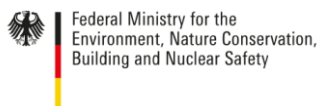




A Methodology for Rapid Assessment of Climate Change Vulnerability and Adaptation Planning at Ramsar Sites



Mekong WET: Building Resilience of Wetlands in the Lower Mekong Region



Food and Agriculture Organization of the United Nations

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Asia Regional Office
63 Sukhumvit Soi 39
Klongtan – Nua, Wattana
10110 Bangkok, Thailand
Tel +66 2 662 4029
Fax +66 2 662 4387
Email address: asia@iucn.org
www.iucn.org/resources/publications

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ACRONYMS

BMUB	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
CAWA	Climate Change Adaptation in Wetland Areas
CEA	Cost Effectiveness Analysis
DRR	Disaster Risk Reduction
GIS	Geographic Information System
IBBRI	Indo-Burma Ramsar Regional Initiative
ICEM	International Centre for Environmental Management
IKI	International Climate Initiative
IUCN	International Union for Conservation of Nature
MRC	Mekong River Commission
NDCs	Nationally-Determined Contributions
Lao PDR	Lao People's Democratic Republic
PRA	Participatory Rural Appraisal
UNFCC	United Nations Framework on Climate Change
VA	Vulnerability Assessment

BACKGROUND

Wetlands, such as marshes, rivers, mangroves, coral reefs, and other coastal and inland habitats play a key role in buffering the effects of climate change and supporting climate adaptation and mitigation. They regulate droughts and floods, provide clean water, store carbon and reduce disaster risk by acting as natural buffers. Wetland ecosystems also play a key role in carbon storage, contributing to climate mitigation at global level.

In recent decades, however, infrastructure developments, deforestation, the expansion of irrigated agriculture and increasing urbanisation have led to a dramatic decline in wetlands. This, in turn, has resulted in the depletion of fish spawning and feeding grounds and a reduction of water quality. Farmers and wetlands communities in many areas are also increasingly affected by saltwater intrusion, landslides, droughts, and flash floods, which are further intensified by climate change.

A review of the existing assessment and adaptation planning methodologies was completed in order to identify and choose a suitable set of methodological tools that could be utilised to assess the vulnerability of wetlands, wetlands species, and wetlands communities to climate change, and to identify strategies to enhance resilience at local level through an ecosystem based approach. In all, eight sets of documentation were reviewed and a summary is provided in Annex 1.

The outcome of the review was to lightly modify (e.g. ensuring collection of gender-disaggregated data) and utilise the suite of three rapid VA tools that were developed by ICEM for the MRC (2012) Climate Change Vulnerability Assessments for the Mekong Wetlands project. The suite of tools was chosen for the following reasons:

- Simple tools with reduced training needs for field teams;
- Rapid assessment with limited field survey costs;
- Provides clear and explicit guidance on field information to be collected and analysed;
- Collected information is directly related to the socio-ecological system conceptual framework of vulnerability (e.g. exposure, sensitivity, adaptive capacity);
- Built-in ecosystem (species and habitat) vulnerability matrix, which reduces the amount of expertise, time and effort required for analysis;
- Independent of any specific climate change projections;
- Ecosystem focus: Habitat and species VA tools; the Village VA tool has an explicit focus on wetland resource use as the basis to assess community livelihoods avoiding the possibility of diverting into general rural development actions.

Researchers piloted and tested this methodology in 10 Ramsar sites in Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam. The assessments received positive feedback from stakeholders involved in the implementation. Wetlands managers of each site also participated in a ten-day national wetlands trainings to further strengthen their understanding of the process.

The climate change vulnerability assessment and adaptation planning methodology is now part of the framework of the Indo-Burma Ramsar Regional Initiative (IBRRI), established under the Mekong WET project, and funded by the German International Climate Initiative. The outcomes support policy dialogues on wetlands and climate change, and will possibly feed the Nationally-Determined Contributions (NDCs) in the five (5) countries of the Lower Mekong

Basin. It is hoped that it will continue being used in the Mekong Region and beyond, and it could possibly be adopted as one of the tools under the framework of the Ramsar Convention.

1 DEFINITION AND CONCEPT OF VULNERABILITY

Vulnerability is defined as the degree to which something (a species, an ecosystem or habitat, a group of people, etc.) is susceptible to, or unable to cope with, the adverse effects of climate change, including climate variability and extremes. Vulnerability is further explained as a function of the character, magnitude, and rate of climate variation to which a system/species is **exposed**, the system/species' **sensitivity**, and the system/species' **adaptive capacity** (Figure 1).

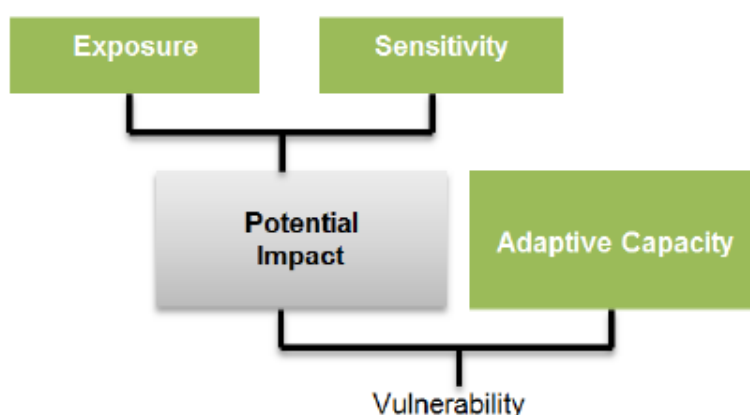


Figure 1 Concept of Vulnerability (ICEM, 2016)

Exposure is defined as the extent to which a region, resource or community experiences changes in climate. It is characterised by the magnitude, frequency, duration and/or spatial extent of a weather event or pattern. Some regions, sectors, groups of people or species are more exposed to extreme climate hazards than others because of their location.

Sensitivity is defined as the degree to which a system is affected by, or responsive to, climate changes. The sensitivity of ecological systems to climate change is normally described in terms of physiological tolerances to change and/or variability in physical and chemical conditions (i.e. temperature, pH, etc.). Sensitivity of social systems depends on a range of economic, political, cultural, technological and institutional factors.

Together, exposure and sensitivity describe the **potential impact** of a climate event or change upon an object. However, to understand vulnerability, this interaction of exposure and sensitivity on the ground is moderated by adaptive capacity.

Adaptive capacity refers to the ability of the system to change in a way that makes it better equipped to manage its exposure and/or sensitivity to a threat. Adaptive capacity can refer to the natural ability of the system to adjust to change (e.g. for an ecosystem to retreat inland over time in response to rising sea levels) or to human resource availability and capacity to manage the system to adjust to change (e.g. human, technological, and financial capital) as well as the capacity and political will of governance structures to deploy those resources.

2 CONCEPTUAL AND ANALYTICAL FRAMEWORK: VULNERABILITY OF SOCIO-ECOLOGICAL SYSTEMS

While the above understanding of vulnerability appears attractive, it is not necessarily a straightforward matter to apply it to either complex ecological systems or complex social systems as is found in a wetland context, even when considering either of these in isolation. Added to this, in the real world, what we are dealing with are actually combined socio-ecological systems that are even more complex.

Figure 2 shows the linkages between ecological vulnerability of an ecosystem, and the socio-economic vulnerability of a group of people who are dependent on one or more resources provided by that ecosystem.

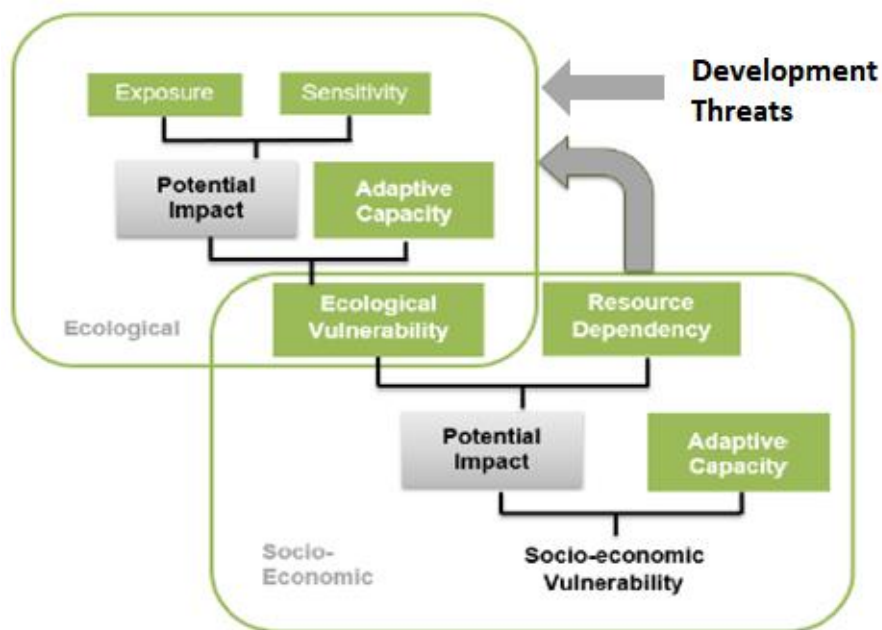


Figure 2 Vulnerability of a Socio-Ecological System (ICEM, 2016)

The ecological system as depicted in Figure 2 consists of two elements: species and habitats. The socio-economic system in Figure 2 refers to the socio-economic vulnerability (e.g. livelihoods, etc.) of the villages or communities that are dependent on resources derived from the wetlands. These resources may be species or resources derived from a particular habitat. Villagers who are using these resources are exposed to the ecological vulnerability of the wetland as well as to whether the resources that they are dependent upon are being used sustainably. Unsustainable resource use will compound the impacts of climate vulnerability (exposure, sensitivity, and adaptive capacity).

The climate vulnerability can also be affected by external development threats that may come from within or from outside of the villages. Such development threats can include threats such as expansion and encroachment of agricultural areas into the wetland, structures such as dams and sluice gates that modify water flows, etc.

3 STEPS TO CARRY OUT THE VULNERABILITY ASSESSMENT INCLUDING ADAPTATION PLANNING

The guidance provided in this document for the CAWA and Mekong WET projects focuses on the rapid vulnerability assessment and adaptation planning steps, which are indicated in Figure 3.

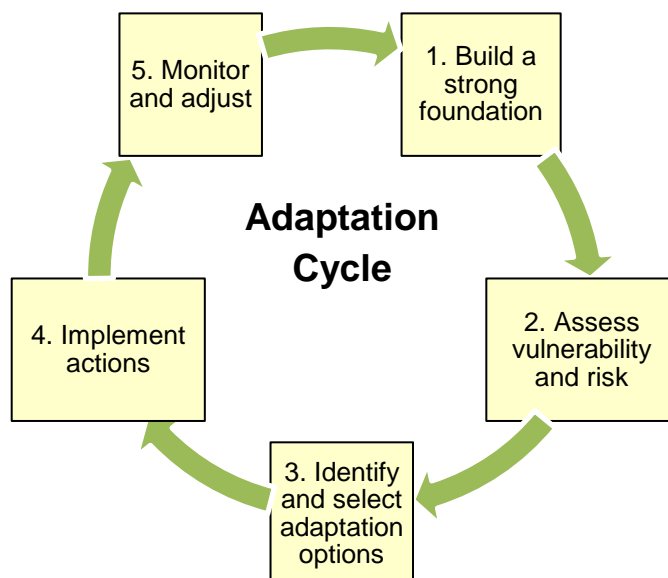


Figure 3 A generalised adaptation cycle (Gross, S. W., et al, 2017).

The different steps are summarised below and provided in a checklist in Annex 4: Checklist for vulnerability assessment and adaptation planning

1. Baseline research

There is a need to conduct baseline research to gather existing information on the wetland and the selected villages and gain a comprehensive understanding of the site. This includes information on important ecosystems and species within the wetland, as well as socio-economic data and information on wetland resources that are important for livelihoods. In addition, gathering information on existing climate projections for the area will help in planning for future impacts.

Socio-economic data can be collected from secondary sources as well as focus group discussions or key informant interviews. In addition to the basic socio-economic data such as population, poverty rate, ethnicity, and major livelihoods, among others, researchers should collect data on the following four areas:

- Resource use by communities; a resource mapping exercise is included in the VA process (village tool). In addition, a GIS expert should conduct a mapping of the wetland;
- Land tenure and land use rights (formal and informal/customary);
- Governance (institutions, management bodies);
- Stakeholder analysis, in particular, of the power and influence and the interest of different stakeholders in the wetlands.

Special emphasis should be placed on identifying vulnerable groups, including women. It is recommended that the project team conduct a gender analysis during the baseline assessment. Participatory rural appraisal (PRA) tools for gender analysis are included in Annex 2.

2. Form a VA team

The VA teams should include representatives from all stakeholder groups in and around the wetland. Potential members include local and national representatives of government agencies, Ramsar focal points, village heads and community representatives, with support from a team leader from academia or a local or international organization with experience on climate change adaptation. It is also important that the VA team includes adequate representation of women.

3. Train the VA team members

The team leader should lead a training for team members on the use of the VA Tool and Adaptation Planning process. The training should be conducted using the local language, with adequate time for questions and for team members to become familiar with the VA Tool to make them comfortable using it during the field study. During the training, team members should be encouraged to ask questions about the process that are specific to the wetland being studied.

4. Define the scope of the VAs and target communities

The scope of the VAs should be limited to the wetland and adjacent villages that rely on its resources for their livelihoods. In addition, the VAs will generally be limited to livelihoods that are directly related to wetland resources and affected by climate threats. However, other factors outside this scope, such as other livelihoods and socio-economic factors, non-climate threats and threats from outside the wetland boundary, will need to be taken into consideration while assessing vulnerability. In particular, the connectivity of the wetland with the wider landscape, as well as the linkages between the site and provincial, national and global policies need to be taken into account.

For each site, the VA teams will have to decide on the number of villages to be included in the assessment. The selection should include:

- Villages that are representative of different habitat types within the wetland;
- Villages in the core, buffer and transition zones (if relevant); of different village clusters; and with different socio-economic characteristics and ethnic groups;
- Outliers or particularly vulnerable villages;
- Villages that depend on different types of resources in the wetland (this can include villages located outside the wetland boundary that rely on the wetland for their livelihoods).

5. Introduce the project to the communities

The team members should introduce the project to community stakeholders as early as possible. Team members who have a trusting, pre-existing relationship with the local community should initiate the introduction of the project, explaining the process and the intended outcomes. Community members should be informed that the process intends to

support their livelihoods, rather than impose restrictions on wetland resource use, and that the process is dependent on community input and support.

6. Conduct the VA in a consultative process

The voices of all stakeholders must be considered throughout the VA process. Minorities, including indigenous and religious groups, the elderly, youth and migrant communities should be involved in the assessment of the wetland.

It is especially important that the needs and perspectives of women be taken into account, because women may use wetland resources differently than men do, and their knowledge and perspectives of wetland resources may not be the same. Therefore, separate focus group discussions for women are included in the VA tool design. It is also important that the VA team itself includes adequate representation of women.

Further guidance on each tool is provided in Section 5: Detailed Description and Guidance on VA Tools.

7. Write the draft VA report

The VA team should review the results of the consultations and organize the data into a draft report, summarizing the findings. The lead author can follow the report structure in Section 6: Narrative Report: Structure and content.

8. Validate the VA results with stakeholders

The VA team should hold a validation workshop with the communities and site managers in order to present the findings of the VA and to give them the opportunity to provide feedback. The feedback should be included in the final VA report.

9. Develop adaptation options

The results of the Vulnerability Assessment should be used to inform the development of climate change adaptation options. During a follow-up workshop, the VA team with stakeholders should determine the Ecosystem-based Adaptation options that will help the communities to mitigate the impacts of climate change on their livelihoods and well-being. The development of these options should be led by stakeholders, divided into groups consisting of (1) male community members (2) female community members and (3) government representatives. The groups should then rank the options to determine those that are of the highest priority for stakeholders. The adaptation options should be incorporated into the wetland management plan, or other relevant plans.

10. Implementing, monitoring and adjusting adaptation options

The adaptations should be implemented as part of the wetland management plan. As this occurs, it is important to monitor the success of the interventions, taking into account community feedback and concerns. It is important for managers to continue to adjust the implementation of the measures if they are not achieving their desired outcomes.

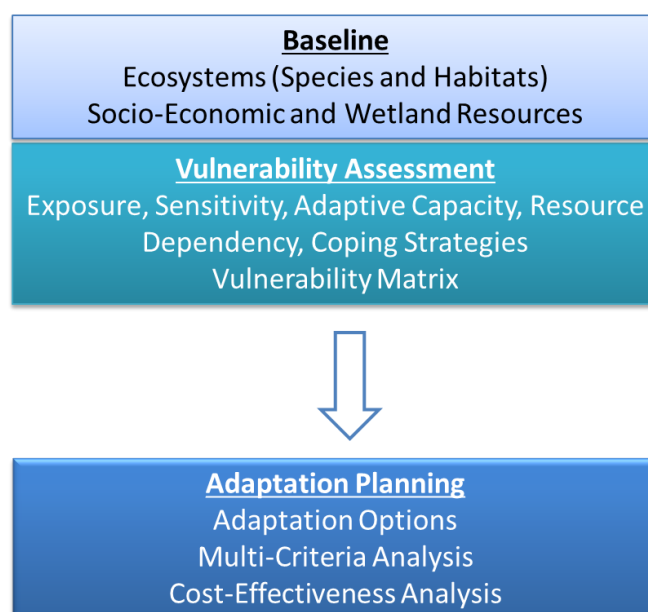


Figure 4. Rapid VA and adaptation steps

4 RAPID VULNERABILITY ASSESSMENT TOOLS

4.1 Tool overview

The Rapid Vulnerability Assessment consists of a suite of three (3) Excel Spreadsheet tools that were developed by ICEM for the MRC (2012) Climate Change Vulnerability Assessments for the Mekong Wetlands project:):

1. [Habitat VA Tool](#)
2. [Village VA Tool](#) (modified to collect gender-differentiated information and supplemented by two (2) PRA tools: Village resource use map and Seasonal calendar)
3. [Species VA Tool](#)

The tools are to be used as a field guide for gathering data as well as a place to record qualitative data. Hand written field notes/interviews are to be summarised in the structured field note cells so that they can be retained as an electronic record of the data and easily shared with team members and reviewers.

As a field guide, the tools provide a set of structured open-ended questions that are used to guide discussions with experts and/or villagers and to elucidate a ranking on the issue in question. These questions are not closed ended questions. Discussions need to be facilitated in order to understand the exact reasons for why a particular ranking has been selected and the reasons need to be recorded and written in an electronic form, which can be stored in the tool. These discussions and responses make up key parts of the vulnerability analysis.

Figure 5. illustrates the parts of the analytical framework for which the tools are being used to gather data.

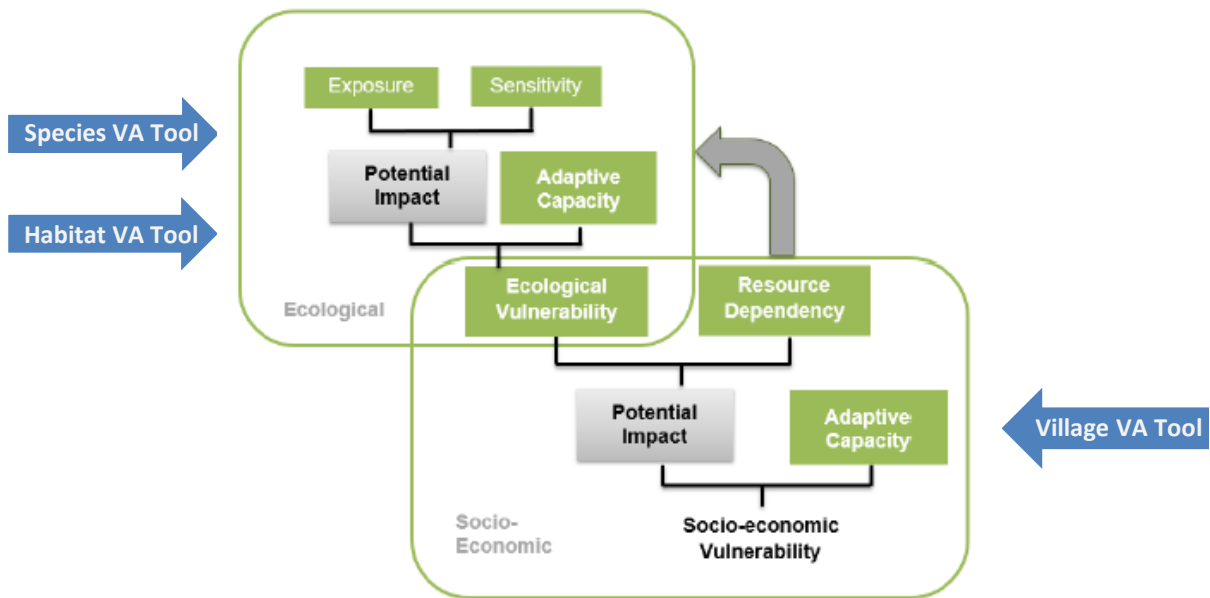
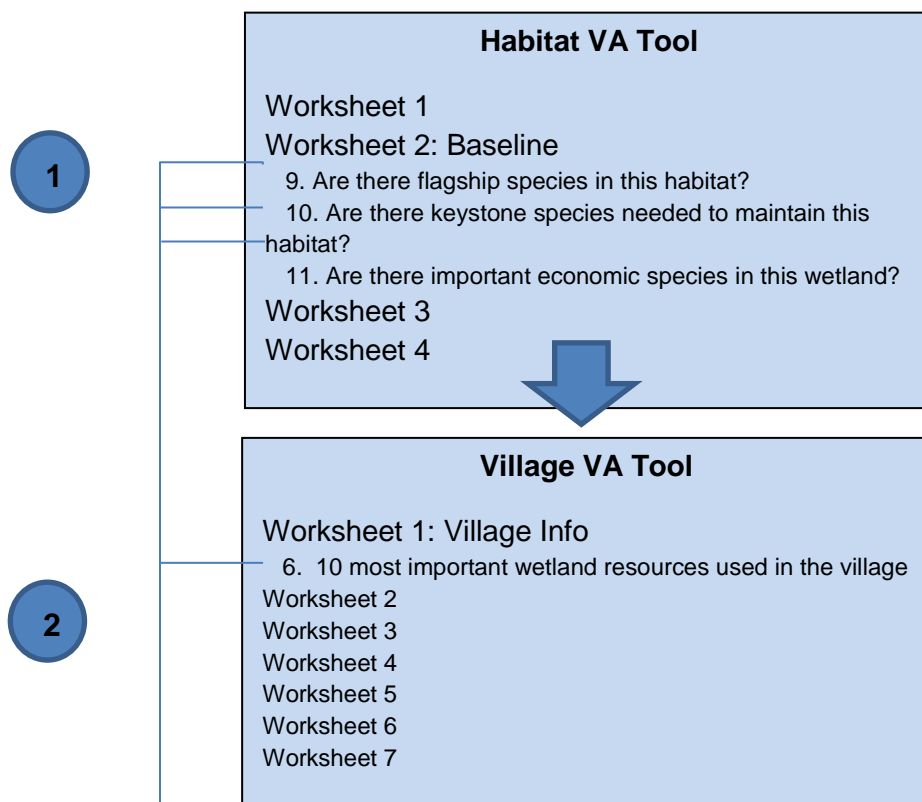


Figure 5. VA Tools and the Analytical Framework

4.2 Suggested sequencing of the VA tools

The following logical sequencing of tools is suggested. The Habitat VA Tool is to be filled in by the field team or experts before crosschecking and validating the information with the community. Knowledge of the habitats then assists the field team in consulting with villagers using the Village VA Tool to determine threats to the resources contained within the habitats. Flagship, keystone and economically important species are identified in both the Habitat and Village VA Tools, and inform the selection of species to assess in the Species VA Tool by species experts.



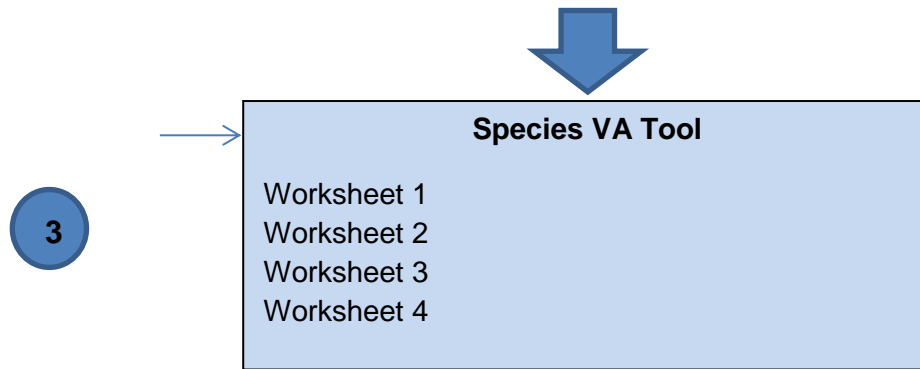


Figure 6. The correct order in which to use the VA tools.

5 DETAILED DESCRIPTION AND GUIDANCE ON VA TOOLS

The following section provides guidance on the use of the tools and suggested information sources and interviewees. The research team will need to review the questions for each section before the fieldwork so that relevant baseline information can be identified and additional questions can be formulated as needed.

The questions provided are not exhaustive, and additional questions should be formulated to tailor the questions to the local context. The questions provided should also be deleted if not relevant to the local context.

A group of experts should complete the Habitat and Species VA tools. The Village VA tool should be completed in a consultative process with the communities. One spreadsheet should be completed for each habitat type, each village, and each species being assessed.

Habitat VA Tool guidance

- ✓ To be completed by a group of experts
- ✓ Note: One spreadsheet per habitat is to be completed.
E.g. If there are four (4) main habitats, four (4) spreadsheets are to be prepared.

Worksheets	Information Source	Comments/Instructions
1. Introduction	No input necessary	This worksheet provides instructions as to how to use the tool. Further explanation on the use of confidence levels are provided in the next section.
2. Habitat Baseline	<p>The baseline assessment should be done by consulting experts, including site managers who are knowledgeable about the habitats, or an expert research team member, and supplemented by existing literature.</p> <p>A community focus group of 10 to 15 persons can also be convened to review the expert opinion. Group consensus will result in a higher confidence score indicating greater reliability in the data and assessment.</p>	<p>This worksheet provides guidance on the baseline information that is to be assessed by scoring various habitat characteristics.</p> <p>Space is provided for any additional questions that the expert or research team thinks is relevant to the habitat. Please add where relevant.</p>
3. Habitat Threat	Climate projections from existing documentation and expert opinion for the area or region.	This section records the climate change projections (to 2050 if available). Complete this section before conducting the assessment as it will help inform the expert analysis of climate threats to habitats in the following tab.
4. Climate threat analysis of habitat	<p>The baseline assessment should be done by consulting experts, which can include site managers who are knowledgeable about the habitats or an expert research team member and supplemented by existing literature.</p> <p>A community focus group of 10 to 15 persons should also be convened to review the expert opinion. Group consensus will result in a higher confidence score indicating greater reliability in the data and assessment.</p>	<p>This spreadsheet analyses the climate threats identified in worksheet 3 by scoring the threats on a scale of 1 to 3.</p> <p>Questions are provided to directly address the analytical concepts of sensitivity, exposure, and adaptive capacity.</p> <p>Space is provided for any additional questions that the expert thinks are relevant to the habitat. Please add where relevant. These additional questions should include questions on development threats if relevant.</p> <p>Delete any irrelevant questions on climate threats.</p>

	The group should consist of a mixed group of male and female elders who can provide historical perspectives as well as younger men and women who are presently exploiting the wetlands.	
5. Overall Assessment	No input is necessary in this worksheet.	The worksheet will auto-populate the cells with analysis from the previous worksheet to provide an assessment of the habitat vulnerability against its conservation status. It also provides an assessment of the confidence level of the results.

Village VA Tool guidance

- ✓ To be completed in a consultative process with the communities
- ✓ The collection of spatial information on the locations and exploitation areas of the 10 most important wetland resources used in the village can be done through a participatory mapping exercise with the community.
- ✓ Note: One spreadsheet per village is to be completed.
- ✓ E.g. If there are six villages, six spreadsheets are to be prepared.

Worksheets	Information Source	Comments/Instructions
1. Wetland information and baseline	<p>Literature review by research team members. This can include published and non-published reports, government reports and data sources.</p> <p>For section 5, convene a community focus group of approximately 10 males and 10 females to consult. Separate the men from the women into two separate focus groups for this exercise.</p> <p>The group should consist of a mixed group of male and female elders who can provide historical perspectives as well as younger men and women who are actively exploiting the wetlands.</p>	<p>The purpose of this worksheet is to identify baseline characteristics of a wetland habitat that might be affected by climate change and then to estimate the habitat's vulnerability to this change.</p> <p>Section 4 consists of baseline information that can be sourced from existing reports or local government data. If not available, additional baseline research should be conducted on:</p> <ul style="list-style-type: none"> - Resource use; - Land tenure and land use rights; - Governance; - Stakeholder analysis. <p>Record the 10 most important wetland resources (local language names of species), what they are being used for by the village, and whether they are being used for subsistence or being sold to markets. If being sold, record their value in terms of village income.</p> <p>Provide a disaggregated ranking of their importance by male and female responses as to their importance.</p> <p>Two additional participatory rural appraisal (PRA) tools are to be used to support this exercise, the village resources maps and the resource Use Seasonal Calendars.</p>

		<p>The first PRA tool is a village resource map. The areas of each of the 10 most important wetland resources and where they are being exploited should be identified on a site map (hand drawn or printed) so that the VA analysis has spatial information on where the resources are located and where they are being exploited.</p> <p>The second PRA tool is a resource use seasonal calendar for each of the 10 most important wetland resources. The calendar will record exploitation times over a 12-month period plotted against environmental conditions including rainfall and floods.</p> <p>See the section below for examples of resource maps and seasonal calendars for more detail.</p>
2. Wetland Socio-Economic Data	Data can be sourced through a literature review by research team members. This can include published and non-published reports, government reports and data sources.	Add any relevant additional socio-economic data that may be of use.
3. Future climate	Climate projections from existing documentation and expert opinion.	Review climate change projections for 2050 from existing documentation on climate projections for the area or region. Complete this section before conducting the fieldwork, as it will help inform the community discussions on future coping strategies for the types of impacts that could be expected.
4. Climate history	<p>Using the same community focus group as above, separate the men from the women into two separate focus groups for this exercise.</p> <p>In order to keep a focused train of thought and discussion with the community, it is recommended that each extreme event is worked through from worksheet 4 to worksheet 7, before starting on the next extreme event.</p>	<p>In consultation with the community, make a list of extreme weather events over the last 10 years and discuss what effect extreme weather has had on the wetland habitats and important species.</p> <p>Examples of extreme weather events are listed in the worksheet.</p>

<p>5. Frequency of impacts</p>	<p>Use the same community focus group as above.</p> <p>In order to keep a focused train of thought and discussion with the community, it is recommended that each extreme event is worked through from worksheet 4 to worksheet 7, before starting on the next extreme event.</p>	<p>Use the list of extreme weather events from the climate history worksheet 3 to discuss with the community and complete the scoring.</p> <p>Delete the types of events that are not relevant for your site. In the 'Impacts' column, note what impact this has had on the village and livelihoods.</p> <p>Examples of impacts and hazards are listed in the worksheet.</p> <p>Additional space is provided for additional questions on the extreme events identified in the previous worksheet.</p>
<p>6. Current coping strategies</p>	<p>Use the same community focus group as above.</p> <p>In order to keep a focused train of thought and discussion with the community, it is recommended that each extreme event is worked through from worksheet 4 to worksheet 7, before starting on the next extreme event.</p>	<p>Using the list of climate impacts and hazards in worksheet 4, identify the impacts on the 10 wetland resources identified in Section 5 of worksheet 1 and coping strategies used by the village to respond to climate hazards and impacts. Space is provided for 3 impacts for each climate hazard. Fill in the blanks for other climate hazards and impacts that are not already listed.</p> <p>Coping strategies are to be recorded separately for men and women. Use gender separated focus groups. Provide comments on the reasons why the coping strategies were successful or not successful and comment on the differences in the strategies between men and women.</p> <p>Note that the focus of discussion on coping strategies are the strategies that the village currently uses to cope with the impacts of climate change in the exploitation or management of the 10 most important wetland resources (Section 6, Worksheet 1).</p>
<p>7. Future coping strategies</p>	<p>Use the same community focus group as above.</p> <p>In order to keep a focused train of thought and discussion with the community, it is</p>	<p>Using the information generated in the above worksheets, complete this exercise on how the village will cope with future climate events in managing the 10 most important wetland resources identified in Section 5 of worksheet 1.</p>

	<p>recommended that each extreme event is worked through from worksheet 4 to worksheet 7, before starting on the next extreme event.</p>	<p>Include new strategies to address current coping strategies that are not successful.</p> <p>Space is provided for 3 impacts for each extreme weather event. Fill in the blanks for other climate impacts and hazards that are not already listed. Prioritize each impact by level of importance on the village livelihoods.</p> <p>Examples of impacts and coping strategies are provided in the worksheet.</p> <p>Future coping strategies are to be recorded separately for men and women. Use gender separated focus groups. Provide comments on the differences in the strategies between men and women.</p> <p>Note that the focus of discussion on future coping strategies are the strategies that the village would like to adopt to exploit or manage the 10 most important wetland resources (Section 5, Worksheet 1) in the future.</p>
<p>8. Wetland management</p>	<p>Combine males and females together in one group and conduct the focus group with the participation of the site managers as the key informants.</p>	<p>Discuss and record the current and future wetland management responses to extreme weather events and future climate projections in terms of managing the 10 most important wetland resources.</p> <p>This step should involve the site managers together with the community in a discussion of management responses to support the future coping strategies.</p> <p>Ensure that the village focus group is able to express their future coping strategies with the site managers in an open and free manner.</p>

Village VA Tool

Resource Use Map

Spatial information needs to be collected on the locations and exploitation areas of the ten most important wetland resources used in the village. This can be done through a participatory mapping exercise with the community where participants are asked to draw in the location of the particular resource and where they are being exploited by the village. Using hand-drawn paper maps will be sufficient and appropriate for use with local communities. These maps should then be used to facilitate discussions on climate and development threats to the resource as well as coping strategies.

An example of village a resource map is provided in **Error! Reference source not found..**

Figure 7 Hand drawn village resource map for Koh Kapik Ramsar Site

Resource Use Seasonal Calendars

Seasonal calendars should be developed in order to understand the temporal nature of the village resource use. In this exercise, the community identifies the periods over a 12-month cycle when a particular wetland resource is being exploited. This should be plotted against seasonal environmental conditions such as rainfall and floods. This information will then be utilised to facilitate the discussions on climate threats and coping strategies.



Figure 8 Seasonal calendar indicating resource exploitation by month

Table 1 Seasonal calendar of wetland resource use/collection in Koh Kapik Ramsar Site

Resources	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fish												
Shrimp												
Small shrimp												
Mud-crab/swimming crab												
Violet vinegar crab												
Green mussel												
Mangrove snail												
Blood cockle												
Mangrove (general)												
Seagrass (general)												

Species VA Tool guidance

- ✓ To be completed by a group of experts
- ✓ Species to be assessed should be determined based on their importance for the site (e.g., included under Criterion 2 for Ramsar designation, species of economic importance to communities as identified under village tool, keystone or flagship species) and for livelihoods (economically important species).
- ✓ Note: One spreadsheet per species is to be completed (up to five species).
- ✓ E.g. If there are five species being assessed, five spreadsheets are to be prepared.

Worksheets	Information Source	Comments/Instructions
1. Introduction	No input necessary	This worksheet provides instructions as to how to use the tool. Further explanation on the use of confidence levels is provided in the next section.
2. Species Baseline	<p>One spreadsheet per species is to be completed.</p> <p>The species VA should be done by consulting experts, who can include site managers who are knowledgeable about the species or an expert team member.</p> <p>The spreadsheet could be sent to an expert to fill in electronically, or face-to-face consultations with an expert or group of experts can be conducted.</p>	<p>This worksheet provides guidance on the baseline information that is to be assessed by scoring various species characteristics.</p> <p>Space is provided for any additional questions that the expert thinks is relevant to the species. Please add where relevant.</p> <p>The species to be assessed should be determined from questions 9 (flagship species), 10 (keystone species) and 11 (economically important species) in the Baseline tab of the Habitat VA Tool, and Box 5 of the Wetland Info tab of the Village VA Tool.</p>
3. Species Threat	Climate projections from existing documentation and expert opinion for the area/region.	This section records the climate change projections (to 2050 if available). Complete this section before conducting the assessment as it will help inform the expert analysis of climate threats to species in the following tab.
4. Climate threat analysis	Expert Opinion	<p>This spreadsheet analyses the climate threats identified in the previous worksheet by scoring the threats on a scale of 1 to 3.</p> <p>Questions are provided to directly address the analytical concepts of sensitivity, exposure, and adaptive capacity.</p>

		<p>Space is provided for any additional questions that the expert thinks are relevant to the species and climate threats identified in the previous spreadsheet. Please add where relevant. These additional questions should include questions on development threats if relevant.</p> <p>Delete any irrelevant questions on climate threats.</p>
5. Overall Assessment	No input is necessary in this worksheet.	<p>The worksheet will auto-populate the cells with analysis from the previous worksheet to provide an assessment of the species vulnerability against its conservation status.</p> <p>It also provides an assessment of the confidence level of the results.</p>

Recording confidence levels

The intended result of this methodology is to produce an assessment of the relative vulnerabilities of a wetland to climate change and other stressors. However, the results of this process, which relies largely on villager's and expert opinions, are subjective and non-quantitative. This can lead to confusion with experts doing the analysis and readers of the report narratives. In the absence of better knowledge, this methodology only provides estimates of a wetland's relative vulnerabilities. It is not intended that these results be considered precise estimations of a wetland's sustainability.

Reference materials should be cited and included in the narrative report during the data-gathering portion of the methodology. Expert opinions, sources and caveats should be noted in the comments columns during the evaluation of the questions relating to baseline status and climate change vulnerability. A confidence score should be associated with each question, based on the scale provided in Table 2 below.

Table 2. Confidence scoring levels used in the VA tools (ICEMb, 2012).

Confidence Score	Confidence	Probability of being correct	Degree of Confidence in Expert opinion
4	Very high confidence	At least 9 out of 10 chance	Taxa expert opinion and peer review citations available
3	High confidence	About 8 out of 10 chance	Taxa expert opinion only
2	Medium confidence	About 5 out of 10 chance	Non- taxa expert opinion only
1	Low confidence	About 2 out of 10 chance	Best guess
0	Very low confidence	Less than 1 out of 10 chance	No idea

As part of the narrative report for the wetland, the VA team should discuss the average confidence for each question and across the entire analysis. Use the confidence score to help identify uncertainty over generous assumptions or gaps in the current knowledge.

6 NARRATIVE REPORT: STRUCTURE AND CONTENT

Following the completion of the baseline and VA, the assessment team will write a narrative report of the results. The following is a suggested structure:

1. Introduction
2. Description of the wetland
 - 2.1. Location and site description (with map)
 - 2.2. Current and historic climate
 - 2.3. Hydrological characteristics
 - 2.4. Wetland habitats
 - 2.5. Biodiversity
 - 2.6. Land use
 - 2.7. Drivers of change
 - 2.8. Conservation and zoning
3. Communities and wetland livelihoods

- 3.1. Communities and population
- 3.2. Key livelihood activities
- 3.3. Use of wetland resources
- 3.4. Land tenure and land use rights
- 3.5. Governance (institutions, management bodies)
- 3.6. Stakeholder analysis
- 3.7. Gender and vulnerable groups
- 3.8. Perceived threats to wetland habitats and livelihoods
4. Climate projections for the site
5. Results of vulnerability assessment
 - 5.1. Habitat VA tool
 - a) Baseline and threats
 - b) Main vulnerabilities
 - 5.2. Village VA tool (including PRA tools)
 - a) Ten most important wetland resources, ranked by women and by men
 - b) Village resource maps and seasonal calendars
 - c) Historical timeline
 - d) Impacts (including differences between women/men)
 - e) Current and future coping (including differences between women/men)
 - f) Wetland management
 - 5.3. Species VA tool
 - a) Baseline and threats
 - b) Main vulnerabilities
6. Conclusions
 - 6.1. Summary of vulnerabilities
 - 6.2. Adaptation planning and development of a management plan

7 ADAPTATION PLANNING

The adaptation planning phase follows the completion of the VA. The objective of adaptation planning is to create a participatory process to convert the ecosystem vulnerabilities, coping strategies and management responses identified in the Vulnerability Assessment into actionable investments and/or institutional developments that will be included in the site's management plan.

While an adaptation plan may consist of similar measures and actions to a management plan, they differ in their objectives and timeframes and are therefore not the same as a site's management plan. Management plans are often short term in nature, for example, looking at actions that are funded and implemented within the next 1 to 5 year planning/budgeting cycle. Adaptation plans consider longer-term objectives of adapting to climate change while taking into account projected climate changes over the next 50 years.

Adaptation actions include ways to reduce climate exposure, sensitivity or to increase adaptive capacity. Some examples:

- creation of protection zones to protect a wetland resource under threat;
- alternative livelihoods to reduce pressure on a particular species or resource;
- creating water retention areas for water supply;

- institutional developments such as co-management to negotiate sustainable use rules, managing resource use quotas, monitoring, communications, etc.

Adaptation Planning Steps

The steps to create an adaptation plan include:

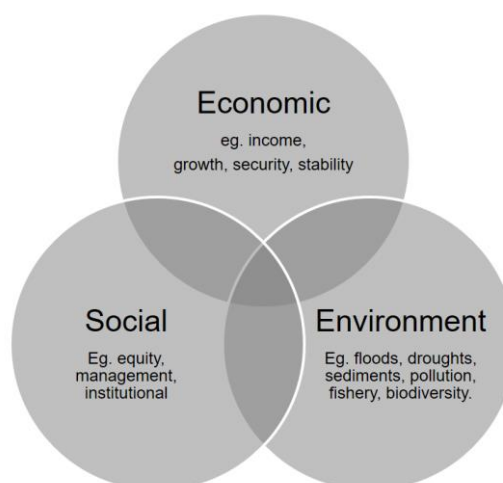
1. Visioning the future of the wetland and community (20 to 50 years)
2. Training on Ecosystem-based Adaptation and examples of EbA in wetlands
3. Developing adaptation options/measures
4. Prioritising adaptation options
5. Cost effectiveness analysis

Step 1: Visioning the future of the wetland and community

Before starting to identify adaptation options, a visioning exercise should be conducted with the communities and site managers in order to identify the long-term vision for the site as well as activities in the short, and medium-term to increase the adaptive capacity of the communities and the wetland they rely on. Identifying a vision for the future will help guide communities and site managers through the process of turning coping strategies into potential adaptation measures. It also helps to ensure that communities and site managers have a shared vision of where they want to be in 20 to 50 years' time and that everyone is focusing on the same goal.

A shared vision can be developed by posing two questions to the community and site managers:

1. What is your mid to long-term (20 – 50 year) 'big-picture' vision (goal) for the wetland? The answer to this question should be summarised in a one-paragraph vision statement.
2. What are your objectives (social, economic, environmental) for the use of the wetland? One may use the following Venn diagram to facilitate the discussion on the vision objectives.



Step 2: Developing Adaptation Options/Measures

The expected output of this step is a long list of adaptation strategies that can be turned into discrete and actionable measures.

Method and Tools: This step should be conducted as a focus group with participants from the community and site managers. The suggested process to develop a long initial list of adaptation options/measures include the following steps:

1. Start by reviewing the current and future coping strategies, and management responses from the VA;
2. Assess whether they are likely to be sufficient to cope with future climate-related disasters and habitat change;
3. Ensure that all potential strategies/measures are assessed for potential maladaptation consequences;
4. Identify any strategies that are needed to protect any threatened habitats and/or species;
5. For each potential strategy, note in detail how it would mitigate a particular threat; avoid or reduce a risk, and/or build adaptive capacity or resilience;
6. Cross-check whether the option/measure is consistent with the vision and note which vision objective it addresses;
7. Identify who would be the lead agency responsible for implementing the strategy, when it would need to be implemented, and any sequencing requirements.

The following table is suggested as a facilitation and recording tool. Each option or measure should be crosschecked with the vision to ensure that the option is in line and supportive of the vision. Details of the measure should be recorded as activities and locations. It is important to ensure that the focus group discussion at this stage includes a common understanding of the scale and scope of the activities to ensure that all participants have the same understanding. This will be particularly important for Step 3 where a consideration of cost effectiveness will depend on the scale and scope of the measure. Discussions at this stage should also include who will be the lead agency for the adaptation measure. This can include a community based organisation or a local government department or a site manager.

	Adaptation Option/Measure	Vision Objective	Activities/Location	Lead Agency
1				
2				
3				
4				

Step 3: Prioritising adaptation options

The previously developed long-list of adaptation options/measures will be compared against each other in order to prioritise the list. Different stakeholders (men, women, young, old) will have different opinions about what the adaptation objective should be, as well as the criteria to prioritize options. Hence, it is important to refer to the shared vision and objectives for the use of the wetland throughout this process of prioritising adaptation options.

The expected output of this step is a list of prioritised adaptation options/measures for each objective of the vision.

Method and Tools: This step should be conducted in a focus group with participants from the community and site managers. The suggested steps are as follows:

1. Group the vision objectives under main categories of effects of the adaptation measures/strategies to be considered (e.g. environmental, social, economic);
2. Discuss how well each of the different adaptation measures/strategies from Step 1 will achieve the objectives of the vision;
3. Subjectively score (e.g. on a 5-point scale) each of the adaptation measures/strategies against each of the objectives;
4. Consider spatial aspects of the likely climate change impact and the intervention;
5. Based on the collectively agreed objectives, rank the identified adaptation options.

While there are many participatory ways to prioritise and rank lists of options, the following matrix approach is suggested as a simple and straightforward method by which to prioritise each option. In the example below, if there are seven options to consider, focus group participants will prioritise each option against another. The indicated priority options in the table cells below are for illustration only.

Option	1	2	3	4	5	6	7
1		2	1	1	5	1	7
2			3	2	5	2	2
3				3	5	6	3
4					5	4	4
5						5	5
6							7
7							

Finish the prioritising exercise by tallying up the number of times an option is chosen as a priority in the previous matrix and then rank the options.

Option	Times chosen	Rank
1	3	3
2	4	2
3	3	3
4	2	4
5	6	1
6	1	5
7	2	4

Step 4: Cost Effectiveness Analysis

Cost effectiveness analysis (CEA) is a useful evaluation approach that can provide insight about alternatives that might not be apparent via other methods. It compares two or more options for achieving the same (or similar) outcome and is capable of providing meaningful results even when benefits cannot be expressed in monetary terms. By comparing the

estimated costs to the measure of effectiveness, options for interventions can be further ranked.

The expected output of this step is a ranking of the cost-effectiveness of each of the prioritised adaptation options/measures identified in the previous step.

Method and Tools: This step should be conducted as a focus group with participants from the community and site managers. The suggested steps are as follows:

1. Identify the cost effectiveness metrics to assess the adaptation options. The cost effectiveness can be measured in monetary and non-monetary terms. Examples of non-monetary effectiveness metrics:
 - increase in food security
 - more habitat area
 - reduction in property damages from flooding
 - level of diversification of livelihood skills
 - increased availability of a wetland resource
2. For each vision objective, review the previously ranked adaptation options and choose the priority options for each objective for the cost effectiveness comparison.
3. Rank the cost effectiveness (e.g. low, medium, high) of each adaptation option in addressing the objective

The following table outlines a suggested scoring system of 1 to 3 for the estimated costs and effectiveness, which are subjectively estimated through focus group discussion. Note the inverse relationship between cost and effectiveness in the scoring. The most cost-effective option will have the lowest cost and the highest effectiveness.

Cost	Effectiveness	Score
High	Low	1
Medium	Medium	2
Low	High	3

Once scores have been allocated to the estimated cost and effectiveness of an option, the combined score is obtained by adding the score for cost and effectiveness together. The options can then be ranked from most cost-effective (highest combined score) to least cost-effective (lowest combined score).

Option	Cost	Effectiveness	Combined Score
1			
2			
3			
4			
5			
6			
7			

The most effective adaptation plans will only create minor changes for the people involved in implementing them, because adaptation measures, which require substantial lifestyle shifts are less likely to be adopted by communities. Ongoing training and capacity development, ideally led by members of the community, is key for long-term sustainability of any adaptation plan.

Finally, it should be noted that adaptation planning is an iterative process. Adaptation plans should be developed with input from both technical experts (and site managers) and communities. The implementation team should monitor and regularly assess the activities, and adjust them if needed.

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- ICEM. 2012a. *Vulnerability Report: Basin-wide Climate Change Impact and Vulnerability Assessment for Wetlands in the Lower Mekong Basin for Adaptation Planning*. Consultant report prepared for the Mekong River Commission, Hanoi, Viet Nam. ([includes Stung Treng and Lower Stung Sen in Cambodia, Xe Champhone and Siphandone in Lao PDR, Lower Songkhram River and Kaeng La Wa in Thailand, and Tram Chim and Mui Ca Mau in Viet Nam](#))
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2. VA tools and methodologies

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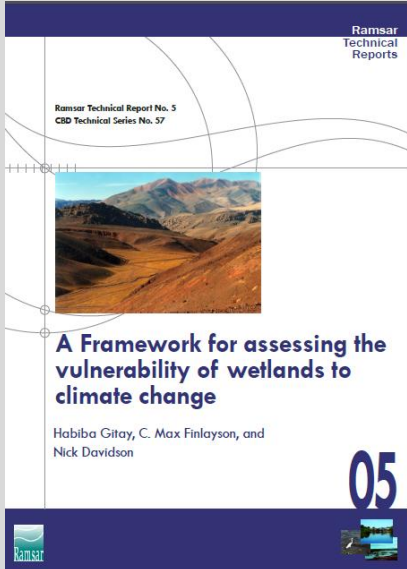
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ANNEX 1: REVIEW OF VULNERABILITY ASSESSMENT METHODOLOGIES CAWA/MEKONG WET

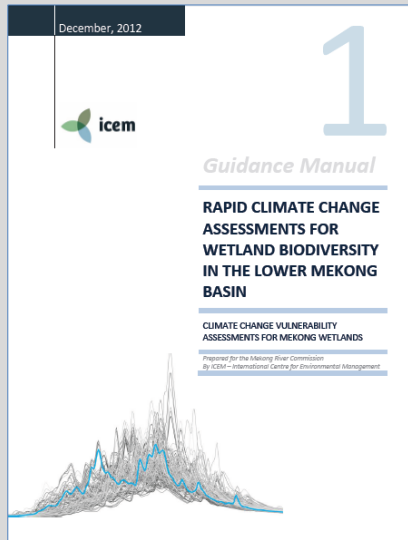
In early 2017, IUCN conducted a review of Vulnerability Assessment (VA) methodologies in preparation of the VAs to be conducted in selected existing or potential new Ramsar sites under the BMUB-funded “Mekong WET: Building Resilience of Wetlands in the Lower Mekong Region” project in Cambodia, Lao PDR, Thailand and Viet Nam and the GEF-funded “Climate Change Adaptation in Wetlands Areas” (CAWA) project in Lao PDR.

A range of VA tools and methodologies have been developed for the Lower Mekong Region and globally in the past few years. The table below describes the strengths and advantages, as well as the gaps and disadvantages of each tool or methodology. While disaster risk reduction (DRR) is not explicitly mentioned in the title of these methodologies, it is generally an implicit component.

Several VAs have been conducted using these tools and methodologies in wetlands in the region over the past few years. The results of these studies were used as a baseline for the relevant Mekong WET and CAWA sites. The studies are mentioned in the References section.

Tool/methodology	Strengths	Gaps / disadvantages
<p>1) Ramsar Technical Report No. 5: <i>A Framework for assessing the vulnerability of wetlands to climate change.</i></p> 	<ul style="list-style-type: none"> • Brings together various methods and approaches to propose a general framework for wetland vulnerability assessment • Includes broader analysis of drivers of change • The general framework for wetland vulnerability assessment has the following elements: <ol style="list-style-type: none"> i) establishing present status and recent trends; ii) determining the wetland’s sensitivity and adaptive capacity to multiple pressures; iii) developing responses; and iv) monitoring and adaptive management. 	<ul style="list-style-type: none"> • No specific tools except to recommend the use of ADAPT and Cristal which are not rapid assessment tools. No clear link between the two tools. • No clear link between ecosystem and community vulnerability. • Framework includes sensitivity and adaptive capacity but is missing assessment of exposure.

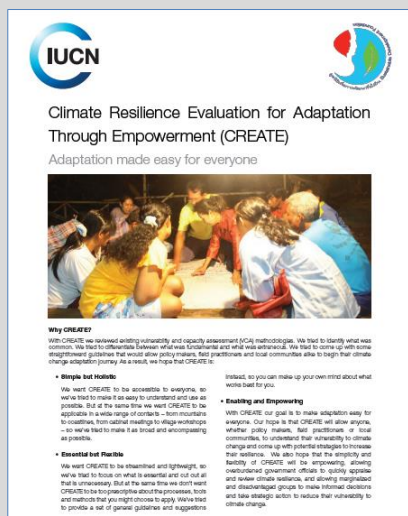
2) Climate Change Vulnerability Assessments for Mekong Wetlands / ICEM-MRC / CAM Methodology



- Clear focus on climate related factors and natural disaster risk
- Simple tools provide clear guidance on information to be collected and analysed
- Has an EbA focus - habitat and species tool available
- Built-in ecosystem vulnerability matrix
- Clear link to conceptual model
- Village assessment has a tight focus on livelihoods derived from wetland resources

- No explicit inclusion of non-climate threats
- No explicit inclusion of socio-economic data
- Doesn't explicitly address scale

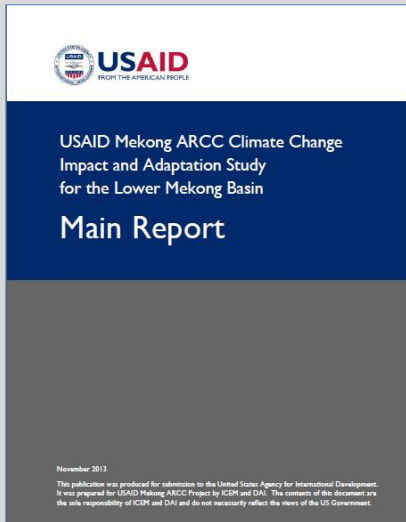
3) Building Coastal Resilience in Southeast Asia – CREATE/PLI / SDF-IUCN



- Easy-to-understand explanation of concepts and process, PRA tools
- Inclusion of climate and non-climate factors
- Focus on livelihoods
- Focus on action/adaptation planning
- Involvement of local governments and communities in process

- No explicit tools for data collection. Uses general PRA tools.
- Requires detailed training (5 days in BCR project)
- Not a rapid assessment (4 days of community work).
- No clear link between ecosystem and community vulnerability. Lacks an EbA focus.
- Livelihood/community focus too broad.

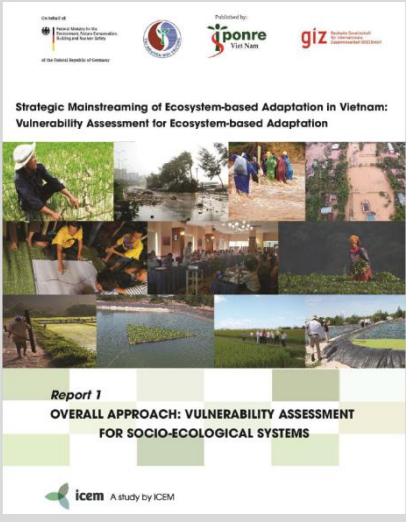
4) Mekong ARCC / USAID-ICEM



- Detailed methodology for scientific study of climate change impacts
- Pilot-tested process of linking scientific findings to local knowledge for adaptation planning
- Focus on livelihoods at the community level

- No specific site-level tools of its own. Uses methodologies from ICEM and BCR and general PRA tools.
- No clear link between ecosystem and community vulnerability. Lacks an EbA focus.
- Livelihood/community focus too broad.

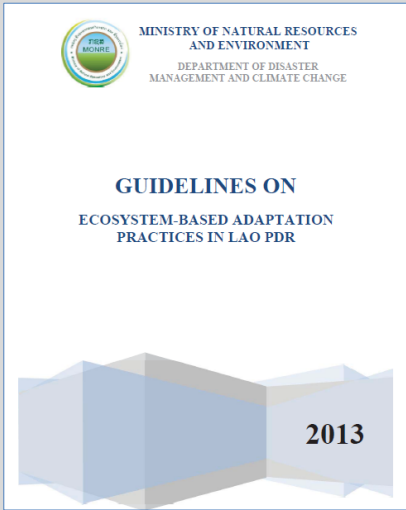
5) Vulnerability Assessment for Socio-Ecological Systems (VASES) / GIZ-ICEM-ISPNRE



- Four-step analytical process
- Focus on socio-ecological systems (SES) and Key Economic Assets (KEAs)
- Explicit link between ecosystems and livelihoods
- Integrates EbA adaptation planning (4th step)
- Multi-scale approach (provincial and local)
- Captures external threats
- Flexible hybrid framework with flexible use of different methods and tools
- Tools (e.g., CREATE, PLI, ICEM CAM) already familiar to some team members

- Detailed (long and costly) analysis
- Does not explicitly address species

6) Guidelines on Ecosystem-Based Adaptation / MONRE, Lao PDR



- Clear steps
- Inclusive approach, stakeholder involvement
- Focus on adaptation planning

- No specific tool provided apart from general PRA tools.
- No species and habitat tools.

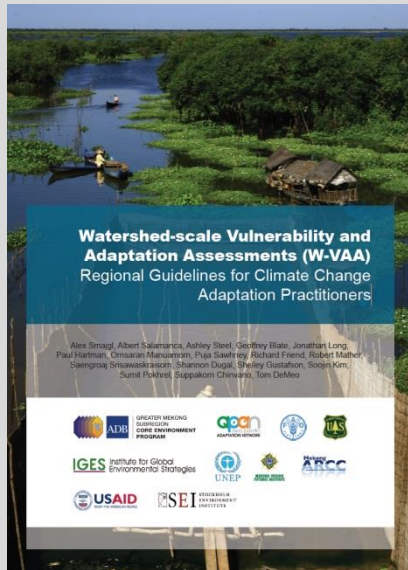
7) Mangroves for the Future (MFF) Resilience Analysis Protocol (RAP)



- Resilience as a framework
- Provides outcome indicators to measure resilience
- Focus on livelihoods, socio-ecological system (SES) and gender
- Uses adaptive management
- Rapid assessment, cost-effective
- Focus on “positive”, forward-looking notion of resilience instead of “negative” notion of vulnerability

- Not a VA tool
- Resilience framework can be unfamiliar to those already exposed to the dominant vulnerability framework utilised in the region
- Framework differs from IUCN global protected areas approaches.
- Less likely to get acceptance from “positivist scientists”

8) Watershed-scale Vulnerability and Adaptation Assessments (W-VAA): Regional Guidelines for Climate Change Adaptation Practitioners.



- Proposes a set of principles for conducting VAs at the watershed scale
 - i) **Principle 1:** W-VAA should focus on informing decisions
 - ii) **Principle 2:** The scope of the W-VAA should be strategically determined given decisions of interest
 - iii) **Principle 3:** W-VAA must consider the complexities of socio-ecological systems
 - iv) **Principle 4:** W-VAAs should embrace and communicate future uncertainties and risks
 - v) **Principle 5:** W-VAAs should be participatory
 - vi) **Principle 6:** W-VAAs should enable people and institutions to learn and reorganize in the context of risk
 - vii) **Principle 7:** W-VAAs should include a plan for monitoring, learning, and evaluation

- No clear tools/ methodology (refers to other tools)

Based on the above analysis and the requirements of both Mekong WET and CAWA, IUCN proposed to use the ICEM Climate Change Vulnerability Assessment tool, with a few improvements. This tool provides an easy-to-use methodology that can be applied by local teams with limited training. The use by local teams involving IUCN staff, government staff, researchers and community representatives is expected to foster local ownership. The tool will also allow for comparison between sites.

Improvements made to the ICEM Climate Change Vulnerability Assessment tool include: 1) gender and socio-economic assessment, 2) non-climate threats, 3) mapping/spatial analysis of habitats, and 4) adaptation planning and involvement of local governments and communities. In addition, through the concept of “resource dependency,” the tool makes an explicit link between ecosystems and livelihoods.

The tools can be downloaded from the following links:

1. [Habitat VA Tool](#)
2. [Village VA Tool](#)
3. [Species VA Tool](#)

ANNEX 2: GENDER ANALYSIS: APPROACH AND TOOLS

Definition: Gender analysis is a process of understanding the relationship of women and men within an environment. The analysis focuses on the reproductive and productive roles of women and men, and how these affect their access and participation in the management of resources. The results of the analysis can be used for developing resource management plans and activities that are sensitive to the conditions and needs of the men and women in the community.

Reproductive roles – The activities, responsibilities and expectations of a man or woman in relation to the care and maintenance of the household (reproduction, child care, education, health, home maintenance, security, etc.)

Productive roles – The activities, responsibilities, and expectations of a man or woman in relation to providing basic economic needs of a household (e.g. food production, wage employment, etc.)

Purpose:

- To facilitate the process of engaging men and women to identify issues and concerns that affect their participation in the use and management of resources.
- To analyse gender roles and relationships in the context of their biophysical and socio-cultural environment.
- To develop a gender responsive management plan and/ or activities.

Key Principles:

- Analysis of gender roles; productive, reproductive and community management (women, men, household and community)

Strengths of this tool:

- Highlights unique contribution of men and women in the use and management of resources.
- Highlights the often overlooked/ neglected contribution of women in production work (unpaid/ unseen labour)
- Increases awareness of both men and women regarding their perceived roles and relationships in the productive and reproductive spheres.

This tool provides a context-specific understanding of a specific area (village/ group of households) and should take into consideration the political economy, power relations and institutional context.

PRA methodologies/ tools you will need to be familiar with to complete the Participatory Gender Analysis and Responsive Planning:

- Daily Activity Chart/ 24-hour clock
- Problem Ranking
- Focus Group Discussion

Prerequisites:

The facilitator must:

- Have a sound understanding in community organizing and a working knowledge of resource management;
- Be gender-sensitive and have an understanding of the principles / concepts of gender and development.

Suggested approach:

Step 1: Understanding how men and women perceive their environment

1. Group men and women separately.
2. For each group, discuss the problems and issues about their biophysical and socio-cultural environment (use Problem Ranking and Focus Group Discussion tools/methodologies). Discuss perceived solutions.
3. Write down the results in a matrix.
4. Ask each group to share results. Note commonalities and differences in men and women in perception of problems and solutions.
5. Synthesize major outputs.

Example

The men's group identifies one of the main problems in the area to be the depletion of mangroves. This was leading to a reduction in local fish catch. Their solution was to protect remaining mangroves and to restore / replant degraded mangrove area.

The women's group identified the same problem. For them, the main concerns were that without a barrier of mangroves, the beach/ shoreline was being steadily eroded, so that during typhoons, houses were being badly damaged. In addition, it is increasingly hard to find firewood for their daily fuel needs. Their solution was also to protect the remaining mangroves and to restore/ replant degraded mangroves.

However, when the two groups joined together, the women were not happy about the large area the men had chosen for reforestation – an area of 'unused land'. For the women the area identified was not 'unused' land but an important gleaning area for them, an area they used for collecting shells, crabs and seaweed for family consumption, an area depended on especially when fish catch is low or not available. The women instead suggested an alternative narrow strip of land that would both enhance the gleaning ground and protect the shoreline from further erosion.

The output from the discussion is used for Gender Responsive Planning (Step 3).

Step 2: Gender Analysis

In this step, community members look into the gender roles played by men and women in the management of their homes (reproductive roles/ activities), their sources of income (productive roles/ activities), their participation in community activities and their positions in terms of access and control over their resources.

1. Group men and women into separate groups.
2. Facilitate a discussion to explore the participants' various reproductive and productive activities and respective roles.

3. Write down in matrix (see sample) the reproductive activities and productive activities (major activities related to fishing/ farming or other sources of livelihood). Subdivide the productive activities into:
 - a. Home-based
 - b. Coastal-based
 - c. Community management work
4. Ask the participants to produce a chart showing how men and women spend their time in a typical day (use Daily Activity Chart / 24-hour clock methodology/tool).
5. Ask the participants to write down their roles in accessing and controlling resources and how benefits are distributed among men and women.
6. Ask the two groups to come together to compare their matrices.

Sample outputs

1. Reproductive activities and gender division of labour

This matrix shows that reproductive activities are dominantly done by women with men sharing in firewood gathering:

Activity	Men	Women
Food preparation, cooking		√
Child care/ child rearing		√
House cleaning		√
Washing clothes		√
House repair	√	
Gathering firewood	√	√
Collecting water for household use		√

2. Productive activities and gender division of labour:

- a. Home-based activities

Activity	Men	Women
Fish drying		√
Care of livestock		√
Home gardening		√
Mending fishing nets	√	√

This matrix shows that women are more active in home based productive activities than men

- b. Resource-based activities

The matrix shows that men and women are involved in resource-based activities.

Activity	Men	Women
Fishing	√	
Selling fish		√
Planting and maintenance of mangrove		√
Gleaning – shellfish, crabs, seaweed etc.		√

- Community management work – maintenance of the community through participation in community organizations and activities.

This matrix shows that both men and women are active in community management work, however, discussion indicated that often only men join community meetings.

Activity	Men	Women
Attending community/ public meetings	√	
Community clean-up	√	√
Membership in community organization	√	√

- Chart of daily activities – compose profile of time allocation and corresponding activities of men and women. Information derived from the Daily Activity Charts/ 24-hour clock.

This matrix or composite profile of time allocation of men and women in the community reveals the multiple roles women have (productive and reproductive/ home-based).

Time	Men/ Activity	Women/ Activity
3 am	Fishing	Wake-up and prepare food for fisher husband and children's breakfast
5 am	Fishing	Clean house and feed livestock, wash clothes and fetch water, prepare children for school
7 am	Sleep	Meet fisher husband on the shore, sort fish for selling, sell fish at local market
11 am		Prepare lunch Prepare fish from morning catch for drying
1 pm	Clean and mend fishing nets	Help mend and clean fishing nets
3 pm		Tend to livestock and home garden Support children with homework/ education Maintenance of replanted mangroves
5 pm	Prepare equipment for fishing	Clean house/ surrounding, fetch water, prepare dinner and pack food for fisher husband
9 pm	Fishing	Retire for bed

5. Access and control over resources and benefits – productive resources (capital assets) such as land, house, fishing boat, fishing gear etc., livestock, small retail shop etc.

Access and control over resources and benefits matrix shows that men and women seemingly have equal access to resources but men have more control over resources.

Resources	Access	Control
House	men & women	men & women
Fishing boat	men	men
Fishing equipment (motor, fishing gear)	men	men
Livestock	men (cattle)	women (poultry)
Income	men & women	men
Formal loans (with formal lending organizations e.g. banks)	men & women	men

6. Access to basic services:

Basic Services	Access to Women/ Girls	Access to Men/ Boys
Health		
Reproductive health		
Child care		
Primary education		
Secondary education		
Banking & Loan services		
Livelihood extension support		
Etc.		

7. Condition and Position: Practical needs and strategic needs of men and women

In groups, define the practical and strategic needs of men and women

Condition	Position
Practical Needs	Strategic Needs
Material living conditions e.g. cooking stoves, water	Status gap between women and men
Deals with improvement in day to day life situations	Improvement in gender norms, attitudes, perception
More women in fishery jobs	More women as leaders in fishery sector. More recognition of women's roles and contribution in coastal management.
Provide skill- building	Address situations for equal value & treatment & mitigate the risk of violence of men and women

Step 3. Gender responsive planning

Step 3 can proceed based on the assumption that in Steps 1 and 2 the participants have critically diagnosed extent/ capacity of their resources and have analysed gender roles.

1. Group men and women in separate groups.
2. Ask the groups to use the data they have gathered in Steps 1 and 2 to identify changes they want to have happen in their productive and reproductive activities.
3. Ask each group to formulate a gender responsive plan of action (i.e. considering division of labour, multiple roles, access and control of assets and benefits, practical and strategic needs of men and women.
4. Ask the two groups to come together, discuss and reach consensus on what projects or activities should be prioritized. Remember to take into consideration the immediate needs and priorities as well as the more strategic, long-term needs and requirements. You can use Preference Ranking methodology or tool.
5. Identify government and non-government agencies that can possibly assist them in the implementation of the action plans/ activities. Refer to output from Institutional Analysis and Stakeholder Analysis.

Output: Outline Plan of Action/ Priority Activities addressing the needs (both immediate practical needs as well as the more long-term strategic needs).

ANNEX 3: GLOSSARY OF CLIMATE HAZARDS

Drought – While there is no universally accepted definition of a drought, the term refers to “an extended period - a season, a year, or several years - of deficient rainfall relative to the statistical multi-year average for a region.”¹

Extreme heat (“Heat wave”) – Extreme heat can be defined as “the temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks.”²

Flood – “A general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waters from the unusual and rapid accumulation or runoff of surface waters from any source.”³

Hailstorm – Hail is defined as “precipitation in the form of balls or irregular lumps of ice.”⁴ A hailstorm is “a storm during which hail falls.”⁵

High winds – Wind speed is defined as the “ratio of the distance covered by the air to the time taken to cover it.”⁶ High winds or strong winds are associated with storms such as typhoons. High winds blowing across water bodies can lead to storm surges.

Rainstorm – A storm that produces heavy rain.

Storm surge – “an abnormal rise of water generated by a storm's winds. Storm surge can reach heights well over 20 feet (6 meters) and can span hundreds of [kilometres] of coastline.”⁷

Typhoon – A severe tropical cyclone originating in the western North Pacific.⁸ It is characterized by strong winds from 33 m/s (65 knots) to over 90 m/s (175 knots), and torrential rain.⁹

Wildfires – “an unplanned, unwanted wild land fire (including unauthorized human-caused fires). Vegetation fires are caused by slash/burn land clearing, clearing of plantations following logging operations, and by natural events such as lightning or extreme drought. The dry seasons provide peak conditions for wildfires to occur, and it is during this time that they are most prevalent.”¹⁰

¹ Source: UNSDR, <http://www.un-spider.org/risks-and-disasters/natural-hazards/drought>

² Source: WMO, <http://www.un-spider.org/risks-and-disasters/natural-hazards/extreme-temperature>

³ Source: UN, <http://www.un-spider.org/risks-and-disasters/natural-hazards/flood>

⁴ Source: American Meteorological Society, <http://glossary.ametsoc.org/wiki/Hail>

⁵ Source: Collins English Dictionary, <http://www.dictionary.com/browse/hailstorm>

⁶ Source: American Meteorological Society, http://glossary.ametsoc.org/wiki/Wind_speed

⁷ Source: NOAA National Hurricane Center, <http://www.nhc.noaa.gov/prepare/hazards.php>

⁸ Source: American Meteorological Society, <http://glossary.ametsoc.org/wiki/Typhoon>

⁹ Source: American Meteorological Society, http://glossary.ametsoc.org/wiki/Tropical_cyclone

¹⁰ Source: UN-SPIDER, <http://www.un-spider.org/risks-and-disasters/natural-hazards/wildfire>

ANNEX 4: CHECKLIST FOR VULNERABILITY ASSESSMENT AND ADAPTATION PLANNING

- Baseline research
- Form a VA team
- Train the VA team members
- Define the scope of the VAs and target communities
- Introduce the project to the communities
- Conduct the BA in a consultative process
- Write up the draft VA report
- Validate the results with the VA team members and the communities
- Develop adaptation options
- Implement, monitor and adjust adaptation options



**INTERNATIONAL UNION
FOR CONSERVATION OF NATURE**

ASIA REGIONAL OFFICE
63 Sukhumvit Soi 39
Klongtan - Nua, Wattana
10110 Bangkok, Thailand
Tel +66 (2) 662 4029
Fax +66 (2) 662 4387
www.iucn.org/asia

