activity is US\$625,000 (approximately FJ\$1.125 million), which translates to about FJ\$3,125 per ha for the target 360 hectares of forest belts. The estimated cost for this project is slightly lower than the average costs incurred in the UNDP-UNEP-GEF Nadi project which is about \$3,132 excluding nursery costs (as shown in the table below).

Breakdown of Costs for Forest Belts (based from data provided by DoF)

Activity	% of cost per ha	Remarks
Area/land identification, including identification of land ownership; marking of boundaries on the map and ground	7	
Awareness and training of all stakeholders particularly the communities on plantation establishment, management and protection; conservation agreements with communities	20	
Nursery establishment, including site selection, establishment, potting, sowing, transplanting, management	17	Listed here but cost is reflected in Activity 2.2.4
Plantation establishment including polings, weeding of planting lines, pitting, planting	27	
Plantation management, including weeding, blanking, monitoring of plant growth, replanting	19	
Forest protection including establishment of fire breaks, maintenance	10	
Total cost of all activities is FJ\$3,600/ha while total cost excluding nursery establishment is equivalent to:	FJ\$3,132 US\$1,734	

Target area for forest belts

Target Communities	Area of forest belt (ha) in target communities	Location
Marou, Buyabuya, Koro, Taunabe Bukuya, Tabuquto, Nadругu, Tabalei, Navala and	260	Upstream

<sup>25</sup> Current exchange rate is about FJ\$1.8 per US\$.

Nakoroboya		
Nalotawa, Nanoko, Toge, Balevuto, Nanuku and Navilawa	100	Midstream
Total	360	

For this activity, the government stakeholders (Forestry Department and the local governments) will take lead with full support from the project. Technical support will be provided in: a) identification of critical areas in the entire watershed; b) delineation of the location of these areas within the boundaries of each community, and c) determination of species mix for reforestation. As this activity will have catchment-wide impacts, the full cost of inputs will be provided by the project. In-kind support from the communities will be mobilized. The members of the targeted communities will facilitate the actual planting programme after demonstration by the Forestry personnel is carried out. This will contribute to community-ownership.

Extensive community consultations will be undertaken by the project in all activities to ensure community ownership. In addressing the deforestation drivers mentioned above, the project will ensure that community conservation agreements are reached between the communities (most likely represented by the head of community advisory council) and the governments in reforestation-related activities (Activities 2.2.1, 2.2.2 and 2.2.3) to ensure proper management of the community forests, forest belts and mangrove forests. During the consultations, the benefits from these activities will be emphasized – the protection of human life and economic assets, as well as ecosystem services in terms of food production, recreation and improved overall quality of life.

The forest belts will be reflected in the Ba Catchment Management Plan for protection and conservation to strengthen the community conservation agreements.

Activity 2.2.3: Mangrove reforestation to stabilize coastal areas and moderate coastal and inland flooding. The coastal zone is the confluence of impacts of flooding regardless of origin – inland or coastal. The impacts of cyclones are most severe in the coastal areas. To minimize the impacts of coastal flooding and from flashfloods originating inland, the project will stabilize the riverine areas and the coasts in the Ba catchment. Healthy mangrove forests are imperative for protecting coastal areas from storm surges and for protecting coastal ecosystems from excessive siltation. Healthy mangroves also provide nurseries for the young of many commercially important fish species and a habitat for other food fishes and invertebrates.

All 8 coastal communities – Nailaga, Natutu, Votua, Nawaqarua, Korovou, Togalevu, Natunuku and Vatutavui – will be covered in this activity. The area of mangroves was estimated using the National Forest Inventory Report (NFI) as of 2008, while the target area for reforestation/enhancement is based on the degraded mangrove forest as identified by NGOs working in these areas. These are areas that are critical in maintaining the protective functions of mangrove forests and also co-benefits in terms of ecosystem services such as for fisheries.

Total coastal area to be reforested will cover approximately 88 ha. This will ensure that the degraded and bare coastal areas in the target 8 coastal village will be fully reforested with mangroves and their protective functions restored. The total budget allocated for this activity is \$90,000 which brings the average cost to about \$1,023 per hectare. The breakdown of these costs is shown in the table below and follows the distribution from data provided by the IUCN-MESCAL project that is currently undertaking similar activities in other parts of Fiji. The

estimated cost of mangrove reforestation estimated in this project (\$1,023/ha) is comparable to the IUCN cost of \$1,402/ha.

Breakdown of Costs for Mangrove Reforestation (based from data provided by the IUCN-MESCAL project)

Activity	% of cost per ha	Remarks
Site selection and inspection	5	
Community engagement, including awareness raising and community conservation agreements	20	
Nursery establishment including propagule collection, initial set-up and nursery maintenance costs	25	Listed here but cost is reflected in Activity 2.2.4
Replanting, including hand gloves, planting bags, tape, etc.	15	
Other costs, including travel, meals, etc.	35	
Total cost of all activities is FJ\$2,500/ha while total cost excluding nursery establishment is equivalent to:	FJ\$1,875 US\$1,042	

Target area for mangrove reforestation

Target Communities	Area of mangrove reforestation (ha) in target communities	Location
Nailaga, Natutu, Votua, Nawaqarua, Korovou, Togalevu, Natunuku and Vatutavui	88	Downstream/ coastal
Total	88	

As in Activity 2.2.3, the project will facilitate the conduct of consultations in the coastal communities towards the community conservation agreements to ensure the sustainable viability of the mangrove forests and their protective functions and ecosystem services. Further, the areas reforested by the project and existing critical mangrove stands will be reflected in Ba Catchment Management Plan for protection and conservation to strengthen the community conservation agreements. **There will be no resettlement of people or relocation of their livelihoods through the coastal mangrove reforestation.**

Activity 2.2.4: Establishment of 4 centralized nurseries – Four communities have been earmarked to (two downstream and one midstream and one upstream) host centralized nurseries to contribute to the sustainability of the reforestation and/or replanting of conservation forests, forest belts and mangroves. The centralized nursery for mangroves will be at Nailaga and Votua; the centralized nursery at the midstream will be in Toge and the upstream nursery will be in Nadarivatu. The Nadarivatu nursery will see to the refurbishment of the existing nursery belonging to the Department of Forestry. These nurseries will supply the requirements for community forests, forest belts and river bank stabilization. These four communities are located strategically within the Ba watershed to serve the coastal and upstream/midstream villages, respectively.

The total budget allocated for the nurseries is \$406,500. It will serve the requirements of the forest belts (approximately \$210,000 for the 360 ha inclusive of replanting), mangrove reforestation (\$35,000 for the 88 ha inclusive of replanting), allocation for community forests (\$50,000) and the remainder (\$111,500) for the nursery structure, equipment and operating and

maintenance for the first 3 years.

The four centralized nurseries (rather than one nursery for each community) are more cost-efficient as the Ba catchment is relatively small with a network of dirt and asphalted roads making all communities accessible. The project will pay for the construction costs of the physical structure of the nurseries. The establishment of the nurseries will be initiated early so as to supply the seedling requirements of the project. The size and volume of seedlings will be in accordance with the pace of the reforestation activities to be determined during the inception phase of the project. It is expected that reforestation will commence during the latter part of the first year and will accelerate on the second and third years.

The Forestry Department which will be the lead agency for the activities in this output has committed to continue operations of the nurseries beyond the duration of the project. It will integrate the operations of the nurseries, including the support to communities in the management of conservation forests, forest belts and mangrove forests. Corresponding budgetary allocations for the continued operations of the nurseries will be integrated into the department's annual budget.

To ensure sense of community empowerment and gender input into the project, women (*soqosoqo vakamarama*) and/or youth groups (*soqosoqo ni i tabagone*) of the selected 2 villages and/or communities will take lead in ensuring the smooth operation, management and sustainability of the established nurseries.

***Output 2.3: Integrated climate-resilient flood-preparedness and protection measures implemented at the community level***

Activity 2.3.1: River bank stabilization through soft and hard measures – The activity will focus on the 14 riverine communities (Mid-stream and downstream) – Nanuku, Balevuto, Toge, Nasolo, Nawaqarua, Natutu, Navilawa, Nailaga, Votua, Sasa, Koroqqa, Natunuku, Matawalu and Nadругu.

Protection measures will include a combination of soft and hard solutions tailored to each site. Soft measures will involve the replanting and conservation of riverine areas with fruit species including *Mangifera indica* and *Inocarpus fagifer*. These fruit species have deeper root structure that will help in river bank stabilization. At the same time address food security issues in surrounding communities.

Hard measures will target the enhancement of current flood management structures (like drainage canals, dams, reservoirs, dikes, levees, flood gates, and flood embankments) to adjust to changing rainfall patterns. Riverside protection structures will be installed where suitable (principally using locally available materials, combination of soft and hard structures, e.g. gabion from tree-trunks, stones), and complemented with vegetation planting along riverbanks.

Activity 2.3.2: Enhancement of existing flood management structures in the entire catchment – The activity will support climate proofing of planned flood management structures such as the constructed retention weirs along the tributaries of upper and middle catchment areas, flood mitigation can be achieved. The weirs will retard the flood flow during torrential rains at the upper catchment side of the structure. The weirs will also store water during the dry season that will be used agriculture and domestic purposes. Through the integrated land-use planning approach, enhanced forestry and agroforestry practices will be introduced on customary lands, closely linked with flood protection and water management outputs. Similar approaches to flood management through construction and/or enhancement of weirs, coupled with soft approaches

such as integrated land-use planning and enhanced forestry and agroforestry practices have been tested and proven in the Nadi catchment area.

Two sites have been identified for this activity by the Land and Water Resource Management (LWRM) Section of the DoA based on technical feasibility studies that were undertaken in the past years. The 1<sup>st</sup> site is Qalinabulu weir located 2km from Balevuto village and 2<sup>nd</sup> site is Nadrou weir which is located 1km from Nasolo village and both are tributaries to the Ba River. The project will finance the additional costs in climate-proofing the weirs in terms of changes in design and incremental construction costs. EIA clearance has already been secured by LWRM for the two structures.

The proposed interventions to enhance existing flood management structures were based on a thorough analysis of the underlying causes of floods along the Ba Catchment. In response to concerns raised during the community consultations, the sufficiency of the design and placement of existing culverts as well as how existing and future flood management structures may need to take into consideration the change in water flow due to the recently commissioned Nadarivatu dam. Moreover, all hard measures will be coupled with other soft measures mentioned earlier and also training and awareness raising on appropriate maintenance, monitoring, and use.

Together with the EWS and other flood preparedness and protection measures, the flood management structures supported and enhanced through this project are expected to comprehensively build community-based flood (and drought) resilience. Ongoing cost-benefit analysis of Flood Mitigation in Ba Catchment, Fiji, based on damage costs of 2012 January and March flood (estimated return period of 4 years), estimates that the expected annual damage per household from flood in the Ba Catchment today is an average of F\$81 and expected to rise up to F\$165 with climate change<sup>26</sup>.

The proposed flood management measures will be small-scale and an enhancement of existing government initiative led by LWRM. LWRM is working on installing small-scale weirs (with retention capacities ranging from 60,000 to 140,000 m<sup>3</sup>, with 2 to 5 meter height and 20 to 30 meter width depending on river widths) in flood and drought-prone river catchments in Fiji. Currently, these weirs have been installed in the Nadi catchment, however, they have not been able to install them in the Ba catchment due to resource constraints.

The flood management structures supported through this project in the Ba Catchment alone may not be able to alleviate intense flash floods in the short term. However, combined with longer-term ecosystem-based approaches, the integrated flood mitigation measures supported through the AF will have significant economic and social benefits not only in terms of lives saved but also for reduction in damage to capital and businesses, to the 10,981 population of the rural villages along the Ba Catchment, as well as the 14,596 urban population in Ba Town (based on 2007 census).

Activity 2.3.3: Construction of village level emergency flood evacuation centers through cost-sharing arrangements – The increasing intensity of floods characterized by sudden rise in the water levels due to climate change often catch villagers unprepared for immediate evacuation. In certain instances, these resulted in mortalities while in other cases, injuries. During the consultations, villagers in flood-prone and isolated areas have expressed the hazards they face

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<sup>26</sup> Daigneault, Adam. March 2014. “Cost-benefit analysis of Flood Mitigation in Ba Catchment, Fiji” (Ongoing work.). Landcare Research NZ.

from flashfloods. In such areas, the move to higher grounds due to floods is made more difficult due to geographic isolation. In this activity, the construction of village level emergency flood evacuation centers through cost-sharing agreements will be carried out in about 10 flood prone communities, including the worst-hit villages of Nawaqarua, Votua, Natutu. The adaptation project will support the communities to construct new or complete/improve emergency evacuation centers. These are clearly additional activities brought about by the accumulation of floodwaters in very short periods due to intense precipitation primarily from climate-induced cyclones.

In many communities, school buildings currently serve as an evacuation centre in times of flood and hurricanes and will be also explored to be climate-proofed to serve better as evacuation centres wherever appropriate. It is recognized though that most schools are located primarily for access considerations hence some communities have considered other more appropriate elevated and accessible locations. Schools, particularly district-owned schools, are interested in opening their facilities as evacuation centres, although in some cases, evacuees overstay in the schools long-after the disaster event, thus posing challenges for the schools to recover and resume operations quickly. However, if and when schools are identified as a target facility to be upgraded as an evacuation centre through this project, approaches and mechanisms to prevent and minimize these potential challenges will be discussed and established.

Cost-sharing will be in the form of labor to be provided by the communities and indigenous building materials available within the community such as soil that is needed to raise elevation, sand and gravel to the extent that the community is near the source and other minor construction materials. The project will provide materials and supplies that have to be purchased such as cement, bricks, lumber, galvanized iron for roof, small implements, among others. It is estimated by the communities that the in-kind contribution could reach up to 40% of the total cost. Communities will provide their own food during the construction period. This activity will involve the entire community, including women and the youth. The total allocation for this activity is about \$300,000 which will provide an average of \$30,000 per community. Upon completion of the facility, these will be turned over to the community. If needed, the project will facilitate community arrangements for the maintenance of the evacuation centers.

#### ***Output 2.4: Climate-resilient agriculture promoted***

A set of activities under this output will address the complete cycle of food production, including experimentation on more drought and flood-tolerant crop planting materials in key agriculture sectors and the introduction of enhanced farming and crop cultivation techniques and modeling of the impacts of climate change in the agriculture sector. With respect to sugar cane farming which is the most important primary agricultural sector in the country, the activities will provide the foundation towards a more climate-resilient industry, which is a long-term goal. The project will work with the industry itself – the Sugar Research Institute (SRI), the individual farmers and the farmer associations – all of whom have provided inputs during project design and have committed to fully participate in the activities during project duration and beyond.

Activity 2.4.1: Development of climate-resilient (flood-tolerant and drought-tolerant) crop varieties and subsequent farmer field trials – This activity will involve the development and introduction of climate-resilient crop varieties and in addition to this, related farming techniques will strengthen knowledge of cultivating traditional crop varieties, and support the diversification of crop types and related food products. Climate resilient crop production techniques by farmers will be supported through enhanced and sector-tailored Climate Early Warning System, addressed under Output 1.1. Local capacities will be enhanced through systematic training and

technical assistance on these measures.

Resilience of crop production will be pursued through identifying and introducing climate change resilient crop varieties and suitable crop cultivation techniques. To ensure the continuous supply of climate-resilient plant species to farmers, a research station for germplasms plots (currently there are 8 in the country, but none in Ba), and associated community nurseries will be established in the Ba area, with appropriate distribution systems. The climate-resilient varieties can be sourced from the Center of Pacific Crops and Trees (Ce-PACT) managed by SPC in Suva.

Training and awareness activities will target farmers, local officers, as well as the strengthening of extension services in order to provide ongoing technical advice on suitable crops and cultivation techniques. Women and youth who are involved in subsistence and commercial agriculture will be involved in the field trials.

Activity 2.4.2: Simulation of climate impacts on sugar cane farming using APSIM (Agricultural Productivity Simulator). APSIM is a computer software that analyzes climate data and produces high-quality information and products tailored for agricultural applications and quantifies the relationships between climate, crop, soil and water resources. They are used as tools to guide crop adaptation work. APSIM is a computer-based modeling framework that has been developed to simulate biophysical processes in farming systems, in particular where there is interest in the economic and ecological outcomes of management practice in the face of climatic risks. Compared to other simulators, APSIM produces robust results; has been used in a broad range of applications, including support for on-farm decision making, farming systems design for production or resource management objectives, assessment of the value of seasonal climate forecasting, analysis of supply chain issues in agribusiness activities, development of waste management guidelines, risk assessment for government policy making and as a guide to research and education activity<sup>27</sup>. It allows users to improve understanding of the impact of climate, soil types and management on crop production. In this activity, using the APISM as a tool, climate impacts on sugar cane farming will be simulated.

Under this activity with the allocated budget available, Sugar Research Institute will procure the APSIM simulator and also secure annual licensing to see to the efficient and effective simulation exercises.

Activity 2.4.3: Adoption of integrated soil and water conservation farming techniques (e.g., contour farming and planting vetiver grass) - Enhanced land-use measures will involve the introduction of soil and water conservation techniques (e.g. mixed cropping, mulching, contour planting, etc.) to counteract changing rainfall regimes and associated effects, such as drought or erosion. The simplest and cheapest way to control soil erosion is by encouraging growers to plant vetiver grass interspersed with their crops. A strong grower education/training programme will be launched under this activity to educate and encourage growers to adopt soil and water conservation farming techniques.

The SRI will take lead in this activity, from the laboratory (tests) to the field (actual planting of the vetiver grass). Selected vetiver grass varieties will be tested (for tolerance to water-logging) and planted in two replicates, one in a low lying area and the other in an elevated area. Varieties planted on elevated plots are to serve as controls for comparison. Certain quantitative

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<sup>27</sup> Keating, B.A, et al; 2003, An overview of APISM, a model designed for farming systems simulation; European Journal of Agronomy 18 (2003) 267-288

data and agronomic characteristics will be recorded (data such as: number of green leaves for both the control and the treatment every month during the course of study; the number of tillers produced in the clumps during each month is also to be recorded; number of millable stalks formed; production of negatively geotropic roots to be recorded whenever met with; the healthy appearance of the clones is to be judged by visual observation on the growth and lushness of foliage; the natural incidence of pests and diseases; time and percentage of flowering; the low lying plot is to be irrigated from time to time after six months of planting to maintain water level up to 30-50cm till harvest; the varieties displaying green leaves till harvest will be selected as tolerant to water-logging). After a year of trials, selected variety and four standards will be planted in replicated trials at two locations. Upon maturity the varieties are will be sampled and the biochemical data such as Brix, % pocs, % fibre, pol and purity recorded. Trial weighing will be done at harvest to determine the cane yield. Superior variety will be selected based on %pocs, %fibre, cane and sugar yield.



*Construction of river bank protection structures using local materials, and planting of vetiver grass for bank stabilization (Buretu, Fiji – USP CBA project)*

**Activity 2.4.4: Improvement of in-farm drainage systems in demonstration sugar cane farms –**

Poor drainage has a direct effect on cane production and water logging enhances N<sub>2</sub>O emissions that reduce nitrogen fertiliser efficiency. Farm drainage is increasingly becoming more important due to the impacts of increased frequency of intense precipitation in growing sugar cane. The N<sub>2</sub>O emissions also have adverse effects on global climatic conditions. Thus there is an urgent need to improve drainage conditions to improve can yields by increasing nitrogen fertiliser efficiency and reduce emissions that encouraged global warming.

The project will support limited activities to improve design and implementation of in-farm drainage systems in the context of climate change. Drainage systems in about 6 sample farms in Mota, Rarawai and Koronubu will be re-designed and implemented as a pilot for more replication in other farms. SRI will be a key partner in this activity with replication through SCGC Fiji.

***Output 2.5: Water supply capacity of communities enhanced under conditions of changing climate***

Activities under this output will address main sources and components of water supply, including enhancement of surface water management, rainwater catchment/harvesting and storage, groundwater management (including quantity, quality control, management of wells), as well existing reticulated systems. Communities in the catchment area utilize water from the

main Ba River and other tributary rivers for collection of water for drinking, other domestic and also agricultural purposes. With limited knowledge on general sanitation, the activities will improve the communities' water supply capacity.

Activity 2.5.1: Diversification and enhancement of water supply for domestic use by harvesting rainwater, enhancing efficiency of current water systems, and storing stream flows and groundwater – In this activity, all communities (villages and settlements) in the project area will diversify and enhance communal water supply for domestic use by improving harvesting rainwater and storing stream flows and groundwater. Pumps and water tanks will be procured under this activity to facilitate water harvesting and storage, which will augment potable water supply in times of drought. Furthermore, wherever appropriate, water efficiency of existing systems will be enhanced so that unnecessary water loss through leaking pipes and taps can be minimized. This activity addresses the concerns of women and children who are generally responsible in fetching water for the entire household, particularly in determining the appropriate site for these facilities.

Activity 2.5.2: Promotion of and increasing awareness for water saving and related practices – In this activity, all communities water supply management actions will be supported by demand management through a community awareness programme on water saving practices, and application of water-related regulations and incentives (such as the Water and Sanitation Code, water allocation schemes, conflict resolution processes). This will also compliment the Community Capacity Building (CCB) programme with the Commissioner Western office on water management during crisis. The CCB programme empowers the community members and also enhances their resilience.

### ***Component 3: Institutional strengthening to support climate- and disaster-resilient policy frameworks***

*Outcome 3: Strengthened institutional capacity to integrate climate change and disaster risks into sectoral policies and management practices*

Institutions are defined broadly to include the entire governance structure – policies, programmes, government bureaucracy and communities. The project proposes to go beyond policy integration (Output 3.1) by strengthening the capacity of relevant stakeholders to ensure that climate-sensitive policies are implemented. Stakeholders refer to government and non-government sectors and more importantly, the communities. The government and the communities recognize the role of information and strengthened capacity towards empowerment to deal more effectively to the impacts of climate change.

#### ***Output 3.1: Climate change and disaster risks and resilience integrated into sectoral policies and planning frameworks at the national and sub-national levels***

Activities under this output will serve to review and reform as necessary, relevant sectoral policies and strategies including those in agriculture, biodiversity/environment, marine and fisheries, forestry, water resources, land management and/or disaster management as these relate to climate change. Assessments of these sectoral policies will be undertaken in the context of the national climate change adaptation strategy (NCCAS) that is currently being developed. Upon approval of NCCAS, the specific areas for policy reform or strengthening will be mapped for each of the sectoral policies. Specific activities towards this end are outlined below. Note that while the focus is on national policies, the implementation of the policy reform

agenda will draw from the experiences in the site-based activities in the Ba catchment. Subsequently, local policies will be reviewed and updated accordingly. The feedback mechanisms will be bottom up and top down.

Activity 3.1.1: Assessment of national and sub-national sectoral policies and institutions with respect to climate change provisions – Under this activity, any relevant sectoral policies, legal and planning frameworks, corporate and management plans at the different levels will be reviewed and assessed through analysis of existing frameworks and related institutional capacities, consultative processes and systematic training of policy makers and planners. This review will look closely at the linkages between the project activities and these frameworks. The review will increase understanding of the role, responsibilities and functions of different institutions and agencies responsible for climate change. Further, it will help secure a better understanding of the governance structure at both the national and sub-national levels as well as the institutional linkages between policy and practice. Finally, it will map the role of local government in service delivery and implementation of climate change programmes.

Activity 3.1.2: Advocacy for the national climate change policy and its localization (at the provincial level) – This activity will allow for further advocacy for the newly launched National Climate Change Policy (2012). Advocacy and its focus at the provincial level will be primary objective of this activity. The localization processes will further develop linkages from the local to national level. This process will build understanding of relevant stakeholders which will enable the exchange of information and help translate the policy work into the local context and the local interventions into policy reform and development.

Activity 3.1.3 Development and implementation of a policy and institutional reform agenda proceeding from Activity 3.1.1 - – This activity will provide a means to implement the recommendation from Activity 3.1.1. It will be practical and community-oriented so that community members are empowered to participate in the reform process. It will also target provincial and national level stakeholders as well to complete the vertical integration of the agenda.

***Output 3.2: Policy makers at the national, provincial and district offices, institutions and extension services trained to implement climate-sensitive policies and plans.***

This output aims at the systematic capacity building of government officials at the different levels, supporting top-down, bottom-up and cross-sectoral linkages, in order to enable effective development and implementation of climate-sensitive policy frameworks in the long term. Information and communication/advocacy activities will be conducted through the preparation of regular policy briefs to inform higher level policy makers on the CC and DRM mainstreaming and related adaptation processes. The project will support inter-ministerial and cross-sectoral coordination and dialogue through the implementation process, via the NCCCT, and the province and district-level representatives of the participating agencies.

Activity 3.2.1: Development of a training manual on integrating climate change adaptation and disaster risk management into community development – This activity will involve the development of training manual on climate change adaptation and disaster risk management. This manual will be used for training policy makers, village chiefs and relevant stakeholders who are influential in decision-making at national, provincial, district and village level meetings. The objective of the trainings will be to make these influential stakeholders aware of their role in the larger policy and institutional framework and their roles and responsibilities for effective vertical

and horizontal integration of the climate change issue. It will further explore how climate change is different from other development agendas; whereas, at the same time, it needs to be mainstreamed throughout development policy and planning. The manual will start with climate change basics and move into the policy and institutional landscape (drawing from Output 3.1) and further linking community intervention to national priorities.

**Activity 3.2.2: Conduct training of national, provincial and district staff in various agencies and sectors** – This activity will see to the training of policy makers at national, provincial and district staff in various agencies and sectors to build their capacity and enhance their existing knowledge. In addition to training of policy makers, village chiefs too will be trained in integrating Climate Change adaptation (CC-A) and disaster management into community development.

Training activities will involve the organization of workshops and seminars on climate and disaster risk assessments, policy and planning processes and adaptation techniques for key agencies involved (Land and Water Resources Management Division, Department of Environment, Department of Agriculture, Department of Forestry, National Disaster Management Office, Water Authority, Fiji Meteorological Service, Ministry of Foreign Affairs and International Cooperation). The conduct of the capacity building activities will be in close collaboration with the NCCCT which has the overall coordinating mandate for climate change work in the entire country. NCCCT is also the implementing mechanism for this project. For local government trainings, these will be coordinated at appropriate levels (West Commission, Ba province and the tikinas).

### ***Output 3.3 Empowerment of local communities to improve resilience to climate change impacts***

Local communities are not fully empowered because of lack of knowledge and technical capacity in the area of climate change and its impacts. Under this output, capacity building and training will improve local communities' resilience to climate change impacts. It will be important for communities to clearly understand the climate change issue in the context of their local development. Capacity building and training will be conducted to improve local communities' resilience to climate change impacts through both modern and traditional methodologies. It will be important to understand any traditional mechanisms that may be in the process of being lost while at the same time, supporting innovative thinking on adaptation responses.

**Activity 3.3.1: Training on climate change adaptation relating to production sectors, including forestry, water, agriculture (crops and livestock), among others.** – This activity will cover training on climate change adaptation relevant to production sectors. Production sectors will include many of the sectors that local communities rely on for daily survival – whether commercially or for subsistence. Workshops, field trips, cross-site fertilization visits and trainings will be conducted under this activity to enhance their resilience to climate change adaptation relevant to the production sector. Women and children will participate in these trainings.

The trainings will disseminate the results from the activities in Output 2.4 on the promotion of climate-resilient agriculture. The key partners include SRI, Ce-PACT and government agencies, primarily the Department of Agriculture. The importance of this training underscores the primarily agriculture-based economy of the entire Ba watershed. All the villages in the catchment are engaged in agriculture as a source of livelihood and food and the technologies developed from this project and from other related initiatives should be transferred to the communities to increase resilience in the agriculture sector.

Activity 3.3.2: Training on emergency response to climate change related disasters – Under this activity, local communities will be trained on emergency response to climate change related disasters. As extreme hydro-meteorological events affect economic and social well-being of communities, this training will be used to enhance current practices and be better prepared for these extreme events. These trainings will include workshops, drills and evacuation exercises that are deemed relevant under climate change disasters.

In addition to this, Commissioner West office also has a Community Capacity Building (CCB) Programme in place. The programme involves empowerment of community in different thematic areas including pre-disaster awareness, training and drilling exercises. This activity will also build on the existing CCB programme to compliment Government's plan, by increasing the number of CCB to be held in each *tikinas* along the Ba Catchment that are vulnerable to flooding. Proper mental preparation of community members through the CCB programme will certainly assist them in responding well to any climate-related disaster.

This was seen in the previous flood, where 1 village out of 4 surrounding villages responded well throughout the emergency period in terms of better rationing of water and food supply. This was the only village where majority attended the CCB training held within the *tikina*.

Overall, these activities will empower the community and will lead to an overall increase in their resilience.

#### **Component 4: Awareness raising and knowledge management**

#### **Outcome 4: Strengthened awareness and ownership of adaptation and climate risk reduction processed at national and local levels**

#### ***Output 4.1: Lessons learned and best practices generated are captured and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms***

Activities under this output aim at capturing, analyzing and disseminating programme experiences at the national and sub-national levels in a systematic way, from early stages of the programme, from the assessment, adaptation planning, implementation, monitoring phases, as well the throughout the policy mainstreaming processes. A range of knowledge products will be developed, tailored to different user groups and disseminated through specific channels and media, including educational institutions, and supported by a project communication action plan for broader awareness-raising purposes. It is expected that integrated knowledge management activities will significantly contribute to the replicability and sustainability of the project results, reaching out to broad layers of society and different generations. Furthermore, this component will build upon the lessons learned and best practices generated through the IWRM efforts in Nadi Catchment as well as through the experience community-based flood management efforts initiated by JICA in 6 village communities along the Ba Catchment area.

Activity 4.1.1 Formulate a project Communication Strategy to guide the project through its entire duration – This activity will aim at developing and disseminating a range of knowledge products, such as experience notes and case studies, photo stories, short videos, posters and brochures (including in local languages) on lessons learned and best practices generated by communities in the main fields of activities and community-level adaptation processes and measures. The

knowledge products will be designed to cover the community-based participatory consultation and planning processes, the planning and implementation of flood and drought protection measures, climate-resilient agriculture and forestry management practices, as well as measures to enhance water supply capacity of communities under conditions of changing climate.

Activity 4.1.2 Establish and support Fiji's Climate Change Adaptation (CCA) Community of Practice for sharing of project experience at national and provincial levels - A project communication plan will be established in to disseminate information and knowledge products on a regular basis using range of modern and conventional media at national and local levels. The sharing of project experience will be supported through the holding of national and provincial climate change and disaster risk management forums, presentations at regional forums and meetings, and the organization of exchange site visits between participating communities for “look-and-learn”, within Ba catchment area, and also between other communities of other related projects (E.g. Nadi basin communities participating in IWRM, communities in the Nausori area participating in PACC project).

Activity 4.1.3 Establish and support a Fiji CCA Solutions Exchange, a national web-based platform and linked with regional and global platforms, such as the Adaptation Learning Mechanism (ALM) – This activity will involve web-based mechanisms and will be promoted through establishing a national web-based platform managed by the Ministry of Foreign Affairs and International Cooperation, linked with regional and global platforms, such as the SPREP CC portal, or the Adaptation Learning Mechanism (ALM). The web-based platform would also include updates on the latest project's news such as conservation site stories, profiles and traditional/best practices. Reports, Guides, videos and online tools to help improve catchment conservation work will also be accessible.

Activity 4.1.4 Use the knowledge management process capturing field experience for upstream policy advice to support policy making and institutional strengthening processes - The knowledge management process capturing field experience will be also used to inform higher level policy making processes to support policy making and institutional strengthening processes. This will also involve the establishment of a Network consisting largely of stakeholders such as Community members, landowning groups, traditional leaders, elected decision-makers, conservation NGO's, University scientists and researchers and representatives from various relevant government Ministries or Departments. Within this network advice can be formulated and agreed upon to strengthen related policy at various levels, and strategies developed to strengthen related institutional frameworks.

***Output 4.2: Climate change awareness and education programmes developed and implemented for schools and technical centers employing various forms of media***

Under this output, the integration of experience drawn from adaptation measures into training materials, school programmes, community awareness programmes will be supported. The project will build upon the existing working relationship with schools to raise awareness on integrated water resource management through the IWRM Project, where innovative and creative initiatives, such as the establishment of environmental libraries will be modelled, enhanced, and scaled.

Activity 4.2.1: Support the integration of experience drawn from adaptation measures into training materials, school programmes and community awareness programmes – In this activity, support will be provided for the integration of experience drawn from adaptation measures from

the project into training materials, school programmes and also community awareness programmes. Most of these will be done in close collaboration with the Ministry of Education and other NGO's such as Live & Learn International Organisation (Fiji) which already has similar programmes of awareness for other environmental conservation initiatives in place.

Activity 4.2.2: Develop school materials to support education activities related to climate change, coupled with training of teachers and educators on climate change issues - For this activity, school materials will be developed to support education activities related to climate change, coupled with training of teachers and educators on climate change issues. This will also be done in close collaboration with other NGO's such as Live & Learn and the Ministry of Education, so that duplication of training objectives is avoided.

Activity 4.2.3: Establish collaborations with USP, FNU, and/or University of Fiji to integrate project experience into curricular and research activities – This activity will involve collaborations to be established with the University of South-Pacific (USP), Fiji National University (FNU), and/or University of Fiji to integrate project experience into curricular and research activities. Currently there is a lot of marine conservation research by students in marine conservation work in Fiji. This project will facilitate students carrying out research on various aspects of catchment/watershed management such as documentation of indigenous/traditional ecological knowledge (values and beliefs, practices, skills and knowledge). Research findings and best practices will be disseminated through various activities outlined in this Component 4.

Activity 4.2.4: Develop various print, broadcast and audiovisual materials to convey various messages to audiences/stakeholders of the project – In this activity various prints (newspaper articles, brochures, posters, etc.), broadcast and video materials will be developed and messages conveyed to audience/stakeholders. This will include general information about the project, the integrated approach at the catchment level, the benefits from the community-based adaptation measures and the lessons learned from the project that might be useful in other parts of Fiji Islands. This will utilize mass channels of communications. The target audiences are those that are not directly involved in or benefitting from the project, which are the general population residing inside and outside Ba Catchment.

- B.** Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

#### *Socioeconomic and environmental benefits*

As it is detailed in the project context section, severe flood and drought related events have caused significant damage to properties, community assets and loss of human lives in the past, and the frequency and severity of these hazards appear to be increasing. The 2009 flood in the Ba area alone caused losses of over F\$86 million (US\$43m), most of it household properties. Government estimated a total damage of F\$45 million (approximately US\$22.5 million) across the five districts (Ba, Lautoka, Nadi, Nadroga, and Tavua) impacted by the January 2012 floods. The short interval of disastrous climate-induced flooding is a cause for concern. By implementing integrated flood and drought risk reduction and adaptation measures, this project is expected to provide important livelihood benefits, through protecting vital livelihood assets of

communities in the relatively densely populated area of the Ba watershed (over 18,000 people). The flood and drought protection measures will rehabilitate the entire watershed to improve ecosystem services and enhance agriculture production and water supply, avoiding or moderating major disruptions due to climate-related hazards. Through enhancing food and water security, nutrition and related health conditions are expected to improve as well. Linkages will be created with water management that is used for both household and agricultural production purposes, as well as community based forest protection in upland areas to regulate and ensure sustainable supply of water resources. By reducing climate risks to the long-term sustainability of natural resources use, this project will contribute to maintaining life and livelihoods in the project area.

Given that the project will rehabilitate the entire catchment through integrated watershed approach, district and village-level adaptation plans, communities will be intimately involved and will benefit from awareness raising and training activities, through participatory consultation and empowerment processes engaging community governing and social institutions, such as village councils, church, youth, or women's groups. The communication and awareness raising activities will engage local and national media, and will also target the primary and secondary schools in the catchment area, reaching out to different generations and economic strata of the country.

The policy changes introduced in sectoral plans and capacity building components of the project will be designed in a way to create an enabling environment that will secure the long-term sustainability of the project. The national capacity in the provision of climate information services, technical capacity of line departments and their extension/advisory services will be enhanced to provide support to communities in their on-the-ground adaptation measures in the long run. Linkages with other policy processes and related initiatives and projects will ensure an effective maintenance and replication of the adaptation techniques introduced to support livelihood activities of villagers.

The project is expected to deliver the following environmental benefits, among others: enhanced soil fertility, improved slope, river bank, and flood zone stability, reduction of pest/disease risks to crops and humans, and conservation of forest areas (rehabilitation of degraded areas, enhanced coverage of native species) and mangrove areas.

Considering the importance of silvi-agriculture in Fiji and in the Ba area, it is expected that the project will provide significant socio-economic and environmental benefits through demonstrating climate-resilient management techniques: Fiji has a total land area of 18,270 square kilometres, out of which 97200 hectares is silvi-agriculture with the rate of establishment at 9200 ha/year which is primarily for industrial uses. Of this 97,200 hectares of silvi-agricultural land, 43.2% is mahogany, 5% is other broadleaved trees, 44.5% is *Pinus spp* and 7% is unspecified. The Ba valley alone has land area of 103 square kilometres of silvi-agriculture which is dominated by Caribbean pine. The project will build on good practices in other Pacific Island Countries, such as lessons from Eua in Tonga, where silvi-agriculture is often practiced to provide shelter belts to crops from strong gusty winds and flash flooding, maximizing crop yields and minimizing destructive inundation which often results in erosion. This has the potential of it being replicated in Ba for the benefits of the local population.

One key area in Ba catchment that has seen a huge influx is vegetable production. Toge produces large volumes of annual and perennial vegetable for the domestic and export markets. Unfortunately Toge is located in the flood plains of the Ba River and farmers in this area suffer huge losses from agriculture during times of natural disasters, for e.g. the January 2009 flood

and now the flooding and wind damage caused by Cyclone Mick. Therefore it is expected that the project will have significant impacts in enhancing resilience of this area.

Ba is also one of the biggest producers of sugarcane. Equally important to Ba's economy are root crops, rice and fruits. Root crops are dominantly cassava but *dalo* and pockets of yam plantation can also be spotted along river banks.

The Ba River is most typical of water courses on volcanic Pacific Islands in the sense that it is used for domestic water supply by villages located along the banks of its main channel and tributaries. The river is also utilised by the Fiji Public Works Department as the source of urban water supply in Ba town situated on the river delta. Periods of drought and associated minimum flow in the Ba River therefore adversely affect a large population living within this river basin. It is expected that the project will benefit local population through improving water supply under current and anticipated climatic conditions.

As it is recognized in the concept, past flood control measures have been focusing on dredging as stop-gap solution, consequently this proposed project aims at undertaking more integrated approaches that combines both soft approaches, such as tree planting and establishment of catchment management plans, with hard interventions, such as climate-proofing weirs and enhancement of flood management structures. This approach is also justified considering the potential environmental impacts of dredging and dams, including<sup>28</sup>:

- Materials: dredging disintegrates the soil and depending on the dredging method some of the soil spills back into the surrounding water which can contaminate it and high soil acidity content can be harmful.
- Turbidity: The fine suspended matter dispersed in the water travels outside the dredging area and as a consequence reduces penetration of sunlight into the water, triggers algal bloom and eventually disrupts the living condition of flora and fauna that thrives at the dredging site and vicinity.
- Disposals: In Fiji, Pipelines are commonly used to transport dredged material from the dredging area to the disposal site which has high energy consumption and generates a lot of air pollution.

Negative impacts of dredging will be counteracted: In Fiji, for any dredging activity, adaptive measures such as planting of vetiver grass and riverbank protection similar to seawalls, using materials such as coconut palms. These adaptive measures have been widely used in Fiji and will be replicated by the project.

Dams whether used as a flood control measure impact ecosystems by altering the natural cycle of flow, transforming the biological and physical characteristics of river channels and floodplains, and fragmenting the continuity of rivers. Therefore, the proposed project will support climate-proofing weirs, which LWRM has already installed in the Nadi Catchment and has also completed an initial EIA for installation in the Ba Catchment.

The focus of mangrove replanting and conservation will provide protection against high risk coastal flooding, which occurs when heavy rains trigger inland river swells during high tide. Mangrove plays a critical role during this scenario especially when huge hard hit waves are

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<sup>28</sup> United Nations, 1995, *Proceedings- Regional Seminar on Environmental Aspects of Dredging Activities in Asia and the Pacific Region*, New York.

18 Vaniqui, M. R. 2009. *Expert Group Meeting on Innovative Strategies Towards Flood Resilient Cities in Asia-Pacific- Good Practices in Fiji Flood Management*, Bangkok, Thailand.

harnessed by mangrove roots which slow the rate of coastal erosion and in land inundation. However, Agrawala et.al pointed that it depends a lot on the rate of sedimentation and sea-level rise<sup>29</sup>.

In summary, the expected main benefits of the project are increased resilience to the impacts climate change-induced extreme events such as drought and floods (including reduction of disease and mortality rates associated with such events), asset protection (both natural and man-made), enhanced food and livelihood security, and social benefits (enhanced awareness of climate change, empowered communities and public institutions through the participatory planning and implementation process, including the involvement of women and youth), and nutrition benefits (quality and consistency of food supply).

The approach to the proposed project is at the catchment level but the focus is on the rural communities and excludes the town proper of Ba which is classified urban. All rural communities and residents are expected to benefit from the project with spill over benefits to the urban town centre. The number and nature of interventions in each community are based on vulnerability and the specific communities are already indicated for each intervention. For watershed rehabilitation through forest belts, only the midstream and upstream communities are covered. For mangrove reforestation, only the coastal villages will be covered. All communities, however, will benefit from enhanced communal water storage. The number of beneficiaries by occupational group (farmers, fishers, etc) will be determined during the inception phase as part of baseline data gathering. As indicated in the census of 2007, there has been significant movement particularly of farmers (of Indian descent) over the years due to various reasons.

### **C. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.**

The proposed interventions in this project have been outlined in close collaboration with national entities of Fiji, involving members of the Climate Change Country Team, coordinated by the Ministry of Foreign Affairs and International Cooperation, and based on key national and sectoral policies, project documents and technical studies done by government agencies and regional technical agencies, such as SOPAC and USP. Initial considerations were given to a number of alternative responses during the concept development stage, based on past and ongoing projects and initiatives in land use, water resource management, flood and drought management, agriculture, and forestry practices. Discussions of the consideration of alternatives (where applicable) in support of cost-efficiency and cost-effectiveness are included in the description of activities.

For the identification of the proposed interventions under this project, methodologies used and experiences generated have been especially considered from the IWRM and PACC projects currently ongoing, and the recently implemented community-based adaptation projects by WWF-SGP and USP. The project builds on the ongoing JICA project on flood EWS and resources are therefore allocated more efficiently to other aspects of EWS, i.e., droughts and their integration into the work of government agencies. This project will build on these experiences and related existing delivery mechanisms and institutional structures, further

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<sup>29</sup> Agrawala, S. et.al. 2003, *Development and Climate Change in Fiji: Focus on Coastal Mangroves*. Organisation for Economic Cooperation and Development.

strengthen and adjust them to reduce current and projected climate risks in a more cost efficient and effective manner.

The approach that is undertaken in this project is holistic and in the context of integrated watershed management. This is fully described in the subsection on “Preferred solutions for climate change adaptation in earlier sections. The alternative approach is sectoral which means identifying the most vulnerable sectors in the entire Ba Catchment area to flood and drought and increase their resilience. A sectoral approach will primarily focus on infrastructure to control floods and reduce the impacts of drought by storing water that may be made available in times of scarcity. This approach would primarily be done through construction of weirs in the entire watershed in which case the available funds will be insufficient. Moreover, this will not address the root causes of low resilience among the people and sectors in the entire watershed. It will not generate the necessary information as basis for an integrated approach and for early warning to allow the residents to move to higher grounds or to adjust cropping seasons in anticipation of droughts.

It is well-proven that efficient climate early warning systems combined with preparedness and integrated adaptation measures, are much more effective to tackle hazards, than reactive response measures. The climate early warning and information system to be implemented in the Ba area under this project will build on experiences gained elsewhere in the country, harnessing and further strengthening expertise and capacities of the FMS, WAF and NDMO. Floodplain management activities have been largely focusing on dredging and maintenance of canals, but the recent (2009 and 2012) flood events proved that current measures are largely ineffective. It can be argued that a more integrated approach combining land use planning, watershed management including upland forest areas can be more effective to reduce the severe natural and human asset losses.

Where applicable, alternatives to the specific activities in Component 2 have been considered in the context of cost effectiveness. Where the design of the facilities is part of project implementation, alternative technologies and specifications will be assessed carefully. This is the case for the drought early warning system (1.1.2), emergency flood evacuation centers (2.3.3), farm drainage systems (2.4.4) and water supply facilities (2.5.1), among others. The proposed watershed and ecosystem rehabilitation activities through community forests (2.2.1), forest belts (2.2.2), mangrove reforestation (2.2.3) and centralized nurseries (2.2.4) already incorporate best practices from government and similar organizations undertaking the comparative activities in Fiji.

The project will build on experiences drawn from a number of related initiatives to employ tested and cost-effective methodologies and approaches, including:

- Pacific IWRM Project: Integrated Flood Risk Management in the Nadi River Basin (UNDP-GEF): The project will apply the lessons learned from this demonstration activity in the Nadi River Basin in Fiji in terms of Output 2.1 and all activities under it, and with the forest belts that are currently being implemented at a limited scale for the Nadi Basin. The IWRM project lists the following broad recommendations: Install independent chairs of catchment committees; put in place community based coordinating mechanisms/committees with linkages to executive government; ensure regional and national development planning; operate local pilot and demonstration activities to build momentum and better inform planning; minimize use of external consultants (go local); ensure watershed catchment committees have working groups to deal with a range of technical and political issues; ensure involvement of Community Based and Civil Society Organizations; and ensure emphasis of use of grant funds as catalysts only while focusing on securing central and provincial government contributions.

- Pacific Adaptation to Climate Change (UNDP-SCCF): There are thematic overlaps with this project as both covers water resources management, food production and the coastal zone, although these are undertaken in different sites. No lessons learned has been reported for the Fiji as the demonstration activity started fairly recently. Coordination will be undertaken closely as these are both implemented by UNDP.
- Ba River and Dredging Master Plan: The project can ensure that check dams are implemented in a very environmental friendly manner without causing any drastic ecological changes. Since dams and dredging are band-aid solutions to addressing the flooding problem in Ba, the project will work on identifying natural long term solution that can replace the temporary ones, e.g. replanting of vetiver grass, coconut palms, conserving riparian vegetation, mangrove rehabilitation etc.
- Pacific Islands Prediction Programme: Through the development of flood inundation maps, information can be shared with farmers on suitable farming areas to minimize risks from flooding.
- Mangrove Ecosystems for Climate Change Adaptation and Livelihoods Project (IUCN): The project will employ the mangrove reforestation technologies that MESCAL has put in place in Fiji and in other countries. The estimated costs of mangrove reforestation (2.2.3) are based on the MESCAL costs in Fiji. The approach that is being implemented by MESCAL – the ‘top-down’ and ‘bottom-up’ co-management governance design could also be useful for the project for the mangrove reforestation and in forest belt (2.2.2) activities.
- The SPC Centre for Pacific Crops and Trees (CePACT) has a “climate-ready collection” that comprises varieties of popular crops such as taro, yams and bananas that are drought-proof, salt-tolerant, high temperature-resistant, and have a high degree of tolerance to water-logged areas. The provision of such species is demand driven and readily available for countries. The project will build on traditional crop production techniques, and will further enhance them through the introduction of climate-resilient crop varieties and related farming techniques.
- Fiji’s Department of Land Use & Planning runs programmes on model farms, i.e. sustainable farming methods using best practices from traditional knowledge. Lessons learned from demonstration will be replicated in the Ba Catchment area. This will be pursued through involving the Department’s technical experts working on the model farms in the proposed AF-funded project, exchanging documentation on methods and organizing site visits for farmers and community representatives in the Ba area to these model farms.
- JICA-funded project as flood EWS complements Component 1 of the project and the close coordination of these two initiatives will be pursued. As indicated, the flood early warning system will rely on the JICA project but the project will support measures to ensure sustainability of the system.

During the project preparatory meetings with national stakeholders and regional organizations in-depth discussions were held on the scope and focus of the proposal, in order to formulate it through a cross-sectoral, integrated approach, involving a range of government institutions, in order to carry out adaptation actions in a comprehensive way in the Ba watershed area. The Ba catchment area was selected considering multiple criteria, including proven and well-documented vulnerabilities of the area, its national importance considering relatively high

density of population and economic importance, existing information and institutional structures that can ensure an effective project delivery, its representativeness in terms of development and climate change adaptation needs across the nation, and the suitability to demonstrate a wide range of adaptation measures cross agriculture, water, forestry, drought and flood risk management fields, that can be replicated in other areas of Fiji, and more broadly in the Pacific. Cost-effectiveness of the project considering government coordination has been pursued through harnessing and further strengthening existing inter-ministerial and cross-sectoral coordination mechanisms, such as the NCCCT and the National Environment Council (NEC) in the overall design of the project. The NCCCT will serve for overall project quality assurance and coordination purposes. These mechanisms will be further strengthened through the policy processes and related training delivered to policy and decision makers, as well as through effectively informing policy processes from on-the-ground implementation activities through the knowledge management and communication activities outlined.

The linkages between the policy and adaptation implementation processes will also support coordination between national, district and community level authorities. Linkages will be created with steering committees and technical working groups of related projects (like IWRM, PACC), exploring the possibility to establish joint or combined project coordination mechanisms, to avoid duplication and have best use of available expertise. The alternative of using existing government and project coordination mechanisms is to set up new and parallel ones, which is obviously a less effective approach, not taking advantage of existing communication and coordination channels and requiring additional resources for communications, holding of meetings and other coordination purposes. This approach also runs the risk of further draining the limited availability of qualified staff, fragmenting government processes, creating duplication and obstacles for integrated implementation of related projects and programmes.

At the operational level, cost effectiveness of the programme concept is reflected through the following characteristics:

- Throughout the project, AF resources will be aligned with the financing and delivery of project Outputs that have competitive procurement components to ensure best value for money. In this regard, the project will apply best practices identified by other, ongoing climate change adaptation projects in the country region (e.g. IWRM, PACC, SGP-CBA, USP-CBA).
- This project will utilize existing government structures and processes for implementation, such at the national, provincial, district and village levels. By building on existing government and institutional structures, the programme will also harness in-kind support and contributions from offices at the national, provincial, district and local levels (office space, staff time, communications, etc.)
- The programme, once designed, will be closely built on existing baseline programmes, especially considering the IWRM and PACC projects, similarly addressing flood-related issues.
- The bulk of programme financing will be directed to community-level activities and connect directly to local opportunities for the procurement of goods and services.

Considering the above, the concept is deemed to be in line with basic cost-effectiveness criteria. During the project formulation phase, cost-effectiveness of the proposed project outcomes and indicative outputs will be further addressed and outlined in the final project document that is submitted for Board approval. Alternative means of removing key barriers outlined in this

concept will be discussed including why the proposed approach is deemed to be more cost-effective.

Cost effectiveness is further analysed below for the two substantive components:

Component 1: Reduced exposure to flood and drought related hazards in the Ba Catchment area. Floods and droughts are likely to occur with more frequency and intensity due to climate change. The purpose of this component is to minimize fatalities from floods and damage to crops and water supply through timely provision of information.

Beneficiaries: This component is expected to benefit the entire population of Ba Catchment area (10,981) and the Ba town (14,596) for a total population protected of 25,577 as of 2007 census. Based on the Census of Agriculture in 2009 for the entire Ba Province (inclusive of Ba Catchment and Ba town), the total number of farmers is placed at 10,243, of which 3,332 are engaged in crop farming only, 499 are in livestock farming and 6,412 are engaged in both crop and livestock farming.

The total cost of this component is \$574,500. This amount is miniscule to the expected benefit of avoiding fatalities particularly in times of floods. The floods in 2009 left 11 dead and displaced 6,000 people. About 600 tourists were stranded. The 2012 flooding resulted in 8 fatalities and a total of 4,561 evacuees. It is expected that with a real-time warning system, fatalities will be minimized, if not totally avoided.

The drought EWS, on the other hand will benefit: a) farmers in terms of being able to plan their cropping cycles to avoid water scarcity; b) households in terms of moderating water use in terms of drought. The project site is predominantly agricultural with the major crop being sugar cane (9,025 ha), yaqona or kava (554 ha), pineapple (163 ha), coconut (162 ha) and various annual crops and vegetables. The total annual sugar cane production is over 376,300 tons and at a price of F\$ 50, total value is almost F\$ 19 million. The value of all other crops is estimated at over F\$ 4 million. Increasing resilience of the agriculture sector to minimize deviations from average annual production is the benefit to be derived from the project. The project will thus protect livelihoods, food sources and overall welfare of the people of Ba.

Alternative: The alternative is doing nothing, in which case the cost is zero. However, it is expected that fatalities will recur in times of floods. The benefits from avoided mortalities are enormous compared to the costs. Without the drought EWS, farmers and households will be unable to plan accordingly resulting in crop losses, primarily sugar cane and disruptions in daily lives to fetch water for household consumption.

Component 2: Community-based adaptation to flood- and drought-related risks and hazards. The interventions in this component are expected to increase resilience of communities to floods and drought and to minimize their impacts.

Beneficiaries: The interventions cover the entire watershed and the primary beneficiaries are those residing in the catchment area estimated at about 10,981 in 2007. The residents of the Ba town will also benefit from the upstream reforestation interventions and downstream flood management interventions. In the 2009 floods, damages from the flood was estimated at over F\$86 million, about 36% of which is from the business sector while the rest from households. Damages are in the form of lost possessions and business, structural damage and destroyed assets. Agricultural damage in Ba was estimated over F\$7.2 million with 3,723 affected farmers in a total area of 1,176 ha. Consolidated damage assessment for the agriculture sector for the

January and March 2012 floods were F\$7.2 million and F\$17.4 million respectively. Furthermore, 20 schools (F\$ 554,000) and 77 schools (F\$1,698,000) were affected by the 2012 January and March floods respectively in Ba and Tavua districts alone.

In Ba, it was also reported that dozens of houses have been damaged and more than 12,000 farmers (though this refers to wider West Commission area) have been affected. Common during floods, access to clean water is limited which would lead to increased morbidity especially among children.

The total cost of the community-level interventions is placed at \$3,504,000. The range of interventions is specified in earlier sections of this proposal. The impacts of these interventions would be felt in the medium to the long-term through the reduction in the losses of private property, public infrastructure, crops and livestock, human morbidity, amenities, among others. Compared to the value of the material damages from the floods alone, the investment from this project pales in comparison to the damages avoided. The estimated total value of agricultural production alone is mentioned above at over \$12 million (sugar cane and other crops). There is no available estimate of the value of public and private infrastructure but this should be substantial.

Alternative. The alternative to the watershed approach proposed in this component is an infrastructure fix and civil works. To minimize floods, dredging of streams and the Ba river could accelerate the flow of floodwaters to the sea. From the scope of dredging works, about 1.5 million m<sup>3</sup> of silt needs to be taken out at a cost of F\$ 15 million (over US\$ 8 million). This is a real alternative but this does not present a long term solution to address floods and neither a cost-effective alternative. First, a one-time dredging costs more than the entire project. Second, the degraded watershed will continuously deposit silt to the river and stream beds. Third, it will not totally prevent floods with the huge volume of rains falling in very short period of time causing flash floods. Nevertheless, it is recognized that dredging in bottlenecks could be a complementary short-term intervention along with the proposed watershed approach.

- D.** Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The *People's Charter for Change, Peace and Progress* (December 2008) serves as the umbrella framework for national development whilst the *Roadmap for Democracy and Sustainable Socio-economic Development 2009–2014* defines the implementation framework for the charter. The Project will address many of the strategies outlined in the charter, such as:

- environmental protection, sustainable management and utilization of natural resources; and
- Strengthening food security

The link between adaptation and development is particularly relevant when seeking to enhance the capacity of people and communities to adapt to climate change in Fiji. The project addresses cross-cutting national, provincial and district level plans for climate change adaptation and disaster risk reduction, focusing on understanding and increasing resilience of both human communities and natural ecosystems. The project will also ensure that there is effective synergy in the NCCP that are sensitive to provincial and district level adaptation needs.

In addition, it will also guarantee that adaptation actions undertaken by communities effectively address their vulnerabilities and contribute to the effective delivery of national CC targets and priorities.

Moreover, the project directly addresses the climate risk related priorities identified in Fiji's Initial National Communication and National Self Capacity Assessment. It is in line with and aims at supporting the development of the NCCP and integrating climate risk and resilience to national and sectoral policy frameworks, such as the Strategic Development Plan, the National Water Resources and Sanitation Policy, Rural Land Use Policy, the Fiji Forest Policy Statement, or the Fiji National Disaster Risk Management Plan.

The project itself represents an action plan envisaged by the NCCP, particularly in the context of flood and drought management. As detailed in the section on barriers, a thorough overview of existing relevant national policies (land use, coastal zone, water resource and watershed management, forestry) and related technical studies have been analysed to assess current gaps and needs in capacities to integrate climate change risk and resilience into livelihood policies and management practices. The community-based adaptation initiatives will be implemented in a coordinated and integrated fashion, complementing existing initiatives, such as the IWRM, PACC, SLM, or SGP projects.

Building on existing government institutions at the different levels, the project will foster inter-ministerial and cross-sectoral coordination on climate change adaptation issues. Cross-sectoral climate change coordination mechanisms will be created and strengthened for flood and drought management in the Ba Catchment Area for replication and use nation-wide.

**E. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.**

All UNDP supported donor funded projects are required to follow the procedures outlined in the UNDP Programme and Operational Policies and Procedures (UNDP POPP). This includes the requirement that all UNDP development solutions must always reflect local circumstances and aspirations and draw upon national actors and capabilities.

In addition, all UNDP supported donor funded projects are appraised before approval. During appraisal, appropriate UNDP representatives and stakeholders ensure that the project has been designed with a clear focus on agreed results. The appraisal is conducted through the formal meeting of the Project Appraisal Committee (PAC) established by the UNDP Resident Representative. The PAC representatives are independent in that they should not have participated in the formulation of the project and should have no vested interest in the approval of the project. Appraisal is based on a detailed quality programming checklist which ensures, amongst other issues, that necessary safeguards have been addressed and incorporated into the project design.

The project will be consistent with all national social and environmental safeguards and standards, such as:

- Environment Management Act (including Environmental Impact Assessment)
- Drainage Act
- Water and Sanitation Code

- Town Planning Act
- Forestry Act
- Natural Disaster Management Act
- Land Conservation and Improvement Act

The Government endorsed a Rural Land Use Policy for Fiji in 2006 which provides a national framework for sustainable development and cooperation between all sectors. Provisions within this policy and the legislation (Land Conservation and Improvement Act) encourage and supports for a land use plan for Fiji. The proposed Ba Catchment Management Plan is in accordance with this law.

The National Climate Change Policy provides a national framework for all climate change related programmes and encourages cross-sectoral integration to address climate change impacts.

Work on Disaster Risk Reduction (DRR) in Fiji was formalized in 1995 through the establishment of a National Disaster Management Office (NDMO), along with its National Disaster Management Plan and a Natural Disaster Management Act. The NDMO facilitates, coordinates and manages national disaster risk reduction and disaster management activities to enhance the provisions of a safer and secure Fiji. Focus is on capacity building activities at the national, divisional, district, local and community levels using existing guidelines.<sup>30</sup> A Disaster Risk Management Strategy for the Agriculture Sector has been established in 2010 (commissioned by UNDP).

As detailed in the barriers section, existing policy frameworks in Fiji do not sufficiently incorporate climate change information, risk and adaptation measures. It is anticipated that the project will provide for the incorporation of climate information into existing and planned policies, strategies and legal frameworks.

Most of the proposed climate change adaptation measures are considered small-scale measures and will not require EIA. The exceptions are the proposed weirs that will be climate proofed by the project. LWRM, which is the partner for the climate proofing of the two weirs, has already completed the technical design of the weirs and secured the necessary EIA clearance from the government. The change in design will require a separate EIA, however, LWRM has indicated that the processes will take less than a year to secure which is well within in time for the projected start of construction on the second year of the project.

In accordance with Fiji's EIA Guidelines<sup>31</sup>, the project plans to undertake EIA for the updated climate-proofed weir design according to the following steps and schedule:

Step	Activity	Schedule
Step 1	Update of weir design and specifications with climate-change considerations taken into account	February 2015
Step 2	Screening by Department of Environment	March 2015
Step 3	Scoping	
Step 4	Final ToR for EIA Study	
Step 5	EIA Study & Monitoring Plan	April – Mid May

<sup>30</sup> Yeo. W. S., 2000, *Ba Community Flood Preparedness Project: SOPAC technical report 309*, SOPAC, Suva.

<sup>31</sup> <http://www.sprep.org/att/IRC/eCOPIES/Countries/Fiji/102.pdf>

<b>Step 6</b>	EIA Report Review, Technical Review and Public Review/comments	2015 (approx. 6 weeks)
<b>Step 7</b>	Decision on EIA	End of May 2015
<b>Step 8</b>	Grievance and/or Appeal	June 2015

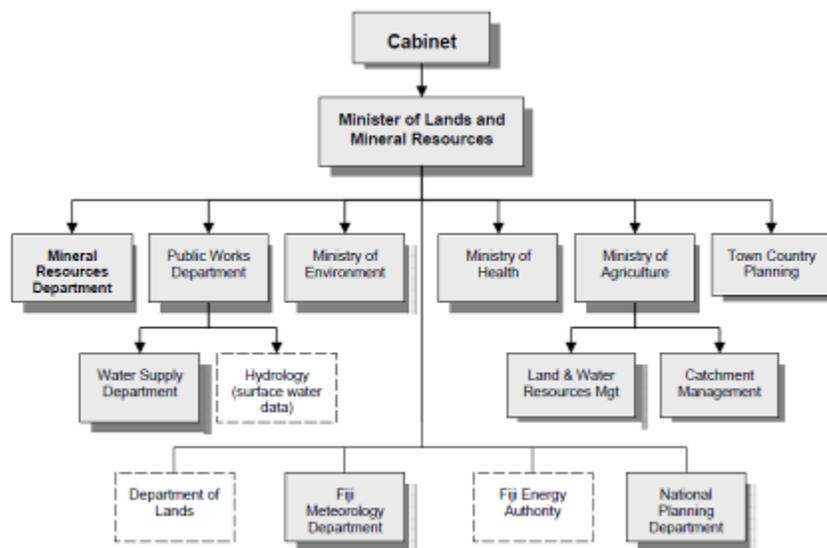
The emergency evacuation centres will follow the local building codes with the additional consideration about elevation and ability to withstand flood currents. The communal water storage facilities will augment the facilities already provided by the provincial government to increase potable water supply particularly in times of droughts. Both these activities will be implemented in close collaboration with the local government units hence the necessary local standards will guide the design and construction. These preparatory activities are built into the project schedule and will not delay project implementation.

The other interventions related to forestry and agriculture will follow the regulatory guidelines in these sectors. With the direct involvement of DoF and DoA in these activities, the necessary guidelines being implemented by these agencies will be followed.

**F. Describe if there is duplication of project / programme with other funding sources, if any.**

Fiji's Ministry of Finance & Planning Aid provides coordination role for development assistance funded by diverse sources and implemented by various line ministries. Fiji has recently revived The National Climate Change Country Team (NCCCT), which will be instrumental in providing technical advice and coordination support to this project, will promote synergies with related initiatives to maximize project delivery. Fiji's National Environment Council (NEC) provides high level policy advice to all environmental initiatives including approval of outputs prior to Cabinet submission. Furthermore, the project will employ the following additional coordination mechanism:

- Governance and Planning Committee – members from line ministries, NGO's, district officers and community rep (Provincial community leader - Roko Tui office), with sub – committees (Technical Committee, Awareness and Capacity Building )
- District and village level committees
- National Disaster Management Council (DISMAC)
- National Water Committee (ref. GEF Hotspots Analysis Diagnostic Report, May 2007)



The project steering committee and technical advisory group will involve representative of agencies and project managers involved in related initiatives. The project will be developed and implemented to create synergies with and implement complementary actions to the following projects and initiatives:

Initiative	Status, results, limitations	Complementarity of proposed AF project
The Pacific Adaptation to CC (PACC) 2009-2013 (UNDP-GEF),	Focusing on dredging of canals and related flood protection infrastructure (flood gates) in the Nausori area as demo. Community-based elements and policy mainstreaming (revision of Drainage Act), has been identified as a need and introduced recently.	Lessons learnt, techniques can be replicated in Ba catchment, complementing with integrated watershed management plans and actions, drought and flood early warning systems
Integrated Water Resources Management Project (IWRM) – 2009-2013 (UNDP-GEF)	Aims at developing and implementing an integrated flood risk management plan (flood early warning, setting up hydro-met stations), and establishing a catchment basin committee. CC has been introduced as a smaller component; the process is not fully informed on CC risks and on how to modify practices to integrate CC and DRR risks. This project does not deal with drought-related risks, early warning systems and adaptation measures	Experience can be replicated and adjusted in Ba catchment area, complementing with drought risk adaptation measures and related climate early warning system, integrating agriculture and forestry sector activities. Furthermore, the Nadi Catchment Committee model can be adjusted and adopted to suit the Ba Catchment. Furthermore, best practices related to awareness raising and community engagement, such as the community to cabinet approach can be adopted and scaled through the AF project in the Ba Catchment.
SLM	All 11 villages involved in Nadi Catchment (4 districts), different strategies for on-the-ground demos. Assessments has been carried out through community consultations, next steps: participatory landuse planning, then followed by demos in selected villages	Lessons learnt can be transferred to Ba, targeting communities (90% customary lands). Need to be complemented with introducing CC resilient crops and techniques to support SLM (develop farmer's capacity to use climate info, irrigation networks).
Ba river and dredging master plan	Currently being developed, in concept phase, EIA is being undertaken. It is being designed to handle a 1 in 5 years flood event based on rainfall data 20 years ago. The initiative tries to introduce small scale check dams (community operation) – 2 of these are being introduced in Nandi	AF project can support integrating info on CC risk (climate proofing master plan), undertake hydromet assessment of return periods and design discharge, and support implementation
Pacific Islands Prediction	Climate info service was developed for the sugar cane industry in forms of monthly Rainfall Outlook,	Expand similar climate info services based on assessment of user needs (different type of

Project ( AusAid in 2005)	provided to Fiji Sugar Cane Corporation. There is a need to develop similar services for other types of crop production (rice, vegetable, fruit)	farmers) and crop requirements
Pacific Island Climate Data Rescue –	Funded by AusAid, this project supported rearranging records, enhancing inventories, identifying data storage options, but did not provide resources for the digitization of data. Digitization of historical climate and met data (1930-1970) is needed for climate forecasting, and disaster risk mapping activities.	Support the management and digitization of historic data and its application for climate forecasting and risk analysis
Pacific Climate Change Science Programme (PCSSP-ICCAI), funded through the AusAid ICCAI initiative	Downscaled climate projections are being prepared for Pacific Island Countries, accompanied by a user programme called Climate Futures. MET services, including that of Fiji are benefitting through the Climate Futures Country Reports (expected by June 2010) and related regional training. There will be a need to customize the regional data base and projection tools to country capacities and needs.	This project will serve to further build the capacity of the Nadi MET Service on the use of climate change projections and information database and related climate info system developed under PCSSP. AF resources will be used to build capacity to provide tailored climate information service, drought and flood early warning systems. Project funds will serve also to train the end-users (farmers, village leaders) on how to interpret and use this information for the shorter term seasonal and longer term planning and management of their activities
Strengthening Community-based DRR in the Pacific, project supported by JICA	This project, implemented from October 2010 to December 2013 , targets pilot areas and communities in Solomon Islands and Fiji. The Fiji component is coordinated by NDMO and involves the establishment of a flood early warning system and evacuation response measures in 2 villages in Ba catchment: Nawaquarua and Nasolo. An initial stakeholder workshop was organized in January 2011 in Suva by JICA , with the participation of national stakeholders and development partners, including UNDP. The workshop informed participants on the initial assessments, such as hydrological analysis (rainfall, runoff, hydraulic accounting and evacuation standards), preparations for the installation of some equipment (like river gauges), and community consultations in the 2 pilot villages. At the end of the project, disaster management plans were developed in Nasolo and Nawaguarua as well as simple automated rain gauges and water level gauges installed in Koro, Toge, Nalotawa, Nasolo, Votua, Nawaguarua and Natutu. However, the majority of the equipment requires upgrading or relocation due to the lack of telemetry system to transmit information to the central FMS database, FMS and WAF have currently pulled out many of the equipment from their original location in order to explore ways of upgrading and integrating the JICA-supported community-based system into the broader EWS schemes.	The AF project can build on and add to the JICA one by: <ul style="list-style-type: none"> <li>• Supporting FMS and WAF to upgrade and integrate JICA supported EWS equipment into the broader catchment-wide EWS</li> <li>• Expanding observational and flood EWS capacity in Ba (gauges needed additional to the ones being installed by JICA)</li> <li>• Replicating and enhancing experience of community-based disaster response plans from 2 pilot villages to the broader Ba area, into a disaster management and response plans that also includes disaster mitigation and preparedness.</li> <li>• Complementing with drought EW and information management component (automated weather stations, climate info products and interpretation capacity tailored to different farmers)</li> <li>• Applying integrated watershed management that can involve the flood EW and evacuation plan by JICA project</li> <li>• Addressing overall systemic, institutional issues (communication, coordination) for EWS</li> <li>• Integrate current and anticipated climate change risks, which is currently not factored into JICA project</li> </ul>

**G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.**

Recognizing the importance of knowledge management (KM) to enhance impacts and facilitate replication, this initiative integrates various KM related actions. The KM component will ensure the systematic capturing and dissemination of lessons learnt and good practices throughout the project from its initial stages of implementation to its end. There will be a broad range of KM products developed (including, case studies, photo stories, short videos, posters, brochures, and technical reports – in English and in local languages). There will be a range of media and means used for dissemination, including meetings, TV, radio, press, briefing papers for policy makers for higher level meetings and processes, technical workshops, awareness programmes in communities, exchange visits between project sites within the Ba watershed, and also with other project sites (like IWRM in neighbouring Nadi) , and web-based platforms. Awareness raising workshops will be organized at the national level, to inform the broader public on project advances and lessons learnt. To ensure exchange of lessons learnt on climate change adaptation in flood- and drought-prone areas of the region, project results will be presented in relevant regional meetings, supported by the KM products. Also, a community of practice dialogue space on the Adaptation Learning Mechanism will allow project staff to participate in a growing expert group of adaptation practitioners who share good practices and tacit knowledge to ultimately catalyse action and influence policy processes at national regional and global level. Lessons learnt from related projects will be pursued through the following approaches:

- Experience from related projects will be systematically analyzed through desk study and involvement of relevant experts and stakeholders involved in them
- Organizations in charge, managers and technical specialists involved in related projects (e.g. IWRM, PACC, SGP-CBA, USP-CBA) will be involved in the Project Steering Committee and Technical Advisor Group, to ensure the incorporation of lessons learnt in the planning and implementation of relevant adaptation-related measures. Furthermore, the project will conduct ongoing and active engagement of the Nadi Catchment Committee initiated by the IWRM project, in order to apply lessons learned from the experience of NCC establishment and operations.
- The coordination and exchange of project experiences will be also pursued through the existing inter-ministerial coordination mechanisms, namely the NCCCT and National Environment Council (NEC), especially on the policy and strategic planning processes.
- Dissemination and sharing of the project experience as described under Outcome 3, through web-based platforms, national and provincial climate change and disaster risk management forums, organization of exchange site visits with related projects.

The project will identify, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects in Fiji, elsewhere in the Pacific, and globally. Further details and costing of KM-related outputs and activities will be provided in the project document.

**H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.**

The project preparation process built on and served to strengthen existing institutions and inter-ministerial coordination mechanisms. Consultations during the project preparatory phase have covered all stakeholders from government, the communities, the farmers and farmer groups (sugar cane), among others:

- Land and Water Resources Management Division
- Department of Environment,
- Department of Agriculture
- Department of Forestry
- National Disaster Management Office
- Fiji Meteorological Service
- Water Authority of Fiji
- Local governments in West Division
- CROP agencies (SOPAC, USP, SPC)
- NGOs (like WWF, FSPI)
- IUCN
- SRIF

Prior consultations were also taken into account in project design. The project builds on previous community consultations, such as an adhoc stakeholder consultation carried out in 2009 with the participation of 15 communities (ref: Official Communiqué from the National Environment Week Programme in Ba held on the 1st – 5th June 2009). The results are also reflected in Annex 9.

An intense consultation process in the project site and in the Suva was undertaken in September 2011 and the results are summarized in Annex 9. The design team composed of technical and governance specialists together with government and UNDP staff processed the information and guided the detailed design of the project.

In addition, a follow-up consultations with the Ba District Office, three communities in the Ba Catchment (Marou, Nanoko, and Nasolo), and FMS were conducted from 30 March to 4 April 2014 in order to update most recent contexts and information regarding drought and flood early warning activities, progress, and existing gaps.

Given the community-based focus of the project, assessment, planning and implementation of adaptation measures were carried out through participatory consultations, engaging community-governance structures, such as District, Town and Village Councils, groups/networks, youth and women groups. The outcomes from these consultations guided the preparation of the project concept as well as this document – the full proposal. Particular attention was given to the role of women, recognizing their critical role in providing food and water supply to their families. **The consultation process worked to capture the potential differentiated needs and vulnerabilities of women by having separate small group breakouts with women and their children during the community consultations.** The communication and knowledge sharing activities will ensure that villagers learn directly from each other, through the good practices analyzed and disseminated in conjunction with direct exchange visits, among other means. The project aims at strengthening catchment level governance and institutional coordination mechanisms and structures for the development and implementation of the integrated flood and drought management plan. **During community consultations, community members were informed of the environment and social principles that the proposed project and expressed their understanding and support that all project activities will ensure equitable participation and access to project**

benefits/investments, empower women, youth, elderly and other vulnerable groups. Furthermore, the community expressed understanding that the proposed project will not result in any relocation or displacement or dislocation. The communities have full appreciation that the CC adaptation interventions that the project will undertake are meant to increase their resilience to climate change impacts, i.e., floods and droughts.

Consultations with all stakeholders, particularly the communities and those in governments and NGOs will be a continuing process during project implementation. This proceeds from the overarching IWRM framework that is employed in the project requiring consultations at all stages of the project. The participatory agenda will revolve around the preparation of several outputs and in the conduct of almost all activities, particularly the concrete community-based adaptation measures. The following activities and outputs are where the inputs of all stakeholders will be sought through their participation are highlighted:

- Activity 1.1.1 Preparation of a Drought Management Plan. This will involve extensive consultations, particularly in the communities that will be worst hit by extreme events such as drought, agriculture-based communities.
- Activity 2.1.1 Establishment of a Ba Catchment Committee and comprehensive capacity building. The composition of the BCC will be multi-sectoral, including communities, women and other interest groups. The BCC will be the formal forum for consultations in both the medium and the long-term. Decisions of the Committee will be based on consensus.
- Activity 2.1.4 Preparation of the Ba Catchment Management Plan through consultative processes and subsequent review. This is an intensive activity and will closely involve the communities so that the Plan will reflect their priorities and therefore ownership by them.
- Activity 2.1.5 Monitoring and evaluation of the Ba Catchment Management Plan which will be conducted through monitoring of key watershed indicators but also interviews of Ba residents
- Activities 2.2.1 (Community forests), 2.2.2 (Forest belts), 2.2.3 (Mangrove reforestation). The initiation of these activities will require extensive consultations, particularly in the formulation of the community conservation agreements.
- Activity 2.3.3 Construction of village level emergency flood evacuation centers through cost-sharing arrangements. The communities will provide the parameters for the design of the centers while actual construction will closely involve all residents through the provision of labor and other inputs.

It is emphasized that the project will hire 6 fulltime community organizers (refer to Annex 5) to ensure participation and direct involvement of the communities in the entire catchment during project implementation. In addition to the organizers, the project will hire consultants that will closely be seeking inputs from all stakeholders, particularly in the abovementioned activities.

- I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

AF funds will be used to expand on, and complement existing baseline programmes and projects, and will be aligned with development priorities of the country, its districts and villages.

**Component 1: Climate early warning and information systems**

*Baseline (without AF resources)*

During the consultations in September 2011, the team was informed and conferred with the JICA-funded flood early warning system in Ba. During the follow-up consultations in July 2012, the local stakeholders indicated the inadequacy of the JICA-installed system and requested for additional equipment to complete a flood EWS. Furthermore, during the consultations in March 2014, after the completion of the JICA-funded project, stakeholders reaffirmed that the JICA-funded project was focused on community-based flood early warning where impacts were limited to the two pilot districts that developed community-based disaster response plans. The efforts are difficult to scale-up due to the simplicity of the community-based EWS equipments installed, which lacked in telemetry functions where the water and rainfall data gathered at the community level can feed into the centrally managed databases that may enable a catchment-wide integrated flood management system. In addition, currently there is no systematic drought early warning system in the Ba area, and there are no drought preparedness and response measures, due to limited capacity of FMS, WAF, DoA, national and local authorities. Without AF support, this situation will remain and the population will continue to be highly exposed to extreme weather events and consequent damages. Limited climate information services exist for the sugarcane industry, but farmers growing other types of crops (especially vegetables, fruits) continue to suffer due to loss in yields caused by extended drought or intensive rainfall events, without having adequate information on how to prepare to reduce impacts and implement alternative practices.

*Additionality (with AF resources)*

AF resources will be used to strengthen the data recording and management capacity of the FMS in collaboration with WAF, NDMO and DoA, as basis for preparing climate information services and early warning functions for droughts. Additional flood monitoring hardware and software will be installed to supplement and enhance the JICA-installed equipment. A centralized database that will serve both the flood and drought EWS, will allow to capture the currently fragmented information on agricultural and hydrological functions, allowing to interlay with climate variables, and present them in user friendly GIS-based tools, that can support planning and decision making processes in agriculture, forestry and water management. These functions, combined with strengthened coordination between FMS, NDMO, DoA and other line ministries and local authorities will allow more effective preparedness and response measures to flood and drought risks and hazards, as well as introducing adaptation measures to counteract the long-term effects of climate change.

## **Component 2: Community-based adaptation to flood- and drought-related risks and hazards**

### *Baseline (without AF resources)*

Currently communities in the Ba area lack knowledge and information on effective adaptation measures. There are some useful, but incipient and ad-hoc experiences in Fiji on community-based flood protection, water management and agricultural practices, but limited to a few pilot projects (like the CBA projects implemented by USP or). Without AF resources, agriculture, forestry, water management and flood protection measures, particularly the pace and extent of implementation will not be modified to integrate current and anticipated climate risks, and current coping techniques and mechanisms will not be sufficient to protect assets and secure livelihoods. The current flood protection measures, largely focusing on dredging and maintenance of canals, will not be effective without complementary measures planned in an integrated way. The LWRM has mobilized internal resources to construct two weirs in efforts to moderate the impacts of flood and drought, however, it has indicated that the current design has not taken into account climate change.

### *Additionality (with AF resources)*

AF resources will support the creation of a Ba Catchment Council that will oversee the development and implementation of an integrated and climate sensitive Ba Catchment Management Plan, based on rigorous technical assessments and broad community consultations. This governance follows from the ongoing efforts in the adjacent Nasi basin. It will provide a framework and coordinated institutional support to implement a series of on-the-ground and community-driven adaptation measures, through watershed rehabilitation (community forests, forest belts and mangrove reforestation), riverbank protection measures including climate-proofing of two weirs, drought resistant crop varieties (sugar cane and other crops) and cultivation techniques, as well as improving communal water supply to communities and construction/improvements of emergency evacuation centres. It is expected that employing AF resources, damages and losses caused by flood and drought events to local communities will be significantly reduced and the resilience of livelihoods will be enhanced in the long term.

## **Component 3: Institutional strengthening to support climate- and disaster-resilient policy frameworks**

### *Baseline (without AF resources)*

Although the Government of Fiji has recognized the importance of climate change, the development of a NCCP is still very early stages, and currently sectoral policies do not integrate climate risks systematically. Without creating an enabling environment through reviewing current policy frameworks and building capacity of national and local authorities on climate change risks and adaptation techniques, development efforts can be seriously jeopardized in the long term due to adverse effects of climate change.

### *Additionality (with AF resources)*

The project will support systematic analysis of sectoral policies and related instruments in the agriculture, forestry, water and disaster risk management areas. This will be carried out through capacity building activities targeting government officials and planners. Given the cross-sectoral nature of the project, it will serve to strengthen the recently established NCCCT, as well as coordination with sub-national level authorities.

## **Component 4: Awareness raising and knowledge management**

### *Baseline (without AF resources)*

As described in the context section, current awareness on flood and climate related risks amongst the Ba area population is very low, and this will continue to impede any effective flood control and adaptation measures. Current awareness raising and knowledge management activities on climate change are limited to a few narrow focused projects (e.g. PACC is focusing on the Nausori area, invited village representatives to its recent inception workshop, and has been present at some national events, but yet to establish a more comprehensive communication plan). USP is the key regional education institute with well-defined environmental and climate change programmes. USP has been also instrumental in piloting community-based adaptation initiatives in the country, which are limited to some 6 villages, but expected to be expanded with further funds. While experiences from these isolated initiatives is very valid, their outreach to communities and field practitioners more broadly in the country is very limited.

### *Additionality (with AF resources)*

The proposed project will build on the above initiatives, and will develop a partnership with USP and other regional organizations (SOPAC, SPC, and SPREP) for awareness and knowledge management purposes, including links with potential research collaborations. AF resources will be used to develop a Communication Strategy focusing on CC adaptation to generate range of knowledge products which will be disseminated systematically through various platforms (CCA Solutions Exchange, CCA Community of Practice), reaching out to broad professional and general audience especially targeting communities in the Ba catchment through locally appropriate communication media. Direct experience sharing will be facilitated through peer-to-peer exchanges and site visits, not only within the Ba area, but also between other relevant project areas, such as the Nadi basin currently carrying out the IWRM project, or the PACC demo site in Nausori. The capturing of experiences from early stages of the project will ensure a comprehensive analysis of lessons learnt, documentation of technical solutions and institutional processes that can be replicated elsewhere in Fiji and in the Pacific region.

## **J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.**

At the catchment level, the proposed Ba Catchment Committee (BCC) will ensure the sustainability of the project initiatives well beyond its duration of 4 years. The Committee will be tasked to oversee the development and subsequent implementation the Ba Catchment Management Plan that will serve as the overall framework for building resilience against the impacts of climate change at the catchment level. The catchment-level approach in planning, design and implementation of community-level CC adaptation measures will ensure their synergistic impacts in improving resilience.

A catchment level institutional arrangement such is that proposed in this project is not new in Fiji as a similar committee has been created for the adjacent Nadi basin. The project will work towards the formalization of the Committee and afford it an appropriate legal status to be able to effectively implement the management plan. The specifics of the Council will be worked out during project implementation through consultations with all stakeholders, in particular the government and the communities.

Complementing the BCC are activities that will ensure the sustainability of project impacts. These are discussed below.

- a) Drought early warning system. This component will be led by FMS in coordination with the other responsible government agencies including the WAF, NDMO and the local governments. The maintenance and operations of the system will be turned over to these agencies starting on the 4<sup>th</sup> year of the project. Prior to the turnover, the agencies with the assistance of the project will incorporate such costs into their respective budgets. Technical capacity building will be provided for smooth operations of the system. The project will work alongside the JICA-funded project to also ensure sustainability of the flood early warning system.
- b) Forestry-related interventions. The Department of Forestry will be the lead agency in collaboration with the communities and will provide the necessary technical assistance even after the completion of the project. The two centralized nurseries will be turned over to the DoF starting on the 4<sup>th</sup> year of the project. It has committed to maintain the nurseries to serve the needs of the communities to improve the forest stands (some may need replanting) and those of other catchments outside the project site. Community contracts with respect to the forest belts and the mangrove reforestation areas will ensure that the trees will not be cut to provide continuing protection of the entire catchment. Guidelines for the community forests will be developed to promote sustainable harvesting of forest products to prevent encroachment in the forest belts and mangrove forests.
- c) Flood control structure. The design and construction will be jointly undertaken with the LWRM of the DoA which has the overall responsibility over these structures. LWRM, in accordance with its mandate, will integrate the operating and maintenance costs of the structure into its regular budget.
- d) Water storage and evacuation centres. These are initiatives to be implemented jointly with communities which directly benefit them. The project will train the communities in operating and maintaining these facilities. Mechanisms for internal financing of these facilities will be developed by the communities with facilitative support of the project. These will be turned over to the communities upon completion.
- e) Agriculture-related initiatives. The leadership of these activities will be with SRI and with the sugar cane farmers who have provided commitment to replicate lessons learned in their farming operations. The DoA has likewise committed to the same for the other crops.

The national-level activities in Components 3 and 4 will be implemented through the Climate Change Unit (CCU) housed under the Ministry of Foreign Affairs and International Cooperation would be the lead implementing agency. The CCU is the overall implementing entity for this project and will work closely with the Commissioner Western's office and the Provincial Administrator's office. The commissioner's and provincial administrator's offices are core components of the local governance structure in terms of implementation.

As a general approach, the government will pursue the sustainability of the project results, by integrating climate resilience and adaptation-related activities, in the work programming and budgetary planning processes of the relevant sectors, as part of the climate change mainstreaming aims, under this proposed project. These will be supported through capacity building of policy makers and planners on climate risk assessments and adaptation planning processes.

**K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.**

As per below review and narrative described below, the Screening Process has categorized the proposal as a **Category B** project with very limited impacts and risks in number, scale, and geographic scope. Most interventions will be small-scale with potential social and environmental risks that can be easily mitigated through ensuring effective implementation as per project design with sufficient community involvement with representation of men, women, youth, indigenous people, and vulnerable groups.

Project Component 1 on Climate early warning and information systems focuses on preparing drought and flood management plans, enhancing relevant government capacities for flood and drought management, and ensuring sustainability of flood and drought early warning. Environmental and social principles related to this component include: compliance with the law, access and equity, gender equity and women’s empowerment, and climate change. All proposed activities under this component are in line with the law. Furthermore, the project will ensure that women and vulnerable groups’ needs and perspectives will be captured within the design of the drought and flood EWS, so that ultimately, these groups can access EWS information and resources. Both men and women will be provided with equal opportunities to participate and benefit from the workshops and training on EWS and flood and drought management under Component 1.

The project acknowledges the importance to reach out to the two major ethnic groups in Fiji, Fijians with iTaukei decent and Indian decent. Experiences from the IWRM project have already highlighted a number of differentiated vulnerability and needs between the abovementioned two major ethnic groups in Fiji. Below table provides a comparative analysis.

	<b>Fijians of iTaukei Decent</b>	<b>Fijians of Indian Decent</b>
<b>Socio-Economic</b>	<ul style="list-style-type: none"> <li>Loss of livelihood – a number of villages traditionally are located along the bank; apart from their houses being inundated / destroyed during extreme events their only source of food – villagers normally plant near river banks, soil is rich, easy to toil, No need to water.</li> </ul>	<ul style="list-style-type: none"> <li>Land Tenure - dilemma over renewable of leases</li> <li>Loss of livelihood – a lot of cash crop farmers live along the bank; apart from their houses during extreme events their only source of income is destroyed.</li> <li>Accessibility- population is cut off from main centre during floods; recent example is the washing away of Moto Bridge affected the supply of vegetable in the local market.</li> <li>Aging population – there always an exodus of youths / young population from the upper catchment to lower or to other areas where opportunities in terms of jobs / education is better.</li> </ul>
<b>Natural</b>	<ul style="list-style-type: none"> <li>Floods</li> <li>Drought</li> <li>River Bank Erosion</li> <li>Tidal Surges (lower catchment)</li> </ul>	<ul style="list-style-type: none"> <li>Floods</li> <li>Drought</li> <li>Tidal Surges (lower catchment)</li> <li>LWRM has placed structures in</li> </ul>

	<ul style="list-style-type: none"> <li>• Loss of income due to seawater intrusion into farms.</li> <li>• Outbreak of Water Borne Disease – classic case recently, many families in the upper and mid catchment still rely on springs and rivers for their drinking water. Normally this is raw water with no to very limited treatment.</li> </ul>	<p>Lower catchment to reduce the normal tidal effects ; that is sea water intruding into farm lands and fresh water</p> <ul style="list-style-type: none"> <li>• Loss of income due to seawater intrusion into farms.</li> <li>• Outbreak of Water Borne Disease – classic case recently , many families in the upper and mid catchment still rely on springs and rivers for their drinking water. Normally this is raw water with no to very limited treatment.</li> </ul>
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Further assessment and analysis will be conducted regarding the different vulnerabilities and needs during the implementation of the proposed project in the Ba Catchment. This can be reflected to various activities, such as incorporation of different evacuation routes as well as roles/responsibilities/benefits/care to be provided within flood/drought management plans.

Project Component 2 on Community-based adaptation to flood and drought related risks and hazards involve watershed rehabilitation through enhanced community-level forest management, promotion of climate-resilient agriculture, enhancement of water supply capacities, and enhancement of existing and/or planned flood-management structures (riverbank replanting, enhancement of drainage canals, floodgates, weirs, and evacuation centres) to be more adaptive to climate change impacts. Community forest management will build upon existing efforts supported by the iTaukei Affairs Conservation Officers. As per attached Letter of Support, community engagement and interest is already active along the Ba Catchment. Proposed activities including community forest management, promotion of climate-resilient agriculture, and enhancement of water supply capacities are compliant with the law. Furthermore, women, men, youth, indigenous peoples and marginalized vulnerable groups will be engaged in planning and implementation of project activities so that the benefits of the project can be accessed equitably. Methods of engaging women and youth in water and forest management and climate-resilient livelihood activities from the IWRM project in Nadi will be adapted and/or replicated in the Ba Catchment. These activities will also have positive impacts to natural habitat protection, biodiversity conservation, building climate change resilience, addressing public health issues (i.e. preventing disease such as typhoid spreading in some of the drought-prone villages during the dry season), pollution prevention and resource efficiency, and conservation of physical and cultural heritage. There will be no direct or indirect resettlements caused due to any of the activities undertaken within this proposal.

Under “Output 2.3: Integrated climate-resilient flood-preparedness and protection measures implemented at the community level” construction of climate-proofed weirs in Qalinabulu and Nadrou is proposed. As per Attachment 10: Memorandum on Qalinabulu and Nadrou Water Retention Dam EIA, the government has already conducted the initial assessments. Upon approval of the proposal, the LWRM will review the existing design of the two proposed weirs and assess ways in which the design can be climate-proofed. Based on the improved design, an updated EIA will be conducted in accordance with planned schedule and steps included in Part II, Section E.

Project Component 3 aims to strengthen institutions to support climate- and disaster- resilient policies frameworks. Efforts to mainstream climate change, disaster risks, and resilience within

sectoral policies and planning frameworks as well as train policy makers to implement climate-sensitive policies are in full compliance with environmental and social principles below and rather will be instrumental in advancing these principles.

Project Component 4 focuses on awareness raising and knowledge management. Equitable access will be ensured for men, women, youth and vulnerable groups to access lessons learned and best practices generated will be captured from the project. Similarly climate change awareness and education programmes will be conducted in a way that men, women, vulnerable groups and especially youth groups can benefit equitably and be empowered through the process.

<b>Checklist of environmental and social principles</b>	<b>No further assessment required for compliance</b>	<b>Potential impacts and risks – further assessment and management required for compliance</b>
<i>Compliance with the Law</i>	✓	
<i>Access and Equity</i>	✓	
<i>Marginalized and Vulnerable Groups</i>	✓	
<i>Human Rights</i>	✓	
<i>Gender Equity and Women’s Empowerment</i>	✓	
<i>Core Labour Rights</i>	✓	
<i>Indigenous Peoples</i>	✓	
<i>Involuntary Resettlement</i>	✓	
<i>Protection of Natural Habitats</i>	✓	
<i>Conservation of Biological Diversity</i>		✓ (to be assessed through planned EIA)
<i>Climate Change</i>	✓	
<i>Pollution Prevention and Resource Efficiency</i>		✓ (to be assessed through planned EIA)
<i>Public Health</i>	✓	
<i>Physical and Cultural Heritage</i>	✓	
<i>Lands and Soil Conservation</i>	✓	

## PART III: IMPLEMENTATION ARRANGEMENTS

### A. Describe the arrangements for project / programme implementation.

The 4-year Project will be implemented through UNDP's **National Implementation (NIM) Modality**, with the **Ministry of Foreign Affairs and International Cooperation (MOFA)** serving as the **designated national executing agency** ("implementing partner") of the project. MOFA is well-positioned as executing agency for this project, considering its current coordination role through the recently established Country Climate Change Team, which will provide the overall project assurance function. MOFA will be responsible for ensuring effective coordination between this Project and other relevant projects in Fiji. MOFA will have the technical and the administrative responsibility for applying AFB inputs in order to achieve the expected outcomes/outputs and that resources are allocated and disbursed in an efficient and effective manner as detailed in the Project Document as defined in the project document. MOFA is responsible for the timely delivery of project inputs and outputs, and in this context, for the effective coordination of all other responsible parties, including other line ministries, local government authorities and/or UN agencies.

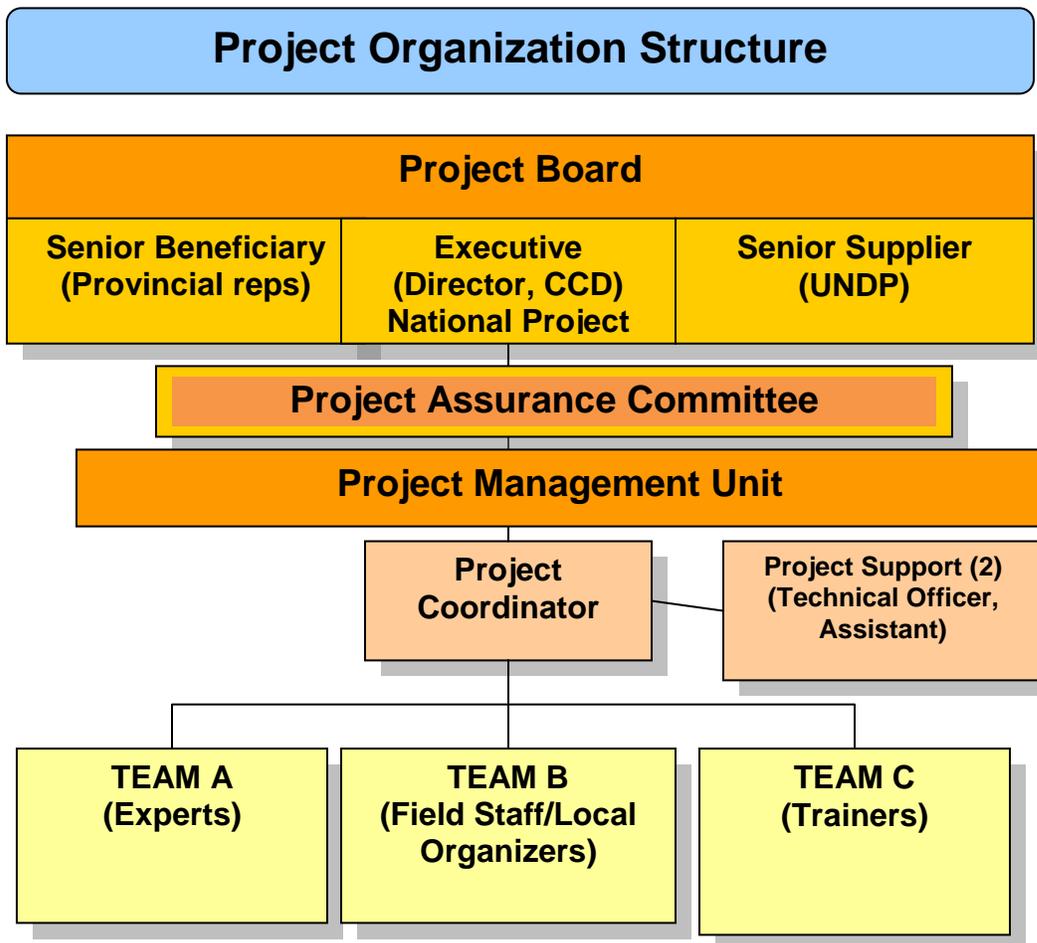
Upon the request of the GoF, **UNDP** will serve as the **Multilateral Implementing Entity (MIE)** for this project. Services that UNDP will provide to the implementing partner in support of achieving project Outcomes are outlined in Annex 4. UNDP's services will be provided by staff in the UNDP Multi-Country Office in Fiji, UNDP Asia Pacific Regional Centre (Regional Technical Advisor) as well as UNDP Headquarters (New York).

The Project will be coordinated through a **Project Steering Committee (SC)** which will provide support for the operational management of the Project. In addition, the SC will be responsible in approving key management decisions of the project and will also play a critical role in assuring the technical quality, financial transparency and overall development impact of the project. The SC will be chaired by the Director of the Climate Change Division (CCD), and will consist of Director of Environment, Director of Land and Water Resources Management Division, Department of Agriculture, Department of Forestry, National Disaster Management Office, Water Authority, Fiji Meteorological Service. Similar to the experience of the IWRM project in the Nadi Catchment, after the establishment of the Ba Catchment Committee during the project inception phase, it will become the project Steering Committee but with the participation of UNDP and other national government agencies such as the National Implementing Partner, Ministry of Foreign Affairs and International Cooperation.

The project structure will be constituted by a **National Project Director (NPD)**, and a **National Project Coordinator (NPC)**. To ensure effective coordination with the relevant line departments, the project design phase will explore the possibility of establishing sectoral-sub-coordinators. The NPD will be responsible for supervising the Project on behalf of MOFA and will work with the NPC. The NPD is the administrative and executive manager of activities described in the Project Document. The NPC will be supported by a technical team, comprised by technical officers of line Ministries and Departments, CROP agencies, NGOs and technical experts to be hired by the project.

MOFA will follow the norms and procedures detailed in the UNDP National Implementation (NIM) manual for project execution. For its part, UNDP will provide support to the Director and the Coordinator of the project, in order to maximize its reach and impact as well as the quality of

its products. Moreover, it will be responsible for administering resources in accordance with the specific objectives defined in the Project Document, and in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Project activities, will be undertaken under the direct supervision of the UNDP Country Office.



Once the project is approved and an operational annual work plan is prepared, the UNDP Multi-Country Office in Fiji will be able, in those specific cases agreed to with project counterparts, to charge the project directly for Execution Support Services, based on transactions and employing a universal price list.

UNDP will undertake the internal monitoring of the Project and of evaluation activities, taking into account from the outset local capacities for administering the project, capacity limitations and requirements, as well as the effectiveness and efficiency of communications between ministries and other institutions that are relevant to the project.

### Roles and Responsibilities

1. Establishing an effective project management structure is crucial for the project's success. The Project has need for direction, management, control and communication and has been designed according to the following project organization structure.

2. **Project Board** is responsible for making management decisions in particular when guidance is required by the Project Coordinator. The Project Board plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Coordinator and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Project Board can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans.

3. In order to ensure UNDP's ultimate accountability for the project results, Project Board decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP as the Senior Supplier to the project.

4. Potential members of the Project Board are reviewed and recommended for approval during the PAC meeting. Representatives of other stakeholders can be included in the Board as appropriate. The Board contains three distinct roles, including:

a) **An Executive:** individual representing the project ownership to chair the group.

i. *Director of Climate Change Division*

b) **Senior Supplier:** individual or group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project.

ii. *Representative of UNDP.*

b. **Senior Beneficiary:** individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries.

iii. *Representative of the Ministry of National Planning.*

5. The **Project Assurance** role supports the Project Board Executive by carrying out objective and independent project oversight and monitoring functions. The Project Manager and Project Assurance roles should never be held by the same individual for the same project. Project assurance is a bridge between project board, project manager and even project team.

6. Potential members of the Project Assurance are reviewed and recommended for approval during the Project Board meeting. Representatives of other stakeholders can be included in the Project Assurance as appropriate.

7. The functions of the Project Assurance is mainly to verify that the project remains consistent with, and continues to meet, the project objectives and that no change to the external environment affects the validity of the project: These includes, but not limited to, the following functions:

- Advising the [Project Board](#)

- Project oversight covers all interests of a project including: business, user, supplier
- Provides independent verification of the project
- Maintenance of thorough liaison throughout the project between the supplier and the customer
- Risks are being controlled
- User needs and expectations are being met or managed
- Adherence to the Business Case
- Constant reassessment of the value-for-money solution
- Fit with the overall programme or company strategy
- The right people are being involved
- An acceptable solution is being developed
- The project remains viable
- The scope of the project is not 'creeping upwards' unnoticed
- Focus on the business need is maintained
- Internal and external communications are working
- Applicable standards are being used
- Any legislative constraints are being observed
- Adherence to quality assurance standards.
- The needs of specialist interests (for example, security) are being observed

8. Project Coordinator: The Project Coordinator has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Coordinator's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

9. The implementing partner appoints the Project Coordinator, who should be different from the Implementing Partner's representative in the Project Board. The implementing partner is the entity responsible and accountable for managing the project, including the monitoring and evaluation of project interventions, achieving project outputs, and for the effective use of UNDP resources. The implementing partner may enter into agreements with other organizations or entities to assist in successfully delivering project outputs. Possible implementing partners include government institutions, other eligible UN agencies and Inter-governmental organizations (IGOs), UNDP, and eligible NGOs. Eligible NGOs are those that are legally registered in the country where they will be operating. Proposed implementing partners must be identified based on an assessment of their legal, technical, financial, managerial and administrative capacities that will be needed for the project. In addition, their ability to manage cash must be assessed in accordance with the Harmonized Approach for Cash Transfers (HACT). The most recent capacity assessment (13th July 2010) had a total rating of 93% indicating very high capacity of Ministry of Foreign Affairs (MOFA) to successfully implement the project.

10. Project Support: The Project Support role provides project administration, management and technical support to the Project Coordinator as required by the needs of the individual project or Project Manager.

11. Financial Arrangements: The Project will be nationally executed (NIM) by the Government of Fiji through the Ministry of Foreign Affairs, where the focal point of contact will be the Director, Climate Change Division. The Ministry of Foreign Affairs (MOFA) will:

- Be responsible for the financial control of the project through the NIM of UNDP. UNDP will administer the Budgetary requirements for the Government of Fiji;

- Sign-off on all budget and work-plan revisions and maintain project accounts and financial responsibility;
- Work with the project and assume responsibility for entering into necessary work arrangements with other national, state and regional organizations for efficient and effective project implementation;
- Support the project by providing guidance and authority to engage services consistent with the objectives of the project; and
- Receive advances equivalent to the financial needs of the project as indicated in the quarterly work plans provided.

12. Funds will be released to the Development Account of the Ministry of Finance. The Ministry of Finance will be responsible for the initial warrant and disbursement of funds in accordance with the work plan and the project document. Further cash advances will be contingent upon timely reporting of expenditure by the Ministry of Foreign Affairs to the UNDP MCO, Fiji.

**B. Describe the measures for financial and project / programme risk management.**

The following are the key underlying factors for the project to ensure success:

- A national consensus on the institutional management of water-, flood- and drought-related priorities in the framework of the NCCP and NCCCT is reached, meaning that collaboration of key government departments in the project is not hindered by unforeseen influences;
- A series of unusually adverse climatic conditions and extreme events does not damage adaptation measures being implemented, or weaken the interest of key stakeholders to address adaptation issues.
- There is sufficient coordination between District and Village Councils and national authorities to scale up the village-based integrated adaptation actions in an effective manner;
- Political or security complications in project sites does not limit implementation of project activities;
- Stakeholders are able to perceive reductions in vulnerability over the time-scale determined by project duration;
- Stakeholders are able to distinguish vulnerability to climate change from baseline weaknesses in land, coastal, riparian, and water resources management;
- The government remains supportive, politically and financially, to a cross-sectoral and integrated approach to the management of climate risks and opportunities;
- There is sufficient co-operation and commitment within the target communities to support community level action for the adaptation measures;
- The techniques and technologies developed are gender sensitive – i.e. they do not increase inequity between men and women or reduce self-reliance;
- The selection of adaptation measures in the villages follows integrated village development plans, vulnerability considerations, and the established criteria and is not derailed due to political processes and influences.

The above factors are assessed in detail below during project preparation and the strong commitment from the Government of Fiji will limit the likely risks of the proposed project. Furthermore, linkages to ongoing and planned baseline development activities implemented by government, as well as local acceptance, will minimize these risks. The programme draws on

the government's strong commitment to climate compatible development, which limits the likelihood of institutional-level risks to have a negative impact on the proposed programme and the desired outcomes.

The following table presents the risks that may affect implementation of the project and achievement of outputs and outcomes. Each of the identified risk scenarios is accompanied by the respective mitigation measures and stakeholders involved in the mitigation measure.

Project Risks & Mitigation Measures			
Risk	Level	Mitigation Measures	Responsibility
Cooperation by communities with community-based measures is weak	M	<ul style="list-style-type: none"> <li>- The package of measures is designed to measurably benefit the communities by building resilience. Through proper awareness raising, cooperation will be forthcoming</li> <li>- The six community organizers to be hired from within communities will facilitate the building of strong partnerships by the project and the government with the communities</li> <li>- All community-level activities will be done through participatory processes to maximize ownership and buy-in</li> <li>- Best practices for community participation such as "community to cabinet" approach and tree trust fund approaches tested and proven through the IWRM project in the Nadi Catchment will be adapted and applied</li> <li>- Community Officers from the Ministry of iTaukei Affaires with responsibilities to promote environmental sustainability and tree planting activities will be engaged and involved and the project will build upon the national government's existing efforts to work with communities in conservation</li> </ul>	PMU; MOFA; local governments; Ministry of I-Taukei Affairs (this office deals with Fijian community affairs)
Land use disputes and presence of settlements within the communities affect implementation of project activities and plans	M	<ul style="list-style-type: none"> <li>- Prior consultations with indigenous Fijians will be done extensively through the 6 community organizers</li> <li>- Agreements through, e.g., the conservation contracts from traditional village management bodies are a prerequisite for the project activities to be undertaken in the communities</li> </ul>	PMU, Ministry of I-Taukei Affairs; MOFA; local governments
Insufficient collaboration between project implementation partners and stakeholders	L	<ul style="list-style-type: none"> <li>- Develop detailed inception work plan to guide inception phase and clarify roles and responsibilities through agreements</li> <li>- Continuous stakeholder engagement throughout the implementation</li> <li>- The Ba Catchment Committee, starting on the second year, is expected to facilitate collaboration among all</li> </ul>	PMU, MOFA, UNDP

		stakeholders	
Weak governance and limited capacity primarily at the local level to support and sustain the adaptation measures	L	<ul style="list-style-type: none"> <li>- Capacity building at provincial and national levels is an integral part of the project's implementation.</li> <li>- As executing agency, the NCCCT and CCU within MOFA will coordinate all government efforts in support of the project. These functions are within the jurisdiction of MOFA.</li> </ul>	PMU, MOFA, Project Board; Provincial Administrations
Limited political and financial support to a cross-sectoral and integrated approach to the management of climate risks and opportunities.	L	<ul style="list-style-type: none"> <li>- Key government partners have endorsed the full proposal and committed financial support during implementation and post project to ensure sustainability</li> <li>- The inter-agency multi-sectoral NCCT and then the BCC together with the PMU will facilitate the support by all sectors for the integrated approach that is the overarching framework for the project</li> </ul>	PMU, NCCT/CCU/MOFA
Adverse climatic conditions such as floods and droughts impacts on the adaptation measures being implemented and weakens community support	L	<ul style="list-style-type: none"> <li>- The scheduling of project activities will take into account climatic factors to avoid adverse weather conditions as far as possible</li> <li>- Flood and drought events during implementation will only serve to strengthen community resolve and support for the project</li> <li>- Address the potentially cyclical nature of climate change events in awareness raising efforts</li> </ul>	PMU, local governments; Project Board
The selection of communities for each CC adaptation measure is derailed due to political processes and influences	L	<ul style="list-style-type: none"> <li>- Selection criteria and decisions of the PMU will be clearly communicated and endorsed through national Project Board and the local governments in the Ba Catchment</li> </ul>	PMU, Project Board, local governments
Lack of and fast turnover of qualified staff to run the project that is typical among Pacific SIDS although less so in Fiji	L	<ul style="list-style-type: none"> <li>- There is an existing pool of qualified technical and managerial staff in various government agencies and in academe that may be tapped to run a priority project like this. Arrangements for their involvement will be worked out during the inception phase.</li> <li>- The presence of regional agencies in Fiji could also provide the pool of experts for the project</li> </ul>	Project Board; MOFA; UNDP

During regular programme review meetings and those of the Project Board, in which UNDP is an active participant, all risks and mitigation measures will be reviewed and updated as per established practices. All these will be done in the context of adaptive management.

**C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.**

As per Screening Process in Part II Section K above, the proposal is categorized as a **Category B** project with very limited impacts and risks in number, scale, and geographic scope, which can be easily mitigated through ensuring effective implementation of existing government environmental impact assessments and social impact assessments with community involvement.

Components 1, 3 and 4 are expected to comply with the principles of the Environmental and Social Policy of the Adaptation Fund. In order to ensure full compliance and maximum benefits to the Environment and Social Principles through proposed activities under the three Components, equitable access and engagement of men, women, youth, and marginalized and vulnerable groups will be ensured through collecting disaggregate data of the participants and beneficiaries of project activities and investments by gender, age groups, and ethnic groups.

Under Component 2 a number of place-based physical interventions will be supported and/or enhanced. For the proposed community forest activity (2.2.1) and establishment of forest belts (2.2.2), direct and indirect benefits are expected such as watershed conservation, biodiversity conservation, fruit production as well as soil and water conservation. There will be no resettlement and extensive community consultation will be conducted to ensure that equitable access and benefits to vulnerable groups are ensured, especially to women and children who normally gather fuel wood as well as utilize community forests for recreational space. Similarly, mangrove reforestation to stabilize coastal area (2.2.3) will have positive, rather than negative impacts in relation to the social and environmental principles through minimizing impacts of coastal flooding. There will be no resettlement through this proposed intervention.

Construction of weirs proposed under Output 2.3 may cause potential risks to Environment and Social Policy although an initial EIA has been conducted as per attached Annex 10. Based on the improved design, an updated EIA will be conducted in accordance with planned schedule and steps included in Part II, Section E.

**D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.**

The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

**Project Start:**

A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

The Inception Workshop should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-

vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.

- Based on the project results framework and the relevant GEF Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 6 months following the inception workshop.
- Share, review closely with Executing Entity and Project Beneficiaries the Environmental and Social Policy of the Adaptation Fund, including the promotion of human rights, where applicable, and how the executing entity and direct beneficiaries would be made aware of the grievance mechanism available in the country and of the complaint handling mechanism of the Fund, in case of non-compliance.

An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

#### **Quarterly:**

The following tasks shall be done:

- Monitoring of the progress made in the UNDP Enhanced Results Based Management Platform.
- Regular updating of the risk log based on the initial risk analysis submitted, in ATLAS. Risks become critical when the impact and probability are high.
- Project Progress Reports (PPR) based on the information in Atlas, and generated in the Executive Snapshot.
- Monitoring issues, lessons learnt, etc. through the use of other Atlas logs. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.
- Project Manager will be responsible of providing information to their government supervisor as well as UNDP project focal point that feed into the UNDP reporting platforms (Atlas, etc).

#### **Annually:**

Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and AFB reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative).
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR.
- Portfolio level indicators are used by most focal areas on an annual basis as well.

**Periodic Monitoring Through Site Visits:**

UNDP Multi Country Office (MCO) and/or the UNDP Asia Pacific Regional Centre (APRC) will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/Back to Office Report will be prepared by the MCO and UNDP APRC and will be circulated no less than one month after the visit to the project team and Project Board members.

**Mid-term of Project Cycle:**

The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Evaluation will analyze gender and age-disaggregated data in order to assess whether project is empowering men, women, youth, and vulnerable groups equitably. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP MCO based on guidance from the UNDP APRC. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Resource Center (ERC).

**End of Project:**

An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and AFB guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. Evaluation will analyze gender and age-disaggregated data in order to assess whether the project was able to empower men, women, youth, and vulnerable groups equitably. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the UNDP Asia-Pacific Regional Centre.

The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Resource Center (ERC).

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

**Learning and Knowledge Sharing:**

Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The activities in the project are also designed in such a way that whenever knowledge products are produced, these are reviewed through a participatory process before these are finalized, officially documented and disseminated as project deliverables.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

**Monitoring & Evaluation Work Plan and Budget** (refer to Annex 5 for cost details)

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> <li>▪ Project Management Unit (PMU)</li> <li>▪ UNDP Fiji MCO, UNDP APRC/GEF</li> </ul>	6,500	Within first two months of project start up
ARR/PIR	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> <li>▪ UNDP APRC/GEF</li> <li>▪ UNDP EEG</li> </ul>	None	Annually
Periodic status/ progress reports	<ul style="list-style-type: none"> <li>▪ PMU</li> </ul>	None	Quarterly
Annual technical monitoring report	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> </ul>	9,000	Annually
Meetings of the Project Steering Committee/Ba Catchment Committee	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> </ul>	1,000	Annually
Meetings of the Provincial CC Steering Committee	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> <li>▪ Government representatives</li> </ul>	1,000	Annually
Mid-term Evaluation	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> <li>▪ UNDP GEF</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	18,000	At the mid-point of project implementation.
Final Evaluation	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> <li>▪ UNDP GEF RCU</li> <li>▪ External Consultants (i.e. evaluation team)</li> </ul>	30,000	At least three months before the end of project implementation
Project Terminal Report	<ul style="list-style-type: none"> <li>▪ PMU</li> <li>▪ UNDP Fiji MCO</li> <li>▪ Local consultant</li> </ul>	0	At least three months before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP Fiji MCO</li> <li>▪ PMU</li> </ul>	12,000	Yearly
Visits to field sites	<ul style="list-style-type: none"> <li>▪ UNDP Fiji MCO</li> <li>▪ UNDP APRC (as</li> </ul>	Paid from IA fees and operational	Yearly

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
	appropriate) ▪ Government representatives	budget	
<b>TOTAL COST</b> Excluding project team staff time and UNDP staff and travel expenses		US\$ 77,500	

E. Include a results framework for the project proposal, including milestones, targets and indicators.

### **Strategic Results Framework**

The Strategic Results Framework lists the indicators, baseline and targets, including the sources of verification for the entire project and by Outcome. For the entire project, the indicators refer to the entire catchment as measured by the number of communities (villages and settlements) that will be benefitting from the project. The indicators and targets are adequately described in the Annex. The following indicators will be monitored through collection of gender-disaggregated data: number of people with improved resilience to climate change; representation of women and marginal groups in managing the Ba Catchment, which will be measured in terms of representation in the Ba Catchment Committee, involvement in specific activities such as the operation of the nurseries, etc.; and consideration of the needs of women and children in the establishment of communal water storage.

## Strategic Results Framework

Project Strategy	Indicator	Baseline	Target at end of Project	Sources of Verification	Assumptions
<p><b>Objective:</b> The overall objective of the project is to reduce the exposure and increase the adaptive capacity of communities living in the Ba catchment area to drought and flood-related climate and disaster risks.</p>	<p>Number of risk-exposed rural villages protected through adaptation measures Number of people with improved resilience to climate change (<b>gender- and age disaggregated</b>)</p>	<p>In the current scenario, risk-exposed villages are to a large extent unable to adapt to climate change due to lack of resources, capacity, knowledge and the necessary support from provincial and national institutions as well as policy frameworks. Development planning in the project site follows geopolitical delineations without regard for ecosystem consideration With the scale of adaptation measures planned for implementation in the entire catchment the total number of rural villages (and rural settlements) is 71. <b><i>The numbers referred to, however, are usually the villages as the settlements are usually within the rural villages' locality</i></b></p>	<p>By the end of the project the resilience of <b>34 rural villages (and 37 rural settlements for a total of 71)</b> against climate-related flooding and drought is increased through community-based and catchment-wide climate change adaptation measures</p> <p>With the catchment-wide approach it is estimated that all resident of the Ba Catchment Area will be benefitting from climate adaptation measures</p> <p><b>At least 30% women and 10% youth with improved resilience to climate change</b></p>	<p>Project reports</p> <p>Minutes from appropriate meetings</p> <p>Provincial policy documents, development plans</p> <p>Disaster preparedness and response plans, project monitoring and evaluation reports</p> <p>Gender-disaggregated data analysis</p>	<p>Political stability and commitment to climate compatible development is maintained Political will and commitment by senior government officials to integrate climate change and adaptation Strong coordination amongst climate change stakeholders in the country, at national and sub-national level Strong community leadership, cooperation and support for project activities. Financial resources are allocated from government budgets and cofinanciers to address climate-related risks</p>
	<p>Catchment-wide governance to improve resilience to climate change impacts (cross-reference to Outcome 2 indicator)</p>	<p>The population of the catchment area (rural villages) is estimated at 10,981 based on the 2007 census. In addition, the town of Ba has a population of 14,596 which stand to</p>	<p>A Ba Catchment Committee is in place and implementing the Ba Catchment Management Plan that is formulated with explicit considerations of climate change impacts. The committee will also sit in the Project Steering Committee.</p> <p>Adequate representation of women and youth in the BCC at 30% of total</p>		
	<p>Management, monitoring and planning of adaptation to climate change at the village level</p>	<p>By the end of the project, adaptation to climate change is planned, implemented, managed and monitored at the village level in the target area and at the catchment level through the Ba Catchment Management Plan.</p>			

		benefit downstream. Total target beneficiary is 25,577. Of these, there are estimated at 63% and youth at 37%.	The project is expected to benefit the entire population of Ba catchment, including the town of Ba. The beneficiaries will include men, women, children, and elderly populations.		
<b>Project Strategy</b>	<b>Indicator</b>	<b>Baseline</b>	<b>Target at end of Project</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
<b>Outcome 1</b> Reduced exposure to flood and drought-related risks and hazards in the Ba catchment area.	Number of villages benefitting from flood and drought early warning service	Disaster preparedness is limited by the lack of and state of facilities and plans There are community-based Disaster Response Plans prepared in Nasolo, Votutu, Nawagarua, and Votua communities, but with a focus on flood response rather than mitigation, prevention, and/or adaptation.	All 34 villages are benefitting from the drought early warning service. The total population benefitting from the flood and drought EWS covers the Ba catchment and the Ba town – 25,577.	Project reports, monitoring & evaluation reports,  Minutes from the TWG, project reports, verification through reports from local CBOs and NGOs Procurement records Site plans for establishment of EWS. Progress reports from Fiji Met Service Distributed weather information reports Provincial policies, disaster management plan	Fiji Meteorological Services remains committed to expand and manage their weather monitoring and forecasting activities and is adequately funded through government resources to allow for maintenance and further expansion after the project. There is strong support from village, district and provincial level officials that ensure the continued cooperation among communities and districts The government supports the identified engineering measures and adopt them in their development plans Financial resources are allocated from government budgets for the operating and maintenance costs of the system
	Number of agro-climatic weather stations	There is lack of equipment and capacity of FMS is weak, hence the forecasting of drought and weather patterns is limited.	Three fully-automated agro-climate station that meets WMO standards and contribute to the monitoring and early warning system		
	Amount of national and subnational funds allocated for operating, repair and maintenance.	None in the Ba Catchment.	Adequate amount (to be determined during implementation) for operations, repairs and maintenance included in the government budget at the national and local levels.		
	Number of public-private partnership established.	None in the Ba Catchment area  There are existing partnerships on flood EWS with Vodafone and Digicel in the Nadi Catchment.	At least one partnership signed regarding the operations and maintenance of the early warning systems		
<b>Project Strategy</b>	<b>Indicator</b>	<b>Baseline</b>	<b>Target at end of Project</b>	<b>Sources of Verification</b>	<b>Assumptions</b>

<p><u>Outcome 2:</u> Increased adaptive capacity of rural villages in the Ba watershed to flood- and drought-related risks and hazards</p>	<p>Ba Catchment Committee (BCC) to oversee management of entire watershed</p> <p>Ba Catchment Management Plan with identified climate change adaptation measures</p> <p>Representation of women and marginal groups in managing the Ba Catchment</p> <p>% of population served by the community interventions (gender- and age disaggregated)</p>	<p>No catchment level organization in place and no management plan prepared with corresponding adaptation measures</p> <p>None</p>	<p>Ba Catchment Committee in place and recognized by government</p> <p>Ba Catchment Management Plan with CC-A measures adopted and implemented</p> <p>Adequate representation of women and youth in the BCC (at least 30% women and 10% youth)</p> <p>100% coverage of all in the catchment (10,981 as of 2007) benefitting from community interventions directly or indirectly.</p>	<p>Project reports, monitoring &amp; evaluation reports, including impact assessments Minutes from the TWG, project reports, verification through reports from local CBOs and NGOs Documents on the Ba Catchment Committee and subsequent minutes of meetings and actions Procurement records Site plans for establishment of the community level initiatives, including communal water storage Progress reports from Fiji Met Services Distributed weather information reports Sub-national policies, disaster management plan</p>	<p>There is a strong commitment from the communities and their leadership throughout the time of the project Fiji Met Services remains committed to expand and manage their weather monitoring and forecasting activities and is adequately funded through government resources to allow for maintenance and further expansion after the project. There is strong support from district and provincial level officials that ensure the continued cooperation among communities, districts and provinces Provincial governments are supportive in expanding the role and resources for the climate change officers/focal points Landowners allowing their land to be used to establish the AWSs. Voluntary weather recorders are committed and consistently recording data.</p>
	<p>Number of communities participating in Ba catchment rehabilitation (gender and age-disaggregated)</p>	<p>There is no coordinated effort among communities in rehabilitating the watershed</p>	<p>All villages are participating through community level conservation areas and forest belts</p> <p>Adequate representation of women and youth in conservation activities (at least 30% women and 10% youth)</p>		
	<p>Number of flood management measures implemented</p>	<p>No concrete plans in place to address floods</p>	<p>At least 3 concrete adaptation measures implemented – river bank stabilization and drainage improvements to reduce impacts on economic assets and livelihoods; village-level emergency evacuation centers to reduce risks to life in times of floods</p>		
	<p>Number of crops and agricultural practices promoted to increase resilience flood and droughts</p>	<p>There is little consideration of climate change in the current agricultural practices</p>	<p>Sugar cane is tested for drought and flood resilience and tested in farm trials</p> <p>At least two soil and water</p>		

			conservation measures implemented in demonstration farms to improve climate resilience of sugar cane farming		
	Number of villages with enhanced water supply particularly in times of drought  Consideration of the needs of women and children in the communal water storage	Most of the communities' water supply have not factored in the impact of climate change	All 31 villages have increased domestic water storage capacity to moderate impacts of droughts  Distance and frequency of water fetching by women/children reduced substantially		
<b>Project Strategy</b>	<b>Indicator</b>	<b>Baseline</b>	<b>Target at end of Project</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
Outcome 3: Strengthened governance to effectively address climate change and disaster risks at the national and sub-national levels.	Number of policy reforms identified and implemented	There has been little/no focus on the need for policy reforms	At least 4 reforms identified and implemented by the end of the project, agriculture, land management, disaster management and water resources. Any other relevant reforms will be identified from the assessment	Development plans, monitoring and evaluation reports  Coastal zone management policies and their gazetment	Senior officials of the provincial administrations are supportive of the project and the integration of climate change and adaptation in development plans and policies. Climate change officers / focal points at the sub-national level are able to utilise trainings and resources to build their own and local capacity for adaptation The Climate Change Act is gazetted and CEPA is established The government remains committed to the climate compatible development strategy
	Number of policy makers strengthened in capacity (gender- and age disaggregated)	There has been little/no strengthening in the capacity of policy makers	At least 20 policy makers trained in climate-sensitive policies by the end of the project. Target trainees from national level is 8 and 12 trainees from the provincial level  Adequate representation of women and youth in training (least 30% women and 10% youth)	Project reports, monitoring and evaluation reports, verification through CBOs and NGOs  Minutes of high-level policy meetings	
	Number of local communities and population empowered to improve resilience to CC impacts (gender- and age disaggregated)	There has been little or no focus on the need for the empowering of local communities to improve resilience to CC impacts	The targeted 71 communities (34 villages and 37 settlements) empowered by the end of the project through life skills trainings, making influential key decisions on implementation of the project. In terms of population, the coverage is 100%, which is estimated at 10,981 as of 2007.		

			Adequate representation of women and youth that are empowered by the project - at least 30% women and 10% youth		
<b>Project Strategy</b>	<b>Indicator</b>	<b>Baseline</b>	<b>Target at end of Project</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
<p><u>Outcome 4:</u> Strengthened awareness and ownership of adaptation and climate risk reduction processes at national and local levels</p>	<p>Number of lessons learned &amp; best practices generated.</p> <p>No. of lessons learned &amp; generated best practices that are distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms</p>	<p>There is little awareness of the need to generate best practices in the area of adaptation and climate risk reduction processes</p>	<p>By the end of the project, there is to be a documentation produces for all lessons learned, &amp; best practices</p> <p>Also, by the end of the project 75% of lessons learned (i.e., 75) and 75% (i.e. 30) of the generated best practices would have been formally distributed to other appropriate users</p>	<p>Awareness raising materials, best practice toolkits, monitoring and evaluation reports, Field reports, project monitoring and evaluation reports School curricula documents Training materials and records of trainings MOUs/agreements</p>	<p>Strong community leadership allows for capacity building and awareness raising to translate into community-led replication activities Department of Education remains committed to the integration of climate change in school curricula The role of corporate social responsibility in Fiji gains further momentum and can be tapped for contributions in the area of climate change and adaptation Infrastructure tax credit schemes introduced/ remain in place</p>
	<p>Number of CC awareness &amp; education programmes developed &amp; implemented for schools</p>	<p>Schools in the Ba catchment area are not yet covering climate change in their classes and activities; there is no/very limited guidance for teachers</p>	<p>The topics of climate change and adaptation are introduced in Ba and Fiji's school curricula and university academic programmes Two teachers from each school in the Ba catchment area are trained on CC and CC-A Note: Outside the Ba Catchment, awareness activities would target the entire Ba Province, the rest of the Western Commission and the wider population of Fiji. Population as of 2007 are, respectively 231 760, 319 611 and 837 271.</p>		

**F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund**

<b>Project Objective(s)<sup>32</sup></b>	<b>Project Objective Indicator(s)</b>	<b>Fund Outcome</b>	<b>Fund Outcome Indicator</b>	<b>Grant Amount (USD)</b>
The overall objective of the project is to reduce the exposure and increase the adaptive capacity of communities living in the Ba catchment area to drought and flood-related climate and disaster risks.	Number of risk-exposed rural villages protected through adaptation measures	Outcome 1: Reduced exposure at national level to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	<b>5,280,000</b>
	Catchment-wide governance to improve resilience to climate change impacts (cross-reference to Outcome 2 indicator)	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks  2.2. Number of people with reduced risk to extreme weather events	
	Management, monitoring and planning of adaptation to climate change at the village level	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level  Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress  Outcome 7: Improved policies and regulations that promote and enforce resilience measures	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses  3.2. Modification in behavior of targeted population  5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress  7. Climate change priorities are integrated into national development strategy	
<b>Project Outcome(s)</b>	<b>Project Outcome Indicator(s)</b>	<b>Fund Output</b>	<b>Fund Output Indicator</b>	<b>Grant Amount (USD)</b>

<sup>32</sup> The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

<p><b>Outcome 1:</b> Reduced exposure to drought-related risks and hazards in the Ba catchment area.</p>	<p>Number of villages benefitting from drought early warning service</p>	<p><b>Output 1:</b> Risk and vulnerability assessments conducted and updated at a national level</p>	<p>1.1. No. and type of projects that conduct and update risk and vulnerability assessments</p> <p>1.2. Development of early warning systems</p> <p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events</p> <p>2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased</p> <p>2.2.1. Percentage of population covered by adequate risk-reduction systems</p> <p>2.2.2. No. of people affected by climate variability</p>	<p><b>574,500</b></p>
<p>Number of agro-climatic weather stations</p>	<p><b>Output 2.1:</b> Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events</p>	<p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events</p> <p>2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased</p> <p>2.2.1. Percentage of population covered by adequate risk-reduction systems</p> <p>2.2.2. No. of people affected by climate variability</p>		
<p>Amount of funds allocated for operating, repair and maintenance.</p>	<p><b>Output 5:</b> Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability</p>	<p>5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)</p>		
<p>Number of public- private partnership established.</p>				
<p><b>Outcome 2:</b> Increased adaptive capacity of rural villages in the Ba watershed to flood- and drought-related risks and hazards</p>	<p>Ba Catchment Committee to oversee management of entire watershed</p>	<p><b>Output 1:</b> Risk and vulnerability assessments conducted and updated at a national level</p>	<p>1.2. No. and type of projects that conduct and update risk and vulnerability assessments</p> <p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events</p> <p>2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased</p>	<p><b>368,000</b></p>
<p>Ba Catchment Management Plan with identified climate change adaptation measures</p>	<p><b>Output 2.1:</b> Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events</p>	<p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events</p> <p>2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased</p>		
<p>Representation of women and marginal groups in managing the Ba Catchment</p>	<p><b>Output 2.2:</b> Targeted</p>			

		population groups covered by adequate risk reduction systems	2.2.1. Percentage of population covered by adequate risk-reduction systems	
	Number of communities participating in Ba catchment rehabilitation		2.2.2. No. of people affected by climate variability	
	Number of flood management measures implemented	Output 5: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	
	Number of crops and agricultural practices promoted to increase resilience flood and droughts			
	Number of villages with enhanced water supply particularly in times of drought			
	Consideration of the needs of women and children in the establishment of communal water storage			
Outcome 3: Strengthened governance to effectively address climate change and disaster risks at the national and sub-national levels.	Number of policy reforms identified and implemented	Output 7: Improved integration of climate-resilience strategies into country development plans	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks	<b>568,000</b>
	Number of policy makers strengthened in capacity		7.2. No. or targeted development strategies with incorporated climate change priorities enforced	
	Number of local communities empowered to improve resilience to CC impacts			
Outcome 4: Strengthened awareness and ownership of adaptation and climate risk reduction processes at national and local levels	Number of lessons learned & best practices generated.	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. and type of risk reduction actions or strategies introduced at local level	<b>334,500</b>
	No. of lessons learned & generated best practices that are distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms			
	Number of CC awareness & education programmes developed & implemented for schools			

- G.** Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Refer to the following:

- ANNEX 2: UNDP Environmental Finance – Specialized Technical Services
- ANNEX 3: Project Execution Cost
- ANNEX 4: Total Budget and Work Plan
- ANNEX 5: Breakdown of Budget by Output and Activity

- H.** Include a disbursement schedule with time-bound milestones.

Refer to the following:

- ANNEX 6: Disbursement Schedule

## PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

**A. Record of endorsement on behalf of the government<sup>33</sup>** *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Amena V. Yauvoli Permanent Secretary for Foreign Affairs and International Cooperation	Date: <span style="background-color: yellow;">May 8, 2014</span>
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**B. Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
	
Adriana Dinu Director a.i Environmental Finance UNDP	
Date: May 12, 2014	Tel. and email: +1-212 906-5143; Adriana.dinu@undp.org
Project Contact Person: Jose Erez Padilla	
Tel. And Email: <a href="mailto:jose.padilla@undp.org">jose.padilla@undp.org</a> ; +66 2 304 9100 ext 2730	

<sup>6</sup> Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



	Outcome / Output / Activity	Year I				Year II				Year III				Year IV			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	2.1.4. Preparation of Ba Catchment Management Plan through consultative processes, implementation and subsequent review																
	Ba catchment Management Plan completed							♦									
	2.1.5 Monitoring and Evaluation of the Ba Catchment Management Plan																
2.2	Ba watershed rehabilitated and sustainably managed through community level actions																
	2.2.1. Establishment of community conservation areas																
	Participation of women in establishment of community forests							♦									
	2.2.2. Establishment of 'forest belts' in steep sloping lands to reduce erosion and moderate downstream water flows																
	Community conservation agreements for forest belts finalized						♦				♦			♦			
	Start of activities in target midstream/upstream communities (3 batches)						♦				♦			♦			
	2.2.3. Mangrove reforestation to stabilize coastal areas and moderate coastal and inland flooding																
	Community conservation agreements for mangrove forests finalized						♦				♦						
	Start of activities in all coastal communities (2 batches)						♦				♦						
	2.2.4. Establishment of four (4) centralized nurseries																
	Centralized nurseries in operation with participation of communities and women			♦													
	Turnover of nurseries to DoF with involvement of communities and local governments																♦
2.3	Output 2.3. Integrated climate-resilient flood protection measures implemented at the community level																
	2.3.1. River bank stabilization through soft and hard measures																
	Design of soft/hard measures completed; implementation starts							♦									
	2.3.2. Enhancement of existing flood management structures in the entire catchment																
	Climate-proofing design completed; Screening by Department of Environment; scoping; Final ToR for EIA Study	♦															
	EIA Study & Monitoring Plan		♦														
	EIA Report Review, Technical Review and Public Review/comments		♦														
	Decision on EIA; Grievance and/or Appeal		♦														
	Construction completed																♦
	2.3.3. Construction of village level emergency flood evacuation centers through cost-sharing arrangements																
	Completion of emergency evacuation centres in target villages taking into account the needs of women and children																♦
2.4	Climate-resilient agriculture promoted																
	2.4.1. Development of climate-resilient (flood-tolerant and drought-tolerant) crop varieties and subsequent farmer field trials																
	Field trials start with participation of women and youth																♦
	2.4.2. Simulation of climate impacts on sugar cane farming using APSIM (Agricultural Productivity Simulator)																
	APSIM purchased and start of simulation studies																♦
	2.4.3. Adoption of integrated soil and water conservation farming techniques (e.g., contour farming and planting vetiver grass)																
	Commencement of farm activities																♦
	2.4.4. Improvement of in-farm drainage systems in demonstration sugar cane farms																
	Start of in-farm activities																♦
2.5	Water supply capacity of communities enhanced under conditions of changing climate																

Outcome / Output / Activity	Year I				Year II				Year III				Year IV			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2.5.1. Diversification and enhancement of water supply for domestic use by harvesting rainwater and storing stream flows and groundwater																
Design of water supplementary water supply with consideration of role of women completed; start of installations				◆												
2.5.2. Promotion of and increasing awareness for water saving and related practices																
Communication materials finalized; start of dissemination				◆												
<b>3.0 Strengthened institutional capacity to integrate climate change risks into sectoral policies and management practices</b>																
3.1 Climate change and disaster risks and resilience integrated into sectoral policies and planning frameworks at the national and sub-national levels																
3.1.1. Assessment of national and sub-national sectoral policies and institutions with respect to climate change provisions																
Sectoral policies and institutions assessed and some reforms identified				◆												
3.1.2. Advocacy for the national climate change policy and its localization																
3.1.3. Development and implementation of a policy and institutional reform agenda proceeding from Activity 3.1.1																
Reform agenda finalized and implementation start							◆									
3.2 Capacity strengthening of policy makers at the national, provincial and district offices, institutions and extension services to implement climate sensitive policies and plans																
3.2.1. Development of a training manual on climate change adaptation and disaster risk management into community development																
Training manual published and distributed					◆											
Training manual gender sensitized				◆												
3.2.2. Conduct training of national, provincial and district staff in various agencies and sectors																
3.3 Empowerment of local communities to improve resilience to climate change impacts																
3.3.1. Training on climate change adaptation relating to production sectors, including forestry, water, agriculture (crops and livestock), among others																
Support system for trainers and community projects implemented			◆				◆									
Strong turnout of men, women and youth at trainings			◆				◆									
3.3.2. Training on emergency response to climate change related disasters																
Lessons learnt from trainings shared				◆			◆				◆					◆
<b>4.0 Strengthened awareness and ownership of adaptation and climate risk reduction processed at national and local levels</b>																
4.1 Lessons learned and best practices generated are captured and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanism																
4.1.1. Formulate a project Communication Strategy to guide the project through its entire duration																
Communication Strategy established			◆													
Communication Strategy gender sensitized	◆															
4.1.2. Establish and support Fiji's CCA Community of Practice for sharing of project experience at national and provincial levels																
CCA CoP goes online							◆									
4.1.3. Establish and support a Fiji CCA Solutions Exchange, a national web-based platform and linked with regional and global platforms, such as the Adaptation Learning Mechanism (ALM)																
Fiji CCA Solution Exchange goes online					◆											
4.1.4. Use the knowledge management process capturing field experience for upstream policy advice to support policy making and institutional strengthening processes																

	Outcome / Output / Activity	Year I				Year II				Year III				Year IV			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4.2	Climate change awareness and education programmes developed and implemented for schools and technical centers employing various forms of media																
	4.2.1.Support the integration of experience drawn from adaptation measures into training materials, school programmes, community awareness programmes																
	Training materials incorporated with project experiences on adaptation																
	4.2.2. Develop school materials to support education activities related to climate change, coupled with training of teachers and educators on climate change issues																
	School materials developed																
	Training of teachers/educator conducted																
	4.2.3.Establish collaborations with USP [ & FNU to integrate project experience into curricular and research activities																
	Review of policies and curricula completed																
	Curricula reflect climate change and adaptation																
	Materials and guidance documents for educational activities produced																
	4.2.4. Develop various print, broadcast and video materials to convey various messages to audiences/stakeholders of the project																
	Wider circulation of awareness materials																
	Programme Execution																
	<b>PMU established and operational</b>																
	Project staff recruited																
	Equipment procured, office established																
	PMU operational and managing programme implementation																
	<b>Project Monitoring and Evaluation</b>																
	Inception report																
	Quarterly reports																
	Annual technical monitoring report																
	Meetings of National Project Steering Committee																
	Meetings of Provincial Climate Change Steering Committee																
	Meeting of National Climate Change Country Team																
	Mid-Term Evaluation																
	Final Project Evaluation																
	Project Terminal Report																
	Audits																

## ANNEX 2: UNDP Environmental Finance – Specialized Technical Services

The implementing entity fee will be utilized by UNDP to cover its indirect costs in the provision of general management support and specialized technical support services. The table below provides an indicative breakdown of the estimated costs of providing these services. If the national entity carrying out the project requests additional Implementation Support Services (ISS), an additional fee will apply in accordance with UNDP fee policy regarding ISS and would be charged directly to the project budget.

Category	Indicative Services <sup>34</sup> Provided by UNDP <sup>35</sup>	Estimated Cost of Providing Services <sup>36</sup>
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness and potential eligibility of identified idea for AF.	US\$ 22,440
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	US\$ 67,320
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs.	US\$ 89,760

<sup>34</sup> This is an indicative list only. Actual services provided may vary and may include additional services not listed here. The level and volume of services provided varies according to need.

<sup>35</sup> Services are delivered through UNDP's global architecture and 3 tier quality control, oversight and technical support system: local country offices; regional technical staff; and headquarters specialists.

<sup>36</sup> The breakdown of estimated costs is indicative only.

Category	Indicative Services <sup>34</sup> Provided by UNDP <sup>35</sup>	Estimated Cost of Providing Services <sup>36</sup>
	<p>Verify technical reports and project conceptualization.</p> <p>Verify technical soundness, quality of preparation, and match with AF expectations.</p> <p>Negotiate and obtain clearances by AF.</p> <p>Respond to information requests, arrange revisions etc.</p>	
Implementation	<p>Technical support in preparing TORs and verifying expertise for technical positions.</p> <p>Provide technical and operational guidance project teams.</p> <p>Verification of technical validity / match with AF expectations of inception report.</p> <p>Provide technical information as needed to facilitate implementation of the project activities.</p> <p>Provide advisory services as required.</p> <p>Provide technical support, participation as necessary during project activities.</p> <p>Provide troubleshooting support if needed.</p> <p>Provide support and oversight missions as necessary.</p> <p>Provide technical monitoring, progress monitoring, validation and quality assurance throughout.</p> <p>Allocate and monitor Annual Spending Limits based on agreed work plans.</p> <p>Receipt, allocation and reporting to the AFB of financial resources.</p> <p>Oversight and monitoring of AF funds.</p> <p>Return unspent funds to AF.</p>	US\$ 201,960
Evaluation and Reporting	<p>Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting.</p> <p>Participate in briefing / debriefing.</p> <p>Verify technical validity / match with AF expectations of all evaluation and other reports</p> <p>Undertake technical analysis, validate results, and compile lessons.</p> <p>Disseminate technical findings</p>	US\$ 67,320
Total		US\$ 448,800

### ANNEX 3: Project Execution Costs

Function	Profile	monthly cost	Year 1	Year 2	Year 3	Year 4	Total
National Programme Manager (NPD)	Designated DOE Director		-	-	-	-	-
National Programme Coordinator (NPM)	Int'l experience, min. Master, min. 7 years experience	2,500	30,000	30,000	30,000	30,000	120,000
Technical Officer	Secondee from Int'l Organisation (Public/Private/NGO)	1,083	13,000	13,000	13,000	13,000	52,000
Administrative & finance support	Local, professional, min. 3 years experience	521	7,500	7,500	7,500	7,500	30,000
Transportation	Vehicle purchase, operation & maintenance		40,000	10,000	10,000	10,000	70,000
Community Organizers	6 Communities (Tikinas) x 1 organizer each @ US\$100/week	433	31,200	31,200	31,200	31,200	124,800
Miscellaneous			0	0	0	0	0
Office Furniture & Assets			6,000	1,800	1,000	0	8,800
IT Equipment & Communications			7,500	4,000	2,400	2,000	15,900
Monitoring & Evaluation	As per breakdown below		12,250	23,750	5,750	35,750	77,500
			<b>Total Programme Execution Cost</b>				<b>499,000</b>
<b>M&amp;E breakdown by year</b>			<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Total</b>
Inception workshop			5,000				5,000
Inception report			1,500				1,500
Quarterly reports							0
Annual technical monitoring report			2,250	2,250	2,250	2,250	9,000
Meetings of National Project Steering Committee			250	250	250	250	1,000
Meetings of Provincial Climate Change Steering Committee			250	250	250	250	1,000
Meeting of National Climate Change Country Team							0
Mid-Term Evaluation				18,000			18,000
Final Project Evaluation						30,000	30,000
Project Terminal Report							0
Audits			3,000	3,000	3,000	3,000	12,000
<b>Totals</b>			<b>12,250</b>	<b>23,750</b>	<b>5,750</b>	<b>35,750</b>	<b>77,500</b>

## ANNEX 4: Total Budget and Work Plan

<b>Award ID:</b>	PIMS 4572; Atlas Proposal ID: 00066451; Project ID: 00082620
<b>Business Unit:</b>	FJI10
<b>Project Title:</b>	Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji
<b>Implementing Partner (Executing Agency)</b>	Ministry of Foreign Affairs and International Cooperation

GEF Outcome/Atlas Activity	Implementation	Fund ID	Donor Name	Atlas Budgetary Code	ATLAS Budget Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year3	Amount (USD) Year4	Total (USD)	Budget Notes
<b>Outcome 1: Reduced exposure to flood and drought related risks in the Ba catchment area</b>	UNDP - NIM	62040	AF	71200	Int'l Consultants	0	12,000	0	0	<b>12,000</b>	1
	UNDP - NIM	62040	AF	71300	Local Consultants	4,000	9,500	11,500	3,000	<b>28,000</b>	2
	UNDP - NIM	62040	AF	71600	Travel	2,000	7,000	3,500	500	<b>13,000</b>	3
	UNDP - NIM	62040	AF	72100	Contractual Services-Companies	0	10,000	10,000	9,000	<b>29,000</b>	4
	UNDP - NIM	62040	AF	72200	Equipment	0	377,000	41,500	0	<b>418,500</b>	5
	UNDP - NIM	62040	AF	72300	Materials and Supplies	0	48,000	3,500	0	<b>51,500</b>	6
	UNDP - NIM	62040	AF	75700	Training, workshops and Conference	4,000	8,000	8,500	2,000	<b>22,500</b>	7
	<b>Total Outcome 1</b>						<b>10,000</b>	<b>471,500</b>	<b>78,500</b>	<b>14,500</b>	<b>574,500</b>
<b>Outcome 2: Increased adaptive capacity of communities in the Ba watershed to flood and drought related risks and hazards</b>	UNDP - NIM	62040	AF	71200	Int'l Consultants	0	0	0	0	-	
	UNDP - NIM	62040	AF	71300	Local Consultants	20,500	42,000	21,000	8,000	<b>91,500</b>	8
	UNDP - NIM	62040	AF	71600	Travel	15,000	22,000	13,000	9,000	<b>59,000</b>	9
	UNDP - NIM	62040	AF	72100	Contractual Services-Companies	35,000	260,000	205,000	5,000	<b>505,000</b>	10
	UNDP - NIM	62040	AF	72200	Equipment	51,000	216,000	143,000	92,000	<b>502,000</b>	11
	UNDP - NIM	62040	AF	72300	Materials and Supplies	272,500	1,070,500	681,000	203,000	<b>2,227,000</b>	12
	UNDP - NIM	62040	AF	72400	Communication Equipment	40,000	5,000	7,500	2,500	<b>55,000</b>	13

	UNDP - NIM	62040	AF	75700	Training, workshops and Conference	17,500	18,500	14,500	14,000	<b>64,500</b>	14
	<b>Total Outcome 2</b>					<b>451,500</b>	<b>1,634,000</b>	<b>1,085,000</b>	<b>333,500</b>	<b>3,504,000</b>	
<b>Outcome 3: Strengthened governance to effectively address climate change and disaster risks at the national and subnational levels</b>	UNDP - NIM	62040	AF	71200	Int'l Consultants	0	0	0	0	<b>0</b>	
	UNDP - NIM	62040	AF	71300	Local Consultants	4,500	15,000	10,000	5,000	<b>34,500</b>	15
	UNDP - NIM	62040	AF	71600	Travel	500	6,000	6,000	3,500	<b>16,000</b>	16
	UNDP - NIM	62040	AF	72100	Contractual Services-Companies	0	110,000	95,000	60,000	<b>265,000</b>	17
	UNDP - NIM	62040	AF	72200	Equipment	0	3,000	3,000	0	<b>6,000</b>	18
	UNDP - NIM	62040	AF	72300	Materials and Supplies	0	2,000	2,000	2,000	<b>6,000</b>	19
	UNDP - NIM	62040	AF	75700	Training, workshops and Conference	0	14,500	15,500	10,500	<b>40,500</b>	20
		<b>Total Outcome 3</b>					<b>5,000</b>	<b>150,500</b>	<b>131,500</b>	<b>81,000</b>	<b>368,000</b>
<b>Outcome 4: Strengthened awareness and ownership of adaptation and climate risk reduction processes at national and local levels</b>	UNDP - NIM	62040	AF	71200	Int'l Consultants	0	0	0	0	-	
	UNDP - NIM	62040	AF	71300	Local Consultants	6,000	6,000	14,000	14,000	<b>40,000</b>	21
	UNDP - NIM	62040	AF	71600	Travel	14,000	12,000	16,000	15,000	<b>57,000</b>	22
	UNDP - NIM	62040	AF	72100	Contractual Services-Companies	46,250	37,250	34,750	22,750	<b>141,000</b>	23
	UNDP - NIM	62040	AF	72200	Equipment and Furniture	3,500	2,000	4,000	3,000	<b>12,500</b>	24
	UNDP - NIM	62040	AF	72300	Materials and supplies	8,000	6,000	10,000	9,000	<b>33,000</b>	25
	UNDP - NIM	62040	AF	72400	Communication Equipment	3,000	2,000	1,500	1,500	<b>8,000</b>	26
	UNDP - NIM	62040	AF	75700	Training, Workshops and Conference	12,000	8,000	12,000	11,000	<b>43,000</b>	27
		<b>Total Outcome 4</b>					<b>92,750</b>	<b>73,250</b>	<b>92,250</b>	<b>76,250</b>	<b>334,500</b>
<b>All Outcomes</b>	UNDP - NIM	62040	AF	71200	Int'l Consultants	-	12,000	-	-	<b>12,000</b>	Refer to preceding budget notes
	UNDP - NIM	62040	AF	71300	Local Consultants	35,000	72,500	56,500	30,000	<b>194,000</b>	

	UNDP - NIM	62040	AF	71600	Travel	31,500	47,000	38,500	28,000	<b>145,000</b>	
	UNDP - NIM	62040	AF	72100	Contractual Services- Companies	81,250	417,250	344,750	96,750	<b>940,000</b>	
	UNDP - NIM	62040	AF	72200	Equipment and Furniture	54,500	598,000	191,500	95,000	<b>939,000</b>	
	UNDP - NIM	62040	AF	72300	Materials and supplies	280,500	1,126,500	696,500	214,000	<b>2,317,500</b>	
	UNDP - NIM	62040	AF	72400	Communication Equipment	43,000	7,000	9,000	4,000	<b>63,000</b>	
	UNDP - NIM	62040	AF	75700	Training, Workshops and Conference	33,500	49,000	50,500	37,500	<b>170,500</b>	
	<b>Total All Outcomes</b>					<b>559,250</b>	<b>2,329,250</b>	<b>1,387,250</b>	<b>505,250</b>	<b>4,781,000</b>	
<b>Project Management (Execution Costs)</b>	UNDP - NIM	62040	AF	71200	Int'l Consultants	-	18,000	-	30,000	<b>48,000</b>	Refer to Annex 5 for breakdown and information
	UNDP - NIM	62040	AF	71300	Local Consultants	31,200	31,200	31,200	31,200	<b>124,800</b>	
	UNDP - NIM	62040	AF	71400	Contractual Services- Individuals	54,250	52,750	52,750	52,750	<b>212,500</b>	
	UNDP - NIM	62040	AF	71600	Travel	40,000	10,000	10,000	10,000	<b>70,000</b>	
	UNDP - NIM	62040	AF	72100	Contractual Services- Companies	3,000	3,000	3,000	3,000	<b>12,000</b>	
	UNDP - NIM	62040	AF	72200	Equipment and Furniture	6,000	1,800	1,000	-	<b>8,800</b>	
	UNDP - NIM	62040	AF	72800	IT Equipment, Communication	7,500	4,000	2,400	2,000	<b>15,900</b>	
	UNDP - NIM	62040	AF	74500	Miscellaneous	-	-	-	-	<b>0</b>	
	UNDP - NIM	62040	AF	75700	Training, Workshops and Conference	5,500	500	500	500	<b>7,000</b>	
	<b>Total Project Management (Execution Costs)</b>						<b>147,450</b>	<b>121,250</b>	<b>100,850</b>	<b>129,450</b>	
<b>TOTAL</b>						<b>706,700</b>	<b>2,450,500</b>	<b>1,488,100</b>	<b>634,700</b>	<b>5,280,000</b>	

Budget Notes

1	For design of the flood and drought early warning systems
2	Primarily for drafting of flood and drought management plans and institutional analysis and putting in place institutional arrangements
3	Travel (including international travel) for consultants and staff related to flood and drought EWS
4	Dissemination of timely information on flood and drought
5	2 Agro-climatic stations equipment (40K x 2) and installation (19K x 2): 118,000; 6 river/water level gauges (30K x 6) and rain gauges (20K x 6) including telemetry equipment and installation: 300,000. Total: 418,000
6	Materials and supplies for installation of EWS hardware, including fencing; operations and maintenance
7	Training for the operation and maintenance of the flood and drought EWS
8	Preparation of the Ba Catchment Management Plan; technical and scientific analyses of the watershed
9	Travel of consultants and staff for the various activities
10	Primarily for the enhancement of flood management structure and other minor infrastructure in the watershed, including biophysical and technical assessments and surveys and mapping of hazards (2.1.2), establishment of seedling banks (2.2.4), establishment and enhancement of 2 retention dams (US\$ 225,000 x 2) (2.3.2)
11	Water storage (US\$ 100,000) (2.5.1); equipment for improvements of in-farm drainage systems (US\$110,000) (2.2.2, 2.2.3) and for river bank stabilization (US\$ 150,000) (2.3.1). Communication Equipment (US\$ 25,000) (2.1.5, 2.2.4). Other equipment related to project implementation (US\$ 117,000).
12	Materials and supplies for nurseries and mangrove planting (US\$ 100,000) (2.2.3, 2.2.4), river bank stabilization (US\$ 225,000) (2.3.1), integrated soil and water conservation (US\$ 75,000) (2.4.3), water storage and awareness materials (US\$ 196,000) (2.5), village evacuation shelters (US\$500,000) (2.2.3), procurement of flood-tolerant and drought-tolerant crop varieties (US\$175,000) (2.4.1), implementation of community-based adaptation measures identified in the Ba Catchment Management Plan (US\$300,000) (2.1.5), establishment of community conservation areas (US\$ 250,000) (2.2.1), other materials and equipment: US\$406,000
13	Primarily vehicles (pick-up truck and motorcycles for operations) and communication equipment for staff and communities, including repairs/maintenance
14	Trainings/workshops for the Ba Catchment Committee, various consultations to mobilize support from all stakeholders and for dissemination of results
15	For analysis of governance (policies, institutions, etc), development and implementation of the governance agenda
16	Travel of consultants and staff for the various activities
17	All types of trainings for <u>governments</u> at national, provincial and local levels, including development, preparation and reproduction of training materials
18	Training equipment - computers and projector
19	Printing and reproduction costs of manuals and training materials
20	Direct costs of training - venues, food, etc.
21	Development of awareness materials, integration of CC adaptation into curricula, etc
22	Travel associated with awareness activities in schools and other audiences
23	For Fiji CC-A Community of Practice and Solutions Exchange; all types of trainings for schools, civil society, including development and preparation communication and training materials
24	Supplementary set of computer and projector
25	Costs of printing and reproduction of awareness materials
26	Communication equipment for partner schools

**Outcome 1:** AF resources (about 11% of total) will be used to develop an early warning system to address flood and drought-related risks to the entire catchment. Flood-related risks will build on an ongoing JICA project to which the project will collaborate with in terms of the management and dissemination of information as well as in addressing sustainability issues beyond the duration of respective projects. AF resources will support the design, installation and maintenance of three agro-climate stations that will be put in place over the entire catchment. Intensive capacity building of FMS, WAF, NDMO and DoA staff on the use of the system will be undertaken with support of the AF resources.

**Outcome 2:** Most of the AF resources will be used for concrete adaptation measures at the catchment level and primarily at the community level. Total allocation for this outcome is about 2/3 of the total budget. The overall approach is catchment-level management with supporting community-level actions. AF resources will support the creation of a Ba Catchment Committee that will oversee the development, implementation and monitoring of the Ba Catchment Management Plan that will be the overall framework for watershed development and for building resilience to climate change. The entire watershed will be rehabilitated through forest belts, community forests and mangrove reforestation. Likewise, river banks will be stabilized and two weirs will be climate-proofed to moderate the impacts of floods and droughts. The resilience of the agriculture sector to climate change, particularly sugar cane farming will be supported. To reduce flood and drought-related risks to life and health, emergency evacuation centers will be built and communal water storage will be enhanced through the AF resources. With the nature of interventions, about 42% of the total budget (62% of the outcome budget) is for materials and supplies. Communities and the national government agencies are expected to provide counterpart financing in the form of own labor or from planned infrastructure expenditures.

**Outcome 3:** About 7% of the AF resources will be used to strengthen governance at the national and subnational levels to effectively address climate change and disaster risks. A comprehensive review of laws and regulations will be undertaken to assess alignment with climate change and a with the proposed climate change policy. The implementation of the resulting policy agenda will be implemented with AF resources. The project will support the empowerment of local communities to enable them to make informed decisions to better adapt to climate change impacts. In parallel, extensive capacity building will be undertaken to improve the capacity of national and local partners to better understand and respond to climate change. The development and conduct of training programmes will be sub-contracted to appropriate organizations in Fiji.

**Outcome 4:** The strengthening of awareness and ownership of adaptation and climate risk reduction processes at national and local levels will utilize about 6.3% of the total project cost to be provided by the AF. These will be used to support communications platforms, including the development and implementation of a Communication Strategy, a CCA Community of Practice and CCA Solutions Exchange. Communication of results will be done through the popular media and through curriculum development. The AF funds will be used primarily to finance the hiring of local and international consultants and the cost of actual training, workshops and conferences.

## ANNEX 5: Breakdown of Budget by Output and Activity

<b>COMPONENT 1</b>		
	Component/Outcome/Output/Activities	Estimated Budget (USD)
<b>1. Climate Early Warning and information systems</b>	Outcome 1: Reduced exposure to flood and drought related risks and hazards in the Ba catchment area	574,500
	Output 1.1. Flood and Drought Management Plan prepared and Early Warning Information System established	519,500
	Activity 1.1.1 Prepare flood and drought management plans	18,000
	Activity 1.1.2 Design and establish fully automated systems for drought and flood monitoring and early warning	475,500
	Activity 1.1.3 Develop and implement mechanisms for dissemination of timely information to all stakeholders, including farmers, households and researchers	26,000
	Output 1.2. Enhanced capacity of responsible government agencies, including the Fiji Meteorological Service, WAF and other national and provincial agencies	37,000
	Activity 1.2.1 Support effective institutional arrangement for early warning systems and disaster management	8,000
	Activity 1.2.2 Assess and enhance technical capacity through applied training on the application of the flood and drought early warning system	22,000
	Activity 1.2.3 Establish linkages with similar systems in other countries for technical exchanges	7,000
	Output 1.3. Ensured sustainability of flood and drought early warning system	18,000
	Activity 1.3.1 Incorporate operating, repairs and maintenance expenses of the system in annual national and provincial budgets	8,000
	Activity 1.3.2 Explore and establish public-private partnerships	10,000
<b>COMPONENT 2</b>		
<b>2. Community-based adaptation to flood and drought-related risks and hazards</b>	Outcome 2: Increased adaptive capacity of communities in the Ba watershed to flood and drought related risks and hazards	<b>3,504,000</b>
	Output 2.1. Integrated and climate-sensitive flood and drought management plan developed for the Ba catchment area	192,000
	Activity 2.1.1 Establishment of a Ba Catchment Committee and comprehensive capacity building	43,000
	Activity 2.1.2 Biophysical and technical assessments and surveys considering alternative climate scenarios and mapping of hazards	52,000
	Activity 2.1.3 Systematic review of existing flood control, water management, land use and related plans and the application of national laws and policies	18,000
	Activity 2.1.4 Preparation of Ba Catchment Management Plan through consultative processes and subsequent review	47,500
	Activity 2.1.5 Monitoring and evaluation of the Ba Catchment Management Plan	31,500
	Output 2.2. Ba watershed rehabilitated and sustainably managed	1,336,500
	Activity 2.2.1 Establishment of community conservation areas	215,000
	Activity 2.2.2 Establishment of 'forest belts' in steep sloping lands to reduce erosion and moderate downstream water flows	625,000
	Activity 2.2.3 Mangrove reforestation to stabilize coastal areas and moderate coastal flooding	54,000
	Activity 2.2.4 Establishment of 4 centralized nurseries	442,500
	Output 2.3. Integrated climate-resilient flood protection measures implemented at the community level	1,128,500
	Activity 2.3.1 River bank stabilization through soft and hard measures	390,000
	Activity 2.3.2 Enhancement of existing flood management structures in the entire catchment	437,000
	Activity 2.3.3 Construction of village level emergency flood evacuation centers through cost-sharing arrangements	301,500
	Output 2.4. Climate-resilient agriculture promoted	433,000
	Activity 2.4.1 Development of climate-resilient (flood-tolerant and drought-tolerant) crop varieties and subsequent farmer field trials	155,000
	Activity 2.4.2 Simulation of climate impacts on sugar cane farming using APSIM (Agricultural Productivity Simulators)	58,000

	Activity 2.4.3 Adoption of integrated soil and water conservation farming techniques (e.g., contour farming and planting vetiver grass)	124,000
	Activity 2.4.4 Improvement of in-farm drainage systems in demonstration sugar cane farms	96,000
	Output 2.5 Water supply capacity of communities enhanced under conditions of changing climate	414,000
	Activity 2.5.1 Diversification and enhancement of water supply for domestic use by harvesting rainwater and storing stream flows and groundwater	350,000
	Activity 2.5.2 Promotion of and increasing awareness for water saving and related practices	64,000
<b>COMPONENT 3</b>		
<b>3. Institutional Strengthening to support climate and disaster-resilient policy frameworks</b>	Outcome 3: Strengthened governance to effectively address climate change and disaster risks at the national and subnational levels	<b>368,000</b>
	Output 3.1. Policy and institutional reforms identified and implemented to address climate and disaster risks	53,000
	Activity 3.1.1 Assessment of national and subnational sectoral policies and institutions with respect to climate change provisions	5,000
	Activity 3.1.2 Advocacy for the national climate change policy and its localization (at the provincial level)	13,000
	Activity 3.1.3 Development and implementation of a policy and institutional reform agenda proceeding from Activity 3.1.1	35,000
	Output 3.2. Capacity strengthening of policy makers at the national, provincial and district offices, institutions and extension services to implement climate sensitive policies and plans	140,000
	Activity 3.2.1 Development of a training manual on climate change adaptation	40,000
	Activity 3.2.2 Conduct training of national, provincial and district staff in various agencies and sectors	100,000
	Output 3.3 Empowerment of local communities to improve resilience to climate change impacts	175,000
	Activity 3.3.1 Training on climate change adaptation relating to production sectors, including forestry, water, agriculture (crops and livestock), etc.	99,000
	Activity 3.3.2 Training on Emergency response to climate change related disasters	76,000
<b>COMPONENT 4</b>		
<b>4. Awareness raising and knowledge management</b>	Outcome 4: Strengthened awareness and ownership of adaptation and climate risk reduction processes at national and local levels	<b>334,500</b>
	Output 4.1. Lessons learned and best practices generated are captured and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanism	202,500
	Activity 4.1.1 Formulate a project Communication Strategy to guide the project through its entire duration	18,500
	Activity 4.1.2 Establish and support Fiji's Climate Change Adaptation (CCA) Community of Practice for sharing of project experience at national and provincial levels	64,000
	Activity 4.1.3 Establish and support a Fiji CCA Solutions Exchange, a national web-based platform and linked with regional and global platforms, such as the Adaptation Learning Mechanism (ALM)	64,000
	Activity 4.1.4 Use the knowledge management process capturing field experience for upstream policy advice to support policy making and institutional strengthening processes	56,000
	Output 4.2. Climate change awareness and education programmes developed and implemented for schools and technical centers employing various forms of media	132,000
	Activity 4.2.1 Support the integration of experience drawn from adaptation measures into training materials, school programmes, community awareness programmes	30,000
	Activity 4.2.2 Develop school materials to support education activities related to climate change, coupled with training of teachers and educators on climate change issues	46,000
	Activity 4.2.3 Establish collaborations with USP [& FNU] to integrate project experience into curricular and research activities	15,000
	Activity 4.2.4 Develop various print, broadcast and video materials to convey various messages to audiences/stakeholders of the project	41,000

### ANNEX 6: Disbursement Schedule

	Upon Agreement signature		One Year after Project Start <sup>a/</sup>	Year 2 <sup>b/</sup>	Year 3	Total
<b>Scheduled Date</b>	<b>October-14</b>		<b>October-15</b>	<b>September-16</b>	<b>September-17</b>	
<b>Project Funds</b>		706,700	2,450,500	1,488,100	634,700	5,280,000
<b>Implementing Entity Fee</b>	179,520	36,042	124,975	75,893	32,370	448,800
<b>Total</b>	179,520	742,742	2,575,475	1,563,993	667,070	5,728,800

<sup>a/</sup> Use projected start date to approximate first year disbursement  
<sup>b/</sup> Subsequent dates will follow the year anniversary of project start  
<sup>c/</sup> Add columns for years as needed

## Annex 7: Overview of Consultations Undertaken in the Preparation of the Full Proposal

Consultation	Main points discussed/ raised by stakeholders
<p>Community consultations as part of the National Environment Week. This was held in Votua village in Ba and attended by 20 villages/communities. The theme of the consultations is “Climate Change is Real, Act Now to Save our Island Home”.</p>	<p>These were prior consultations conducted with 20 villages/communities as part of the National Environment Week Programme (June 1-5, 2009) held in Ba. The following are lifted from the Ba Communique<sup>37</sup> and these results guided the preparation of the concept and the full proposal.</p> <ul style="list-style-type: none"> <li>• Communities identified the priority climate-related impacts to be floods, cyclones, landslides and drought and requested that the proposal should address these threats. Flooding affects commercial and residential house, crops, livestock, infrastructures, damage to coral reefs, human injuries and loss of life. Drought affects crops, biodiversity, livestock and water supply.</li> <li>• The most vulnerable communities to floods are some of the midstream communities and all the downstream, primarily coastal communities. Droughts, on the other hand, have been identified to be catchment-wide phenomenon but affecting mostly the upstream and midstream communities.</li> <li>• Communities acknowledge that human activities have exacerbated the climate impacts. The degradation of the Ba watershed is due to diminishing natural forests, loss of biodiversity, degradation of land and hydrological/river systems, soil erosion and heavy siltation of the Ba river channel. Due to logging and improper land use management, over 70% of the upper Ba watershed has lost its tree cover and has now become grassland.</li> <li>• Proposed Measures to Adapt to the Impacts of Climate Change <ul style="list-style-type: none"> <li>✓ Communication and awareness. This recognizes the need for conducting more effective awareness on climate change and its impacts at all levels of communities in the Ba watershed. The messages will also cover sustainable management of natural resources and the protection of the environment.</li> <li>✓ Assessment of the vulnerability and adaptation options of communities within the Ba watershed. This pertains to proper assessment of vulnerability and adaptation options to prioritize the measures to be implemented.</li> <li>✓ Natural disaster risk management. This calls for the formation disaster risk management committees at the settlement and village levels and development of a natural disaster risk management plan and an emergency response plan.</li> <li>✓ Application of sustainable natural resources management. This includes the implementation of proper land management systems, afforestation of the <i>talasiga</i> grassland within the mid and upper Ba watershed areas, re-afforestation of the logged native forestry within the Ba watershed, proper land conservation practices for all sugar cane farms in marginal lands, development and endorsement of a community-based and tikina-based land-use plans, demarcation and protection of all areas regarded as headwaters of the major tributaries and water catchment areas for the preservation of water sources, protection of freshwater fisheries and the maintenance of stream flows particularly during the dry season.</li> <li>✓ Evaluation and assessments of existing and future developments. This includes the re-assessment of the Ba urban development plans to take full account of the impacts of climate change, re-assessment and proper planning of the drainage systems within the Ba watershed particularly within sugar cane growing areas, assessment of the drainage system within the Ba river mouth and its exit tributary system, among others.</li> </ul> </li> </ul> <p>Collaborating Partners</p> <ol style="list-style-type: none"> <li>(1) Government: Department of Environment; National Disaster Management Office; Ministry of Health; Forestry Department; Ministry of Provincial Development and Multi Ethnic Affairs; Department of Fisheries; Ministry of Indigenous Affairs; Department of Agriculture; Department of Energy; Fiji Meteorological Services; Ministry of Education; Fiji Electricity Authority; University of the South Pacific (PACE-SD); Ba Town Council; Ba Rural Local Authority</li> <li>(2) NGOs: Mareqeti Viti; World Wild Life Conservation; Green Peace; International Union of Conservation for Nature</li> <li>(3) Representatives from twenty (20) villages within the Ba watershed</li> </ol>

<sup>37</sup> Addressing Climate Change and its Impacts Within the Ba Watershed. Official Communique from the National Environment Programme in Ba held on the 1<sup>st</sup> -5<sup>th</sup> June 2009. 19 pp.

<p>Tues, 6 Sept, 2011. 1<sup>st</sup> Consultation with Suva-based stakeholders</p>	<ul style="list-style-type: none"> <li>• Project should contribute to empower civil servants, not create problems by taking away scarce resources particularly vehicles and computers. Project should provide transport and computers, if possible.</li> <li>• A lot of data has already been collected, and we need to check on these to identify problem areas.</li> <li>• Fiji would like to submit additional similar proposals and it should be confirmed whether they could submit more AF proposals or identify alternative sources that could be tapped (e.g., AusAID and other donor agencies)</li> </ul>
<p>Consultation (9-12 am) held between the AF Project Formulation Team and Suva-based stakeholders which included officials of DOE, Provincial Development, IUCN, FNU, LWRM, etc.</p>	<ul style="list-style-type: none"> <li>• Ba watershed could be divided into 3 locations/ areas (upstream, midstream and downstream), as well as on land-use (agricultural or forest based)</li> <li>• Mangroves should be considered as another category (it should be noted that there are plans to cut off these mangroves) or perhaps the category should be “coastal zone”.</li> <li>• Accessibility could be a problem / issue that will affect selection of sites.</li> <li>• Problem areas (i.e., areas suffering from drought and flooding) should be selected as project sites.</li> <li>• Ba River has two major tributaries and should be both considered by the proposed AF project</li> <li>• Amount of money requested by this AF Project will have to be divided over 4 years and a number of communities/ activities and may not be much after all</li> <li>• Stakeholders were generally supportive of the project</li> </ul>
<p>Wed, 7 Sept, 2011. 1<sup>st</sup> General Consultation with stakeholders based in Nadi, Lautoka, and Ba, including community representatives</p>	<ul style="list-style-type: none"> <li>• Flooding at Ba due to activities along the Ba river</li> <li>• Project should identify best practices in Nadi and replicate in Ba</li> <li>• Need for the various stakeholders to work together</li> <li>• Problems in the Ba watershed are related to location – the Upland has drought problems while the Lowland has flooding problems</li> <li>• Better to focus on problem areas – with regard to drought &amp; flooding</li> </ul>
<p>Consultation (9:45 – 12:00) was held at Lautoka. Stakeholders include CWD, DPO, PA (Ba), DO, LWRM, DOE, etc.</p>	<ul style="list-style-type: none"> <li>• Drought monitoring involves three groups: (a) Met Services,(b) Agriculture, (c) Hydrology (WAF<sup>38</sup>)</li> <li>• Early warning systems: (a) there are some real gaps, (b) there is fragmentation issue to be resolved - many groups involved</li> <li>• AF Project should not duplicate the work of others working in the Ba watershed e.g.: WWF, Live &amp; Learn, JICA, etc.</li> </ul>
<p>Wed, 7 Sept, 2011. Consultation with Fijian villages in Ba</p> <p>Villages visited are Toge and Nawaqarua.</p>	<ul style="list-style-type: none"> <li>• Toge Village: 70 households, village was flooded during the big flood of 2009. Retention dams have been suggested to reduce flood damage but cost is an issue. During droughts, water level in river can get very low; plants just don't grow and everything is brown – no greenery. Village is vulnerable to both drought and flooding</li> <li>• Nawaqarua: by the Ba river, last village on river bank before the sea; in need of enhancement of evacuation centre. They will also need boats to help in evacuation during floods and to be used for fishing at other times.</li> </ul>
<p>Thursday, 8 Sep, 2011. Consultation with LWRM staff in Lautoka.</p>	<ul style="list-style-type: none"> <li>• Drainage schemes in Ba/West were developed in the 70s-80s (mostly during 72-75) and now in need of repairs.</li> <li>• Seawalls installed to control seawater intrusion</li> <li>• Floodgates designed for a 30-year life-span</li> <li>• Soft solutions now (mangroves) now considered but seawall still important for controlling seawater intrusion</li> </ul>

<sup>38</sup> Hydrology Division has moved to FMS in October 2012.

<p>Meeting (9-11 am) between Project Formulation Team and LWRM staff in Lautoka. Meeting was held at the LWRM Office, Lautoka.</p>	<ul style="list-style-type: none"> <li>• AF Project should consider helping with enhancement of existing drainage</li> <li>• Seawall – made of well-compacted earth. Maintenance cost: \$500,000 - \$600,000 a year</li> <li>• Seawalls: Plan is to raise height by 300 – 500 mm (0.3-0.5 m). Length of seawalls in the Ba watershed area: <ul style="list-style-type: none"> <li>○ 3.65 km Sarava Drainage Scheme (DS)</li> <li>○ 1.40 km Votua DS</li> <li>○ 1.57 km Talecake DS</li> <li>○ 3.60 km Raviravi DS</li> </ul> </li> <li>• Another contributing factor to flooding: highway built at high level and they block water flow during heavy rains/ flooding; current culverts not adequate</li> <li>• Flood retention dams – being tried in Nadi, plan is to duplicate in Ba. A series of 12 retention dams planned for Nadi with 3 completed, and 9 to go. Costs \$500,000 a dam – 2 dams considered for Ba watershed. Can be used for aquaculture and irrigation as well.</li> <li>• River dredging carried out in Ba but soft approaches (Forestry/ Agriculture) being considered; watershed management being a proactive rather than reactive approach.</li> <li>• LWRM has been following codes for putting up infrastructure and AF project should consider supporting the upgrade of codes with regard to CC. Drainage Act (a law) has specific codes – to change codes, have to change Act. There is also need of capacity building regarding CC. Specifications held under Dept. of Town &amp; Country Planning.</li> <li>• Soil erosion – an important cause of sedimentation/siltation &amp; flooding</li> <li>• Using river water for irrigation at Toge: To irrigate 10 acres: cost \$50,000 (pump, tank, pipes, sprinklers, labour)</li> </ul>
<p>Thurs, 8 Sept, 2011. Consultation with DPO's Office, Lautoka</p>	<ul style="list-style-type: none"> <li>• JICA EWS: Nawaqarua, Nasolo – as part of JICA's pilot projects in Pacific (Solomon Is &amp; Fiji)</li> <li>• Integrated Rural Development Framework <ul style="list-style-type: none"> <li>○ Centralized/ Sectoral → Integrated Rural Development</li> </ul> </li> <li>• Peoples Charter for Change: Bottom up; client driven; coordination (NGOs, regional, international); team work; decentralized; planning, implementation, monitoring &amp; evaluation. Has a National Steering Committee.</li> </ul>
<p>Consultation took place from 11 am to 1 pm.</p>	<ul style="list-style-type: none"> <li>• Strategies: (1) Empower the DC's, (2) Ministries/ Depts. – provide 6 monthly reports, (3) NGO's role, (4) Community's role – have to take ownership, (5) Development Boards – at Provincial and Divisional levels</li> <li>• Village Development Committee: TNK is Chairman with reps from village groups – Youth Group, Women's Group, etc. Includes sustainability mechanism – involves Provincial Council Officer. Village to see project as a village project and not a UNDP project. DO's, Provincial Officers, etc. to the evaluation and monitoring during their visits.</li> <li>• NGOs operating in Ba/West need to contact Commissioner (West). ADRA (an SDA NGO works with water and has good records).</li> <li>• JICA meters: rain gauge – measuring rainfall; water gig – measuring water level in river. Linked automatically to NDMO who gives the disaster messages. System not linked automatically to Japan as claimed by some.</li> <li>• Provincial Development has 3 sections – Provincial Dept., NDMO, and Sugar.</li> <li>• Disaster Management Plan – not yet finished; National Disaster Management Act – now under review.</li> <li>• Trainings for TNK's: how to conduct initial damage assessment – to avoid overestimation of damages in the hope of getting more aid. Emma suggested that they be given camera to make "photo stories"</li> <li>• DO (Ba) responsible for development in Ba District which includes the following tikina's: (1) Nailaga, (2) Nalotawa, (3) Naloto, (4) Bulu, (5) Magodro, and (6) Qaliyalatini</li> <li>• Nadarivati District includes (1) Nadrau, (2) Navatusila</li> <li>• Agreed that the actual development of resistant crop varieties cannot be supported by the AF Project</li> </ul>

<p>Thurs, 8 Sep, 2011. Consultation with IWRM (Nadi) and Hydrology WAF (Lautoka)</p>	<ul style="list-style-type: none"> <li>• Data kept by WAF (Hydrology) includes water levels, flow data, flood records</li> <li>• Data flow in the Nadi Basin project: Nadi Basin data → Fiji Met Services → Suva → NDMO</li> <li>• An example of current fragmentation within the system: <ul style="list-style-type: none"> <li>○ WAF – keeps water level</li> <li>○ Met Services – monitors rainfall</li> <li>○ MRD – monitors tsunamis &amp; earthquakes</li> <li>○ NDMO – issues warnings</li> </ul> </li> </ul>
<p>This consultation (3-5 pm) was held by the project formulation team with staff of the IWRM Project (Nadi) and Hydrology WAF (Lautoka)</p>	<ul style="list-style-type: none"> <li>• Met Services and WAF are starting to collaborate</li> <li>• Early Warning System: need training of locals. NIWA – involved in training of locals in Nadi.</li> <li>• EWS – important as it can avoid loss of life during disasters</li> <li>• A problem with JICA funding – have to buy equipment from Japan</li> <li>• AF Project should consider training people at WAF to reduce their dependence on Japanese experts. (Japanese are also training WAF staff for maintenance skills)</li> </ul>
<p>*Note: Hydrology Division of WAF has moved to FMS in October 2012</p>	<ul style="list-style-type: none"> <li>• For EWS, dissemination of information will require private-public collaboration (e.g. with Digicel or Vodaphone). Commissioner (West) can initiate message so warning/ message could be texted to all subscribers.</li> <li>• A small plane could be useful for survey works (though not under AF funding).</li> <li>• Drought messages may include: wells/river drying; animals/plants dying; boreholes dried out; etc.</li> <li>• Catchment Management Plan: legislation about to be enacted “Land &amp; Water Conservation Bill”. Will give legal teeth to catchment management at divisional and district levels</li> <li>• Better forget trying to work with the Navua EWS, better work with JICA as they are already working in the Ba watershed</li> <li>• From Nadi experience, the Ba Watershed Management Plan will take years to finalize. Better to just start with some activities such as establishing conservation areas for firewood.</li> <li>• Economics does not favour pine trees (\$80/tree – after 10 years) compared with “tarawau”, a local fruit tree (\$50/year - \$500 after 10 years)</li> <li>• Nadi Project deals with Legalega Research Station and Sigatoka RS for nurseries – for grafting etc.</li> <li>• Focus on staple, dwarf coconuts, breadfruit varieties</li> <li>• Nadi now working with a food processing company to process fruits including mangoes, guavas, etc.</li> <li>• To involve government departments, need to identify and tie in with their core activities</li> <li>• Working linkage between UNDP and DOE: for non-finance matters, UNDP deals directly with DOE; for finance matters, UNDP goes to DOE through Ministry of Finance</li> <li>• Nadi Basin catchment Committee: 24 members (sectoral representation); sitting allowance – Chair: \$110/meeting; Others: \$60/meeting; meets every quarter.</li> <li>• Ad hoc consultants: \$90/day plus mileage, per diem.</li> <li>• For Ba, first step recommended: have a Project Management Unit; have an Interim Committee (Steering Committee) that will later develop into the Ba Catchment Committee. Finalize things later.</li> </ul>
<p>Fri, 9 Sep. 2<sup>nd</sup> General Consultation with Stakeholders based in Nadi, Lautoka and Ba, including community representatives</p>	<p><u>WWF and Land Use</u></p> <ul style="list-style-type: none"> <li>• Also working on building resilience with a focus on CC and mangroves in two sites – Ba and Labasa (Macuata, Vanua Levu). Considering issues related to people, catchment, rivers, mangroves, iqoliqoli (traditional fishing ground)</li> <li>• Divided Ba into 3 regions: Coastal, Coastal inland, and Highland. Also looking into sources of water, patterns of water usage, and source of income.</li> </ul> <p><u>Extraction of Magnetised Sand by Amex Resources Ltd</u></p>

<p>This consultation (10:30 am – 2:00 pm) was held in Ba. Stakeholders that attended included WWF, Land Use Planning, PA (Ba), SA (Ba), Amex Resources Ltd, LWRM, WAF, Fiji Met Services, community representatives, etc.</p>	<ul style="list-style-type: none"> <li>• This company is interested in extracting sand from the Ba River at 2 areas not dredged – near Ba bridge and near mouth of Ba River. Land owners do not want the river mouth dredged saying that it will affect their fish catch</li> <li>• They are interested in doing physical extraction/ dredging with no chemical input which they argue will have no negative environmental effect but will help river flow – especially during floods</li> </ul> <p><u>JICA/ PA (Ba)</u></p> <ul style="list-style-type: none"> <li>• JICA is doing a 3 year community based disaster management project (2010-13). Target areas: Toge, Nasole, Nawaqarua, Votua. Have installed gauges to measure rainfall and water level in rivers.</li> </ul> <p><u>Special Administrator (Ba)</u></p> <ul style="list-style-type: none"> <li>• Argues that 90% of flooding in Ba town is due to water coming from Elevuka creek and not from the main Ba river.</li> <li>• There is a need to straighten up streams draining to the main Ba river – to facilitate waterflow, especially during flooding</li> </ul> <p><u>Some Additional Comments</u></p> <ul style="list-style-type: none"> <li>• Important to focus on empowerment – make communities properly understand project and involve them in all aspects,</li> <li>• Agreed for AF Project to focus on drought as JICA is already working on flooding aspects</li> <li>• Visited D&amp;I areas with LWRM – especially floodgates. Saw effect of highway on flooding. Culverts to allow waterflow across roads: \$120,000 - \$150,000 per crossing</li> <li>• Visited town areas needing D&amp;I works</li> <li>• Population: Ba town = 20,000; Others dependent on town/market = 60,000; Total = 80,000 (Special Administrator)</li> </ul>
<p>Sat, 10 Sept, 2011. Consultation with PA (Ba) and community leaders in the upstream villages</p>	<ul style="list-style-type: none"> <li>• Boreholes may cost \$9,000 each (\$6,000 for borehole and generator, \$3,000 for pipes)</li> <li>• Catchment Committee (Nadi has 24 members – may be too big for Ba?) vs Steering Committee. Discussed idea of starting with a Steering Committee to start off the project activities and then slowly move into the establishment of a Catchment Committee later on.</li> <li>• PA (Ba) can accommodate office for PMU which includes a staff of 5 (3 permanent and 2 visiting)</li> </ul>
<p>Consultation was held during field visit to Nadarivatu (9 am - 6 pm)</p>	<ul style="list-style-type: none"> <li>• Evacuation Centres: Total cost = \$70,000; 70/30 funding arrangement; 70% = \$50,000</li> <li>• Sugarcane being planted in midstream as well, eg Navala and Toge</li> </ul>
<p>Mon, 12 Sep, 2011. Consultation with Agriculture (Extension), Lautoka</p>	<ul style="list-style-type: none"> <li>• Ba has 3 crops and 2 livestock officers that report to the AO (Ba) based in Ba, who reports to the SAO (Ba) based in Lautoka, who reports to the PAO (West) based in Lautoka</li> <li>• They have 3 additional staff in Ba – a TO for Ba district, a Locality Field Officer, and a Fieldman</li> <li>• They are aware of drought and flooding problems which they consider as important issues for agriculture in Ba</li> <li>• There is some complexity in the “boarder areas” of Ba: E.g., (1) Nadrau village comes under Navosa district but is served by Ba district – which is much easier to get to; (2) Mare, Nanoko come under the district of Magodro, Ba but served by Nadroga.</li> </ul>
<p>Consultations were held first with the PAO (W) then with SAO (Ba)</p>	<ul style="list-style-type: none"> <li>• Agriculture can be involved in research (through Director Research) and training (through their Extension Division). They can consider demonstrations at Research Station or on-farm (multi-locations). Two key research stations are (1) Legalega Research Station – which deals with “Dry Zone” (which includes Ba) issues – including research on potential dry zone crops including vegetables, cereals, pulses, and is also involved in sugarcane research, and (2) Dobiulevu Research Station – which is involved with root crops research.</li> </ul>
<p>Mon, 12 Sep, 2011. Consultations at Indo-Fijian communities</p>	<p><u>First Community: Bulabula/ Moto/ Wailagi Settlement</u></p> <ul style="list-style-type: none"> <li>• Five families in the settlement have a borehole. Serious digging started after the 2007 drought. Some find water at 100 ft, others at 235 ft with cost averaging about \$5,300 per borehole. Borehole water does not dry up during droughts.</li> </ul>

<p>Consultations (2-6 pm) were held in the field in the Ba Catchment Area</p>	<ul style="list-style-type: none"> <li>• Drinking water at Moto settlement is dirty.</li> <li>• An issue is children preferring to move outside Ba and even overseas in search of better opportunities.</li> </ul> <p><u>Second Community: Nukuloa (Nukurua) Settlement</u></p> <ul style="list-style-type: none"> <li>• Vatusui settlement is on the other side of Nukuloa settlement</li> <li>• Indian Advisory Councillors are voluntary, unpaid positions</li> <li>• The micro-catchment that feeds this area is the Nukuloa/Valevuto catchment</li> <li>• More than 100 households in the settlement</li> <li>• Water volume – as well as water quality – are the big issues</li> <li>• People in the community have been digging boreholes to meet their own requirements but they say that the whole community will be better off if helped with a dam/ reservoir (to collect water from the stream) and pipings to distribute the water to community members .</li> <li>• A problem that has persisted for the last 40 years: A private supplier (Mr. X) has been supplying water to 800 households and charging each one \$140/year (those needing water for vegetable production as well pay \$200/year) for drinking water but quality has been very poor – causing health problems such as diarrhoea (technical details of water quality and impact on health of local people are with the local health centre)</li> <li>• Villages/settlement supplied by Mr. X – Nukuloa, Valevuto, Nacaci, Toge, Vatusui, Naruku, Kumkum, Nukuloa backroad, Pakistan</li> <li>• Government is aware of the issue (has been reported to the local DO; PM visited community 2 years ago) but lack of funding seems to be a major issue</li> <li>• Not always easy to find water upon drilling. A community member has so far dug 6 boreholes and still unsuccessful in his search for water</li> <li>• We were shown a “settling tank” for the dirty water from Mr. X - from which owner collects 1,000 L per month of “clean” water.</li> </ul>
<p>Tues, 13 Sep, 2011. Consultation held with SRIF</p>	<ul style="list-style-type: none"> <li>• SRIF has 18 professional staff with plans to have 10 with postgraduate degrees (MSc/PhD) by 2015. They have a website: sris.tk</li> <li>• There are 16,000 farmers in the cane belt: 10,000 in Viti Levu and 6,000 in Vanua Levu. In Viti Levu, sugarcane land is 60,000 ha – of which only 40,000 is currently planted. In Ba, there are 4,500 – 5,000 sugarcane growers planting 15,000 – 18,000 ha of sugarcane.</li> </ul>
<p>Consultation held with the CEO of the Sugarcane Research Institute of Fiji</p>	<ul style="list-style-type: none"> <li>• Soils are shallow in the hills: NLTB does not allow planting of sugarcane on slopes above 9 degrees</li> <li>• Poor drainage contributes to flooding. Three levels of drainage: (1) main drain – for whole area/ catchment; (2) field drain – covers a number of farms; (3) farm drain – internal drainage within a single farm.</li> <li>• Two severe droughts: 1983, 1997/98</li> <li>• Mana variety – developed for hills but now grown on lowlands; drought resistant</li> <li>• Cane production is totally rainfed hence climate and CC are very important issues</li> <li>• Mauritius: 80% of sugarcane is irrigated</li> <li>• Rainfall: Fiji – 2,000 mm/yr (cf Australia – 1,200 to 1,300 mm/yr). Supplementary not total irrigation is needed in Fiji – to address poor distribution of “high” rainfall.</li> <li>• About 50% of sugarcane in whole of Fiji is of one variety – Mana (Mana makes up 90% of all cane on Viti Levu). It’s a farmer-friendly variety (throw &amp; grow) and it makes good ratoon. In Fiji, sugarcane farmers grow 15-20 ratoons/ crops from one planting. One reason is the high cost of inputs and establishment: \$2,500 - \$2,600 per hectare. Farmers are intercropping vegetables for additional income.</li> <li>• 3 mills in Viti Levu: Lautoka, Ba, Penang</li> <li>• Sugarcane yields in Fiji is a matter of concern. Now about 50 t/ha (actually 45-48 t/ha) with efforts to raise this to 50-60 or even</li> </ul>

	<p>70 t/ha. Yields are higher in other countries eg Australia and India (80 t/ha), Swaziland (100 t/ha), while some countries obtain up to 200 t/ha.</p> <ul style="list-style-type: none"> <li>• When rainfall is extremely high, sugar content of the canes will be low. Trends in the last 50 years: (1) minimum temperature is rising; (2) rains are getting more intense.</li> <li>• Land tenure insecurity is an issue. Farmers are not too keen to plant vetiver grass for soil erosion control due to land tenure insecurity. Farmers also think that vetiver will reduce amount of cane they can plant; and it also prevents tractors from going up and down the slopes.</li> </ul>
<p>Tues, 13 Sep, 2011. Consultation with AO (Ba)</p>	<ul style="list-style-type: none"> <li>• Ba Agriculture Office has a Crops Section and a Livestock Section</li> <li>• Drought &amp; Flooding: Both are problematic for Ba non-sugarcane farmers but they find it easier to deal with flooding. Despite climate change and variability, farmers still have a rough idea when to expect a lot of rain and subsequent flooding (mid-November to mid-April is the hurricane season when they can expect a lot of rain) and they can programme the planting times for their crops (e.g. tomatoes &amp; Capsicum) such that they can avoid the impact of heavy rain and flooding. This is not the case with droughts which are unpredictable. Nevertheless, climate (especially in the last 2-3 years) has been very variable.</li> </ul>
<p>Consultation was held with the Agricultural Officer (Ba) at her office in Ba</p>	<ul style="list-style-type: none"> <li>• Crops grown include vegetables (mostly on the lowlands) as well as root crops (in the midstream areas and mostly in the upstream areas). Vegetables grown include leafy vegetables, eggplants, tomatoes, pulses – cowpeas, beans. In the midstream/upstream areas (e.g., Magodro) emphasis is on rootcrops such as taro, cassava, yams and yaqona as well.</li> <li>• Sugarcane vs non-sugarcane crops: sugarcane can resist drought and flooding better than non-sugarcane crops, especially vegetables. Depending on timing and duration of drought, sugarcane can actually benefit from little rain or drought; this is not the case with vegetables which get badly affected and even destroyed by periods of drought/little rain. On the other hand, sugarcane can continue growing after a week of flooding which would have killed off vegetable plants.</li> <li>• Number of crop- (especially vegetable-) farmers has been increasing due to farmers reducing their emphasis on sugarcane and increasing their emphasis on crops (vegetables). Even some previously prominent cane farmers are moving away from sugarcane</li> <li>• Some farmers (especially those on leased land [Native Lease and Crown Lease]) are growing the minimal amount of cane required according to their lease contract but having a great interest in vegetable farming</li> <li>• Some farmers (especially on freehold and therefore under no obligation to grow sugarcane) are no longer growing any sugarcane and focusing totally on vegetable production</li> <li>• The main reason for the change in interest is with regard to the financial/economic benefits. There is a much greater benefit from vegetable production and also farmers wait for only 1-3 months before getting an income instead of waiting for more than a year.</li> <li>• An emerging, non-sugarcane crop is rice – this year (2011), 40 ha of rice was grown in Ba; one farmer is now trying ginger.</li> <li>• Farmers are growing not only for the local market but the export market as well. Exporters from Sigatoka have been coming to Ba to buy local crops for the export market. Last year (2010), of the chilli export from Fiji, the highest contribution is from Ba. This year, unfortunately, there has been a fungal attack on chillies in Ba and production has been reduced.</li> <li>• Another emerging crop is “sukhi” (tobacco) which brings in a good income for growers. A particular farmer with slightly more than an acre of sukhi got \$10,000 for one crop.</li> <li>• Possible intervention for droughts include: (1) boreholes, (2) pumping water from nearby rivers, (3) a large earthen reservoir, (4) drought resistant crops/ varieties, (5) appropriate soil/crop management practices such as composting, mulching, contour cropping, and other water conservation techniques (6) non-agricultural intervention – such as planting of trees in the catchment area to harvest water. In Magodro, the Land Use section has been growing vetiver for soil &amp; water conservation purposes.</li> <li>• Last year (2010), there was a bad drought. The main request received from farmers is for boreholes. Ten requests were received during/after the drought and three were approved due to funding constraints – but requests for boreholes continue to come in. It costs approximately Fiji\$7,700 to make a borehole – including the cost of the pump but not including the cost of water (storage) tank and pipings.</li> </ul>

	<ul style="list-style-type: none"> <li>Four government research stations help MPI Ba and their farmers: (1) the Legalega Research Station (mainly for research on pulses), (2) Sigatoka Research Station (horticulture), (3) Koronivia Research Station (crop protection, analysis of plant and soil tissues) and (4) Dobeilevu (rootcrops). Research to help Ba with drought resistant crops/varieties will need to be conducted at Sigatoka.</li> </ul>
15 Sep, 2011. 2 <sup>nd</sup> Consultation with Suva-based stakeholders	<ul style="list-style-type: none"> <li>We should be careful about construction activities – with regard to impact on water quality and biodiversity</li> <li>Drainage activity should be considered not only for sugarcane farmers but other farmers as well. Village communities in Ba have resources – men, rocks, gravel, sand, wood, etc. which could be regarded as their contribution to project activities.</li> <li>Key people to be involved in monitoring and evaluation, CWD, DPO, PA (Ba), DO (Ba), etc.</li> </ul>
Joined also by invited stakeholders from Nadi, Lautoka and Ba.	<ul style="list-style-type: none"> <li>(1) Liason Officers of the AF Project should be full time; (2) Need to train people in the project; (3) Project involves various types of activities requiring different kinds of expertise; might not be possible for one committee to adequately cater for all the activities; there might be a need for a number of committees; (4) DOE has only 4 staff (including permanent &amp; project staff) in CC; UNDP to pay for staff so DOE should not suffer as a result of this project; there is therefore a need to revise the Management Structure.</li> <li>AF Project should try to explore the impact of FSC fertilizers on the environment.</li> <li>(1) Planting of forest belts in Component 2 is a good idea: Loss of some traditional trees have affected birdlife – need to identify and include these trees in the project, (2) Component 4: awareness raising – should involve primary and secondary schools: adopt a school to champion an issue</li> <li>(1) AF Project should consider helping local farmers who cannot afford – rather than helping FSC, (2) consider impacts on BD, (3) consider benefits of flooding – builds new land, fertilizes land, etc.</li> <li>Project should try and learn from Nadi experiences</li> <li>(1) Some solutions later become problems, eg mynah birds and the mongoose; (2) sustainability &amp; continuity: the key; (3) issues to be resolved: staff &amp; other resources.</li> </ul>
10 <sup>th</sup> July, 2012 – Suva Stakeholder Consultation	<ul style="list-style-type: none"> <li>Need to liaise more with USP – as their projects within the Ba Catchment Area has vastly increased in the past year</li> <li>USP/PACE SD has carried out a V&amp;A assessment in the Navala area, useful for the project preparation of the Ba Catchment Management Plan</li> </ul>
Consultation held at MOFA and attended by NGOs, Institutions, relevant government stakeholders eg LWRM, i-Taukei Ministry, Forestry, TLTB	<ul style="list-style-type: none"> <li>WAF to be consulted closely when it comes to rural water schemes (specifically referring to Activity 2.5.1) as there is a new Rural Water Use Policy in place</li> <li>AF Project should look at procuring both APSIM (and DSAT) simulator(s) to have a robust system in place – instead if the currently proposed APSIM only</li> <li>Increase budget under training of communities to better enhance their resilience</li> <li>Decrease budget on international consultancy ( for activities that include putting together management plans) as USP has the technical capacity to carry out such tasks</li> <li>Project Management Unit to be based on the field in the West similar to IWRM Project instead of being based in Suva at the MOFA</li> <li>Emphasis of component 1 on drought should be revised and we should revisit possibility of including flood risks too as JICA project is only a demo project; hence it does not cover much of the flood EWS</li> </ul>
23 <sup>rd</sup> July, 2012 – Lautoka Stakeholder Consultation	<ul style="list-style-type: none"> <li>SRI supported USP that to have a robust simulator system in place, AF Project needs to procure DSAT along with APSIM – and not just either of the two simulators.</li> </ul>
Consultation held at Waterfront Hotel, Lautoka and attended by NGOs, Institutions, and relevant	<ul style="list-style-type: none"> <li>Hydrology (WAF) needed to increase their number of rain gauges in certain communities and hydro level meter.</li> <li>They see the need to have real time data – and hence need their telemetry system to be automated.</li> <li>This will greatly allow WAF to early warn the public through FMS and NDMO of any flood risks</li> <li>All project activities identified for priority communities will need to be reconfirmed by Commissioner West's office to identify</li> </ul>

<p>government stakeholders eg LWRM, i-Taukei Ministry, Forestry, Environment, TLTB, Strategic Planning; Provincial Development. Mostly stakeholders based in Lautoka and serve the Ba District including communities within the Ba Catchment</p>	<p>synergies with Government's development plans for the coming years. Moreover, the degree of vulnerabilities to flood and drought resulting from the analyses in the preparation of the Ba Catchment Plan will help to refine the activities.</p> <ul style="list-style-type: none"> <li>• Need to cut down on budget for international consultants as USP and other institutions are available and also have the technical expertise to carry out some of the activities that have been proposed</li> <li>• Increase budget for training of communities to compliment the Community Capacity Building (CCB) Programme. This training will see to the empowerment of community and further increases their resilience.</li> <li>• To instil sense of ownership in communities, have the project activities to be part of the Cash for Work Programme. In this case, they will value their commitment in doing project activities e.g.; reforestation, planting of forest belts etc.</li> <li>• If possible, to include some activities that could be income-generating activities to the community members. This will help in instilling sense of ownership and also in the sustainability of the project</li> <li>• In the past flood, the Commissioner West office named the best managed community during the flood as Nawaqarua – in terms of management of drinking water; record keeping and also rehab response time was quick. This was all the outcome of the CCB Programme and the experiences will be useful in project implementation.</li> </ul>
<p>24<sup>th</sup> July, 2012 – Community consultation in Votua village. Attended by downstream surrounding communities (farming communities and villages). There were 20 women, 32 men and 16 youth who attended. Of these numbers, 5 women and 16 men were from the sugar cane farming communities</p>	<ul style="list-style-type: none"> <li>• Roko Tui Ba reminded the members of the community about sense of ownership in regards to the project. The need to have a system in place that will ensure that the project will be sustainable and will increase their resilience</li> <li>• Need to have 4 centralised nurseries – Votua, Nailaga, Toge and Nadarivatu. This is mainly because of climatic/environment conditions and distance between communities within the wider Ba Catchment Community.</li> <li>• Mataniqara seawall project is still incomplete and is deemed to have been one of the major causes of flooding in the village of Votua. Water from heavy rain follows the incomplete waterway channel and right into the village hence increasing the rate at which flooding will happen in the village. According to the villages, the best seawall structure is in Nailaga. If possible, to follow same structure.</li> <li>• The need to have evacuation centres in the area and along with it evacuation transport – such as punts and small outboard motors and/or inflatables to help in moving vulnerable members of the communities</li> <li>• Some suggested not to build new evacuation centres, but to refurbish the school and make it climate proof so it will cater for the communities that needs to be evacuated. (This is feasible provided schools are not easily inundated and are accessible to communities.)</li> <li>• Previous flood saw lack of drinking water – Need to enhance facilities in the evacuation centre that will put a stop to this</li> <li>• Women group volunteered to see through the set up and implementation of the centralised mangrove nurseries, if one is set up in Votua.</li> <li>• Other projects going on in the communities including JICA (training); <i>Soqosoqo Vakamarama</i> (Honeybee project); OISCA (Mangrove replanting)</li> </ul>
<p>25<sup>th</sup> July, 2012 - community consultation in Nasolo Village.  Attended by surrounding midstream communities (farming communities and villages). There were 30 women, 52 men and 20 youth who attended. Of these numbers, 11 women and 17 men were from the surrounding farming</p>	<ul style="list-style-type: none"> <li>• Proposed sites for 2 nurseries to cater for the midstream communities to be at Toge and Nasolo</li> <li>• To avoid cutting of forest community or reforested areas, communities proposed that a committee be set up of landowners, and Roko Tui Ba officers and Commissioner West office to oversee the implementation and sustainability of the project activities.</li> <li>• Another way to avoid cutting of forest is for landowners to sign agreements with responsible government agency (for e.g., Forestry for conservation belts) and the Commissioner West's office</li> <li>• Another major issue identified was landslide – and this has largely contributed to heavy sedimentation which would lead on to decreasing depth of mid and lower Ba catchment. Identified that we need to plant native trees (avoid planting pine trees) to serve two purposes – one is that it has cultural and sentimental value and secondly to serve the purpose of minimising sedimentation in the Ba catchment</li> <li>• River Bank erosion is another issue – due to strong down flow of the Ba catchment. Hence a need to reforest with native trees and also with fruit trees to also cater for the food security of the villages.</li> <li>• With very heavy sedimentation in the reaches of the midstream and downstream, water is becoming too shallow. Hence the rate</li> </ul>

communities	<p>at which water rises during heavy rain is faster than usual. Dredging is also a possible solution, but communities said it's only a short term solution. They prefer to reforest and plant forest belts so that sedimentation will not be problematic overtime.</p> <ul style="list-style-type: none"> <li>• During disaster, livelihood is usually cut off – e.g. water supply, cut off from road access. To address water problem during disaster, there's a need to have water tanks and sustainable sources of water such as boreholes and to address access to amenities, communities will need evacuation transport such as small outboard motor.</li> <li>• Women held a very strong position when it came to discussion reforestation. They put forward the need to have seedlings for fruit trees too in the centralised nursery; in addition to native trees such as <i>dakua</i> and <i>yaka</i>.</li> <li>• Agroforestry too was mentioned as very important as these also addresses food security in the community</li> </ul>
<p>26<sup>th</sup> July, 2012 - Community consultation in Lewa Village</p> <p>Attended by surrounding upstream communities (farming communities and villages). There were 18 women, 34 men and 14 youth who attended. All were from surrounding villages including Naiyaca, Buyabuya, Nagatagata etc.</p>	<ul style="list-style-type: none"> <li>• According to the villagers, one of the contributing factors to flooding of lower Ba area is the new Power 4 Hydro Project; of which they dammed the Sigatoka River and channel it to the turbine through the penstock and outlet at the Ba River.</li> <li>• Source of food along the Ba River is becoming dry as compared to before e.g. marshy peat that provided the villages with edible ferns are now drying up, and ferns are dying out</li> <li>• Proposed that the Nadarivatu nursery belonging to the Forestry Department be refurbished to house the 4<sup>th</sup> centralised nursery. Seedlings to include <i>kauniviti</i> (native species) and <i>kauvuata</i> (fruit trees) such as coconut trees, pineapple, voivoi and mango; to address both issues including 1) dried up land (food area – e.g. marshy peats) and 2) food security</li> <li>• Communities to plant along the Ba River Banks and its tributaries</li> <li>• As proposed by the communities – one of the ways to stop people from cutting down reforested area is to lease the native land area where planting is to be done. However, some disagreed saying leasing wasn't a sustainable solution. In the sense, that whenever leases ends, people will have the urge to cut trees down. More importantly a group suggested that we need to have native pride and sense of ownership to see that the project activities are implemented without any barrier and that the sustainability of the activities lies in each hand of a landowner</li> <li>• Another issue is high sedimentation which causes a fast rise in water level whenever there's a downpour. And this also puts to risk the communities down at the mid and low streams</li> <li>• Proposed to have structures such as floodgates to reduce the force of the down flow of water.</li> <li>• Naiyala and Lewa communities expressed the need to have water harvesting techniques such as tanks. This issue mainly arise due to dry river beds and also caused by excessive logging</li> </ul>
<p>31<sup>st</sup> March 2014 – Community consultation in Marou Village (attended by 28 villagers: 12 women &amp; 16 men, with 8 under 30 years old)</p>	<ul style="list-style-type: none"> <li>• The villagers expressed their appreciation for the team's visit (Departments of Fisheries, Forestry, Agriculture, Water Authority of Fiji, Nadarivatu Station govt officers, UNDP staff and IWRM Fiji country co-ordinator)</li> <li>• For cyclones, some of the villagers need to cross a stream to take shelter in the community hall, thus stayed in their own houses or took shelter at the neighbour's if their home was not safe during a cyclone.</li> <li>• Some possible sources of livelihood identified are: Forestry – production of seeds from <i>dakua</i> <i>makadre</i> and <i>yasi</i>, mountain hiking and bird watching. The villagers therefore also requested help in setting up of nurseries for the seed production</li> <li>• Villagers also requested assistance towards Agroforestry especially with Citrus and Breadfruit growing well in the village. There was support for making 'breadfruit flour'.</li> <li>• The village had a few fish ponds with <i>tilapia</i>.</li> <li>• There was a mini dam a few kilometres downstream that had stopped the freshwater fishes from swimming upstream to spawn. The villagers sources of protein have been severely affected thus they have requested seed funding for poultry farming to be run by ladies. Chicken wastes would be used to nourish the <i>tilapia</i> ponds and for soil manure.</li> <li>• Even though Pine was currently being grown in some adjacent areas, there was concern that in the long run, pine will be logged, so the villagers requested for other species to be supplied such as coconut.</li> <li>• Some septic tanks adjacent to the stream and implications of underground effluent runoff ending up in the stream were explained to the villagers. The concept of composting toilets was welcomed.</li> <li>• There was a request for a mini-dam to provide some energy since the current electricity had to be supplied to them with</li> </ul>

	<p>powerlines from Nadi</p> <ul style="list-style-type: none"> <li>The villagers requested for representatives from other communities could come and ‘tell their stories’ to them about similar initiatives happening at their own village</li> </ul>
1 <sup>st</sup> April 2014 – Community consultation in Nanoko Village	<ul style="list-style-type: none"> <li>Community expressed grave concern about the Typhoid outbreak in their village which resulted in the village being kept in isolation from the rest of the country by the Fiji govt in Quarter 3 &amp; 4 of 2011 (Total of 43 cases with 26 lab confirmed). Because of drought the villagers resorted to drinking stream water which had been contaminated by E.coli/coliform bacteria. They requested piping to run from their water source (about 2 hours walk) to their village.</li> <li>Water is scarce between the months of August-December. There were only 2 water tanks in the village, one located at the school and the other at the centre of the village. The villagers were encouraged to carry out rainwater harvesting to stock up for the dry months.</li> <li>Crops grown include cassava, Yaqona, taro, Kumara &amp; Potatoes. The latter has a lot of possibilities for economic &amp; sustainable livelihoods since the potatoes can grow to extra-large sizes because of the cool weather. Aquaculture is not a possibility due to the months of drought.</li> <li>Currently there are 165 villagers at Nanoko and they requested for projects/activities to ensure that migration away from the village is minimised or stopped altogether. Four religious groups co-exist in the village (Seventh Day Adventists, Catholic, Assemblies of God &amp; Methodist)</li> <li>“Bose vakoro” (village meeting were conducted once /month), an opportunity where the village laws were once again emphasised such as general rules of non-consumption of alcohol and environmental conservation rules such as the prohibition of burning rubbish</li> <li>Electrification is needed as they are currently powered by generator with a few houses having solar.</li> <li>Some possible sources of income include beekeeping. Poultry and nursery for seed production.</li> <li>Accessibility is a major problem due to the distance from the nearest towns (Ba &amp; Nadi) exacerbated by the poor road conditions. A land-carrier can be hired for F\$150/way and is not conducive for business (crops to the market).</li> <li>School has 235 students (early childhood 30, primary 125 &amp; secondary 80). The primary/early childhood school headmaster and the high school assistant principal were excited at the prospect of carrying out some of the IWRM school activities that were done at the Nadi IWRM site</li> </ul>
2 <sup>nd</sup> April 2014 – Community consultation in Nasolo Village	<ul style="list-style-type: none"> <li>The village is located along the bank of the Ba river further down from Navala village. It has a EWS/water level gauge, although it doesn’t send data to the Nadi/Suva Metrology offices. The gauge is connected to a siren which went off to warn the villagers of rising water levels, thus urging the villagers to evacuate and flee to higher grounds.</li> <li>Government has asked the villagers to relocate (move their village) to higher ground and 3 families have complied with the request by moving to the identified site.</li> <li>The needs of the village were communicated to the team by the member of the village natural resource (yaubula) committee: the purchasing of a boat to help ferry the stranded villagers during flooding, help in upgrading drainage in the village (since they attributed bad drainage as contributing to increasing inundation), assistance in building up barriers along the river banks.</li> </ul>
4 <sup>th</sup> April 2014 – Consultation with Director, Climate Change Division, Ministry of Foreign Affairs and International Cooperation	<ul style="list-style-type: none"> <li>Fiji Government strongly supports the resubmission of the Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risk in the Ba catchment Area of Fiji proposal to the Adaptation Fund partnering with UNDP as the MIA</li> <li>Fiji Government would like to seek the following support from UNDP in effective management in implementation of the Project: <ul style="list-style-type: none"> <li>Participation in evaluation and selection of Project Management Staff</li> <li>Identification and recruitment of International Consultants for EWS technical design and support</li> <li>Project monitoring and evaluation support including recruitment and management of midterm and final evaluation and project terminal evaluation consultants</li> </ul> </li> </ul>

<p>4<sup>th</sup> April 2014 – Consultation with Fiji Meteorological Service</p>	<ul style="list-style-type: none"> <li>• In October 2012, Hydrology Division has been moved from WAF to FMS</li> <li>• Currently, FMS plans to establish flood EWS in Rewa, Sigatoka, Nadi including Ba, Labasa, and Rakiraki</li> <li>• Flood EWS in Nadi, Navua and Rewa are now functional, sending three-tiered warning and evacuation messages through various communication channels</li> <li>• Although there are no national legal policies regarding flood EWS, FMS is currently working on integrating the existing and upcoming flood EWS system under the NIWA supported FLOYSYS/TIDEDA to NEON (VHF Radio) and NEON (satellite) systems</li> <li>• The JICA project was focused more on awareness raising and community-based disaster management. Therefore, there is significant work that needs to be done in the Ba Catchment area as it is facing challenges in regard to system integration and agency/donor coordination</li> <li>• Currently, the Ba flood EWS is not working and therefore not commissioned. The server is down waiting for Vodafone SIM card to be installed. NIWA is working with Japanese technicians and equipment company to resolve the situation however, as the project was managed by NDMO as JICA's main government counterpart, FMS, despite its technical expertise feels limitation to the amount of support they can provide to resolve the current challenges</li> <li>• The Water Level Gauge planned to be installed in Navala by JICA was unsuccessful due to the lack of mobile network coverage. Therefore, AF support in installing automated satellite-base Water Level Gauge will be extremely beneficial</li> <li>• Additional support of the AF to the Ba Flood EWS will be significant as it may serve as a catalyst to bring the various stakeholders engaged in the process together to resolve the existing challenges and work together to establish a functional and effective flood EWS</li> <li>• There are no existing cases of drought EWS implemented in Fiji</li> </ul>
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## ANNEX 8: Letter of Endorsement from Government



### MINISTRY OF FOREIGN AFFAIRS & INTERNATIONAL COOPERATION



Telephone: (679) 330 9645  
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08 May 2014

The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

Dear Secretariat

**RE: Endorsement for the Project "Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji"**

In my capacity as designated authority for the Adaptation Fund Board in The Republic of Fiji, I confirm that the above mentioned project proposal is in accordance with the Government's "Strategic Framework for Change into a Roadmap for Democracy and Sustainable Socio-Economic Development". One of the pillars of this strategic framework is on Environmental Sustainability, which encompasses priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Fiji Islands.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Development Programme and executed by the Ministry of Foreign Affairs & International Cooperation through the Climate Change Division.

Sincerely,

Amenatave.V.Yauvoli

**Permanent Secretary for Foreign Affairs & International Cooperation**

## ANNEX 9: Letter of Support from Government



"EFFECTIVE AND EFFICIENT PARTICIPATION OF THE ITAUKEI IN  
THE NATION'S PEACE, PROGRESS AND PROSPERITY"

ITAUKEI AFFAIRS BOARD  
TTFB Building Complex (North Wing)  
87 Queen Elizabeth Drive  
PO Box 2100  
Government Buildings  
Suva, Fiji

Telephone: 330 4200  
Facsimile: 330 5115  
Email: [tab@govnet.gov.fj](mailto:tab@govnet.gov.fj)

Ref: 29/71-3

Date: 12/05/14

The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)

Fax: 202 522 3240/5

**Subject: Letter of Support for Project "Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji"**

We would like to take this opportunity to express our support to the "Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji" as a key partner in supporting the implementation of the community-level sustainable forest management indicatives undertaken by this proposal in the Ba Catchment Area of Fiji.

At the iTaukei Affairs Board, it is our mandate to work closely with all traditional village management bodies to build capacities for community-based sustainable forest management throughout the country. We have dedicated Conservation Officers that support the communities in this respect. In the Ba Catchment Area, we work with 16 districts that have 84 villages to support them in the reforestation of native plant species, including communities that the proposed Adaptation Fund project plans to engage within the community forest activities. Through this process, we assure to the Adaptation Fund board that community-level buy in for forest management activities in the communities of the Ba Catchment Area, in which the support from the proposed project can build upon once approved.

We look forward to working on this very important effort in communities in the Ba Catchment Area upon approval of the proposal through the support of the Adaptation Fund.

Sincerely,



[A T G Kurusiga]

for **CHIEF EXECUTIVE OFFICER, ITAUKEI AFFAIRS BOARD.**

**ANNEX 10: Memorandum on Qalinabulu and Nadrou Water Retention Dam EIA**

**Ministry of Local Government, Housing & Urban Development, and Environment**

**DEPARTMENT OF ENVIRONMENT**  
Level 1 P.O. Pylar Building  
90 Rongobul Pylar Street, Suva, FJ  
All correspondence to be addressed to:  
Director of Environment  
P.O. Box 2107  
Government Buildings, Suva, FJ

TELEPHONE NO: (878) 3311-899/3311297 (025)      FAX NO: (878) 3311-875/(3311-888/008)

**MEMORANDUM**

<b>From</b>	A/ Director of Environment	<b>Phone</b>	3311 699/331 1930
<b>To</b>	A/Director-Department of Land & Water Resource Management	<b>File</b>	EP 5/1/5
<b>Re</b>	Qalinabulu & Nadrou Water Retention Dam project,	<b>Date</b>	14/05/10

**Re: Qalinabulu & Nadrou Water Retention Dam - EIA**

We acknowledge receipt of the EA report for the proposed Water retention dam of Qalinabulu and Nadrou in Ba.

The report has been judged to be satisfactory subject to the following conditions:

1. The developer shall ensure the execution of recommendations of the mitigation measures as identified in the report.
2. Land & Water Resources Department must see that the respective fishing rights owners of the Qalinabulu and Nadrou creeks must consent to the use of their qoliqoli for dam purposes.
3. During periods of dry season retention of water for dam purposes must be regulated to allow continual flow of water downstream from dam site.
4. Farmers having access to irrigation channels from the dam must be trained to use water sparingly and efficiently.

Suva, 14/05/2010

5. The water quality should be monitored weekly to ensure that methodologies may be adjusted if required to reduce environment impacts from construction activities.
6. Any wastewater treatment plant proposed to be used for construction purposes should be submitted to the Ba Rural Local Authority for approval and a copy sent to the Department of Environment.
7. The use of sediment traps should be fully implemented when undertaking earthworks during the construction stage so as to minimise sedimentation of the Gafinabulu and Nadrou Creeks.
8. All borrowed fill materials used for construction must be consented by the responsible approving authority.
9. Pollution from solid waste should be minimized by placing rubbish bins around the facility and disposable waste generated to be taken to Ba Town dump site.
10. There shall be a strict "No dumping" principal around the dam site area.
11. Department of Environment inspection must never be restricted to enter the site during construction and operation phase to monitor works being undertaken.
12. A contact centre needs to be established on site to receive any form of claims or concerns from the nearby residents. Any concerns raised need to be recorded in the complaints log book and forwarded to management to resolve.

We look forward to your cooperation however, should you require further clarifications do not hesitate to contact the undersigned or call the EA unit or email: [J.Davetanivalu@environment.gov.fj](mailto:J.Davetanivalu@environment.gov.fj) or [criticalliaisons@environment.gov.fj](mailto:criticalliaisons@environment.gov.fj)

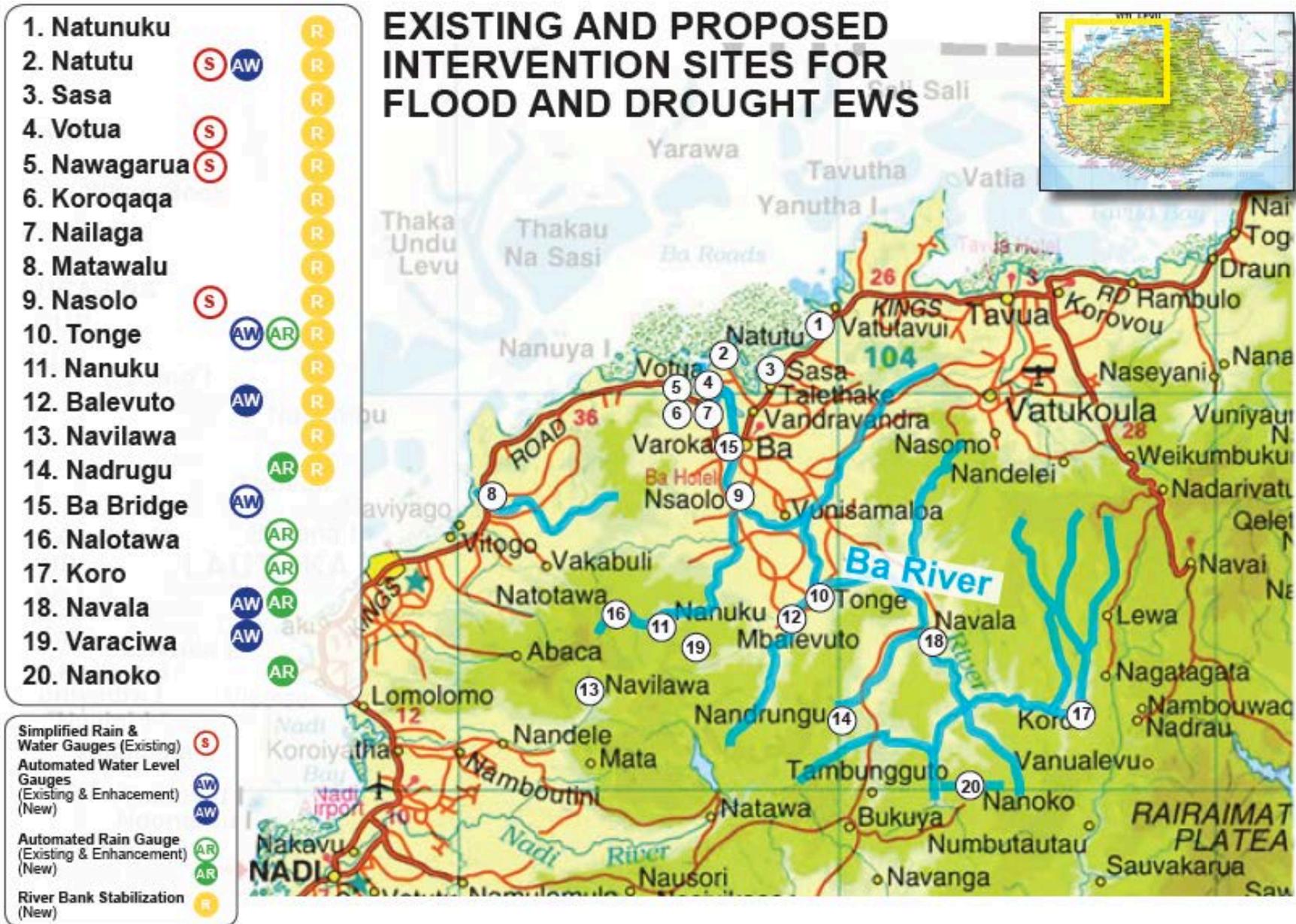
Vinaka,



Jope Davetanivalu Mr.  
A/ Director of Environment

cc: Secretary – Ba Rural Local Authority  
File

**ANNEX 11: Map of Existing, Enhanced and/or New EWS and River Bank Stabilization Interventions**



## ANNEX 12: List of Abbreviations

AFB	Adaptation Fund Board
AFSRF	Adaptation Fund Strategic Results Framework
ALM	Adaptation Learning Mechanism
APR	Annual Project Review
APSIM	Agricultural Production Simulation Model
AusAID	Australian Agency for International Development
AWP	Annual Work Plan
CBA	Community Based Adaptation
CBO	Community Based Organisation
CC	Climate Change
CCA	Climate Change Adaptation
Ce-PACT	Center of Pacific Crops and Trees
CROP	Council of Regional Organisation in the Pacific
DIM	Direct Implementation Modality
DISMAC	Disaster Management Committees
DoA	Department of Agriculture
DoF	Department of Forestry
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EEG	Environment Energy Group
EEZ	Exclusive Economic Zone
EIA	Environment Impact Assessment
EMA	Environment Management Act
ENSO	El Nino Southern Oscillation
EU	European Union
EWS	Early Warning System
FMS	Fiji Meteorology Services
FNU	Fiji National University
FSPI	Foundations of the Peoples of the South Pacific International
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
GoF	Government of Fiji
ha	hectare
HACT	Harmonised Approach for Cash Transfers
HYCOS	Hydrological Cycle Observing System
ICMP	Integrated Coastal Management Plan
IGO	Intergovernmental Organisation
IPCC	Inter-governmental Panel on Climate Change
IWRM	Integrated Water Management
JICA	Japan International Cooperation Agency
KM	Knowledge Management
LWRM	Land and Water Resource Management

M&E	Monitoring and Evaluation
MIE	Multilateral Implementing Entity
MOFA	Ministry of Foreign Affairs and International Cooperation
NCCCT	National Climate Change Country Team
NCCP	National Climate Change Policy
NCSA	National Capacity Self-Assessment
NDMO	National Disaster Management Office
NEC	National Environment Council
NFI	National Forestry Inventory
NGO	Non-Government Organisation
NIM	National Implementation Modality
NIWA	National Institute of Water and Atmospheric Research
NPC	National Project Coordinator
NPD	National Project Director
NRT	Neon Remote Terminal
PACC	Pacific Adaptation to Climate Change
PCSSP	Pacific Climate Science Support Programme
PICCAP	Pacific Islands Climate Change Assistance Programme
PIR	Project Implementation Reports
PPR	Project Progress Reports
RCU	Regional Coordinating Unit
RCU	Regional Coordinating Unit
RTA	Regional Technical Advisor
SC	Steering Committee
SGP	Small Grants Programme
SIDS	Small Islands Development States
SLM	Sustainable Land Management
SOPAC	Pacific Islands Applied Geo-Science Commission
SPC	Secretariat of the Pacific Community
SPCZ	South Pacific Convergence Zone
SPREP	Secretariat of the Pacific Regional Environment Programme
SRES	Special Report on Emissions Scenarios
TLTB	Taukei Land Trust Board
TWG	Thematic Working Group
UNDP	United Nations Development Programme
UNDP CO	UNDP County Office
UNDP ERC	UNDP Evaluation Resource Centre
USP	University of the South Pacific
WAF	Water Authority of Fiji
WUE	Water Use Efficiency
WWF	World Wildlife Fund

# UNDP Environmental and Social Screening Template (December 2012)

## QUESTION 1:

**Has a combined environmental and social assessment/review that covers the proposed project already been completed by implementing partners or donor(s)?**

Select answer below and follow instructions:

→NO: Continue to Question 2 (do not fill out Table 1.1)

→YES: No further environmental and social review is required if the existing documentation meets UNDP's quality assurance standards, and environmental and social management recommendations are integrated into the project. Therefore, you should undertake the following steps to complete the screening process:

1. Use Table 1.1 below to assess existing documentation. (It is recommended that this assessment be undertaken jointly by the Project Developer and other relevant Focal Points in the office or Bureau).
2. Ensure that the Project Document incorporates the recommendations made in the implementing partner's environmental and social review.
3. Summarize the relevant information contained in the implementing partner's environmental and social review in Annex A.2 of this Screening Template, selecting Category 1.
4. Submit Annex A to the PAC, along with other relevant documentation.

**Note: Further guidance on the use of national systems for environmental and social assessment can be found in the UNDP ESSP Annex B.**

TABLE 1.1: CHECKLIST FOR APPRAISING QUALITY ASSURANCE OF EXISTING ENVIRONMENTAL AND SOCIAL ASSESSMENT	Yes/No
1. Does the assessment/review meet its terms of reference, both procedurally and substantively?	
2. Does the assessment/review provide a satisfactory assessment of the proposed project?	
3. Does the assessment/review contain the information required for decision-making?	
4. Does the assessment/review describe specific environmental and social management measures (e.g. mitigation, monitoring, advocacy, and capacity development measures)?	
5. Does the assessment/review identify capacity needs of the institutions responsible for implementing environmental and social management issues?	
6. Was the assessment/review developed through a consultative process with strong stakeholder engagement, including the view of men and women?	
7. Does the assessment/review assess the adequacy of the cost of and financing arrangements for environmental and social management issues?	

**Table 1.1 (continued) For any "no" answers, describe below how the issue has been or will be resolved (e.g. amendments made or supplemental review conducted).**

QUESTION 2:

Do all outputs and activities described in the Project Document fall within the following categories?

- Procurement (in which case UNDP's Procurement Ethics and Environmental Procurement Guide need to be complied with)
- Report preparation
- Training
- Event/workshop/meeting/conference (refer to Green Meeting Guide)
- Communication and dissemination of results

Select answer below and follow instructions:

- NO** → Continue to Question 3
- YES** → No further environmental and social review required. Complete Annex A.2, selecting Category 1, and submit the completed template (Annex A) to the PAC.

QUESTION 3:

Does the proposed project include activities and outputs that support *upstream* planning processes that potentially pose environmental and social impacts or are vulnerable to environmental and social change (refer to Table 3.1 for examples)? (Note that *upstream* planning processes can occur at global, regional, national, local and sectoral levels)

Select the appropriate answer and follow instructions:

**NO** → Continue to Question 4.

**YES** → Conduct the following steps to complete the screening process:

1. Adjust the project design as needed to incorporate UNDP support to the country(ies), to ensure that environmental and social issues are appropriately considered during the upstream planning process. Refer to Section 7 of this Guidance for elaboration of environmental and social mainstreaming services, tools, guidance and approaches that may be used.
2. Summarize environmental and social mainstreaming support in Annex A.2, Section C of the Screening Template and select "Category 2".
3. If the proposed project ONLY includes upstream planning processes then screening is complete, and you should submit the completed Environmental and Social Screening Template (Annex A) to the PAC. If downstream implementation activities are also included in the project then continue to Question 4.

<b>TABLE 3.1</b>	<b>EXAMPLES OF UPSTREAM PLANNING PROCESSES WITH POTENTIAL DOWNSTREAM ENVIRONMENTAL AND SOCIAL IMPACTS</b>	Check appropriate box(es) below
1.	<p>Support for the elaboration or revision of <b>global- level</b> strategies, policies, plans, and programmes.</p> <p><i>For example, capacity development and support related to international negotiations and agreements. Other examples might include a global water governance project or a global MDG project.</i></p>	
2.	<p>Support for the elaboration or revision of <b>regional-level</b> strategies, policies and plans, and programmes.</p> <p><i>For example, capacity development and support related to transboundary programmes and planning (river basin management, migration, international waters, energy development and access, climate change adaptation etc.).</i></p>	x - the work will feed into Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP) Goal 1 and 3
3.	<p>Support for the elaboration or revision of <b>national-level</b> strategies, policies, plans and programmes.</p> <p><i>For example, capacity development and support related to national development policies, plans, strategies and budgets, MDG-based plans and strategies (e.g. PRS/PRSPs, NAMAs), sector plans.</i></p>	x
4.	<p>Support for the elaboration or revision of <b>sub-national/local-level</b> strategies, polices, plans and programmes.</p> <p><i>For example, capacity development and support for district and local level development plans and regulatory frameworks, urban plans, land use development plans, sector plans, provincial development plans, provision of services, investment funds, technical guidelines and methods, stakeholder engagement.</i></p>	x



QUESTION 4:

Does the proposed project include the implementation of *downstream* activities that potentially pose environmental and social impacts or are vulnerable to environmental and social change?

To answer this question, you should first complete Table 4.1 by selecting appropriate answers. If you answer “No” or “Not Applicable” to all questions in Table 4.1 then the answer to Question 4 is “NO.” If you answer “Yes” to any questions in Table 4.1 (even one “Yes” can indicated a significant issue that needs to be addressed through further review and management) then the answer to Question 4 is “YES”:

**NO** → No further environmental and social review and management required for downstream activities. Complete Annex A.2 by selecting “Category 1”, and submit the Environmental and Social Screening Template to the PAC.

**YES** → Conduct the following steps to complete the screening process:

1. Consult Section 8 of this Guidance, to determine the extent of further environmental and social review and management that might be required for the project.
2. Revise the Project Document to incorporate environmental and social management measures. Where further environmental and social review and management activity cannot be undertaken prior to the PAC, a plan for undertaking such review and management activity within an acceptable period of time, post-PAC approval (e.g. as the first phase of the project) should be outlined in Annex A.2.
3. Select “Category 3” in Annex A.2, and submit the completed Environmental and Social Screening Template (Annex A) and relevant documentation to the PAC.

**TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT**

1. Biodiversity and Natural Resources	Answer (Yes/No/Not Applicable)
1.1 Would the proposed project result in the conversion or degradation of modified habitat, natural habitat or critical habitat?	No
1.2 Are any development activities proposed within a legally protected area (e.g. natural reserve, national park) for the protection or conservation of biodiversity?	No
1.3 Would the proposed project pose a risk of introducing invasive alien species?	No
1.4 Does the project involve natural forest harvesting or plantation development without an independent forest certification system for sustainable forest management (e.g. PEFC, the Forest Stewardship Council certification systems, or processes established or accepted by the relevant National Environmental Authority)?	No
1.5 Does the project involve the production and harvesting of fish populations or other aquatic species without an accepted system of independent certification to ensure sustainability (e.g. the Marine Stewardship Council certification system, or certifications, standards, or processes established or accepted by the relevant National Environmental Authority)?	No
1.6 Does the project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater</i>	No - the drought and flood management infrastructures will be

<b>TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT</b>	
<i>extraction.</i>	small-scale and/or enhancement of existing infrastructure
<b>1.7</b> Does the project pose a risk of degrading soils?	No
<b>2. Pollution</b>	<b>Answer</b> (Yes/No/ Not Applicable)
<b>2.1</b> Would the proposed project result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and transboundary impacts?	No
<b>2.2</b> Would the proposed project result in the generation of waste that cannot be recovered, reused, or disposed of in an environmentally and socially sound manner?	No
<b>2.3</b> Will the propose project involve the manufacture, trade, release, and/or use of chemicals and hazardous materials subject to international action bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Convention on Persistent Organic Pollutants, or the Montreal Protocol.</i>	No
<b>2.4</b> Is there a potential for the release, in the environment, of hazardous materials resulting from their production, transportation, handling, storage and use for project activities?	No
<b>2.5</b> Will the proposed project involve the application of pesticides that have a known negative effect on the environment or human health?	No
<b>3. Climate Change</b>	
<b>3.1</b> Will the proposed project result in significant <sup>1</sup> greenhouse gas emissions? <i>Annex E provides additional guidance for answering this question.</i>	No
<b>3.2</b> Is the proposed project likely to directly or indirectly increase environmental and social vulnerability to climate change now or in the future (also known as maladaptive practices)? You can refer to the additional guidance in Annex C to help you answer this question. <i>For example, a project that would involve indirectly removing mangroves from coastal zones or encouraging land use plans that would suggest building houses on floodplains could increase the surrounding population's vulnerability to climate change, specifically flooding.</i>	No. Project intends to reduce vulnerability
<b>4. Social Equity and Equality</b>	<b>Answer</b> (Yes/No/ Not Applicable)
<b>4.1</b> Would the proposed project have environmental and social impacts that could affect indigenous people or other vulnerable groups?	Yes. Positive impacts
<b>4.2</b> Is the project likely to significantly impact gender equality and women's empowerment <sup>2</sup> ?	Yes. Positive impacts

<sup>1</sup> Significant corresponds to CO<sub>2</sub> emissions greater than 100,000 tons per year (from both direct and indirect sources). Annex E provides additional guidance on calculating potential amounts of CO<sub>2</sub> emissions.

<sup>2</sup> Women are often more vulnerable than men to environmental degradation and resource scarcity. They typically have weaker and insecure rights to the resources they manage (especially land), and spend longer hours on collection of water, firewood, etc. (OECD, 2006). Women are also more often excluded from other social, economic, and political development processes.

<b>TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT</b>		
<b>4.3</b>	Is the proposed project likely to directly or indirectly increase social inequalities now or in the future?	No
<b>4.4</b>	Will the proposed project have variable impacts on women and men, different ethnic groups, social classes?	No
<b>4.5</b>	Have there been challenges in engaging women and other certain key groups of stakeholders in the project design process?	No
<b>4.6</b>	Will the project have specific human rights implications for vulnerable groups?	No
<b>5. Demographics</b>		
<b>5.1</b>	Is the project likely to result in a substantial influx of people into the affected community(ies)?	No
<b>5.2</b>	Would the proposed project result in substantial voluntary or involuntary resettlement of populations? <i>For example, projects with environmental and social benefits (e.g. protected areas, climate change adaptation) that impact human settlements, and certain disadvantaged groups within these settlements in particular.</i>	No
<b>5.3</b>	Would the proposed project lead to significant population density increase which could affect the environmental and social sustainability of the project? <i>For example, a project aiming at financing tourism infrastructure in a specific area (e.g. coastal zone, mountain) could lead to significant population density increase which could have serious environmental and social impacts (e.g. destruction of the area's ecology, noise pollution, waste management problems, greater work burden on women).</i>	No
<b>1. Culture</b>		
<b>6.1</b>	Is the project likely to significantly affect the cultural traditions of affected communities, including gender-based roles?	No
<b>6.2</b>	Will the proposed project result in physical interventions (during construction or implementation) that would affect areas that have known physical or cultural significance to indigenous groups and other communities with settled recognized cultural claims?	No
<b>6.3</b>	Would the proposed project produce a physical "splintering" of a community? <i>For example, through the construction of a road, powerline, or dam that divides a community.</i>	No
<b>2. Health and Safety</b>		
<b>7.1</b>	Would the proposed project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions? <i>For example, development projects located within a floodplain or landslide prone area.</i>	No
<b>7.2</b>	Will the project result in increased health risks as a result of a change in living and working conditions? In particular, will it have the potential to lead to an increase in HIV/AIDS infection?	No
<b>7.3</b>	Will the proposed project require additional health services including testing?	No
<b>3. Socio-Economics</b>		
<b>8.1</b>	Is the proposed project likely to have impacts that could affect women's and men's ability to use, develop and protect natural resources and other natural capital assets? <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their development, livelihoods, and well-</i>	No

**TABLE 4.1: ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT**

	<i>being?</i>	
8.2	Is the proposed project likely to significantly affect land tenure arrangements and/or traditional cultural ownership patterns?	No
8.3	Is the proposed project likely to negatively affect the income levels or employment opportunities of vulnerable groups?	No
9.	<b>Cumulative and/or Secondary Impacts</b>	<b>Answer</b> (Yes/No/ Not Applicable)
9.1	Is the proposed project location subject to currently approved land use plans (e.g. roads, settlements) which could affect the environmental and social sustainability of the project?  <i>For example, future plans for urban growth, industrial development, transportation infrastructure, etc.</i>	No
9.2	Would the proposed project result in secondary or consequential development which could lead to environmental and social effects, or would it have potential to generate cumulative impacts with other known existing or planned activities in the area?  <i>For example, a new road through forested land will generate direct environmental and social impacts through the cutting of forest and earthworks associated with construction and potential relocation of inhabitants. These are direct impacts. In addition, however, the new road would likely also bring new commercial and domestic development (houses, shops, businesses). In turn, these will generate indirect impacts. (Sometimes these are termed "secondary" or "consequential" impacts). Or if there are similar developments planned in the same forested area then cumulative impacts need to be considered.</i>	No

## ANNEX A.2: ENVIRONMENTAL AND SOCIAL SCREENING SUMMARY

(to be filled in after Annex A.1 has been completed)

**Name of Proposed Project:** Enhancing Resilience of Rural Communities to Flood and Drought-Related Climate Change and Disaster Risks in the Ba Catchment Area of Fiji

### **A. Environmental and Social Screening Outcome**

Select from the following:

**Category 1.** No further action is needed

**Category 2.** Further review and management is needed. There are possible environmental and social benefits, impacts, and/or risks associated with the project (or specific project component), but these are predominantly indirect or very long-term and so extremely difficult or impossible to directly identify and assess.

**Category 3.** Further review and management is needed, and it is possible to identify these with a reasonable degree of certainty. If Category 3, select one or more of the following sub-categories:

**Category 3a:** Impacts and risks are limited in scale and can be identified with a reasonable degree of certainty and can often be handled through application of standard best practice, but require some minimal or targeted further review and assessment to identify and evaluate whether there is a need for a full environmental and social assessment (in which case the project would move to Category 3b).

**Category 3b:** Impacts and risks may well be significant, and so full environmental and social assessment is required. In these cases, a scoping exercise will need to be conducted to identify the level and approach of assessment that is most appropriate.

### **B. Environmental and Social Issues** (for projects requiring further environmental and social review and management)

In this section, you should list the key potential environmental and social issues raised by this project. This might include both environmental and social opportunities that could be seized on to strengthen the project, as well as risks that need to be managed. You should use the answers you provided in Table 4.1 as the basis for this summary, as well as any further review and management that is conducted.

1. The Project aims to build community resilience to flood and drought disasters today and in the future with climate change through the establishment of an integrated, catchment-wide early warning system. Interventions under this Project will focus on enhancing existing water management systems through improvement of existing water infrastructures along the Ba River as well as introduction of small-scale weirs that serve as flood management and water source during drought, ecosystem-based approaches such as tree-planting, and introduction of appropriate climate-resilient agricultural practices. Therefore, the impact on environment will be minimal but social benefit from the project will help and ease the burden of annual flood damages as well as address serious issues of water shortages during the dry season and provide more benefit to the women and children.

2. The Project will establish the required governance structure including the Ba Catchment Committee and Ba Catchment Management Plan. Existing models from the Nadi Catchment will be adopted and utilized in order to build upon the various lessons learned from the tested and proven initiative.

3. No migration directly related to the intervention of the project is expected. Rather, the project will support mitigating the potential impacts from flood and drought so that communities can reduce the risks of losing their houses, businesses and social services and maintain their livelihoods in their existing villages, settlements, and town.

4. The project will include improved accessibility to water in the drought-prone areas in the upper catchment. These interventions would result in the reduction of burdens of women and children collecting water for the family. Therefore the

people should not travel far and should also spend less time collecting water. Consequently, this will also allow women to engage in other livelihood activities to support their families.

5. The project will be working in rural areas where majority of land is customary owned, especially in the mid to upper catchment. Therefore there may be minor land issues during the course of the project. However, with proper consultation and communication such issue will be easily resolved. Furthermore, the Ministry of iTaukei Affairs is engaged from the development to the implementation of the project to facilitate proper and equitable engagement of community regarding land issues related to this project. In addition, six community organizers will be hired by the project from within the communities who will facilitate the building of strong partnerships by the project and the government with the communities

**C. Next Steps** (for projects requiring further environmental and social review and management):

In this section, you should summarize actions that will be taken to deal with the above-listed issues. If your project has Category 2 or 3 components, then appropriate next steps will likely involve further environmental and social review and management, and the outcomes of this work should also be summarized here. Relevant guidance should be obtained from Section 7 for Category 2, and Section 8 for Category 3.

The establishment and enhancement of small scale water infrastructures as well as tree planting will build upon existing government initiatives in these areas led by Fiji Meteorological Service, Water Authority Fiji, Ministry of Agriculture Land and Water Resource Management division, etc. and work with communities and areas within the Ba Catchment that the government is already exploring and/or conducting community consultation and technical analysis on the suitability and effectiveness of intervention.

Nevertheless, prior to intervention, the project will further ensure that all project interventions in the communities will be based on thorough technical and socio-political assessment through strong participation of the community members. In order to ensure this, the project will engage the community at various levels through strong partnership and communication with the Ba District Government, Community Council Advisors, and the six community organizers that will be hired by the project.

**D. Sign Off**

Project Manager

Wamori  
winifereki Nauroa

Date

10/4/14

PAC

Date

Programme Manager

  
ASENACA RAVUVU

Date

10/4/14