Climate Proofing for Development

A Training Toolkit

With support from

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

Department of Environment and Natural Resources

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Climate Proofing for Development
A Training Toolkit

Responsible
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Preface

The Environmental Management Bureau of the Department of Environment and Natural Resources is extremely pleased and honoured to present this **Training Manual on Climate Proofing for Development (CP4D)** which is a culmination of the Department's efforts and commitment to conscientiously address the global issue of climate change. This initiative on capacity development on climate change adaptation was undertaken with assistance from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through the project "Adaptation on Climate Change and Biodiversity Conservation (ACCBio)" funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under its International Climate Initiative. The Bureau is the lead agency for the institutional strengthening component of the ACCBio Project. The development of the Climate Proofing manual also benefited from the institutional assessment undertaken in 2008-2009 through the UNDP-MDGF Climate Adaptation Project.

The CP4D Manual traces a long history of development prior to reaching its current form. It traces its beginning in July 2009 when the ACCBio Project introduced the GIZ Instrument Climate Check and the concept of analyzing climate risks through climate proofing. Participants of the two-day workshop which had the opportunity to apply the instrument in case studies at the national and sub-national levels, immediately recognized the usefulness of the tool and aspired to adapt it to fit the Philippine context. Since then, the tool has evolved into a full-blown training manual in response to the need to build the institutional capacity of the Department to "systematically integrate the concept of climate change in various phases of policy formulation, development plans, poverty reduction strategies and other development tools and techniques" consistent with the mandate of the Climate Change Act of 2009.

In the last three years since its inception, the Manual was subjected to an iterative process of testing and improvement in the climate proofing trainings of the Ecosystem Research and Development Bureau (ERDB), Protected Areas and Wildlife Bureau (PAWB), Planning and Policy Studies Office (PPSO) and the Forest Manage-

ment Bureau (FMB). The 2-day Orientation and 5-day Full Training Courses of the CP4D Manual have also been tested with the EMB Regional Directors and Senior Technical Staff, respectively.

Other national government agencies and local government units have also benefitted from trainings using earlier versions of the CP4D Manual. The Department of Interior and Local Government (DILG) and the Department of Agrarian Reform were among the first to take advantage of the courses offered in climate proofing. Selected LGUs in the Visayas also benefitted from the application of climate proofing as input to the preparation of their Comprehensive Land Use Plans as part of the review of the CP4D manual for local level application. The orientations and trainings conducted contributed to the further enhancement of the content and the process.

The Training Manual aims to serve as a tool to enhance capacity among the various Offices and Bureaus of the Department and its stakeholders in successfully fulfilling its mandate and in taking action on climate change adaptation.

In particular, the Manual intends to provide a valuable resource to develop skills of DENR Senior and Technical Staff in managing and organizing a process of integrating CCA into the different levels of development programming and implementation as an on-going institutional change process. It also supports the end view of the Department to form a resource pool on mainstreaming CCA to ensure continuous action within the institution.

We, therefore, wish to enjoin each and every one to maximize the use of this tool in your respective undertakings in the pursuit of attaining a higher level of resiliency and adaptive capacity as we inevitably hurdle the changing climate.

ATTY. JUAN MIGUEL T. CUNA, CESO IV
OIC-Director
Environmental Management Bureau
Department of Environment and Natural Resources

Introduction

The reality of climate change is here and now. A dramatic plunge in greenhouse-gas emissions notwithstanding, the change has begun; the shift is in mid-swing. Over the years, the impact of climate change has become increasingly apparent— exceptionally wet rainy seasons interspersed with scorching dry spells, massive flooding, and long-drawn-out droughts. In the long run, the situation is likely to escalate to food shortage, the spread of vector-borne diseases and devastation of natural resources. And in its midst are the poor, marginalized sectors that will bear the brunt unless the issue is addressed.

Development choices made today will shape the adaptive capacity of the individual, community and, subsequently, nation. The result of these choices is sure to carry into the future, cascading to younger generations. Substantive development plans—those that factor in human and environmental susceptibility to climate change—are required.

The urgency of the matter is, however, undermined by the dearth in information. The lack of awareness among the populace is alarming. The much-needed knowledge, it seems, is confined to a few; it is not widely disseminated.

An inventory of effective techniques for analyzing climate impacts is necessary. Educating decision- and policy-makers calls for comprehensive adaptation strategies. The learning should be approached in the context of the Philippine experience for it to resonate among local stakeholders.

For these reasons, the Organization for Economic Co-operation and Development's (OECD) Environment Policy Committee (EPOC) and Development Assistance Committee (DAC) formulated the Policy Guidance on Integrating Climate Change Adaptation into Development Co-operation (OECD Guidance). The framework aims at

creating a better understanding of climate change. Moreover, it seeks to promote practical means of integrating climate adaptation into development undertakings at national, sectoral, project and local levels.

Working closely with the OECD, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH developed the Integrating Climate Change into Development Planning training course. The instruction tool and its components was based on amalgamated information from OECD Guidance, experiences on the ground in developing countries, and GIZ's own resources—Climate Assessments for GIZ projects, Climate Proofing for Development, and Climate Strategy Advice (Integrating Climate Change into Development Cooperation, GIZ).

Intent on mainstreaming climate change into development activities, the Department of Environment and Natural Resources (DENR) designed the Climate Proofing for Development (CP4D) —A Training Toolkit, with support from GIZ BMU. The Toolkit comprises a handbook for trainers (the **Manual for Trainers**, which is this particular publication) and a module compilation (the **Training Manual**, a separate publication) for training participants and trainers as well.

This veritable information and training suite is geared at sowing the seeds of, and ultimately growing, climate-resilient development investments. It is a springboard for developing effective information and resources within the current climate change context.

Navigating the Toolkit

The Climate Proofing for Development (CP4D) Training Toolkit consists of three components—a **Manual for Trainers**, a **Training Manual** or compilation of modules and a CD-ROM.

The two are physically distinct yet complementing print publications. PowerPoint presentations that trainers could use as a tool for the training activities are stored in the CD-ROM.

A quick-reference handbook, the **Manual for Trainers**, which is this publication, is intended for lay-trainers and professionals not necessarily from the scientific community.

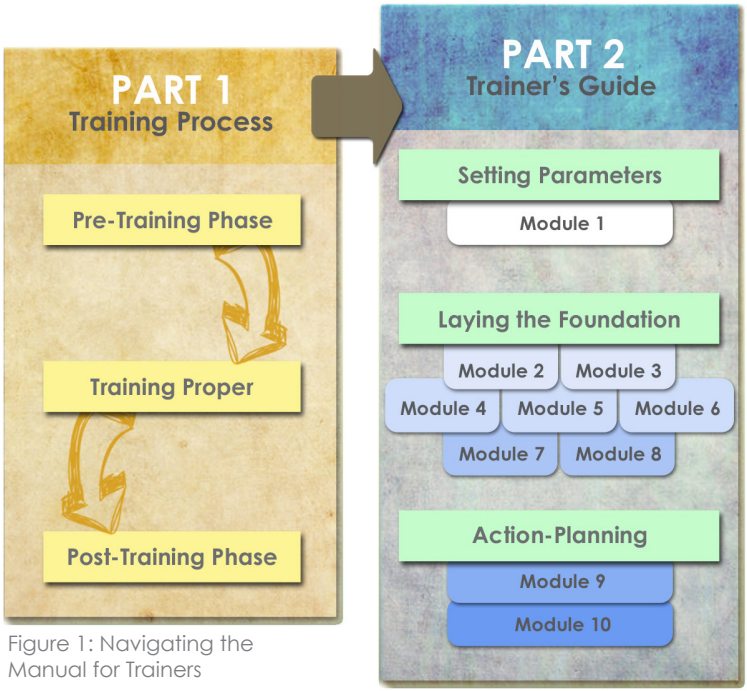


Figure 1: Navigating the Manual for Trainers

The first part of the **Manual for Trainers** outlines the training process, providing insight into the target audience and identifying key teaching concepts. The second part maps out the training activity, with emphasis on integral components such as the objective, coverage, methodology and participant profile. Ideally for a five-day course, the guide could easily be adapted for shorter term training sessions. It could also serve as an orientation material.

Part 1 • The Training Process

Phase One

Pre-Training is an overview of the critical elements in delivering a learning activity namely, (a) assessing needs, (b) developing the teaching design, and (c) laying the groundwork for training activities.

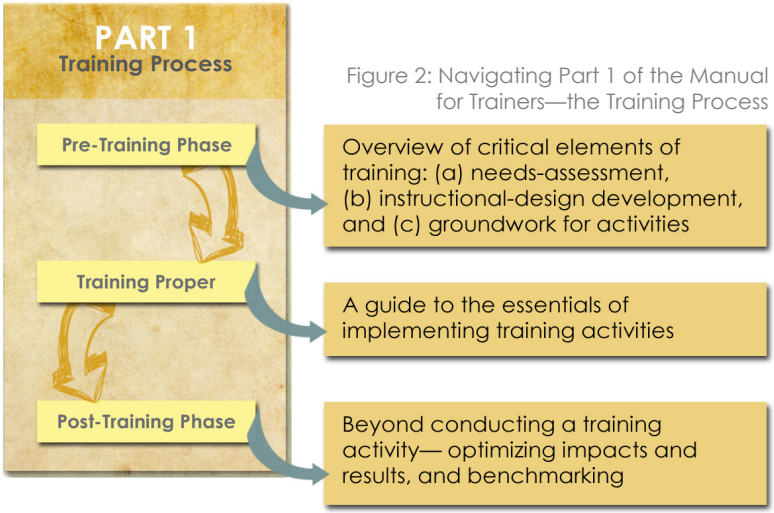


Figure 2: Navigating Part 1 of the Manual for Trainers—the Training Process

Phase Two

Training Proper outlines the essentials of implementing a training activity, including the fundamentals of facilitation and logistics.

Phase Three

Post-Training guides the trainer on how to maximize training outcomes and go beyond teaching towards benchmarking results.

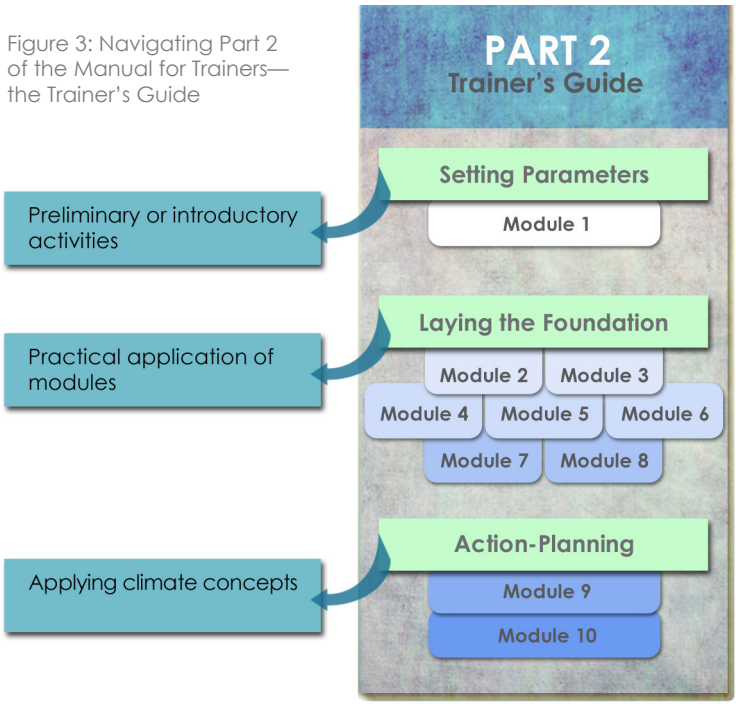


Figure 3: Navigating Part 2 of the Manual for Trainers—the Trainer's Guide

Part 2 • The Trainer's Guide

Setting Parameters

Preliminary or introductory activities. The environment is set and participants are primed for the learning experience.

Laying the foundation

The crux of the training wherein modules are put to use. This is when basic concepts on climate change are translated to relevant and practicable terms.

Action-planning

The ultimate purpose and final output of the training. Ideas are crystallized and specific, measurable, attainable, realistic and timely goals are formed toward applying climate adaptation concepts in development work.

The second component of the CP4D Training Toolkit is the **Training Manual** or a compilation comprising ten (10) modules, each representing sections of the course. To facilitate implementation of the course, templates for tables and matrices are annexed to the compilation. These standardized guides could be used in workshops and related activities.

Every module has a **Session Guide**, **Facilitator's Notes** and **Handouts** for participants; most come with a **PowerPoint Presentation**.

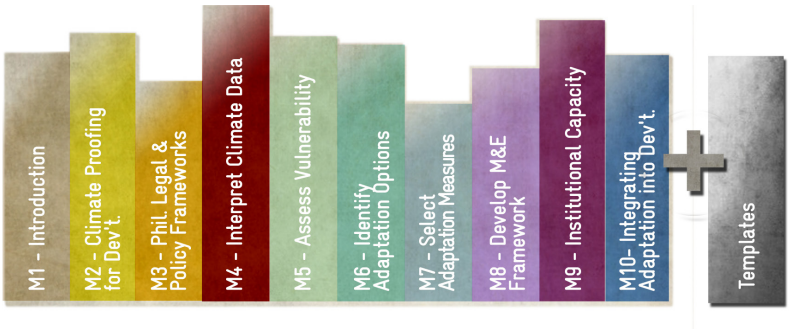


Figure 4: Training Manual or compilation of modules—the second component of the CP4D Training Toolkit

The Session Guide gives an overview of the module. It indicates the duration of the session, states the objectives and outlines the training procedures specific to the session.

Facilitator's Notes are reference materials and supplementary talking points. Since the concepts discussed are basic, these could easily be simplified or enhanced depending on the users' needs. It is imperative to cite examples to which the participants can relate.

Handouts are printouts of background notes on the training. These come in many forms (e.g., a comprehensive exposition, a transcript, and an abstract of specific subject matters). Handouts supplement a lecture and help give direction to exercises and workshops.

PowerPoint Presentations are saved in the CD-ROM along with other reference materials intended to supplement the information in the Facilitator's Notes and the Handouts. It is up to the trainer to decide whether these will be made available to the participants.

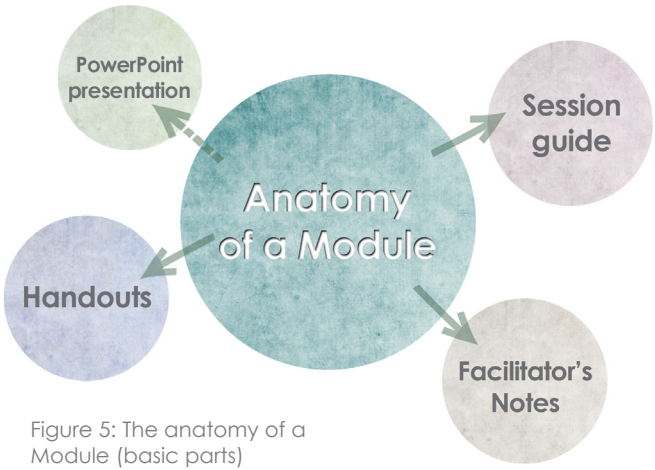


Figure 5: The anatomy of a Module (basic parts)

Part 1: The Training Process

The CP4D training sessions are designed for adult learners. As such, participants and trainers alike should be engaged in the activities physically, psychologically and socially. The ultimate goals of training are to build capacity, apply lessons practically, and initiate a change in behavior. To achieve these, a trainer must have a working knowledge of **Adult Learning Principles.**

Adult learners are volunteers. They are neither coerced nor conscripted. The challenge is not motivating them but rather, sustaining their interest.

Adult learners come with a wealth of knowledge and experience. Autonomous and self-directed, they generally find hierarchical roles off-putting. Trainers need mostly to guide learners, not just supply them with facts that are seemingly meaningless to their life.

Adult learning has a higher purpose. Goal-oriented, they regard learning as a means to an end; they do not simply acquire knowledge for the sake of having knowledge. The training must have a value that is meaningful to the participants.

Adult learning complements the work-life balance. The demands of learning must be commensurate to its benefits. The learning proper must not interfere with the individuals' personal or professional life.

Adult learning is permanent. Self-initiated learning lasts much longer than the education imposed by family or society. Because it holds much significance to adult learners, knowledge is absorbed readily and applied practically.

The CP4D Training Course was prepared and implemented using Jane Vella's **Twelve (12) Principles for Effective Adult Learning** from her book Training Through Dialogue (1995),

1. **Needs Assessment.** The participation of the learner in naming what is to be learned.

2. **Safety** in the environment between trainer and learner for learning and development.

3. **A sound relationship** between trainer and learner for learning and development.

4. Careful attention to **sequence** of content and
5. **reinforcement.**

6. **Praxis:** Action with reflection or learning by doing.

7. **Respect for learners** as subjects of their own learning.

8. Cognitive, affective, and psychomotor aspects: **ideas, feelings, actions.**

9. **Immediacy** of the learning.

10. **Clear roles** and role development.

11. **Teamwork** using small groups.

12. **Engagement** of the learners in what they are learning.

13. **Accountability.** How do they know they know?

The course adopts a problem-oriented approach to instruction. Case studies, exercises and problem-solving groups are designed in a way that is relevant to the participant. The trainer is encouraged to integrate new information with the learners' stock knowledge. Equal emphasis must be put on the content and learning process.

The training activity has a definitive Training Flow, occurring in sequence: Phase One is the Pre-Training stage; Phase Two is the Training Proper; and Phase Three, Post-Training activities.

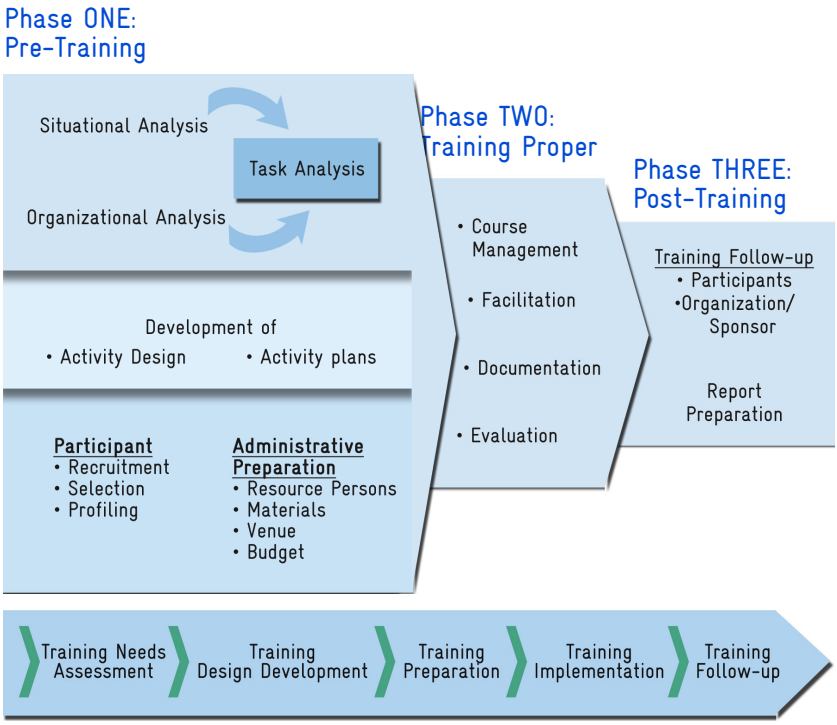


Figure 6: The Training Flow—the Three Phases of the Training Process

Phase One: Pre-Training

An overview of critical elements of training: (a) needs-assessment, (b) instructional design development, and (c) groundwork for activities

Needs-Assessment is the process of identifying the existing competencies of the participants as regards:

- Distinguishing attributes and current situation (Situational Analysis).
- Affiliation with an organization, and how relevant its mandate is to climate change adaptation (Organizational Analysis).
- Tasks required of individuals; how relevant their respective job responsibilities are to climate change adaptation (Task Analysis).

Climate proofing for development requires looking through a "climate lens" when viewing development initiatives. It necessitates integrating climate change adaptation measures into development processes at the participant's level of work.

'Ideal' connotes the requisite competencies for integrating climate change adaptation

'Existing' indicates the participant's current level of competency.

'Training Needs' are the competency gaps that the training activity needs to address.

Figure 7: The Training Needs Equation

Training-needs assessment is often conducted with the use of information-gathering tools, including individual interviews, focus group discussions, meetings and questionnaires. If at the start of the training an initial task analysis of participants is improbable, a questionnaire could be used instead. The questionnaire could be distributed at registration stage and collected afterwards. Collation and analysis must be done prior to the design and implementation of the training activity.

Another option is to interview the organization's officers to ascertain the needs of both the group and personnel to be trained. Information generated therein could be included in the participants' individual personal profile. These could later be used for training design development.

Design Development could enhance the learning process. In the case of the CP4D training activities, a standard course outline has been set (refer to Part 2: Trainer's Guide). Nonetheless, **supplementary training activity components** can be adapted to the training needs.

Training design constitutes the what, why and how of the training activity. Modules and session guides could incorporate examples that strike a familiar chord in participants.

Activity plans are guidelines on implementing and managing the training:

- Documentation Plan—ascertain if the activity should be documented and reported, and how (refer to Annex 1.1 Documentation Templates).
- Evaluation Plan—determine factors for evaluating the activity (refer to Annex 1.2 Evaluation Plan).

- Administrative/Logistics Plan—draw up an administrative and logistical to-do list prior to the training activity (refer to Annex 1.3).
- Management Plan—get a consensus on the formation of a training team. Ascribe tasks to members, and set protocols and work schedules.

Training Preparation entails sourcing the required human and material resources, doing legwork and coordinating with subcontractors as needed.

1 Participants

Recruiting suitable participants is critical to ensuring that training goals are met. Participants are often pre-selected by the organization and are not subjected to a proper selection process. It is important to discuss with the organization their criteria and expectations from their staff after the training. Selected participants must then fill-up a registration form.

2 Administrative preparations

A. Invited Resource Persons must be informed of:

- The results of the training needs assessment: the situation that is being addressed, details of the organization being supported, and training needs that have been identified
- The rationale, details and expected outputs of the overall training activity and specific session they are to handle. The module and session guides should be discussed, modifying the prototypes as needed

- Participants' profiles. These include results of the train ing-needs assessment and a rundown of demographics and other relevant information (e.g., number of parici pants, age range, gender, job responsibilities and, when available, the expectations of the participants and orga nizations).

B. Materials consist of standard printouts, including hand-outs and forms, and visual aids like PowerPoint presentations of the training topic. Trainers could print on the materials (i) logos of partner and sponsoring institutions; (ii) date and venue of the training activity; and (iii) pictures, local samples and other information to be used. Once edited and finalized, these are ready to be reproduced and packaged for the training kits. Coordination with resource persons is imperative to determining the materials to be used and how these should be presented.

C. Venue should be well-suited to the type of training activity. The decisive factors should be:

- The training room (size and shape; accessibility to dining and lodging areas, restrooms; artificial and natural lighting; acoustics; ventilation; tables, chairs, audio-visual equipment; electrical outlets; boards/panels)
- Accommodations (number of participants per room; accessibility to training venue)
- Food (people's food restrictions; quality and quantity of food; dining arrangements)

D. Budget or financial resource requirements need to be identified, money requested and approval acquired.

Phase Two: The Training Proper

A guide to the essentials of implementing training activities

1. Facilitation should be guided by the pre-set parameters and principles.

To enhance the learning experience:

- Speak clearly, making sure that you are heard by all.
- Address learners' expectations early on.
- Explain the module structure and components at the start of each session.
- Provide refreshers on previous discussions to ensure that everyone understood the material covered.
- Answer questions as they arise but if unsure, simply say you will look into the matter and get back to them.
- Give useful and constructive feedback.
- Stick to the schedule but have a contingency plan in case the session takes longer than expected.

2. Documentation captures critical information. Implementing the documentation entails taking down notes, recording audio and video, and taking photos. Documentation is an integral input to the report and a good source of feedback. Correctly label and carefully store materials for easy referencing.

3. Evaluation gives direction to the training. The evaluation plan allows the trainer to get immediate feedback on the status of participants during training (formative evaluation), and at the end of the activity (summative evaluation). The output of evaluation could enhance the training design and facilitate management of the activity.

4. Administrative/Logistic Monitoring entails timely preparation and distribution of materials. Venue and other pertinent provisions should be monitored closely.

5. Overall training activity management, when done properly, yields an impeccable training session. Ironing out the curriculum and implementing the various plans is contingent to the efficiency of the training team.

Phase Three: Post-Training

Beyond conducting a training activity, the imperative is optimizing impacts and results, and benchmarking.

1. Training report preparation must be guided by an established documentation plan. The report must contribute to the review and revision of the training design, processes planning and implementation. It includes the daily documentation, evaluation results and course output.

2. Training follow-up with the partner organization and sponsors includes soliciting feedback on accomplishments, concerns and recommendations after the training. This enhances post-course support to participants and the overall integration of learning into organizational operations.

Part 2: Trainer's Guide to the CP4D Course

Climate proofing is a systematic undertaking with an end-result to analyze climate risk-reduction factors and increase adaptive capacity. Applying a "Climate Lens" puts in focus the extent to which—

- a measure or a set of measures could be vulnerable to climate risks
- climate change risks have been factored in formulating these measures
- the measure or set of measures could lead to increased or decreased vulnerability, or lead to maladaptation
- opportunities arising from climate change can be utilized
- current strategies and policies need to be revised to ad dress climate risks

The Trainer's Guide to the CP4D Course serves as an introduction to concepts and a springboard for climate change adaptation. The content of the course, founded primarily GIZ modules, builds on local training courses, orientations and workshops conducted in the community in the last three years. This process-based tool engages stakeholders to incorporate climate-proofing principles into their development agenda. Modules are categorized according to purpose:

Setting parameters: Preliminary or introductory activities. The environment is set and participants are primed for the learning experience.

Laying the foundation: The crux of the training wherein basic concepts on climate change are translated to relevant and practicable terms.

Action-planning: The ultimate purpose and final output of the training. Ideas are crystallized and specific, measurable, attainable, realistic and timely goals are formed toward applying climate adaptation concepts in development work.

Training Activity Overview

A. Objectives

1. to improve institutional capacities to analyze and formulate climate change adaptation policies and strategies; and
2. integrate adaptation measures into development plans and processes.

B. Coverage

The CP4D Training Course consists of ten (10) basic modules that could be modified depending on the nature of the training activity—from an orientation session to a training course—and the needs of the organization and participants (Table 1 on pages 19-20).

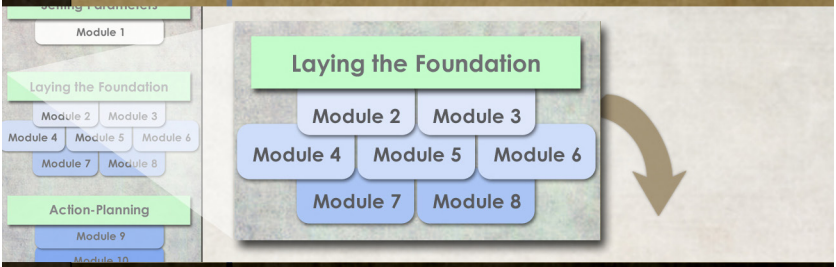
C. Methodology

The training adopts a participatory approach, utilizing matrices and diagrams to complement the ten (10) modules. The exercises are essentially action learning-oriented. **The Training Activity Flow** shows the links running through the training activity objectives, content and method (Figure 8 on page 21).

D. Participant Profiles

The target participants are from organizations engaged in climate proofing initiatives or are required to implement such measures as part of their mandate. The ideal number of participants is 20 to 30 for an orientation course and 15 to 20 for a training course.

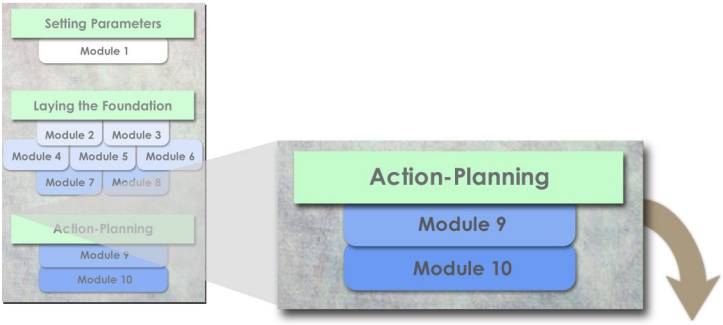
Setting Parameters	**Module 1:** Introduction to the Training Activity	The training context and learning environment must be set prior to the activity. Module 1 sets the tone of the course. At this stage, exercises for participant introductions, setting of expectations and overview of activities are conducted; and general objectives are identified.



		I. Applying a Climate Lens
Layong the Foundaton	**Module 2:** Climate Proofing for Development	Identifying climate-change risks is the first step to addressing the issue. Module 2 provides a background to climate change concepts, factors and impacts. Philippine climate scenarios, trends and projects are tackled at macro-level, stressing the value of adaptation. An exercise identifies how climate change affects the development process.
	Module 3: Philippine Legal and Policy Frameworks on Climate Change	National- and local-level policies on climate change are tackled in Module 3. The mandate of the organization to which participants belong is inevitably linked to Philippine legal frameworks. Establishing such linkages accentuates
	Module 4: Interpret Climate Data	Module 4 pinpoints current and future risks associated with climate change, and highlights the importance and relevance of climate data in decision making.

Table 1: Coverage of the CP4D Training Course

	II. The Four-Step Approach to Integrating Adaptation	
	Module 5: Assess Vulnerability	Assessing vulnerability is the initial step in the systematic approach to climate change adaptation. By analyzing the vulnerability of the system of interest, action points are easily identified. These become a basis for formulating solutions.
	Module 6: Identify Adaptation Options	The second step in integrating adaptation measures into the development process is threshed out in Module 6. This step provides participants with a foothold in CP4D initiatives.
	Module 7: Select Adaptation Measures	At this stage, plausible options are evaluated and, based on established criteria, ranked according to priority.
	Module 8: Develop a Monitoring and Evaluation Framework	The elements of a monitoring and evaluation framework for adaptation are formulated at this stage of the training.



Action-Planning	III. Planning for Climate Change Actions	
	Module 9: Develop Institutional Capacity for Adaptation	Enumerated in Module 9 are the various institutional-capacity requirements in implementing adaptation as a continuous change process.
	Module 10: Integrating adaptation into the development process	Module 10 pinpoints key steps to integrating adaptation and linkages among stakeholders at the local, regional or national level.

Table 1: Coverage of the CP4D Training Course

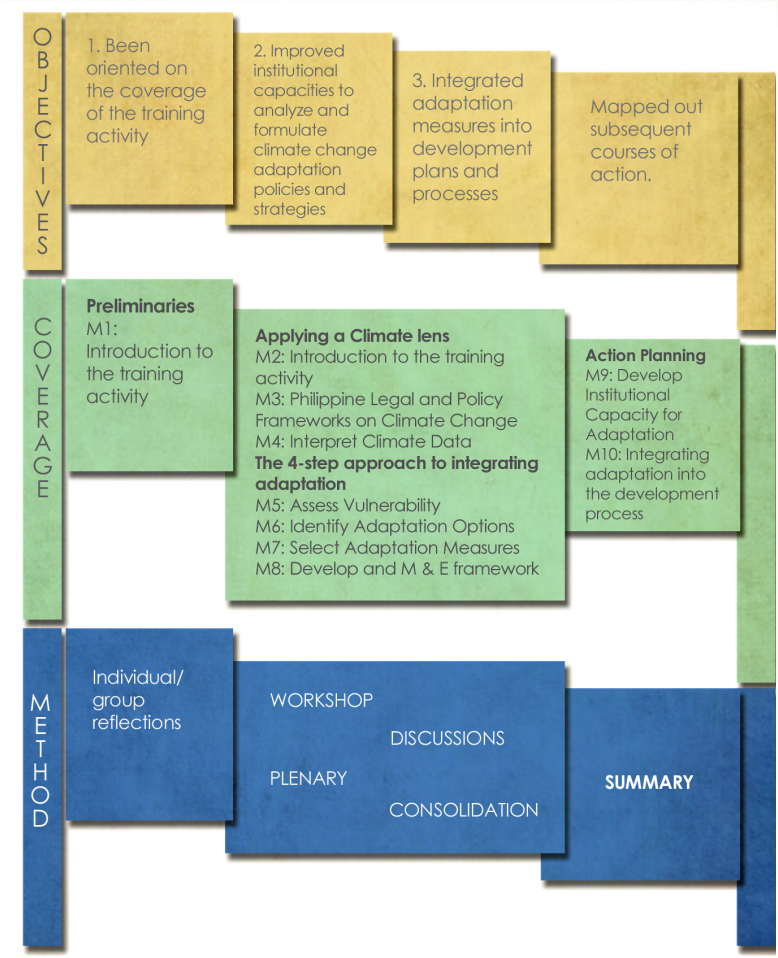


Figure 8: The Training Activity Flow (Methodology)

About the Cover

The cover depicts the reality of climate change as ordinary people see it—on the first panel, inundated plains at the foot of a denuded mountain and on the next, a valley beset by drought. These characterize fears, questions about the alarming shift in weather conditions.

The succeeding panels, meanwhile, portray an almost-perfect setting, where the dry season is warm but not scorching and the wet season with just enough rain. These illustrate a hope of keeping things from getting any worse; of preventing total devastation.

The overall picture idealizes the concept of nature coexisting with industry: communities enjoy the benefits of urbanization without harming the environment. In this ideal, people go about their daily lives, like birds keeping true to their migratory nature, all the while adjusting, adapting.

On the foreground is the palay plant persisting, overcoming adversity to ripen and become rice, finally. The palay is a fitting focal point of the artwork because it embodies sustenance for Filipinos, for which the CP4D Training Toolkit was tailor-fit.

The growth of the palay from a short and unripe shoot to a tall and golden stalk denotes a progression. It represents the strengthening of the trainer's competency in imparting knowledge on climate proofing for development and, subsequently, the adult learners' deepening understanding of the subject.

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Overview of MODULE 1

Duration

Orientation Course: 45 minutes
Training Course: 1 hour 15 minutes

Objectives

At the end of the module, the participants would have:

1. established an environment conducive to learning
2. leveled-off expectations with the training team
3. been oriented on the process and content of the training activity
4. laid down mechanics for the duration of the course (workshop groupings, host teams, house rules, etc.)

Coverage

A. Introduction
- Team-building activity

B. Leveling off expectations
- Individual expectations
- Collation and synthesis of participants' expectations

C. Overview of the training activity
- Rationale
- Objectives
- Activity flow

Suggested Methodology

- Structured learning exercise: Team building
- Expectations check
- Presentation of:
  - (a) course objectives
  - (b) training activity flow and schedule
- Formation of host teams and workshop groups
- Setting up house rules

Outputs

- Fostered team spirit
- Identified and discussed expectations on the training activity
- Outlined the scope and focus of the activity

Resources

Supplies & equipment
- Manila paper, meta cards, markers, masking tape
- White board, white board markers
- LCD projector, computer

Visual aids
- Training activity design: objectives, framework, schedule

Handouts
- Training activity design

Introduction to the Training Activity

SESSION GUIDE

A. Introduction

Duration

Orientation Course: 10 minutes
Training Course: 15 minutes

Objectives

At the end of the session, the participants and training team would have:
1. introduced themselves to each other
2. set a positive learning atmosphere

Key Points

Collective effort from the participants and training team (team work)

Suggested Methodology

Structured learning exercise:
Team building (to be identified by training team)
(a) instructions
(b) process questions

Resources

To be identified by training team

B. Leveling off expectations

Duration

Orientation Course: 15 minutes
Training Course: 30 minutes

Objectives

At the end of the session, the participants would have shared their expectations on the training activity

Coverage

Recognition and comprehension of each other's expectations

Suggested Methodology

Option 1: For an orientation course

- The facilitator requests participants to share their expectations on the training activity
- The facilitator consolidates participants' responses, listing each on the templated matrix
- Once the facilitator has generated sufficient responses, the final output are presented and discussed

Option 2: For a training course

- Participants write on a piece of paper at least two expectations in relation to their personal concerns
- Participants are grouped and instructed to share their individual responses. The facilitator consolidates participants' responses, listing each on the matrix
- The facilitator reviews, validates and discusses each group's output

Key Points

Collation and synthesis of expectations:

- Collate expectations based on themes specified below
- Group expectations that have similar ideas or themes
- Present synthesis of expectations in preparation for the overview of the training activity

Proposed matrix of collation/synthesis:

Content	Process	Facilitators/ Resource Person	Participants	Management Concerns

Guide questions for matrix:

- **Content:** What do you want to discuss?
- **Process**: How do you want to discuss it?
- **Facilitators/Resource Person**: What do you expect from the training team/resource persons?
- **Participants**: What do you expect from your co-participants?
- **Management Concerns**: Time management, host teams, etc.

Resources

Supplies & equipment

- Manila paper, meta cards, markers, masking tape
- White board white board markers
- LCD projector, computer

Visual aids

- Matrix

C. Overview of the training activity

Duration

Orientation Course: 20 minutes
Training Course: 30 minutes

Objectives

At the end of the session, the participants would have:
1. been oriented on the training activity design
2. discussed the activity in the context of their work/job
3. set the learning parameters for the training activity

Key Points

- Leveling off understanding of training activity objectives, coverage and schedule
- The training activity rationale and process as it contributes to the organizations to which participants belong
- Learning parameters for the duration of the training activity:
  (a) host teams
  (b) time management
  (c) other concerns

Suggested Methodology

Orientation on the training activity design
- Presentation of the training activity objectives, coverage and flow
- Discussions of the prepared design in relation to the participants' expectations; clarification and leveling off

Content	Process	Facilitators/ Resource Person	Participants	Management Concerns

Vis-à-vis /In relation to

Coverage	Methodology	Learning Contract
Modules	• Expert presentations and discussions • Exercises	• Host teams • Time management • Other concerns

Resources

Supplies & equipment
- White board, white board markers
- LCD projector, computer

Visual aids
- Participants' matrix of expectations
- Training activity design: Objectives, framework, schedule

Topics for Discussion

A. Introduction
- Team-building activity

B. Leveling off expectations
- Individual expectations
- Collation and synthesis of expectations

C. Overview of the training activity
- Rationale
- Objectives
- Activity flow

A. Introduction

Team-building activity	The team-building activity can be as casual as an energizer or as formal as a structured learning exercise. The objective is for the participants and training team to be acquainted with each other, and create a positive learning environment for themselves.

B. Leveling off expectations

Discuss individual expectations on the training activity with regard to:

• Content	Inputs that would emerge from the training activity, including objectives and coverage
• Process	Strategies and methodologies that would be used in the training activity, including the schedule of activities
• Facilitators/ Resource persons	Expectations on the facilitators in terms of teaching style and methodology in delivering inputs, including the use of visual aids and handouts
• Participants	Expectations from co-participants in terms of how they conduct themselves in the training activity
• Management concerns	Matters related to the administrative details of the training activity, including food, accommodation and materials

C. Overview of the training activity

Rationale	This is the main reason for conducting the training activity. The facilitator should supplement the discussion with official documents (e.g. proposal); and highlight the significance of the training to the sponsor or host organization.

Objective of the activity

At the end of the training activity, the participants would have:

1. improved individual and institutional capacity to analyze and formulate climate change adaptation policies and strategies
2. integrated adaptation measures into development plans and processes

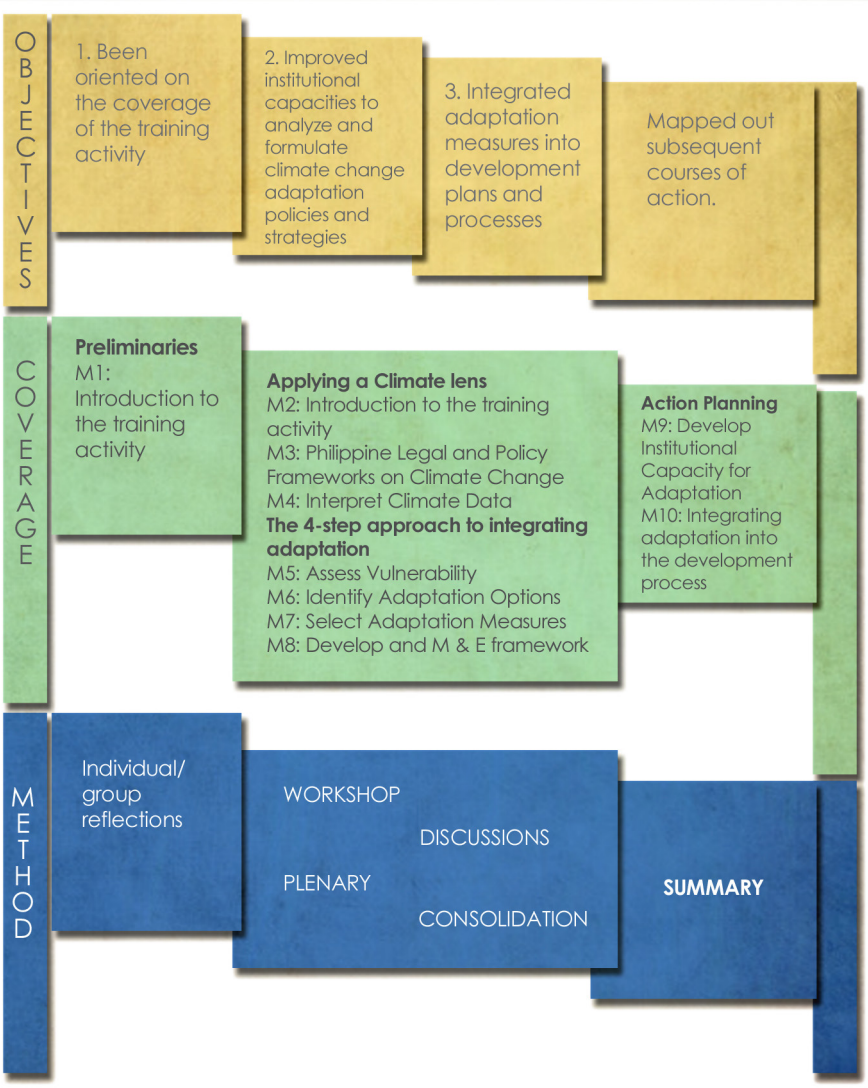
Coverage

Setting Parameters	**Module 1:** Introduction to the Training Activity	The training context and learning environment must be set prior to the activity. Module 1 sets the tone of the course. At this stage, exercises for participant introductions, setting of expectations and overview of activities are conducted; and general objectives are identified.
	I. Applying a Climate Lens	
Laying the Foundation	**Module 2:** Climate Proofing for Development	Identifying climate-change risks is the first step to addressing the issue. Module 2 provides a background to climate change concepts, factors and impacts. Philippine climate scenarios, trends and projects are tackled at macro-level, stressing the value of adaptation. An exercise identifies how climate change affects the development process.
	Module 3: Philippine Legal and Policy Frameworks on Climate Change	National- and local-level policies on climate change are tackled in Module 3. The mandate of the organization to which participants belong is inevitably linked to Philippine legal frameworks. Establishing such linkages accentuates adaptation initiatives.
	Module 4: Interpret Climate Data	Module 4 pinpoints current and future risks associated with climate change, and highlights the importance and relevance of climate data in decision making.
	II. The Four-Step Approach to Integrating Adaptation	
	Module 5: Assess Vulnerability	Assessing vulnerability is the initial step in the systematic approach to climate change adaptation. By analyzing the vulnerability of the system of interest, action points are easily identified. These become a basis for formulating solutions.
	Module 6: Identify Adaptation Options	The second step in integrating adaptation measures into the development process is threshed out in Module 6. This step provides participants with a foothold in CP4D initiatives.
	Module 7: Select Adaptation Measures	At this stage, plausible options are evaluated and, based on established criteria, ranked according to priority.
	Module 8: Develop a Monitoring and Evaluation Framework	The elements of a monitoring and evaluation framework for adaptation are formulated at this stage of the training.
	III. Planning for Climate Change Actions	
Action-Planning	**Module 9:** Develop Institutional Capacity for Adaptation	Enumerated in Module 9 are the various institutional-capacity requirements in implementing adaptation as a continuous change process.
	Module 10: Integrating adaptation into the development process	Module 10 pinpoints key steps to integrating adaptation and linkages among stakeholders at the local, regional or national level.

Schedule of activities

Please refer to the training activity design.

Training activity flow



Background on Climate Proofing for Development

Climate Proofing for Development is a tool that facilitates analysis of policies, projects and programs in relation to risks and opportunities posed by climate change; it helps identify measures required to address such changes. The the tool, consisting several specific steps, is used on national, sectoral, project and local levels. It has a flexible approach that can be adapted to different contexts.

A better understanding of climate proofing requires gathering information on climate trends and projections, and defining exposure units within the specific planning context. Exposure units refer to a particular ecosystem (e.g. forest), a service sector (e.g. agriculture), administrative entities (e.g. local authorities) or other type of unit. After determining the climate stimuli's biophysical and socioeconomic impacts on the exposure units, the risks that these impacts pose are then evaluated. Options for action and practical integration of climate aspects are then developed. Determining which options should be priotized requires coordination with supporting sectors. Priority is usually given to options that address high and medium risks. Other prioritization criteria include political and financial feasibility, cost benefit approximation and 'no-regret' measures.

Climate Proofing for Development is a process-based tool that can be adapted to a specific context. The tool builds on intensive collaboration with local stakeholders who have the motivation to lead the process and integrate the tool into the planning cycle. The involvement and commitment of relevant decision-makers is at the heart of successful climate proofing for development.

OBJECTIVES

1. to improve institutional capacities to analyze and formulate climate change adaptation policies and strategies
2. integrate adaptation measures into development plans and processes

COVERAGE

Setting Parameters	**Module 1:** Introduction to the Training Activity	The training context and learning environment must be set prior to the activity. Module 1 sets the tone of the course. At this stage, exercises for participant introductions, setting of expectations and overview of activities are conducted; and general objectives are identified.
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	Module 3: Philippine Legal and Policy Frameworks on Climate Change	National- and local-level policies on climate change are tackled in Module 3. The mandate of the organization to which participants belong is inevitably linked to Philippine legal frameworks. Establishing such linkages accentuates adaptation initiatives.
	Module 4: Interpret Climate Data	Module 4 pinpoints current and future risks associated with climate change, and highlights the importance and relevance of climate data in decision making.
	II. The Four-Step Approach to Integrating Adaptation	
	Module 5: Assess Vulnerability	Assessing vulnerability is the initial step in the systematic approach to climate change adaptation. By analyzing the vulnerability of the system of interest, action points are easily identified. These become a basis for formulating solutions.
	Module 6: Identify Adaptation Options	The second step in integrating adaptation measures into the development process is threshed out in Module 6. This step provides participants with a foothold in CP4D initiatives.
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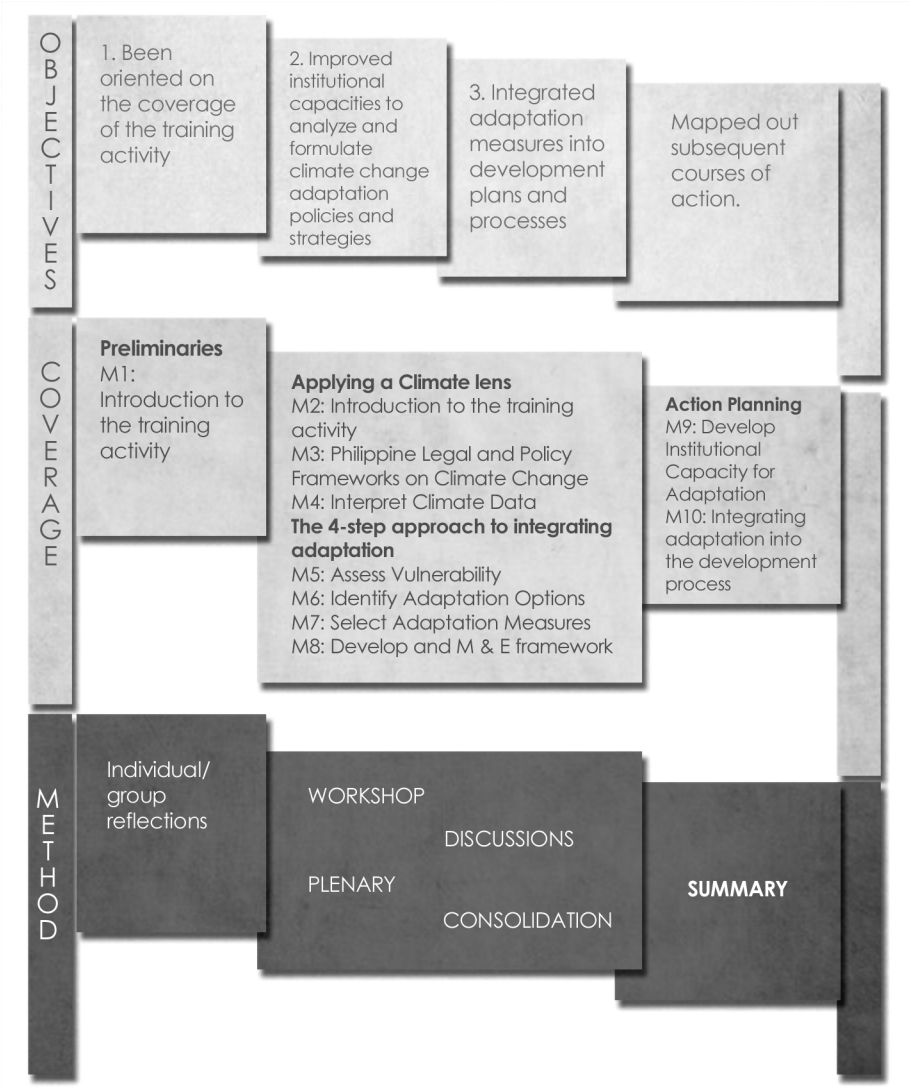
	Module 8: Develop a Monitoring and Evaluation Framework	The elements of a monitoring and evaluation framework for adaptation are formulated at this stage of the training.
	III. Planning for Climate Change Actions	
Action-Planning	**Module 9:** Develop Institutional Capacity for Adaptation	Enumerated in Module 9 are the various institutional-capacity requirements in implementing adaptation as a continuous change process.
	Module 10: Integrating adaptation into the development process	Module 10 pinpoints key steps to integrating adaptation and linkages among stakeholders at the local, regional or national level.

METHODOLOGY

The training adopts a participatory approach, utilizing matrices and diagrams to complement the ten (10) modules. The exercises are essentially action learning-oriented. The **Training Activity Flow** shows the links running through the training activity objectives, content and method.


OBJECTIVES
1. Been oriented on the coverage of the training activity
2. Improved institutional capacities to analyze and formulate climate change adaptation policies and strategies
3. Integrated adaptation measures into development plans and processes
Mapped out subsequent courses of action.
COVERAGE
Preliminaries
M1: Introduction to the training activity
Applying a Climate lens
M2: Introduction to the training activity
M3: Philippine Legal and Policy Frameworks on Climate Change
M4: Interpret Climate Data
The 4-step approach to integrating adaptation
M5: Assess Vulnerability
M6: Identify Adaptation Options
M7: Select Adaptation Measures
M8: Develop and M & E framework
Action Planning
M9: Develop Institutional Capacity for Adaptation
M10: Integrating adaptation into the development process
METHOD
Individual/ group reflections
WORKSHOP
DISCUSSIONS
PLENARY
CONSOLIDATION
SUMMARY

Overview of MODULE 2

Duration

Orientation Session: 1 ½ hours
Training Course: 2 ½ hours

Objectives

At the end of the module, the participants will have:

1. gained a working knowledge of the concepts and implications of climate change, and the importance of climate change adaptation initiatives
2. been oriented on Philippine climate scenarios and trends
3. been familiarized with the concept of climate proofing

Coverage

A. What is climate change
B. Effects of climate change: Projected changes and impacts
C. What we can do: Overview of climate proofing

Exercise—Matrix 1: Climate link to development goal

Suggested Methodology

- Structured learning exercise: Film-showing or group activity
- Expert presentation and discussion
- Group work—Matrix 1 : Climate link to development goal

Outputs

A systematized understanding of the science of climate change, and a holistic perspective on climate change adaptation

Resources

Supplies & equipment

- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentations

Handouts

- Weather, climate variability and climate change

A. What is climate change

Duration

Orientation Session: 30 minutes
Training Course: 45 minutes

Objectives

At the end of the activity participants will have been oriented on, and discussed the concept and elements of climate change

Key Points

- Definition of terms
- Factors affecting climate

Suggested Methodology

1. Film showing or group activity
2. Participants reflection on the exercise
3. Expert presentation and discussion

Resources

Supplies & equipment
- White board, white board markers
- LCD projector, computer

Visual aids
- PowerPoint presentations

Handouts
- Weather, climate variability and climate change

B. Effects of climate change: Projected changes and impacts

Duration

Orientation Session: 30 minutes
Training Course: 45 minutes

Objectives

At the end of the presentation, the participant would have an enhanced grasp of the effects of climate change at a global and local level

Key Points

- Changes due to climate change
  - (a) global level
  - (b) local level (Philippines)
- Impacts of climate change
  - (a) global level
  - (b) local level (Philippines)

Suggested Methodology

Expert presentation using PowerPoint slides
- The training team should orient the resource person on the process and expected results of the structured learning exercise
- The resource person should refer to discussions in the previous exercise, using this as a basis for his/her presentation

Resources

Supplies & equipment
- White board, white board markers
- LCD projector, computer

Visual aids
- PowerPoint presentations
- Results of the structured exercise discussion

C. What we can do: Overview of climate proofing

Duration

Orientation Session: 30 minutes
Training Course: 1 hour

Objectives

At the end of the presentation, the participant would have an appreciation of measures for action

Key Points

1. Climate change action
- Approaches
  (a) mitigation
  (b) adaptation
- Institutional actions
- Framing adaptation
- Meaning of adaptation
- Adaptation opportunities

2. Climate proofing
- Definition
- Applying a climate lens
- Locus
- Steps in applying a climate lens

Suggested Methodology

Expert presentation using PowerPoint slides
- The training team should orient the resource person on the process and expected results of the structured learning exercise
- The resource person should refer to discussions in the previous exercise, using this as a basis for his/her presentation

Resources
Supplies & equipment

- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentations
- Results of the structured exercise discussion

Exercise—Matrix 1: Climate link to development goal

Duration

Orientation Session: 15 minutes
Training Course: 30 minutes

Objectives

At the end of the presentation, the participant would have an appreciation of the link between their development goals and climate change

Key Points

- Review of development goals of the organization
- How the goal is affected by climate change
- Geographic area affected
- Agencies that can contribute to possible actions

Suggested Methodology

1. Group work
- Participants form small groups
- Each group is given a matrix and a set of data
- Groups are instructed to discuss and fill up the matrix
- Groups present and discuss their output in plenary

2. Plenary presentation and discussion
- Stress the point that the exercise requires participants to enhance their understanding of risks and responsibilities in climate change adaptation

Resources
Supplies & equipment

- Felt pens, map pins, meta cards
- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentations
- Matrix 1 instructions

Topics for Discussion

A. What is climate change
B. Effects of climate change: Projected changes and impacts
C. What we can do: Overview of climate proofing

A. What is climate change

Weather	Conditions at one particular time and place, including temperature and rainfall
Climate	• Long-term average weather pattern in one place • Influenced by slow changes in the climate system (i.e. interactions between the ocean, the land, the orbit of the earth around the sun, and the energy output of the sun) • The climate system is in turn affected by an area's latitude, elevation, terrain, and distance from coasts, mountains and lakes • Fundamentally the climate is controlled by the balance of energy of the earth and its atmosphere
Climate change	• "A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere which is in addition to natural climate variability observed over a comparable period of time" *— United Nations Framework Convention on Climate Change (UNFCCC)* • "Any change in climate over time, whether due to natural variability or as a result of human activity" *— Intergovernmental Panel on Climate Change (IPCC)*
Factors affecting the climate	• Greenhouse effect refers to the rise in global temperature due to the process by which the gases in the atmosphere trap the heat coming from the sun that is re-radiated by the earth's surface and re-emit it downwards. Because of how they warm our world, these gases are referred to as greenhouse gases or GHGs (i.e. water vapor, clouds, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and halocarbons)
How GHGs are produced	• By natural processes such as the water cycle, growth and death of plants and animals, decaying of wood and other biodegradable materials and volcanic activities. These are the naturally occurring gases that keep the earth comfortably warm enough for plants and animals to live in at an average temperature of 15°C. This is the natural variability that leads to climate change

- By human (anthropogenic) activities that introduce new sources or by interfering with natural processes that destroy or remove GHGs. Due to industrialization and our modern lifestyle, the level of GHGs have increased rapidly. The higher the concentration of greenhouse gases in the atmosphere, the stronger the greenhouse effect making it into an enhanced greenhouse effect. This results into global warming. Scientists now agree that most of the global warming today have been caused by human activities

Anthropogenic sources of GHGs

- Increased carbon dioxide (CO2) emissions. Burning of fossil fuels like oil, coal, gas and others in transportation, manufacturing processes and industry including steel, cement and lime production, land-use and land-use changes
- Increased methane (CH4) emission into the atmosphere. Decomposition in flooded rice fields causes, wastes from dairy production and rotting garbage in landfills, and leaks from coal mining and natural gas production.
- Nitrous oxide (N20) is responsible for 20% of the enhanced greenhouse effect produced from intensive agriculture including cultivated soils and nitrogen fertilizer and pesticide use, biomass burning, combustion processes in vehicles, acid production processes

B. Effects of climate change

Projected changes

- Increase in minimum (nighttime) temperatures, maximum (daytime) temperatures, and increases in the global mean temperature
- Global average surface temperature increased by 0.74°C (1906-2005) which is higher than the Third Assessment Report (TAR) of 0.6°C (1901-2000)
- Increase in sea surface temperatures, sea level and changes in evaporation
  (a) sea level rise will occur mostly as a result of the thermal expansion of warming ocean waters, the influx of freshwater from melting glaciers and ice, and vertical movements of the land itself
  (b) the ocean has been absorbing more than 80% of the heat added to the climate system. Such warming causes seawater to expand, contributing to sea level rise
  (c) there are projected increases from 1.4°C to 5.8°C during the 21st century leading to an increase in the sea level from 18-59 cm by 2100
- In the Philippines, under the A1B scenario, mean annual temperatures are expected to rise by about 0.9°C to 1.2°C for 2020 and 1.7°C to 2.2°C by 2050. These will result in changes in rainfall patterns and extreme changes in weather patterns

Impacts

- Changes in temperature, weather patterns and sea level rise will have an impact on our (a) natural resources and (b) human resources

- Coastal and marine ecosystem

(a) climate change will alter ocean circulation and wave patterns, affecting biological productivity, nutrient availability and marine ecological structure and functions
(b) sea level rise will greatly affect coastal areas through inundation and erosion, increased flooding, and salt-water intrusion, and may even cause extreme events like high tides, storm surges and tsunamis, thereby affecting coastal agriculture, tourism, freshwater resources, fisheries and aquaculture, human settlements and health

- Water resources

(a) climate change will influence the hydrological cycle, changing evaporation, precipitation and runoff patterns which could affect water resources

(b) sea level rise will increase saline intrusion of surface water and groundwater resources will reduce quality and quantity of freshwater supplies
(c) rising temperatures will lead to longer drought periods and water scarcity
(d) impact on power generation
(e) for extreme weather events more intense rainfall in the northern parts of the country; less rainfall/drought and water scarcities in provinces along and below the equator

- Agriculture and food security. Added heat stress, shifting monsoons, drier soils and water shortages as a result of higher temperatures will affect livestock and crop production patterns with expanded range of weeds, insects and diseases which may reduce global food supplies and contribute to higher food prices.

(a) rice production will

Impacts

largely be affected because of changes in temperature and rainfall. For every 1°C increase in temperature, rice yields will decrease by 10%-15%. according to IRRI
(b) as the daily minimum temperature increases (nighttime), rice yields drop
(c) water for agriculture is critical for food security. Agriculture is by far the biggest consumer of water worldwide. To raise a ton of rice, a thousand gallons of water, according to IRRI

- Health

(a) increase in health problems and deaths due to greater frequency and severity of heat waves and other extreme weather events
(b) will largely affect those suffering from respiratory and cardiovascular disorders as they have lesser coping capacity
(c) contamination of water supply through pollutants from submerged waste dumps
(d) change in the distribution of disease-spreading insects
(e) effect on nutrition due to a loss in agricultural land and changes in fish catch
(f) health impacts associated with population displacement
(g) occurrence of infectious diseases

- Biodiversity (including forests and wildlife)

(a) ecosystems sustain the earth's entire storehouse of species and genetic diversity. Plants and animals are very sensitive to changes in climate hence, the most affected are those ecosystems in the higher latitudes, the tundra forests. Polar regions will feel the impact of warming more than others

(b) change in species distribution, composition and abundance
- shift in feeding points and disruption in flight patterns for migratory birds
- extinction or loss of plant and animal species
- increased outbreaks of pests and diseases
- invasion of weeds and alien species
- displacement of native plant/forest species
- migration of plant and animal species

(c) loss of wetlands

Approaches

1. Mitigation. Limit the cause of climate change through measures that could slow down the buildup of atmospheric GHGs concentrations by reducing current and future emissions and by increasing GHG sinks The key reasons for conducting the training activity. The facilitator should support the discussion with official documents (e.g. proposal); and the significance of the training to the sponsor or host organization

Mitigation measures/strategies
Energy supply. Improved supply and distribution efficiency; fuel switching from coal to gas, nuclear power, renewable heat and power (hydropower, solar, wind, geothermal and bioenergy); combined heat and power
Transport. More fuel efficient vehicles; hybrid vehicles; cleaner diesel vehicles; biofuels; modal shift from road transport to rail and public transport systems; non-motorized transport (cycling, walking); land use and transport planning
Buildings. Efficient lighting and day lighting; more efficient electrical appliances and heating and cooling devices; improved cook stoves, improved insulation; passive and active solar design for heating and cooling; alternative refrigeration fluids, recovery and recycling of fluorinated gases.
Recycle. Generate as little trash as possible, because trash in landfill sites emits large quantities of methane, and if burned, carbon dioxide is released. Recycle cans, bottles, plastic bags and newspapers

2. Adaptation. Increase the resilience and coping capacity of the sector with the current and future changes

Adaptation measures/strategies
Agriculture. Adjustment of planning dates and crop variety; crop relocation; improved land management, e.g. erosion control and soil protection through tree planting
Water. Expanded rainwater harvesting; water storage and conservation techniques; water re-use; desalination; water-use and irrigation efficiency
Human health. Health action plans; emergency medical services; improved climate-sensitive disease surveillance and control; safe water and improved sanitation
Infrastructure/Settlement. Relocation; seawalls and storm surge barriers; dune reinforcement; land acquisition and creation of marshlands/ wetlands as buffer against sea level rise and flooding; protection of existing natural barriers

3. Institutional actions
   - Strengthen environmental awareness and action among your colleagues by initiating innovative and creative information and education campaigns.

- Encourage cooperation and partnerships among other institutions in programs and activities that would help fight global warming.
- Review your institution's current policies and programs that may work as either mitigation or adaptation strategies and measures in addressing climate change

Framing adaptation

1 Addressing Drivers of Vulnerability	2 Building Response Capacity	3 Managing Climate Risk	4 Confronting Climate Change
Aim: To increase individual and community buffer capacity All development activities are no-regret adaptation options that would also foster development if there were no climate change or the projections underpinning the adaptation strategy did not become a reality.	Aim: To build robust systems for problem solving Development activities in critical sectors, such as natural resource management, biodiversity conservation, water, etc. with a focus on enhancing the target groups' explicit adaptive capacity.	Aim: To increase a system's resilience by strategically and systematically using climate information • Measures taken to 'climate proof' development projects and programmes of all categories, i.e. assess their vulnerability to CC and design respective measures • Systematic assessments are also undertaken to avoid mal-adaptation, overlooking or misjudging	Aim: To respond to a clearly CC-induced threat As these would often incur high transaction cost and clearly push a system out of the 'comfort zone', the need for reliable climate information as well as additional funding is particularly highy.

VULNERABILITY FOCUS — IMPACTS FOCUS

What adaptation means

- Bearing the losses. All adaptation measures may be compared with the baseline response of "doing nothing" except bearing or accepting the losses. In theory, bearing loss occurs when those affected have no capacity to respond in any other ways (for example in extremely poor communities) or where the costs of adaptation measures are considered to be high in relation to the risk or the expected damages
- Sharing the losses. This type of adaptation response involves sharing the losses among a wider community. Such actions take place in traditional societies and in the most complex, high-tech societies. In traditional societies, many mechanisms exist to share losses among a wider community, such as extended families and village-level or similar small-scale communities. At the other end of the spectrum, large-scale societies share losses through public relief, rehabilitation, and reconstruction paid for from public funds. Sharing losses can also be achieved through insurance.
- Modifying the threat. For some risks, it is possible to exercise a degree of control over the environmental threat itself. When this is a "natural" event such as a flood or a drought, possible measures include flood control works (dams, dikes, levees). For climate change, the major modification possibility is to slow the rate of climate change by reducing GHGs and eventually by stabilizing GHG concentrations in the atmosphere (i.e. mitigation)

Adaptation opportunities

- Policy
- Infrastructure
- Capacity development
- Research
- Good practices

Who acts and how

- Public sector. Responsibilities are setting rules and regulations for public assets, public services, public goods, social protections, preventing conflict and managing migration
- Individuals. Focus on household preparedness, autonomous adaptation
- Private sector. Task is to integrate climate risks into project design and services (climate-resilient investments)
- International cooperation. Is required to have financial responsibility, resilient ODA, capacity development

Climate proofing for development —Definition

Climate proofing is the process of systematically undertaking an analysis on climate risk reduction and increase of adaptive capacity. It focuses on the creation of climate change-resilient development plans/programs/projects. It responds to questions such as:

- Are investments threatened by climate change?
- Are development goals, e.g. in planning or projects, achievable considering changing climate as a constraint? Is there a need for adjustments?

—Applying a climate lens

Applying a "climate lens" puts in focus the extent to which—

- a measure or a set of measures could be vulnerable to climate risks
- climate change risks have been factored in formulating these measures
- the measure or set of measures could lead to increased or decreased vulnerability, or lead to mal-adaptation
- opportunities arising from climate change can be utilized
- current strategies and policies need to be revised to address climate risks

— Locus in applying a climate lens

- National level: policy formulation
- Multi-year development planning: planning
- National budget: resource allocation
- Sectoral/local plans: programming and implementation

— Steps in applying a climate lens

- Identify vulnerabilities, risks and opportunities
- Identify adaptation options
- Select adaptation measures

Exercise—Matrix 1: Climate link to development goal

Goal	How could the goal be affected by climate change?	What region is/ are most at risk?	What other agencies can contribute to possible actions?
Example: Increase in diversify agricultural production and rural incomes	Agricultural production and incomes depend on predictable crop yields which are affected by temperature and rainfall	Visayas Region	Dept. of Agriculture, LGU, NIA

What is climate change?

Weather	Conditions at one particular time and place, including temperature and rainfall
Climate	• Long-term average weather pattern in one place • Influenced by slow changes in the climate system (i.e. interactions between the ocean, the land, the orbit of the earth around the sun, and the energy output of the sun) • The climate system is in turn affected by an area's latitude, elevation, terrain, and distance from coasts, mountains and lakes • Fundamentally the climate is controlled by the balance of energy of the earth and its atmosphere
Climate change	• "A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere which is in addition to natural climate variability observed over a comparable period of time" *— United Nations Framework Convention on Climate Change (UNFCCC)* • "Any change in climate over time, whether due to natural variability or as a result of human activity" *— Intergovernmental Panel on Climate Change (IPCC)*
Factors affecting the climate	• Greenhouse effect refers to the rise in global temperature due to the process by which the gases in the atmosphere trap the heat coming from the sun that is re-radiated by the earth's surface and re-emit it downwards. Because of how they warm our world, these gases are referred to as greenhouse gases or GHGs (i.e. water vapor, clouds, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and halocarbons)
How GHGs are produced	• By natural processes such as the water cycle, growth and death of plants and animals, decaying of wood and other biodegradable materials and volcanic activities. These are the naturally occurring gases that keep the earth comfortably warm enough for plants and animals to live in at an average temperature of 15°C. This is the natural variability that leads to climate change

- By human (anthropogenic) activities that introduce new sources or by interfering with natural processes that destroy or remove GHGs. Due to industrialization and our modern lifestyle, the level of GHGs have increased rapidly. The higher the concentration of greenhouse gases in the atmosphere, the stronger the greenhouse effect making it into an enhanced greenhouse effect. This results into global warming. Scientists now agree that most of the global warming today have been caused by human activities

Anthropogenic sources of GHGs

- Increased carbon dioxide (CO2) emissions. Burning of fossil fuels like oil, coal, gas and others in transportation, manufacturing processes and industry including steel, cement and lime production, land-use and land-use changes
- Increased methane (CH4) emission into the atmosphere. Decomposition in flooded rice fields causes, wastes from dairy production and rotting garbage in landfills, and leaks from coal mining and natural gas production.
- Nitrous oxide (N20) is responsible for 20% of the enhanced greenhouse effect produced from intensive agriculture including cultivated soils and nitrogen fertilizer and pesticide use, biomass burning, combustion processes in vehicles, acid production processes

Effects of climate change

Projected changes

- Increase in minimum (nighttime) temperatures, maximum (daytime) temperatures, and increases in the global mean temperature
- Global average surface temperature increased by 0.74°C (1906-2005) which is higher than the Third Assessment Report (TAR) of 0.6°C (1901-2000)
- Increase in sea surface temperatures, sea level and changes in evaporation
  (a) sea level rise will occur mostly as a result of the thermal expansion of warming ocean waters, the influx of freshwater from melting glaciers and ice, and vertical movements of the land itself
  (b) the ocean has been absorbing more than 80% of the heat added to the climate system. Such warming causes seawater to expand, contributing to sea level rise
  (c) there are projected increases from 1.4°C to 5.8°C during the 21st century leading to an increase in the sea level from 18-59 cm by 2100
- In the Philippines, under the A1B scenario, mean annual temperatures are expected to rise by about 0.9°C to 1.2°C for 2020 and 1.7°C to 2.2°C by 2050. These will result in changes in rainfall patterns and extreme changes in weather patterns

Impacts

- Changes in temperature, weather patterns and sea level rise will have an impact on our (a) natural resources and (b) human resources

- Coastal and marine ecosystem

(a) climate change will alter ocean circulation and wave patterns, affecting biological productivity, nutrient availability and marine ecological structure and functions
(b) sea level rise will greatly affect coastal areas through inundation and erosion, increased flooding, and salt-water intrusion, and may even cause extreme events like high tides, storm surges and tsunamis, thereby affecting coastal agriculture, tourism, freshwater resources, fisheries and aquaculture, human settlements and health

- Water resources

(a) climate change will influence the hydrological cycle, changing evaporation, precipitation and runoff patterns which could affect water resources
(b) sea level rise will increase saline intrusion of surface water and groundwater resources will reduce quality and quantity of freshwater supplies

(c) rising temperatures will lead to longer drought periods and water scarcity
(d) impact on power generation
(e) for extreme weather events more intense rainfall in the northern parts of the country; less rainfall/drought and water scarcities in provinces along and below the equator

- Agriculture and food security. Added heat stress, shifting monsoons, drier soils and water shortages as a result of higher temperatures will affect livestock and crop production patterns with expanded range of weeds, insects and diseases which may reduce global food supplies and contribute to

Impacts

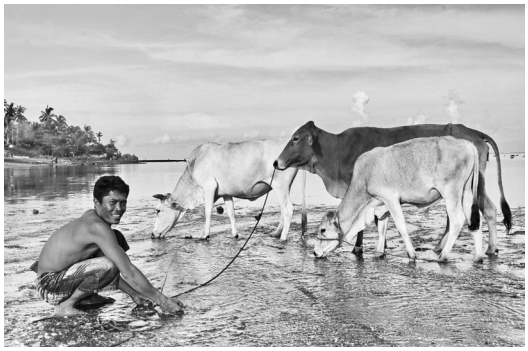
and rainfall. For every 1°C increase in temperature, rice yields will decrease by 10%-15%. according to IRRI
(b) as the daily minimum temperature increases (nighttime), rice yields drop
(c) water for agriculture is critical for food security. Agriculture is by far the biggest consumer of water worldwide. To raise a ton of rice, a thousand gallons of water, according to IRRI

- Health

(a) increase in health problems and deaths due to greater frequency and severity of heat waves and other extreme weather events
(b) will largely affect those suffering from respiratory and cardiovascular disorders as they have lesser coping capacity
(c) contamination of water supply through pollutants from submerged waste dumps
(d) change in the distribution of disease-spreading insects
(e) effect on nutrition due to a loss in agricultural land and changes in fish catch
(f) health impacts associated with population displacement
(g) occurrence of infectious diseases

- Biodiversity (including forests and wildlife)

(a) ecosystems sustain the earth's entire storehouse of species and genetic diversity. Plants and animals are very sensitive to changes in climate hence, the most affected are those ecosystems in the higher latitudes, the tundra forests. Polar regions will feel the impact of warming more than others



(b) change in species distribution, composition and abundance
- shift in feeding points and disruption in flight patterns for migratory birds
- extinction or loss of plant and animal species
- increased outbreaks of pests and diseases
- invasion of weeds and alien species
- displacement of native plant/forest species
- migration of plant and animal species

(c) loss of wetlands

What is global warming?

Global warming refers to the increase in the earth's mean temperature due to the so-called enhanced greenhouse effect.

What are the manifestations/signals of global warming in the country?

- From 1960-2003, there are already significant trends of increasing number of hot days and warm nights, but decreasing number of cold days and cool nights. Both maximum and minimum temperatures are generally getting warmer.
- An increase of 0.62°C from 1951 to 2006 has been observed.
- Other extreme weather/climate events like intense rains have been seen to be more frequent.
- The trend in the five year running average of tropical cyclones greater than 150kph is on the rise and found to be more frequent during El Niño events.

How vulnerable is the Philippines to global warming/climate change?

Highly susceptible to flooding and inundations

- Archipelago, composed of low lying small islands
- 70% of cities and municipalities are coastal areas

Low agricultural productivity

- Rice production in the Philippines will decline by as much as 75% if the country is not quick enough to adapt to and put in place safeguards against climate change. Such decline will start in 2020.

Highly susceptible to loss of biological resources according to UN, 20%-30% of plant and animal species may become extinct as a result of climate change

Water-borne and parasitic illnesses will become prevalent with climate change

What we can do

- Read and share what we have learned about climate change
- Save electricity
  (a) turn off lights and electric appliance when not in use
  (b) use more energy efficient electric appliances
  (c) use compact fluorescent bulbs (CFLs) that last 4 times longer and use just 1/4 of the electricity compared to incandescent bulbs
- Plant trees in your neighborhood and look after them. Trees absorb carbon dioxide from the air.
- Increase the resilience and coping capacity of the sector with the current and future changes (Adaptation)
- Limit the cause of climate change through measures that could slow down the build up of atmospheric GHGs concentrations by reducing current and future emissions and by increasing GHG sinks (Mitigation)

Developing Climate Change Scenario for the Philippines

What are climate scenarios?

- Precise forecasts of future climate are not possible. An alternative approach is to construct Climate Scenarios.
- A scenario is: "a plausible description of a possible future state of the world" (Parry and Carter, 1998).
- Not a forecast or a prediction, but alternative views of what the world could look like in the future
- Hence, a climate scenario is: "…. a plausible future climate that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change". (IPCC, 2001)

Why do we need climate scenarios?

- To provide data for impact/adaptation assessment studies;
- To aid in strategic planning and/or policy formation;
- To structure our knowledge (or ignorance) of the future;

Responses to Climate Change (Approaches)

1. Mitigation. Limit the cause of climate change through measures that could slow down the buildup of atmospheric GHGs concentrations by reducing current and future emissions and by increasing GHG sinks The key reasons for conducting the training activity. The facilitator should support the discussion with official documents (e.g. proposal); and the significance of the training to the sponsor or host organization

Mitigation measures/strategies
Energy supply. Improved supply and distribution efficiency; fuel switching from coal to gas, nuclear power, renewable heat and power (hydropower, solar, wind, geothermal and bioenergy); combined heat and power
Transport. More fuel efficient vehicles; hybrid vehicles; cleaner diesel vehicles; biofuels; modal shift from road transport to rail and public transport systems; non-motorized transport (cycling, walking); land use and transport planning
Buildings. Efficient lighting and day lighting; more efficient electrical appliances and heating and cooling devices; improved cook stoves, improved insulation; passive and active solar design for heating and cooling; alternative refrigeration fluids, recovery and recycling of fluorinated gases.
Recycle. Generate as little trash as possible, because trash in landfill sites emits large quantities of methane, and if burned, carbon dioxide is released. Recycle cans, bottles, plastic bags and newspapers

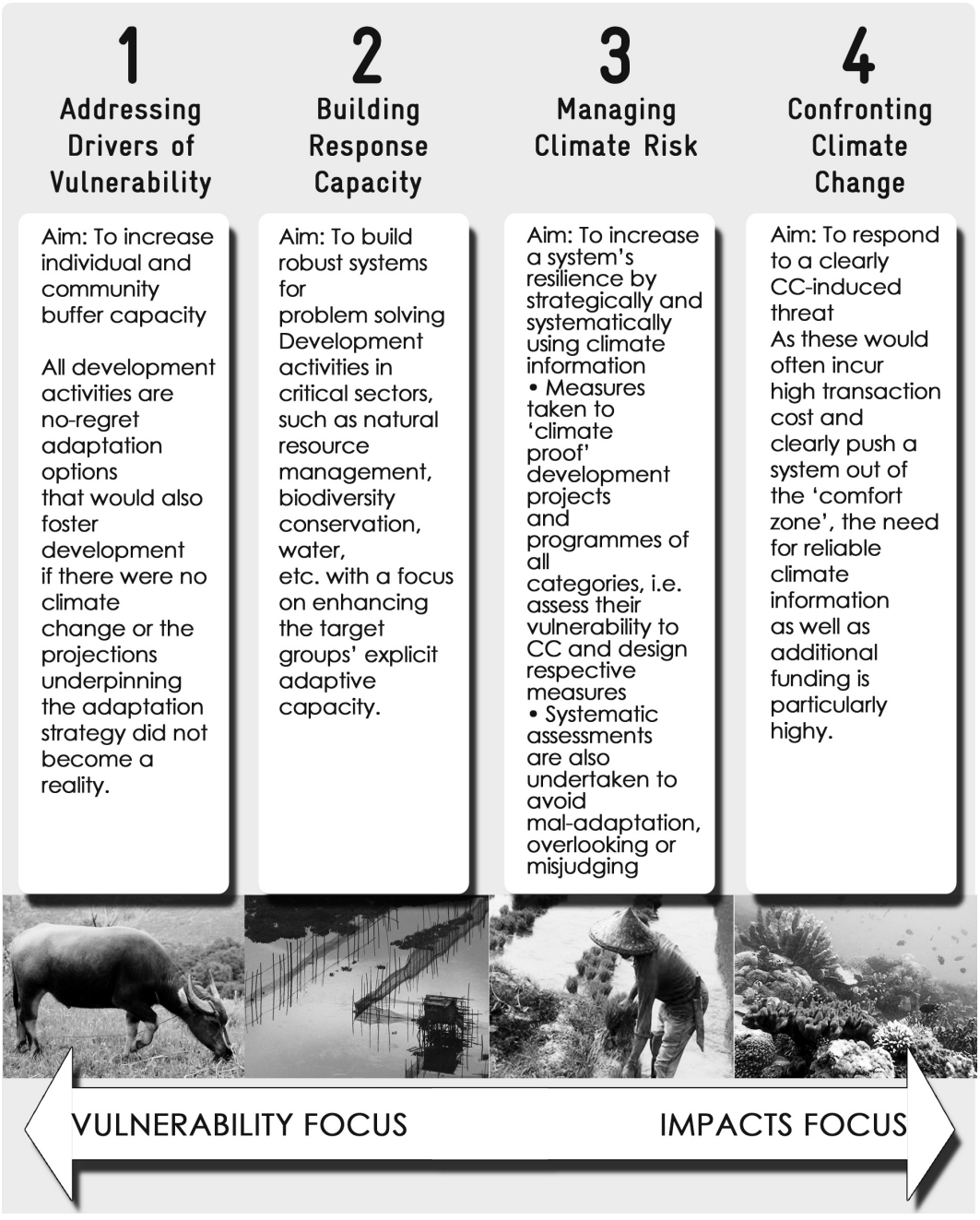
2. Adaptation. Increase the resilience and coping capacity of the sector with the current and future changes

Adaptation measures/strategies
Agriculture. Adjustment of planning dates and crop variety; crop relocation; improved land management, e.g. erosion control and soil protection through tree planting
Water. Expanded rainwater harvesting; water storage and conservation techniques; water re-use; desalination; water-use and irrigation efficiency

Responses to Climate Change (Approaches)

Human health. Health action plans; emergency medical services; improved climate-sensitive disease surveillance and control; safe water and improved sanitation

3. Institutional actions
- Strengthen environmental awareness and action among your colleagues by initiating innovative and creative information and education campaigns.
- Encourage cooperation and partnerships among other institutions in programs and activities that would help fight global warming.
- Review your institution's current policies and programs that may work as either mitigation or adaptation strategies and measures in addressing climate change



What adaptation means

- Bearing the losses. All adaptation measures may be compared with the baseline response of "doing nothing" except bearing or accepting the losses. In theory, bearing loss occurs when those affected have no capacity to respond in any other ways (for example in extremely poor communities) or where the costs of adaptation measures are considered to be high in relation to the risk or the expected damages

- Sharing the losses. This type of adaptation response involves sharing the losses among a wider community. Such actions take place in traditional societies and in the most complex, high-tech societies. In traditional societies, many mechanisms exist to share losses among a wider community, such as extended families and village-level or similar small-scale communities. At the other end of the spectrum, large-scale societies share losses through public relief, rehabilitation, and reconstruction paid for from public funds. Sharing losses can also be achieved through insurance.

- Modifying the threat. For some risks, it is possible to exercise a degree of control over the environmental threat itself. When this is a "natural" event such as a flood or a drought, possible measures include flood control works (dams, dikes, levees). For climate change, the major modification possibility is to slow the rate of climate change by reducing GHGs and eventually by stabilizing GHG concentrations in the atmosphere (i.e. mitigation)

Adaptation opportunities

- Policy
- Infrastructure
- Capacity development
- Research
- Good practices

Who acts and how

- Public sector. Responsibilities are setting rules and regulations for public assets, public services, public goods, social protections, preventing conflict and managing migration
- Individuals. Focus on household preparedness, autonomous adaptation
- Private sector. Task is to integrate climate risks into project design and services (climate-resilient investments)
- International cooperation. Is required to have financial responsibility, resilient ODA, capacity development

Climate proofing

Climate proofing is the process of systematically undertaking an analysis on climate risk reduction and increase of adaptive capacity. It focuses on the

creation of climate change-resilient development plans/programs/projects. It responds to questions such as:

- Are investments threatened by climate change?
- Are development goals, e.g. in planning or projects, achievable considering changing climate as a constraint? Is there a need for adjustments?

Applying a "climate lens"

Applying a "climate lens" puts in focus the extent to which—

- a measure or a set of measures could be vulnerable to climate risks
- climate change risks have been factored in formulating these measures
- the measure or set of measures could lead to increased or decreased vulnerability, or lead to mal-adaptation
- opportunities arising from climate change can be utilized
- current strategies and policies need to be revised to address climate risks

What is the "climate lens"?

- The climate lens is a systematic approach to incorporate/integrate **climate change** in to your plannung approach or project.

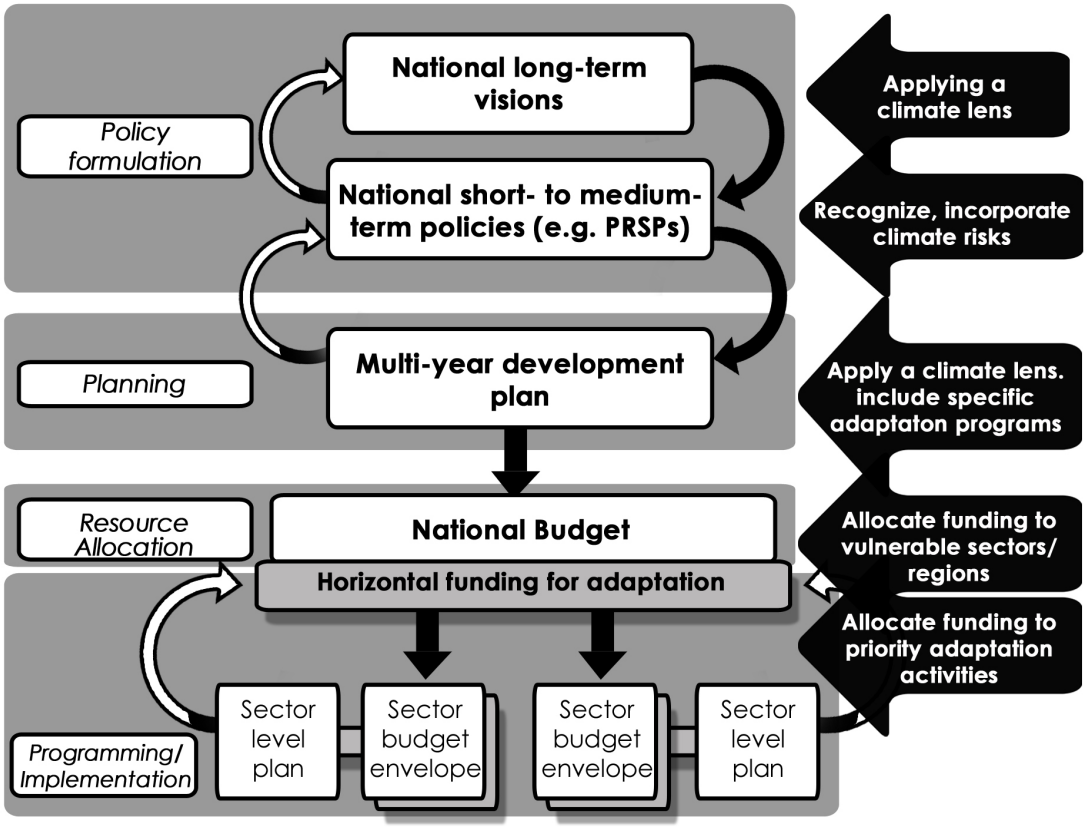
- If you think about how climate change will affect our life (project) you need to look how exposed you are to it.

Exposure Units and Climate Stimuli

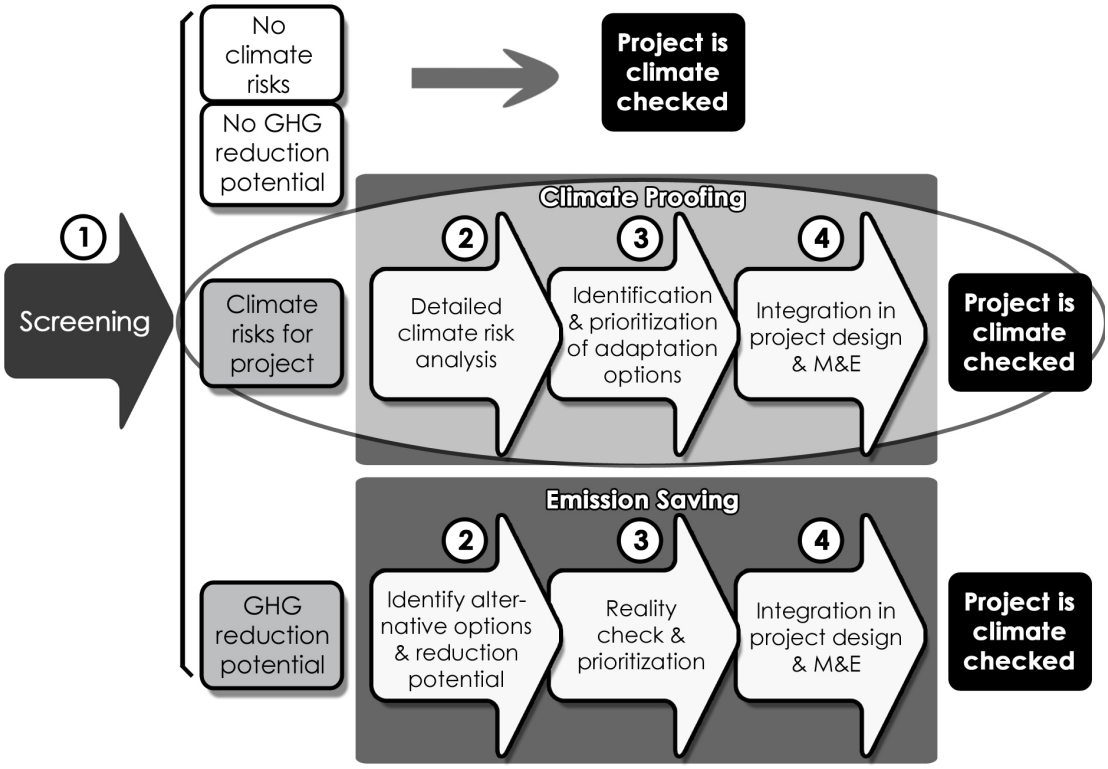
Category	Exposure Unit
Ecosystem services	• Water resources • Agriculture • Biodiversity • Forestry
Anthropogene Systems	• Buildings and settlements • Infrastucture and transport • Industry and production • Energy supply • Services • Tourism • Health (systems)
Specific risk regions	• Coastal zones • Flooding areas • Arid regions • Mountain regions
...	• ...

Category	Trend
Annual mean temperature	↗
Temperature in critical season	↑
Snnual precipitaion	↘
Precipitation in critical season	↘
Annual water availability	↘
Duration of vegetation period (drought / rain season)	→
Extreme rainfalls	→
Sea level	↗
Flood	→
Hurricanes / typhoons	→
Heat waves	↗
Droughts	↗

Locus in applying a climate lens



Steps in applying a climate lens



Overview of MODULE 3

Duration

Orientation Session: 30 minutes
Training Course: 1 hour

Objectives

At the end of the module, the participants would have been oriented and discussed the legal framework for climate change adaptation in the Philippines

Coverage

A. Early policies
B. Current policies
C. The Philippines' response to the international call to address climate change

Suggested Methodology

- Review
  (a) Review the outputs and discussion points from Matrix 1: Climate link to development goals
  (b) Highlight information that will serve as a link to Module 3
- Expert presentation and discussion

Outputs

- Participants aware of the various Philippine legal and policy frameworks on climate change

Resources

Supplies & equipment

- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentations

Handouts

- Legal and policy frameworks on climate change in the Philippines (PDF files on CD)

Topics for Discussion

A. Early policies
B. Current policies
C. The Philippines' response to the international call to address climate change

A. Early Policies

Inter-Agency Committee on Climate Change (IACCC)	• Created on May 8, 1991 by virtue of Presidential Administrative Order No. 220 to serve as the national coordination mechanism and administrative machinery for the implementation of the Philippines' commitments to the UNFCCC • Chaired by the Secretary of the Department of Environment and Natural Resources (DENR) and Co-Chaired by the Secretary of the Department of Science and Technology (DOST)
Philippine Council for Sustainable Development (PCSD)	• Response to the Earth Summit in 1992 to act as the country's multi-stakeholder participatory body • Created on September 1, 1992 by virtue of Executive Order No. 15 to chart the environment and sustainable development initiatives of the country

B. Current Policies

National Authority for CDM	• Designated the Department of Environment and Natural Resources (DENR) as designated national authority (DNA) for CDM on June 25, 2004 by virtue of Executive Order No. 320

- Main functions:
  (a) formulate and develop a national CDM policy
  (b) develop the criteria, indicators, standards, systems and procedures, and evaluation tools for the review of CDM projects
  (c) undertake the assessment and approval of CDM projects to be submitted to the UNFCCC-EB
  (d) monitor the implementation of CDM projects
  (e) perform other functions that are related to and in pursuance of the development of the CDM

Biofuels Act of 2006

Ratified by both houses of Congress on November 29, 2006. It mandates a minimum 1% biodiesel blend and 5% bioethanol blend by volume in all diesel and gasoline fuels, which are currently distributed and sold in the country. The blend shall increase to 2% biodiesel and 10% ethanol in gasoline after four years

Renewable Energy Act of 2008

Intends to provide incentives to and require mandatory use of renewable energy by power generators

Disaster Reduction and Management Act of 2010 (RA 10121)

Adopts a holistic, comprehensive, integrated DRRM approach to lessen socio-economic and environmental impacts of climate- and non-climate related disasters.

National Climate Change Action Plan (NCCAP) 2011-2028

Signed on November 2011, it serves as the roadmap for concerted climate change actions aligned along seven strategic priorities: food security, water sufficiency, environment and ecological stability, human security, climate-smart industries and services, sustainable energy, and knowledge and capacity development.

People's Survival Fund Act (RA 10174)

Enacted on July 2012, it creates a special fund to support climate change adaptation at the local level, called the People's Survival Fund.

C. The Philippines' response to the international call to address climate change

- Signed the **UNFCCC** on June 1992 and ratified it on August 2, 1994
- Signed the **Kyoto Protocol** on April 15, 1998 and ratified it on November 20, 2003

Climate Change Act of 2009 (RA 9729)	Signed by the President on 23 October 2009, it is an n act mainstreaming climate change into government policy formulations, establishing the framework, strategy and program on climate change, and creating the Climate Change Commission.
Climate Change Commission (CCC)	It is the sole policy-making body of the government tasked to coordinate, monitor and evaluate CC programs and action plans attached to the Office of the President
Composition of the CCC	 The CCC is chaired by the President of the Philippines. It has three commissioners appointed by the President, one of whom shall serve as Vice-Chairperson of the Commission. The advisory board consists of the 13 Secretaries of DA. DOE, DENR, DepEd, DFA, DOH, DILG, DND, DPWH, DOST, DSWD, DTI, DOTC; the (b) NEDA Director-General; (c) National Security Council Director-General; the (d) President of the League of Provinces, Cities, Municipalities, Liga ng mga Barangay; and (e) representatives from the academe, business sector and NGO.
The National Strategic Framework on Climate Change (2010-2022)	• Signed by the President on 28 April 2010, , the Framework guides national and local actions to fulfill its vision of "a climate risk-resilient Philippines with healthy, safe, prosperous and self-reliant communities, and thriving and productive ecosystems". • The framework shall guide the national as well as the sub-national planning processes • A year after the adoption of the framework, the National Climate Change Action Plan shall be developed to guide LGUs in developing their own local action plans

The Philippine Strategy on Climate Change Adaptation (2010-2022)

The Adaptation Strategy is regarded as a practical tool to assist national and local institutions to manage the devastating impacts of climate change and aims to guide the country's climate change adaptation actions for the next twelve years. Its formulation is based on:

- Available information on climate parameters and most probable scenarios based on science, consensus and official baseline adopted by the government on climate change
- Current assessment of the country's vulnerability and adaptive capacity
- Assessment of the potential positive and negative, direct and indirect impacts of climate change on the key sectors (water, biodiversity, forestry, coastal and marine, fisheries, agriculture, health, energy and infrastructure)
- National development goals and priorities
- A multi -sector consultation on process

Matrix 1: Climate link to development goal

Goal	How could the goal be affected by climate change?	What region is/ are most at risk?	What other agencies can contribute to possible actions?
Example: Increase in diversify agricultural production and rural incomes	Agricultural production and incomes depend on predictable crop yields which are affected by temperature and rainfall	Visayas Region	Dept. of Agriculture, LGU, NIA

Interpret Climate Data
SESSION GUIDE

Module 4

Overview of MODULE 4

Duration

Orientation Session: 1 hour
Training Course: 2 hours

Objectives

At the end of the module, the participants would have:
1. appreciated the need for climate data
2. learned about various climate data sources
3. been aware of the different conclusions which different data types allow

Coverage

A. Rationale for interpreting climate data
B. Information needs for decision- makers
C. Climate model performance
D. Good practices in the use of climate information

Exercise—Matrix 2: Analyze climate data

Suggested Methodology

- Expert presentation and discussion
- Exercise—Matrix 2: Analyze climate data

Preparation. The trainer must prepare data sets based on the area/location of the participants, or pick an area/location of his/her choice. The data sets will be used as an example for the exercise

Activity

(a) Group work
1. Participants form small groups
2. Each group is given a matrix sheet and a set of data information
3. Groups are instructed to discuss and fill up the matrix
4. Groups present and discuss their outputs in plenary

(b) Plenary presentation and discussion
1. Discuss with participants the ease/difficulty of filing up the matrix
   (i) How to handle the limitations of the data
   (ii) How to deal with uncertainties
2. Discuss how the information shared during the expert presentation contributed to the application of knowledge

Outputs

Participants are able to practice interpreting climate data

Resources

Supplies & equipment
- Manila paper, meta cards, markers, masking tape
- White board, white board markers
- LCD projector, computer

Visual aids
- PowerPoint presentations
- Participants' outputs: Matrix 2

Handouts
- Interpret climate data

Topics for Discussion

A. Rationale for interpreting climate data
B. Information needs for decision-makers
C. Climate model performance
D. Good practices in the use of climate information

A. Rationale for interpreting climate data

Climate change adaptation

Climate change adaptation is concerned with current and future risks related to climate and requires the use of climate data and/or information in decision-making.

Adaptation planning

All policy cycle stages at all levels require the use of **climate information** in:

- identifying problems: initial
- planning stages
- selecting strategies
- technical design of responses

In adaptation planning, questions at different steps/scales must be answered using climate data at the:

- **national level** to identify priority
- climate change risks
- **sector and local levels** to determine the nature and scale of risks and scale and type of adaptation needed
- **project and local** for designing responses based on current and anticipated climate conditions

Projections

Projections should be used, where available, to ensure that plans are based on the best information available and do not simply assume that history is the best guide to the future.

Climate variables

Some climate variables can be projected with less certainty than others

- more certain: increase in temperature and sea level rise
- less certain: precipitation-related impacts, extreme events, e.g. droughts, floods

No data source

No data source can provide a precise picture of the future comprehensive information to support specific adaptation decisions.

B. Information needs for decision- makers

• What will happen	Select the relevant climate variables Example: What will happen to hydropower generation? Streamflow
• Where it will happen	Establish the geographic extent and resolution of information Example: Which dams will be affected? Streamflow for all dammed rivers in the basin
• When it will happen	Establish the appropriate timeframe Example: Might planned dam upgrades be affected? Projections over the next 50 years
• How definite the change is	Determine the necessary confidence level Example: Should we reallocate budget? Probabilities of different levels of impact

C. Climate model performance

Climate models	• Useful tools for decision-makers in interpreting data • A numerical representation of the climate system based on physical, chemical and biological properties of its components, their interactions and feedback processes • Climate model (non-scientist definition)
Models combining data and processes	There are different models combining data and processes in different ways. A model is only as good as the data it is based on and the processing capacity of the computers. There are models at global scale (GCM) and downscaled regional models (RCM) as well as specific models that suit different purposes.
Model validity	Model validity should be considered when deciding which data to use.
Examples of climate proofing tools	• Information & data presentation — ci:grasp, Climate Mapper, Precis • Vulnerability assessment tools: SimClim, REDAS, FIVIMS, MOSAICC, MDG-F 1656 VA Tools • Process tools at community level — C ristal, CEDRA (Tearfund) • Process tools at project level — GIZ Climate Check, ORCHID, ADB PST • Process tools at national/local/sectoral levels— GIZ Climate Proofing; USAID Guidance Manual, • NEDA-DENR VA Mainstreaming Guidelines, NEDA Reference Manual on Mainstreaming DRR-CCA • Networking platforms— weADAPT, WB CC Portal, ci:grasp

D. Good practices in the use of climate information

- Use all data and information available; combine information about the past, present and future.
- Use all sources, e.g. weather station observations, firsthand experiences of local people and projections. Use this information to complement each aspect
- Whenever possible work with climate scientists.
- Build on existing assessments and studies.
- Tools are available to manage uncertainty:
- (a) contingency planning
- (b) flexible/adaptive strategies that take into account revised information

Exercise—Matrix 2: Analyze climate data

Mechanics:

1. Group participants into small groups. It is recommended that these groupings be retained for succeeding exercises
2. Distribute and discuss pre-made information sheets, which ideally are based on participants' own set of data
3. Give the groups 20 minutes to do the exercise
4. Conduct plenary presentations and discussions
    - Group representatives present their collective output
    - In processing the presentations, the trainer should note:
        (a) factors considered by the group in coming up with their responses, e.g. references used
        (b) limitations of the group in doing the exercises
        (c) how the exercise contributed to their understanding and skill in analyzing data

Matrix 2: Analyze climate data

A	B	C	D
Data	**What does the data tell you?**	**What doesn't the data tell you?**	**What other data to you need to devise adaptation strategies?**
Example:	Example:	Example:	Example:
Rainfall	• There will be stronger rains • No significant occurrence of tropical storms	Measures to adapt to the changing patterns of rainfall	Temperature

In **adaptation planning**, questions at different steps/scales must be answered using climate data at the:

- **national level** to identify priority climate change risks
- **sector and local levels** to determine the nature and scale of risks and scale and type of adaptation needed
- **project and local** for designing responses based on current and anticipated climate conditions

Projections should be used, where available, to ensure that plans are based on the best information available and do not simply assume that history is the best guide to the future

Some **climate variables** can be projected with less certainty than others

- more certain: increase in temperature and sea level rise
- less certain: precipitation-related impacts, extreme events, e.g. droughts, floods

No data source can provide:

- a precise picture of the future
- comprehensive information to support specific adaptation decisions

Information needs for decision- makers

In **interpreting climate data** decision-makers need to know:

- **what will happen:** select the relevant climate variables
  Example: What will happen to hydropower generation? Streamflow
- **where it will happen:** establish the geographic extent and resolution of information
  Example: Which dams will be affected? Streamflow for all dammed rivers in the basin
- **when it will happen:** Establish the appropriate timeframe
  Example: Might planned dam upgrades be affected? Projections over the next 50 years
- **how definite the change is:** Determine the necessary confidence level
  Example: Should we reallocate budget? Probabilities of different levels of impact

Climate model performance

Climate models are useful tools for decision-makers in interpreting data.

- A climate model is a numerical representation of the climate system based on physical, chemical and biological properties of its components, their interactions and feedback processes
- Climate model (non-scientist definition)

There are different **models combining data and processes** in different ways. A model is only as good as the data it is based on and the processing capacity of the computers.

There are models at global scale (GCM) and downscaled regional models (RCM) as well as specific models that suit different purposes.

Model validity should be considered when deciding which data to use.

Examples of climate proofing tools:
- Information & data presentation — ci:grasp, Climate Mapper, Precis
- Vulnerability assessment tools: SimClim, REDAS, FIVIMS, MOSAICC, MDG-F 1656 VA Tools
- Process tools at community level — C ristal, CEDRA (Tearfund)
- Process tools at project level — GIZ Climate Check, ORCHID, ADB PST
- Process tools at national/local/sectoral levels— GIZ Climate Proofing; USAID Guidance Manual, NEDA-DENR VA Mainstreaming Guidelines, NEDA Reference Manual on Mainstreaming DRR-CCA
- Networking platforms— weADAPT, WB CC Portal, ci:grasp

Good practices in the use of climate information

- Use all data and information available; combine information about the past, present and future.
- Use all sources, e.g. weather station observations, firsthand experiences of local people and projections. Use this information to complement each aspect
- Whenever possible work with climate scientists
- Build on existing assessments and studies
- Tools are available to manage uncertainty:
    (a) contingency planning
    (b) flexible/adaptive strategies that take into account revised information
    (c) iterative decision-making
    (d) choosing no-/low-regret options

Overview of MODULE 5

Duration

Orientation Session: 1½ hours
Training Course: 3 hours

Objectives

At the end of the module, the participants would have:
1. reviewed the 4-step approach to climate change adaptation planning
2. defined vulnerability and discussed factors contributing to vulnerability in a system
3. identified priority actions where needed

Coverage

A. Review: The 4-step approach to climate change adaptation
- Action learning exercise: Vulnerability Assessment

B. Concept and factors affecting vulnerability

C. Analysis of sensitivity and adaptive capacity
- Matrix 3: Assess current vulnerability
- Matrix 4: Assess potential vulnerability

Suggested Methodology

- Expert presentation and discussion
- Action learning exercise: Vulnerability assessment
- Exercise—Matrix 3: Assess current vulnerability
- Exercise—Matrix 4: Assess potential vulnerability

Preparation. The trainer must prepare data sets based on the area/location of the participants, or pick an area/location of his/her choice. The data sets will be used as an example for the exercise

Activity

(a) Group work
1. Participants form small groups
2. Each group is given a matrix sheet and a set of data (in the case of prepared data sets)
3. Groups are instructed to discuss and fill up the matrix
4. Groups present and discuss their outputs in plenary

(b) Plenary presentation and discussion
1. Discuss with participants the ease/difficulty of filing up the matrix
2. Discuss how the information shared during the expert presentation contributed to the application of knowledge

Outputs

Participants appreciate the significance of vulnerability, and apply learning through exercises

Resources

Supplies & equipment
- Manila paper, meta cards, markers, masking tape
- White board, white board markers
- LCD projector, computer

Visual aids
- PowerPoint presentations
- Participants' outputs: Matrix 2

Handouts
- 4-Step Approach: Basic adaptation planning process

Topics for Discussion

A. Review: The 4-step approach to climate change adaptation
B. Concept and factors affecting vulnerability
C. Analysis of sensitivity and adaptive capacity

A. Review: The 4-step approach to climate change adaptation

Basic adaptation planning process:

The **4-step approach to climate change adaptation** is a systematic and step-by-step process to dealing with all relevant questions and avoids mental blocks due to the over-complex challenge.

- Assess vulnerability
- Identify adaptation options
- Select adaptation measures
- Develop an M&E framework

B. Concept and factors affecting vulnerability

Assessing vulnerability

Step 1 in the basic adaptation planning process. It establishes the basis for integrating adaptation into development efforts. The system of interest's vulnerability is analysed and the need for action defined.

(a) **national scale:** the results may be needed for cross-sectoral coordination
(b) **sector scale:** the results may show the potential risks within the sector and recognize the need for coordination beyond the sector
(c) **local level:** the results should integrate needs and views from affected stakeholders
(d) **project level:** assessing vulnerabilities would, ideally, be carried out during the scoping and design of the project

A simple rule of thumb.

If an area or system is affected by climate variability, then it is sensitive to climate change, e.g:
- extreme events
- variability in precipitation (e.g. rainfall)
- extended periods of warm temperatures

Other factors

These other factors may change due to climate change risks, and substantially affect vulnerability as well:

(a) Population (b) Migration
(c) Income (d) Institutions
(e) Technology

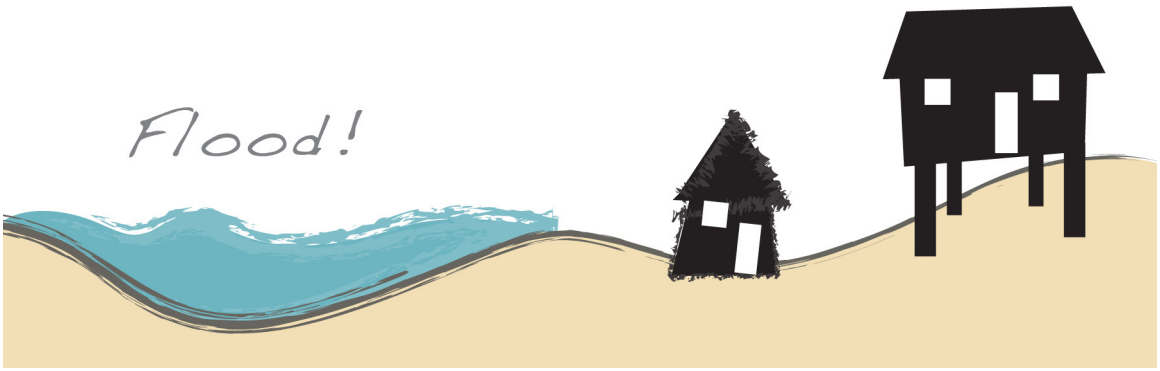
Terminologies and relationships in assessing vulnerability

System of interest (human, natural, economic)	System of interest (human, natural, economic) is the unit you chose to assess in respect to your question. You may determine your system of interest at different levels, e.g. a single crop system, an ecosystem, a region—depending on the objective of your analysis (Imagine looking at your house from different angles). Defining systems of interest and development objectives provides the reference for determining whether and how climate change impacts might be important
Climate signal	Climate change signals of concern are anticipated changes in climate based on projections
Exposure	Important climate events that affect a system. In practical terms, exposure is 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 climate event. (IPCC 2007, IUCN 2010)
Sensitivity	Degree to which a system can be affected, negatively or positively, by changes in climate
Potential impact	Potential effect of a climate change hazard on a system of interest. Can be positive or negative: • Biophysical impacts are those impacts that result from climate change factors, e.g. damaged infrastructure due to flooding or erosion of shorelines due to storm surge. • Socioeconomic impacts are those impacts that (for the bigger part) follow biophysical impacts and affect socio-economic development, e.g. declines in access to services due to damaged infrastructure or losses in tourism revenues due to shoreline erosion
Adaptive capacity	• Ability to adjust to climate change to moderate damage, take advantage of opportunities or cope with consequences • Function of the relative level of a society's economic resources, access to technology, access to climate information, skills to make use of the information, institutions and equitable distribution of resources • In ecosystems, adaptive capacity is influenced by biodiversity (genetic, species, etc.). In social systems adaptive capacity is de-

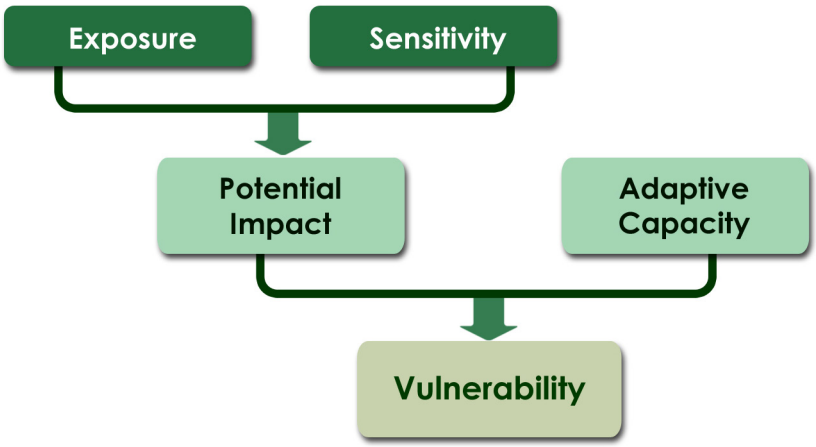
	termined by the individual and/or common ability to cope with change (the ability to learn, manage risks and impacts, develop new knowledge, and devise effective approaches) and the institutional setting (IUCN)
Vulnerability	Degree to which a system is susceptible to, and unable to cope with adverse effects of climate change. Vulnerability is a function of exposure to climate stresses, sensitivity and adaptive capacity. Vulnerability increases as the magnitude of climate change or sensitivity increases, and decreases as adaptive capacity increases.

Activity learning exercise

Using the following pictures, go through the exercise of getting the participants to analyze the level of vulnerability of the system of interest:



For analysis, use the diagram below *



* Arrows can be used to depict increase/decrease in the elements

C. Analysis of sensitivity and adaptive capacity

Once participants acquire a grasp of the concept and factors affecting vulnerability, proceed to Matrix 3: Assess current vulnerability

Mechanics:

1. Group participants into small groups. Previous groupings can be retained
2. Distribute Matrix 3: Assess current vulnerability, and discuss with participants
3. Give the groups 20 minutes to do the exercise
4. Conduct plenary presentations and discussions
   - Group representatives present their collective output
   - In processing the presentations, the trainer should note:
     a) factors considered by the group in coming up with their responses, e.g. references used
     b) limitations of the group in doing the exercises
     c) how the exercise contributed to their understanding and skill in analyzing data

Exercise–Matrix 3: Assess current vulnerability

	A	B	C
System of interest	Current climate variability	Current sensitivity to climate variability	Current adaptive capacity
Example:	Example:	Example:	Example:
Coral reef	Sea level temperature increase	• Only 30% of the coral cover is in good condition • Coral is known to be sensitive to temperature increase of 10°C	• Good diversity in coral species in the coral reef • Community established marine protected area

Instructions—Task for Part 2:

- Look toward the future
- Analyze potential impacts of climate change
- Define the vulnerability and need for action
- Use Matrix 4: Assess potential vulnerability
  - (a) in column D identify the key climate change signals to which the system is likely to be exposed.
  - (b) in column E brainstorm the potential impacts to the bio physical part of the system
  - (c) in column F brainstorm socio-economic impacts
  - (d) in column G rate where there is need for action
- Follow previous procedure in processing the exercise

Exercise—Matrix 4: Assess potential vulnerability

	D	E	F	G
System of interest	Current change signals of concern	Potential bio-physical impacts	Potential socioeconomic impacts	Rate the need for action (--, -, 0, +, ++)
Example:	Example:	Example:	Example:	Example:
Coral reef	• ↑ sea surface temperature T > 1°C by 2020 • ↑ rainfall intensity • Storm surge	• ↑ incidence of coral bleaching • Siltation of municipal waters	↓ decreasing quantity of coral reef fishes, affecting income security of fishing households	++

Review: The 4-step approach to climate change adaptation

The **4-step approach to climate change adaptation** is a systematic and step-by-step process to dealing with all relevant questions and avoids mental blocks due to the over-complex challenge.

Basic adaptation planning process:
- Assess vulnerability
- Identify adaptation options
- Select adaptation measures
- Develop an M&E framework

By undertaking the 4-step approach we can **appreciate that the process:**
- recognizes and collects diverse stakeholders' views
- identifies challenges and opportunities to climate change adaptation
- facilitates the prioritization of entry points for action
- increases awareness of climate change and adaptation among actors

Concept and factors affecting vulnerability

Assessing vulnerability is Step 1 in the basic adaptation planning process. It establishes the basis for integrating adaptation into development efforts. The system of interest's vulnerability is analysed and the need for action defined. This step is especially effective when carried out at:

(a) **national scale:** the results may be needed for cross-sectoral coordination
(b) **sector scale:** the results may show the potential risks within the sector and recognize the need for coordination beyond the sector
(c) **local level:** the results should integrate needs and views from affected stakeholders
(d) **project level:** assessing vulnerabilities would, ideally, be carried out during the scoping and design of the project

A simple rule of thumb.

If an area or system is affected by climate variability, then it is sensitive to climate change, e.g:
- extreme events
- variability in precipitation (e.g. rainfall)
- extended periods of warm temperatures

Other factors that may change due to climate change risks, and substantially affect vulnerability as well:

- Population
- Income
- Technology
- Migration
- Institutions

Terminologies and relationships in assessing vulnerability

System of interest (human, natural, economic)
System of interest (human, natural, economic) is the unit you chose to assess in respect to your question. You may determine your system of interest at different levels, e.g. a single crop system, an ecosystem, a region—depending on the objective of your analysis (Imagine looking at your house from different angles). Defining systems of interest and development objectives provides the reference for determining whether and how climate change impacts might be important

Climate signal
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Important climate events that affect a system. In practical terms, exposure is 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 climate event. (IPCC 2007, IUCN 2010)

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Adaptive capacity
Ability to adjust to climate change to moderate damage, take advantage of opportunities or cope with consequences
- Function of the relative level of a society's economic resources, access to technology, access to climate information, skills to make use of the information, institutions and equitable distribution of resources
- In ecosystems, adaptive capacity is influenced by biodiversity (genetic, species, etc.). In social systems adaptive capacity is determined by the individual and/or common ability to cope with change (the ability to learn, manage risks and impacts, develop new knowledge, and devise effective approaches) and the institutional setting (IUCN)

Vulnerability
Degree to which a system is susceptible to, and unable to cope with adverse effects of climate change. Vulnerability is a function of exposure to climate stresses, sensitivity and adaptive capacity. Vulnerability increases as the magnitude of climate change or sensitivity increases, and decreases as adaptive capacity increases.

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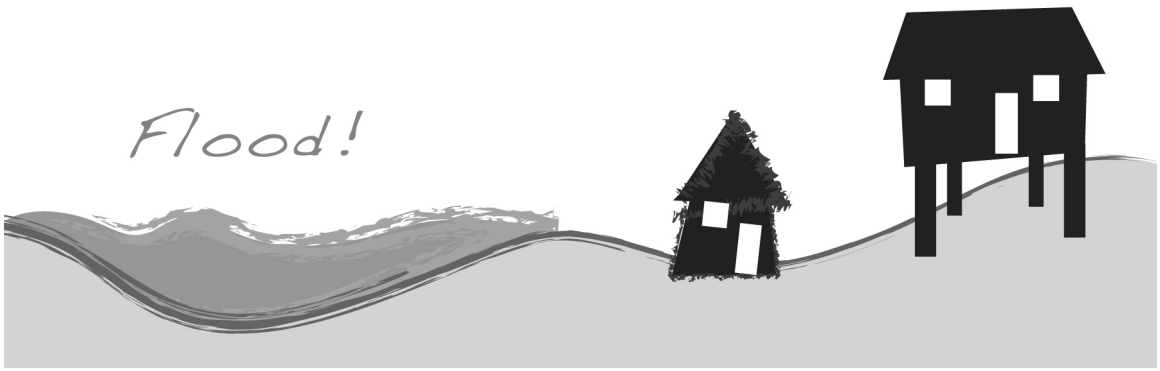

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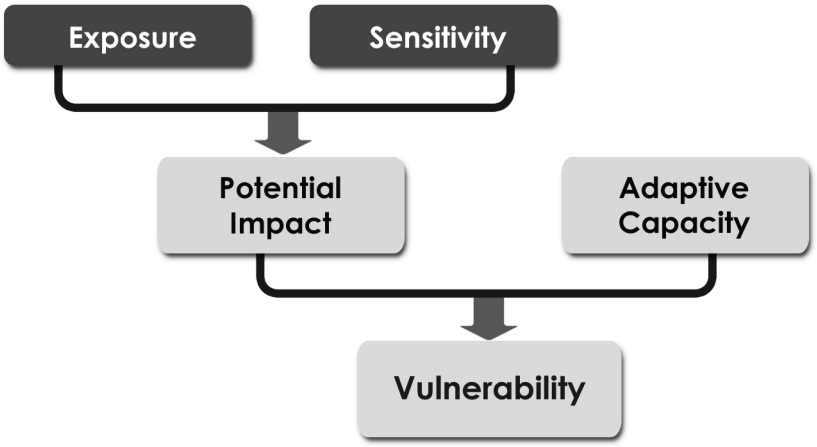

* Arrows can be used to depict increase/decrease in the elements

Analysis of sensitivity and adaptive capacity

Once participants acquire a grasp of the concept and factors affecting vulnerability, proceed to Matrix 3: Assess current vulnerability

Mechanics:

1. Group participants into small groups. Previous groupings can be retained
2. Distribute Matrix 3: Assess current vulnerability, and discuss with participants
3. Give the groups 20 minutes to do the exercise
4. Conduct plenary presentations and discussions
   - Group representatives present their collective output
   - In processing the presentations, the trainer should note:
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     c) how the exercise contributed to their understanding and skill in analyzing data

Instructions—Task for Part 2:

- Look toward the future
- Analyze potential impacts of climate change
- Define the vulnerability and need for action
- Use Matrix 4: Assess potential vulnerability
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  (b) in column E brainstorm the potential impacts to the bio physical part of the system
  (c) in column F brainstorm socio-economic impacts
  (d) in column G rate where there is need for action
- Follow previous procedure in processing the exercise

Identify Adaptation Options
SESSION GUIDE

Module 6

Overview of MODULE 6

Duration

Orientation Session: 1 hour
Training Course: 1½ hours

Objectives

At the end of the module, the participants would have:
1. been oriented on the factors to consider in identifying adaptation options
2. identified options for addressing vulnerabilities identified in the previous module

Coverage

A. Review: The 4-step approach to climate change adaptation
B. Understanding the different set of adaptation options
C. Analysis of adaptation options

Exercise—Matrix 3: Adaptation options

Suggested Methodology

- Expert presentation and discussion
- Exercise—Matrix 3: Adaptation options

Preparation. Outputs from Matrix 3 and 4 will be used as this exercise builds on previous modules

Activity

(a) Group work

1. Participants retain their previous grouping
2. Each group is given a matrix sheet, which they will discuss and fill up
3. Groups present and discuss their outputs in plenary

(b) Plenary presentation and discussion

1. Discuss with participants the ease/difficulty of filing up the matrix
2. Discuss how the information shared during the expert presentation contributed to the application of knowledge

Outputs

Participants are able to enumerate and discuss adaptation options

Resources

Supplies & equipment

- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentations
- Participants' outputs: Matrices 3 and 4

Handouts

- Step 2: Identify adaptation options

Topics for Discussion

A. Review: The 4-step approach to climate change adaptation
B. Understanding the different set of adaptation options
C. Analysis of adaptation options

A. Review: The 4-step approach to climate change adaptation

- A refresher on the **4-step approach, with an emphasis on Step 2: Identify Adaptation options.** Undertaking the process will help participants absorb a range of adaptation options from different perspectives
- As climate change adaptation requires thinking outside of the box, participants will have optimized brainstorming thereby stimulating a discourse on implementation, including enumerating actors or stakeholders to the activities

B. Understanding the different set of adaptation options

Identifying adaptation options is vital to shaping action for climate-resilient development.

Such as step is useful in carrying out policy-formulation; strategy development; and project identification, appraisal and design—

(a) **at national, sectoral and local level,** the results will be prioritized according to entry points in identified geographic hotspots or priority topics

(b) **at the project level,** identifying options would, ideally, be carried out during project identification, appraisal and design and shape the intervention logic

Adaptation options leading to opportunities for reducing vulnerability:

A. **Activities at various time scales** (short term, medium term, long term)

B. **Activities within the various adaptation frames**

- some options are no-regret, or justified under current or historic climate conditions. These measures are more justifiable under climate change scenario, especially those with strong co-benefits for development. Example: expanding mangrove plantations to buffer erosion; improving disaster preparedness infrastructure and planning

	• other options are even more justified under certain climate change scenario. These may require more certain and précis climate information. Example: long-lived infrastructure (e.g. flood control) or adjusted infrastructure designs, the cost of which are effective only if damages are avoided
C. Activities can follow various strategies	• avoid or limit the impacts of climate change by reducing exposure or sensitivity of the system • stabilize or enhance the adaptive capacity of relevant actors
D. Activities can build on various tools:	• adjust practices • increase flexibility of the system • develop capacity to improve actions and decisions • change policies, regulations and incentives • invest in infrastructure

C. Analysis of adaptation options

Exercise—Matrix 5: Identify adaptation options
(Refer to Annex 2—Matrices)

Mechanics:

1. Maintain groupings; distribute Matrix 5 exercise sheet and discuss

- review the climate change vulnerability options in column G of Matrix 4. From the same matrix, select the impacts leading to high/medium vulnerability and need for action. List these in **column H of Matrix 5**—Potential climate change vulnerabilities and need for action
- review column B of Matrix 3, and columns E and F of Matrix 4 when considering **adaptation options** that can prevent or r educe destructive biophysical and socioeconomic impacts on the given system of interest. Fill out column I of Matrix 5. Keep in mind—
  (a) the categories of adaptation options
  (b) adaptation options enhancing opportunities from climate change
  (c) adaptation options enhancing the adaptive capacity of relevant actors
- in column J of Matrix 5, reflect on the main actors crucial to the implementation of the adaptation options identified

2. Give the groups 20 minutes to do the exercise

3. Conduct plenary presentations and discussions

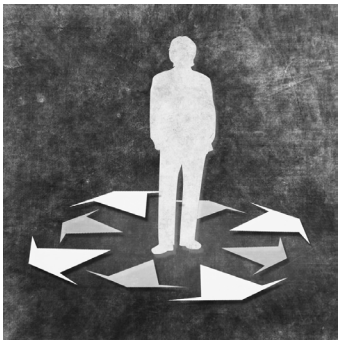
- Group representatives present their collective output
- In processing the presentations, the trainer should note

(a) factors considered by the group in coming up with their responses, e.g. references used
(b) limitations of the group in doing the exercises
(c) how the exercise contributed to their understanding and skill identifying adaptation options

Matrix 5: Identify adaptation options

	H		I	J
	Potential biophysical impacts	Potential socioeconomic impacts		
	Rate need for action			
System of interest	Potential climate change vulnerabilities & Need for action		Adaptation options	Relevant actors & stakeholders

Step 2: Identify Adaptation options



- Undertaking the process will help participants absorb a range of adaptation options from different perspectives
- As climate change adaptation requires thinking outside of the box, participants will have optimized brainstorming thereby stimulating a discourse on implementation, including enumerating actors or stakeholders to the activities

Understanding the different set of adaptation options. Identifying adaptation options is vital to shaping action for climate-resilient development. Such as step is useful in carrying out policy-formulation; strategy development; and project identification, appraisal and design—

(a) **at national, sectoral and local level,** the results will be prioritized according to entry points in identified geographic hotspots or priority topics

(b) **at the project level,** identifying options would, ideally, be carried out during project identification, appraisal and design and shape the intervention logic

Adaptation options leading to opportunities for reducing vulnerability:

1. Activities **at various time scales** (short term, medium term, long term)
2. Activities **within the various adaptation frames.**
   - some options are no-regret, or justified under current or historic climate conditions. These measures are more justifiable under climate change scenario, especially those with strong co-benefits for development. Example: expanding mangrove plantations to buffer erosion; improving disaster preparedness infrastructure and planning
   - other options are even more justified under certain climate change scenario. These may require more certain and précis climate information. Example: long-lived infrastructure (e.g. flood control) or adjusted infrastructure designs, the cost of which are effective only if damages are avoided
3. Activities can follow **various strategies:**
   - avoid or limit the impacts if climate change by reducing exposure or sensitivity of the system
   - stabilize or enhance the adaptive capacity of relevant actors
4. Activities can build on **various tools:**
   - adjust practices
   - increase flexibility of the system
   - develop capacity to improve actions and decisions
   - change policies, regulations and incentives
   - invest in infrastructure

Select Adaptation Measures
SESSION GUIDE

Module 7

Overview of MODULE 7

Duration

Orientation Session: 1 hour
Training Course: 1½ hours

Objectives

At the end of the module, the participants would have:
1. learned how to identify the appropriate criteria for selecting adaptation measures
2. applied said criteria in evaluating alternative adaptation options and, ultimately, formulating a set of adaptation measures chosen deliberately by them

Coverage

A. Review: The 4-step approach to climate change adaptation
B. Rationale for selecting adaptation measures
C. How to select adaptation measures

Exercise—Matrix 6: Select adaptation measures

Suggested Methodology

- Expert presentation and discussion
- Exercise—Matrix 6: Select adaptation measures

Preparation. Outputs from Matrix 5 will be used as this exercise builds on previous modules

Activity

(a) Group work

1. Participants retain their previous grouping
2. Each group is given a matrix sheet, which they will discuss and fill up
3. Groups present and discuss their outputs in plenary

(b) Plenary presentation and discussion

1. Discuss with participants the ease/difficulty of filing up the matrix
2. Discuss how the information shared during the expert presentation contributed to the application of knowledge

Outputs

Participants are able to list and discuss the process and outputs in selecting adaptation measures

Resources

Supplies & equipment
- Manila paper, meta cards, markers, masking tape
- LCD projector, computer

Visual aids
- PowerPoint presentations
- Participants' outputs: Matrix 5

Handouts
- Step 3: Select adaptation measures

Topics for Discussion

A. Review: The 4-step approach to climate change adaptation
B. Rationale for selecting adaptation measures
C. How to select adaptation measures
Exercise—Matrix 6: Select adaptation measures

A. Review: The 4-step approach to climate change adaptation

- A refresher on **the 4-step approach, with an emphasis on Step 3: Select adaptation measures.** Undertaking the process will help participants arrive at an adaptation strategy.
- The strategy should be composed of complementary elements and ensure (a) effective reduction of climate change risks and (b) coherence with the priorities and practical constraints of a given situation
- The desired outcomes are (a) agreed-upon set of selection criteria and process of prioritization (b) adaptation options (step 2) that are critically assessed; and (c) list of prioritised and complementary adaptation measures

B. Rationale for selecting adaptation measures

Selecting adaptation measures is vital to shaping action for climate-resilient development

Such as step is useful in carrying out policy-formulation; strategy development; and project identification, appraisal and design—

(a) **at national, sectoral and local level,** the results will be prioritized according to entry points in identified geographic hotspots or priority topics
(b) **at the project level,** identifying options would, ideally, be carried out during project identification, appraisal and design and shape the intervention logic

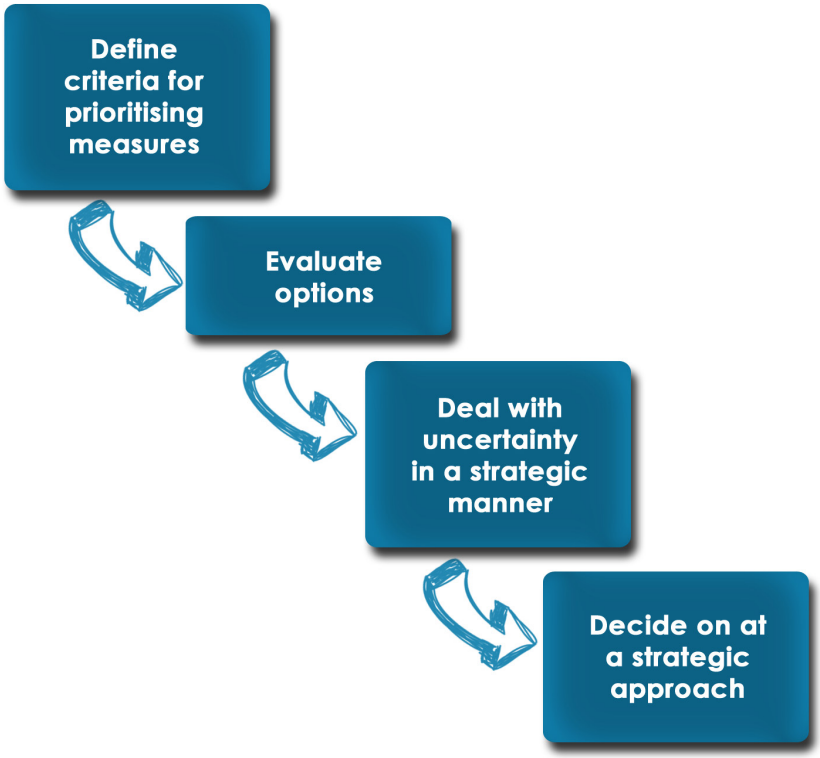
Adaptation strategy

Adaptation strategy should be composed of complementary elements that ensure—

(a) effective reduction of climate risks
(b) coherence with the priorities and practical constraints of a given situation
(c) **Additional criteria** can be identified depending on the need and context. The set of criteria has far-reaching influences on the outcomes of your adaptation strategy process.

The baseline is always no adaptation. If we do nothing, what is the cost in terms of impact? **This is the no regret or low-regret measure.**

Criteria to evaluate adaptation options	
1. Effectiveness	Extent to which the adaptation option reduces vulnerability and provides other benefits
2. Costs	Relative costs of an adaptation option, i.e. investment costs, costs across time, economic and non-economic costs
3. Feasibility	Answers whether the necessary legal, administrative, financial or technical resource exist. Adaptations that can be implemented under the current operational framework will be likely favored
4. Additional criteria	Additional criteria can be identified depending on the need and context. The set of criteria has far-reaching influences on the outcomes of your adaptation strategy process. Make sure that all relevant actors agree with the criteria. Decide if all criteria are equally weighted.



C. How to select adaptation measures

1. Define criteria for prioritizing measures:	• Feasibility—legal, financial, technical—and acceptability • Strong co-benefits—reforestation to avoid landslides, resulting in carbon sequestration and groundwater recharge, low- or no-regret options

	• Alignment with funding requirements • Effectiveness in addressing relevant vulnerability functions • Cost of investment and operation—cross-check difference in adaptation costs over time, ask where early action is cheaper, e.g. long-term infrastructure investments • Urgency—what happens if no action is taken • Window of opportunity—a plan goes into revision, a person in authority is in favour of certain ideas • No adverse impacts on environment— 'do no harm', biodiversity-friendliness
2. Evaluate options	Can be done individually—voting on paper and calculating the median, or by open discussion. The process has to be transparent manner and all votes treated equally • Be consistent in rating the—e.g (++) means positive in terms of implementation; (--) means high costs with rather unreliable data basis. Otherwise you will face difficulties calculating an overall score • If too many options have similar evaluations, consider weighing the criteria instead (e.g. criterion 3 'feasibility' x2)
3. Deal with uncertainty in a strategic manner	• Note that uncertainty is no justification for inaction • Prioritise measures with sufficiently reliable information • Decide on the roots of uncertainty and, if needed, agree on how further analysis—cost and feasibility assessments, can be fed in the process without delaying beyond the agree time frame • Choose no- or low-regret options
4. Decide on at a strategic approach	Decide on at a strategic approach that reflects outcomes of earlier stages, balances stakeholders' interests and addresses barriers. Consider alternative adaptation scenarios and their implications; consider complementary actions and substitutes among highly ranked options

Exercise—Matrix 6: Select adaptation measures

(Refer to Annex 2—Matrices)

Mechanics:

1. Maintain groupings; distribute Matrix 6 exercise sheet and discuss

- Transfer the contents of column I (adaptation options) in Matrix 5 to **column K in Matrix 6**
- In columns **L, M, N, O**
  - (a) discuss the selection criteria; add other criteria as desired
  - (b) consider each option using the criteria and rate them using agreed-upon qualitative or quantitative ranking, e.g. ++/+/0/-/--
  - (c) if too many options have similar evaluations, consider weighing the criteria instead
- Review and assess your results:
  - (d) do they address the range of key risks?
  - (e) would they be effective together?
  - (f) do they overlap or complement each other?

2. Give the groups 20 minutes to do the exercise

3. Conduct plenary presentations and discussions
4. Conduct plenary presentations and discussions

- Group representatives present their collective output
- In processing the presentations, the trainer should note
  - (a) factors considered by the group in coming up with their responses
  - (b) acknowledge challenges faced by the group
  - (c) observe how the exercise contributed to their understanding and skill in identifying adaptation measure
  - (d) consider categorizing adaptation options into option types, e.g. policy, capacity building, infrastructure

	H		I	J
	Potential biophysical impacts	Potential socioeconomic impacts		
	Rate need for action			
System of interest	Potential climate change vulnerabilities & Need for action		Adaptation options	Relevant actors & stakeholders

K	L	M	N	O	P
Adaptation options	Effectiveness	Cost	Feasibility	Criterion 4	Overall evaluation

Matrix 8: M&E framework

Potential climate change vulnerabilities and need for action			Achievement of intended results Extent of the intended change (quality, quantity, time, geographic coverage)	
No adaptation scenario Baseline	Adaptation measures selected	Link with the overall plan	Possible indicators	Sources of data, means and schedule for collection

Step 2: Identify Adaptation options

Undertaking the process will help participants arrive at an adaptation strategy. The strategy should be composed of complementary elements and ensure (a) effective reduction of climate change risks and (b) coherence with the priorities and practical constraints of a given situation

- The **desired outcomes** are:
  (a) agreed-upon set of selection criteria and process of prioritisation
  (b) adaptation options (step 2) that are critically assessed
  (c) list of prioritised and complementary adaptation measures

Rationale for selecting adaptation measures

- Selecting adaptation measures is vital to shaping action for climate-resilient development. Such as step is useful in carrying out policy-formulation; strategy development; and project identification, appraisal and design—
  (a) **at national, sectoral and local level,** the results will be prioritized according to entry points in identified geographic hotspots or priority topics
  (b) **at the project level,** identifying options would, ideally, be carried out during project identification, appraisal and design and shape the intervention logic

- Adaptation strategy should be composed of **complementary elements** that ensure:
  (a) effective reduction of climate risks
  (b) coherence with the priorities and practical constraints of a given situation

- **How to decide and when.** The baseline is always no adaptation. If we do nothing, what is the cost in terms of impact? **This is the no-regret or low-regret measure**

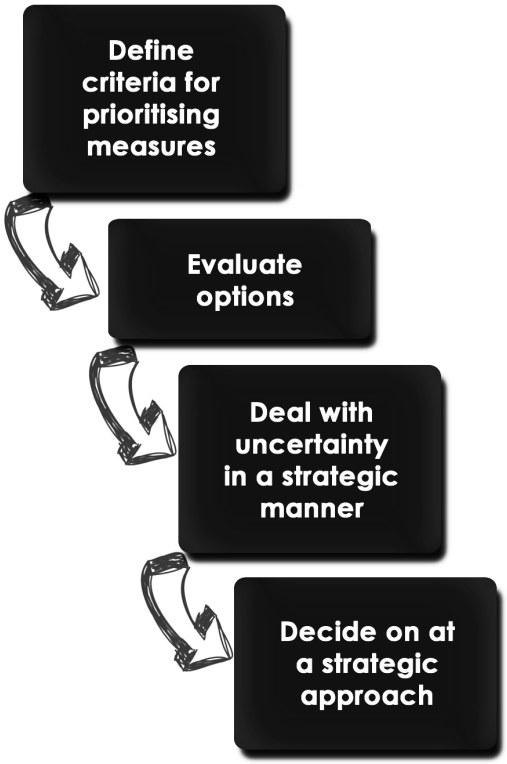
- **Criteria to evaluate adaptation options:**
  (a) **Effectiveness.** Extent to which the adaptation option reduces vulnerability and provides other benefits
  (b) **Costs.** Relative costs of an adaptation option, i.e. investment costs, costs across time, economic and non-economic costs
  (c) **Feasibility.** Answers whether the necessary legal, administrative, financial or technical resource exist. Adaptations that can be implemented under the current operational framework will be likely favoured.
  (d) **Additional criteria** can be identified depending on the need and context. The set of criteria has far-reaching influences on the outcomes of your adaptation strategy process. Make sure that all relevant actors agree with the criteria. Decide if all criteria are equally weighted

How to select adaptation measures

1. **Define criteria for prioritising measures:**

- Feasibility—legal, financial, technical—and acceptability
- Strong co-benefits—reforestation to avoid landslides, resulting in carbon sequestration and groundwater recharge, low- or no-regret options

- Alignment with funding requirements
- Effectiveness in addressing relevant vulnerability functions
- Cost of investment and operation—cross-check difference in adaptation costs over time, ask where early action is cheaper, e.g. long-term infrastructure investments
- Urgency—what happens if no action is taken
- Window of opportunity—a plan goes into revision, a person in authority is in favour of certain ideas
- No adverse impacts on environment— 'do no harm', biodiversity-friendliness



2. **Evaluate options**

- Can be done individually—voting on paper and calculating the median, or by open discussion. The process has to be transparent manner and all votes treated equally
- Be consistent in rating the—e.g (++) means positive in terms of implementation; (--) means high costs with rather unreliable data basis. Otherwise you will face difficulties calculating an overall score
- If too many options have similar evaluations, consider weighing the criteria instead (e.g. criterion 3 'feasibility' x2)

3. **Deal with uncertainty in a strategic manner**

- Note that uncertainty is no justification for inaction
- Prioritise measures with sufficiently reliable information
- Decide on the roots of uncertainty and, if needed, agree on how further analysis—cost and feasibility assessments, can be fed in the process without delaying beyond the agree time frame
- Choose no- or low-regret options

4. **Decide on at a strategic approach** that reflects outcomes of earlier stages, balances stakeholders' interests and addresses barriers. Consider alternative adaptation scenarios and their implications; consider complementary actions and substitutes among highly-ranked options

Overview of MODULE 8

Duration

Orientation Session: 1 hour
Training Course: 2 hours

Objectives

At the end of the module, the participants would have:
1. discussed the concept and elements of the monitoring and evaluation (M&E) framework for adaptation
2. applied these concepts in the development of an M&E framework

Coverage

A. Review: The 4-step approach to climate change adaptation
B. Rationale for monitoring and evaluation in climate change adaptation
C. Preparing a monitoring and evaluation framework

Exercise— Matrix 8: M&E framework

Suggested Methodology

- Expert presentation and discussion
- Exercise—Matrix 8: M&E framework

Preparation. Outputs from Matrix 5 will be used as this exercise builds on previous modules

Activity

(a) Group work
1. Participants retain their previous grouping
2. Each group is given a matrix sheet, which they will discuss and fill up
3. Groups present and discuss their outputs in plenary

(b) Plenary presentation and discussion
1. Discuss with participants the ease/difficulty of filing up the matrix
2. Discuss how the information shared during the expert presentation contributed to the application of knowledge

Outputs

Participants are able to present and discuss an M&E framework on adaptation

Resources

Supplies & equipment
- Manila paper, meta cards, markers, masking tape
- White board, white board markers
- LCD projector, computer

Visual aids
- PowerPoint presentations
- Participants' outputs: Matrix 5

Handouts
- Monitoring and evaluation framework

Topics for Discussion

A. Review: The 4-step approach to climate change adaptation
B. Rationale for monitoring and evaluation in climate change adaptation
C. Preparing a monitoring and evaluation framework

A. Review: The 4-step approach to climate change adaptation

A refresher on the **4-step approach, with an emphasis on Step 4: Develop a monitoring and evaluation framework.** Undertaking this final process will enhance participants' effectiveness in relating adaptation-specific activities to core development goals and accountability; and gauging which activities work

B. Rationale for monitoring and evaluation in climate change adaptation

M&E for adaptation can and should fit into ongoing M&E systems

Given that the adaptation context complements standard development and environment indicators. Such as step is useful in carrying out policy-formulation, strategy development, resource allocation and budgeting, and operational planning. Formulating indicators is a precursor to finalizing the plan—

(a) **at the national, sectoral and local level:** the result will be an agreed-upon intervention logic **(results chain)** as part of the plan, linking activities to the desired impact of climate resilient development

(b) **in the project cycle:** M&E activities are typically final step. The M&E framework needs to be developed alongside the project design, and M&E should be carried out as an ongoing activity—all this to ensure results-oriented and adaptive management

(c) **at all operational levels:** information on the target group, timeframe, baseline and target values can be included in the formulation of objectives or specified in the indicators. The completed plan, including indicators, will provide a solid basis for management at implementation-level and M&E activities

M&E is useful for knowledge management and integrating lessons learnt into management

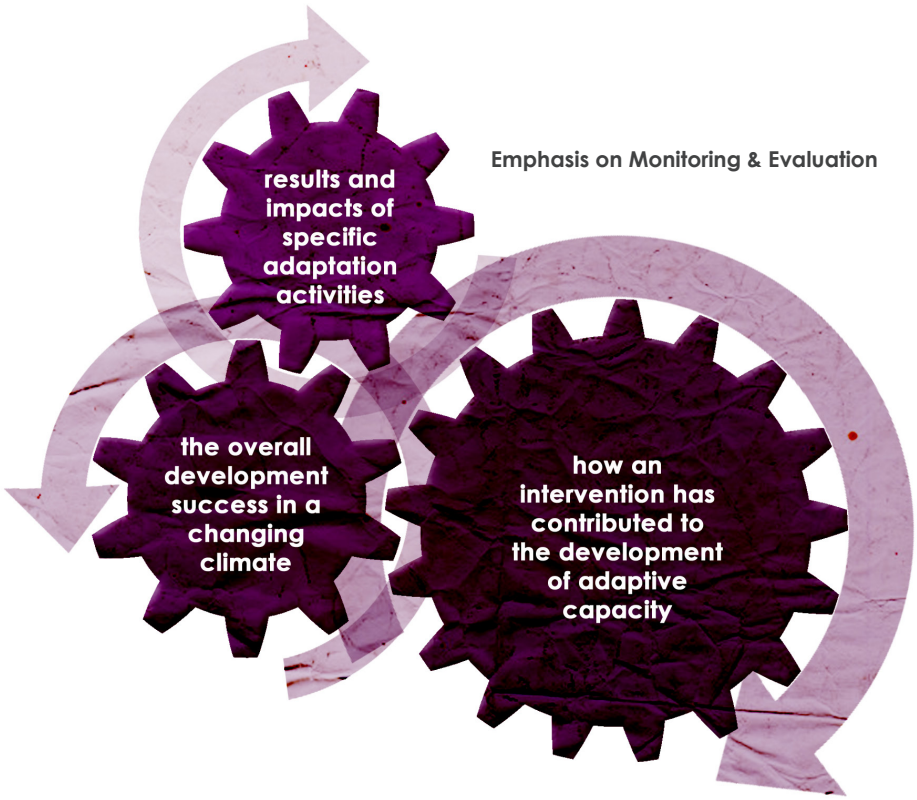
As a knowledge- management tool M&E can increase delivery capacity as it:

(a) provides feedback on recent performances
(b) increases technical and operational knowledge in a relatively new field of work. In adaptation, the management approach should be adaptive, i.e. adjusting plans and activities in reaction to new information such as new findings on impacts, successful approaches implemented elsewhere and others

In terms of M&E: Are we doing the right things and are we doing things right? What is being monitored?

Depending on the intervention, **emphasis on M&E should be on:**

(a) results and impacts of specific adaptation activities associated with a project, programme or policy. This requires analysis of key risks and vulnerabilities and an understanding of how activities address these. In the short-term, outputs or impact-oriented development indicators—rather than changes in outcome—may be the most realistic focus for M&E
(b) how an intervention has contributed to the development of adaptive capacity among stakeholders—information management capacity, strategic and mainstreaming capacities or technical knowledge on adaptation techniques
(c) the overall development success in a changing climate. Indicators used for monitoring this are often not very different from M&E for regular development interventions (e.g. securing incomes of target groups in vulnerable regions)



Reasons for M&E for adaptation

M&E is an opportunity to strengthen delivery capacity. The use of clear indicators can help:

(a) track the performance of activities and the delivery of results
(b) ensure the desired impact
(c) enhance accountability
(d) increase technical and operational knowledge in new fields of action, thus enabling learning, stakeholder-engagement and adaptive management
(e) develop a unique selling point for funding, based on provable results

Difficulties in results-based M&E for adaptation

1. The complexity of the adaptation makes it more difficult to attribute certain activities to certain impacts (attribution gap) and is aggravated because:

(a) climate change is only one stressor among many on sustainable development
(b) adaptation is long-term, the effects of which may only be apparent after decades, and may extend over periods longer than that associated with project lifetimes.

2. If one seeks to qualify for additional support or funding there might be a need to distinguish 'adaptation measures' from 'business as usual. When the best adaptation mode is integrated into ongoing projects, plans and policies, it becomes more difficult to track the 'adaptation difference'

3. The distinction between 'no adaptation' and 'adaptation' scenarios is difficult as the climate 'baseline' is fluid. Climate conditions are constantly changing regardless of climate change. It is not proper to simply compare losses or damages before and after adaptation interventions.

Dealing with difficulties in results-based M&E for adaptation

1. Combination of different assessment methods	(a) a combination of quantitative and qualitative indicators to be used alongside stakeholder perceptions and stories. These stories can depict changes that support the desired outcome, and community practices that support adaptation to climate change (b) include a bottom-up perspective. A combination of scientific data analysis, community-level observation and third-party verification has proven particularly effective
2. Complement established M&E techniques	(a) established monitoring techniques can be used for many aspects of M&E for adaptation. Additional evaluation loops should, however, be factored in to ensure that activities, which would make an 'adaptation difference', are assessed (b) as M&E for adaptation is about learning and improving management, it is important for local experts to monitor ongoing processes, and that results are available to practitioners, communities and policy-makers

C. Preparing a monitoring and evaluation framework

Define appropriate indicators	The indicator used to evaluate an effect is not in itself a measurement or evidence of that effect. Rather, it provides information about changes, which may either result from the intervention **(effect with direct attribution)** or other causes
A good indicator	1. mirror relevant aspects of the desired result—covering socioeconomic, environmental 2. and governance aspects 3. convey if the intended result has been achieved and/or if activities are on track 4. provide information on quality, quantity, time and regional extent of the intended change
Criteria for the selection of good indicators	
1. Validity and accuracy	Indicator reflects precisely the subject under observation
2. Precision	Indicator's formulation is not ambiguous
3. Relevance	Indicator reflects a relevant aspect of the overall subject
4. Robustness	Indicator is related to universal and lasting characteristics of the subject
5. Sensitivity	Generated data vary significantly when change occurs in the subject being observed

6. Feasibility	Data for monitoring the indicator should be readily available
Review the geographical scales of observation	As climate change does not stop at administrative borders, using an ecosystem or risk-relevant area (e.g. flood plain, coastal strip, etc.) for observation might provide better results.
Describe a results chain	1. A results chain links specific activities to the overall desired impact of the intervention and establishes a basis for managing results 2. Managing for development results means that success is not only measured in terms of completed activities but also the resulting changes, which can be causally or plausibly attributed to development activities 3. Look into factors and impacts relevant to risks, vulnerability and resilience when setting up your intervention logic Data for monitoring the indicator should be readily available As climate change does not stop at administrative borders, using an ecosystem or risk-relevant area (e.g. flood plain, coastal strip, etc.) for observation might provide better results.

Exercise—Matrix 8: M&E framework

(Refer to Annex 2—Matrices)

Mechanics:

1. Maintain groupings; distribute Matrix 8 exercise sheet and discuss
- Referring to the results of Matrix 6: Potential climate change vulnerabilities and need for action, write down the scenario if there were no adaptation actions
- Based on the overall evaluation of adaptation options in Matrix 7, list the adaptation measures selected
- Establish a link between the adaptation options listed and the overall plan
- Identify the indicators
- Write down sources of data, means and schedule for collection

2. Groups are given 45 minutes to do the exercise

3. Conduct plenary presentations and discussions
- Group representatives present their collective output
- In processing the presentations, the trainer should:
  (a) note factors considered by the group in coming up with their responses
  (b) acknowledge challenges faced by the group
  (c) observe how the exercise contributed to their understanding and skill in preparing a monitoring and evaluation framework for adaptation

Step 4: Develop a monitoring and evaluation framework.

Undertaking this final process will enhance participants' effectiveness in relating adaptation-specific activities to core development goals and accountability; and gauging which activities work

Rationale for monitoring and evaluation in climate change adaptation

- **M&E for adaptation can and should fit into ongoing M&E systems** given that the adaptation context complements standard development and environment indicators. Such as step is useful in carrying out policy-formulation, strategy development, resource allocation and budgeting, and operational planning. Formulating indicators is a precursor to finalizing the plan—

  (a) **at the national, sectoral and local level:** the result will be an agreed-upon intervention logic **(results chain)** as part of the plan, linking activities to the desired impact of climate resilient development

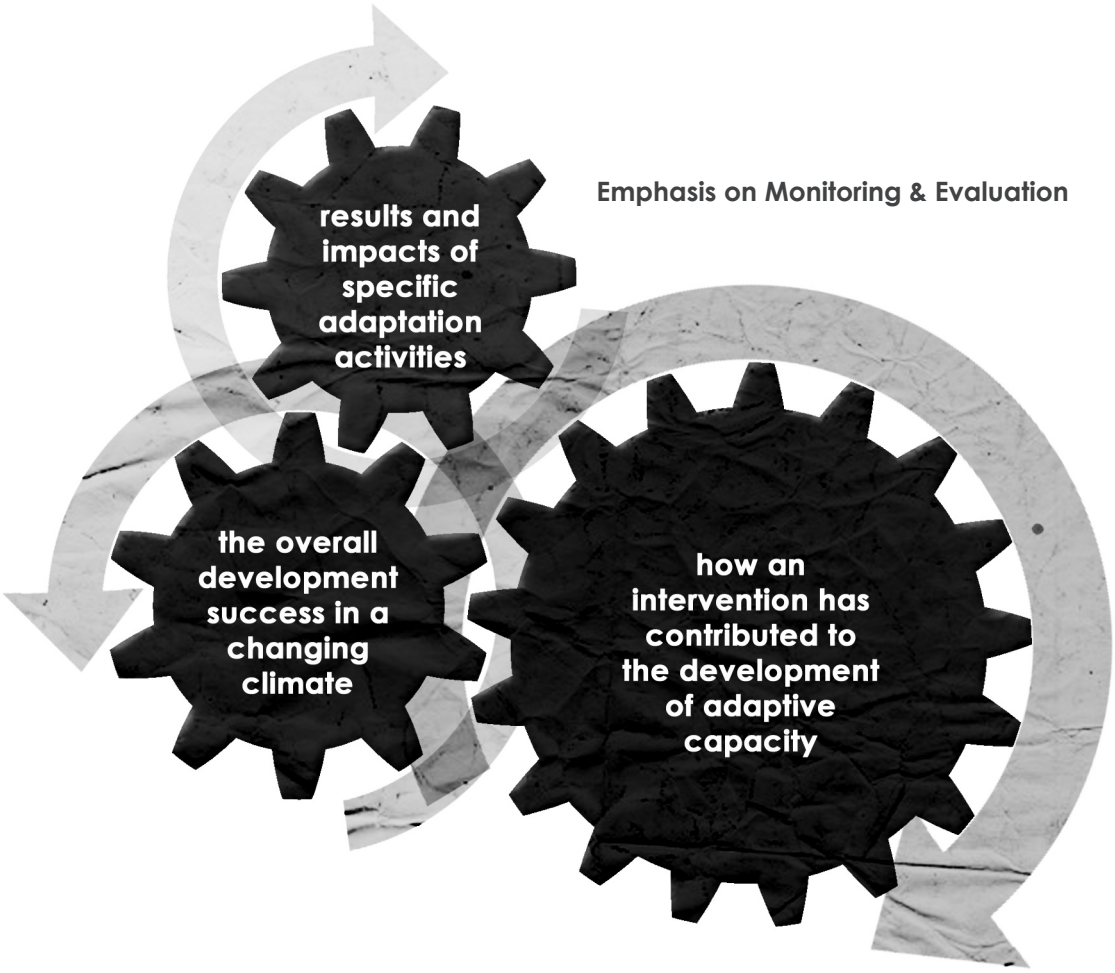
  (b) **in the project cycle:** M&E activities are typically final step. The M&E framework needs to be developed alongside the project design, and M&E should be carried out as an ongoing activity—all this to ensure results-oriented and adaptive management

  (c) **at all operational levels:** information on the target group, timeframe, baseline and target values can be included in the formulation of objectives or specified in the indicators. The completed plan, including indicators, will provide a solid basis for management at implementation-level and M&E activities

- **M&E is useful for knowledge management and integrating lessons learnt into management.** As a knowledge- management tool M&E can increase delivery capacity as it:
  (a) provides feedback on recent performances
  (b) increases technical and operational knowledge in a relatively new field of work. In adaptation, the management approach should be adaptive, i.e. adjusting plans and activities in reaction to new information such as new findings on impacts, successful approaches implemented elsewhere and others

- In terms of M&E: **Are we doing the right things and are we doing things right?** What is being monitored? Depending on the intervention, **emphasis on M&E should be on:**

  (a) results and impacts of specific adaptation activities associated with a project, programme or policy. This requires analysis of key risks and vulnerabilities and an understanding of how activities address these. In the short-term, outputs or impact-oriented development indicators—rather than changes in outcome—may be the most realistic focus for M&E



(b) how an intervention has contributed to the development of adaptive capacity among stakeholders—information management capacity, strategic and mainstreaming capacities or technical knowledge on adaptation techniques
(c) the overall development success in a changing climate. Indicators used for monitoring this are often not very different from M&E for regular development interventions (e.g. securing incomes of target groups in vulnerable regions)

- **Reasons for M&E for adaptation.** M&E is an opportunity to strengthen delivery capacity. The use of clear indicators can help:
  (a) track the performance of activities and the delivery of results
  (b) ensure the desired impact

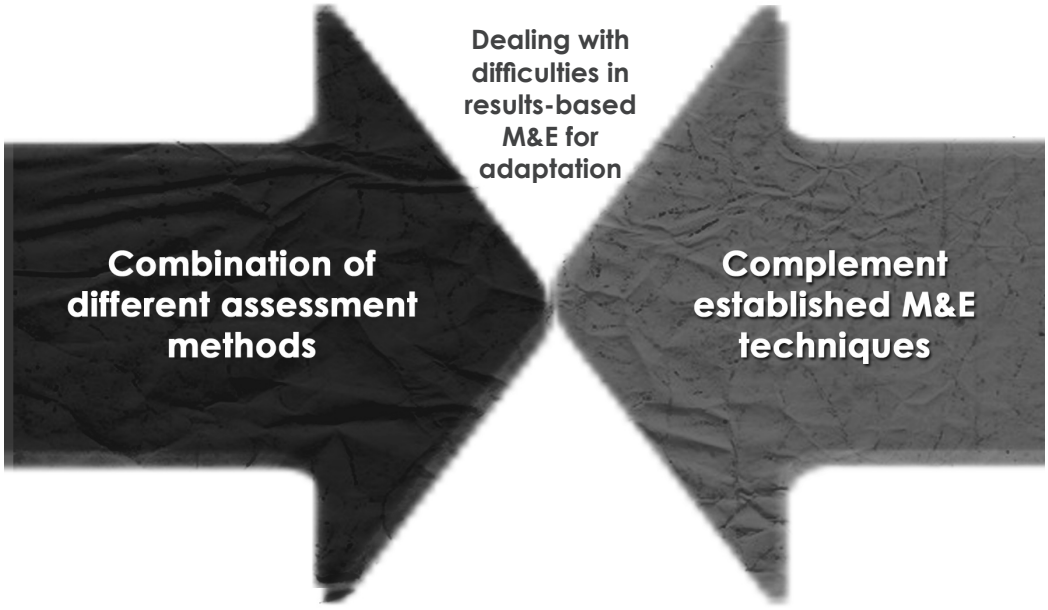
(c) enhance accountability
(d) increase technical and operational knowledge in new fields of action, thus enabling learning, stakeholder-engagement and adaptive management
(e) develop a unique selling point for funding, based on provable results

- **Difficulties in results-based M&E for adaptation.** The complexity of the adaptation makes it more difficult to attribute certain activities to certain impacts **(attribution gap)** and is aggravated because:
  (a) climate change is only one stressor among many on sustainable development
  (b) adaptation is long-term, the effects of which may only be apparent after decades, and may extend over periods longer than that associated with project lifetimes

- **If one seeks to qualify for additional support or funding, there might be a need to distinguish 'adaptation measures' from 'business as usual'.** When the best adaptation mode is integrated into ongoing projects, plans and policies, it becomes more difficult to track the 'adaptation difference'

- **The distinction between 'no adaptation' and 'adaptation' scenarios is difficult as the climate 'baseline' is fluid.** Climate conditions are constantly changing regardless of climate change. It is not proper to simply compare losses or damages before and after adaptation interventions

- **Dealing with difficulties in results-based M&E for adaptation**



1. Combination of different assessment methods:
   (a) a combination of quantitative and qualitative indicators to be used alongside stakeholder perceptions and stories. These stories can depict changes that support the desired outcome, and community practices that support adaptation to climate change

(b) include a bottom-up perspective. A combination of scientific data analysis, community-level observation and third-party verification has proven particularly effective

2. Complement established M&E techniques:
   (a) established monitoring techniques can be used for many aspects of M&E for adaptation. Additional evaluation loops should, however, be factored in to ensure that activities, which would make an 'adaptation difference', are assessed
   (b) as M&E for adaptation is about learning and improving management, it is important for local experts to monitor ongoing processes, and that results are available to practitioners, communities and policy-makers

C. Preparing a monitoring and evaluation framework

- **Define appropriate indicators.** The indicator used to evaluate an effect is not in itself a measurement or evidence of that effect. Rather, it provides information about changes, which may either result from the intervention **(effect with direct attribution)** or other causes

- **A good indicator should:**
  1. mirror relevant aspects of the desired result—covering socioeconomic, environmental and governance aspects
  2. convey if the intended result has been achieved and/or if activities are on track
  3. provide information on quality, quantity, time and regional extent of the intended change

- **Criteria for the selection of good indicators:**
  1. **Validity and accuracy:** indicator reflects precisely the subject under observation
  2. **Precision:** indicator's formulation is not ambiguous
  3. **Relevance:** indicator reflects a relevant aspect of the overall subject
  4. **Robustness:** indicator is related to universal and lasting characteristics of the subject
  5. **Sensitivity:** generated data vary significantly when change occurs in the subject being observed
  6. **Feasibility:** data for monitoring the indicator should be readily available

- **Review the geographical scales of observation** (national, regional, community, etc.). As climate change does not stop at administrative borders, using an ecosystem or risk-relevant area (e.g. flood plain, coastal strip, etc.) for observation might provide better results

- **Describe a results chain:**

1. A results chain links specific activities to the overall desired impact of the intervention and establishes a basis for managing results
2. Managing for development results means that success is not only measured in terms of completed activities but also the resulting changes, which can be causally or plausibly attributed to development activities
3. Look into factors and impacts relevant to risks, vulnerability and resilience when setting up your intervention logic

Overview of MODULE 9

Duration

Orientation Session: 1 hour
Training Course: 2 hours

Objectives

At the end of the module, the participants would have:
1. comprehended that adequate institutional capacities at various levels are key to successful adaptation
2. been oriented on the different adaptive capacity frameworks
3. applied lessons learned in adopting the National Adaptive Capacity Framework

Coverage

A. Why the need for institutional adaptive capacity
B. What is institutional adaptive capacity and where is it applied
C. How do we assess institutional adaptive capacity
D. How do we manage institutional adaptive capacity

Exercise—Adaptive capacity analysis
(Refer to Annex 2—Matrices)

Suggested Methodology

- Expert presentation and discussion
- Exercise—Adaptive capacity analysis

Activity

(a) Group work
1. Participants retain their previous grouping
2. Each group is given a matrix sheet, which they will discuss and fill up
3. Groups present and discuss their outputs in plenary

(b) Plenary presentation and discussion
1. Discuss with participants the ease/difficulty of filing up the matrix
2. Discuss how the information shared during the expert presentation contributed to the application of knowledge

Outputs

Participants are able to present and discuss their analysis of their organization's/program's/project's adaptive capacity using the National Adaptive Capacity Framework

Resources

Supplies & equipment
- Manila paper, meta cards, markers, masking tape
- White board, white board markers
- LCD, laptop

Visual aids
- PowerPoint presentations

Handouts
- Individual capacity for adaptation

Topics for Discussion

A. Why the need for institutional adaptive capacity
B. What is institutional adaptive capacity and where is it applied
C. How do we assess institutional adaptive capacity
D. How do we manage institutional adaptive capacity

A. Why the need for institutional adaptive capacity

Objective of capacity building:

Adaptation is about taking systematic and strategic action. It requires experienced experts and appropriate institutional structures and processes. **The objective of capacity building is:**

(a) to develop a comprehensive strategic approach for developing capacities to act on adaptation. This is in preparation for effective implementation of a climate change action plan. Preparation partly entails a change management process—where experts and institutional structures and processes come in. Building experience is critical for long term success; it requires learning by practice.

(b) to foster institutional learning and adaptive management. The application of this module should be part of the planning process.

B. What is institutional adaptive capacity and where is it applied

Institutions are establishments or entities where systems of rules, decision making procedures and programs are present. These programs give rise to social practices they assign roles to participants and guide interaction

Capacity development

- **Capacity development** entails building capacities to manage resources efficiently in order to achieve desired results in a sustainable manner
- **Capacities for adaptation** are those that enable countries, communities and institutions to undertake adaptation measures and continue to adapt on an on-going basis

Levels of implementation

(a) Human resources development

The development of the staff—from the managers to clerks—through coaching, training and mentoring for technical, management and soft skills.

(b) Organizational development

To achieve change management through monitoring and evaluation, discussing adaptive management processes, steering and planning and knowledge management.

(c) Network development	Other partners—members of TWGS, interagency committees. This requires network management through development and steer cooperative systems to benefit from comparative advantages and economies of scale. Ensuring partners' cooperation and support to undertake climate change adaptation actions is vital in this process.
(d) System development in the policy field	Achieved through policy advice, which can be realized with lawful and participatory negotiation and process designing.

C. How do we assess institutional adaptive capacity

Frameworks for analyzing institutions' capacity to adapt

1. Assets-based frameworks	Identifies the institution's current resources to adapt (e.g. human resource).
2. Organizational adaptive capacity	Includes access to capital, systems in place, data collection and storage, knowledge, access to information, awareness and motivation. This is the adopted by the International Union for the Conservation of Nature (IUCN).
3. Functions-based framework	The institution's capacity to adapt and resources available within the organization. This was developed by the World Rresources Institute in 2009 as the National Adaptive Capacity Framework.

National Adaptive Capacity Framework

Adaptation involves specific processes within planning and management. These are functions that institutions need to build capacities for climate change adaptation—the process of assessment, planning, coordination, information management and implementation.

What else must be done to integrate adaptation into these processes?

- **Assessment** refers to the capacity for research or optimize information in decision making (e.g. the production of country data, vulnerability assessment, climate change impact assessment, evaluation of adaptation processes)

- **Planning** assigns significance to specific issues, areas, sectors or populations over various time horizons. This is where the projections of climate change for 2020 aand 2050 may be of use. Since vulnerable areas have been identified, prioritization of activities, projects and programs can follow
- **Coordination** of actions of various actors at multiple levels is needed to avoid duplication. This could be **vertical (cross scales from nation to sub-national agencies, and inter-sectoral coordination between private and public sector) or horizontal (relations across national agencies)**
- **Information management** entails the collection, analysis, and provision of knowledge in support of adaptation activities (e.g. projected climate variables, the status of natural and human systems and coping strategies). Information is not only managed but shared to all stakeholders
- **Implementation or climate risk reduction** pertains to the prioritization of climate risks, evaluation of options for addressing the risks and finance and implement risk reduction measures (e.g. climate proofing for development policies, fundraising for adaptation projects discreet risk reducing adaptation measures)

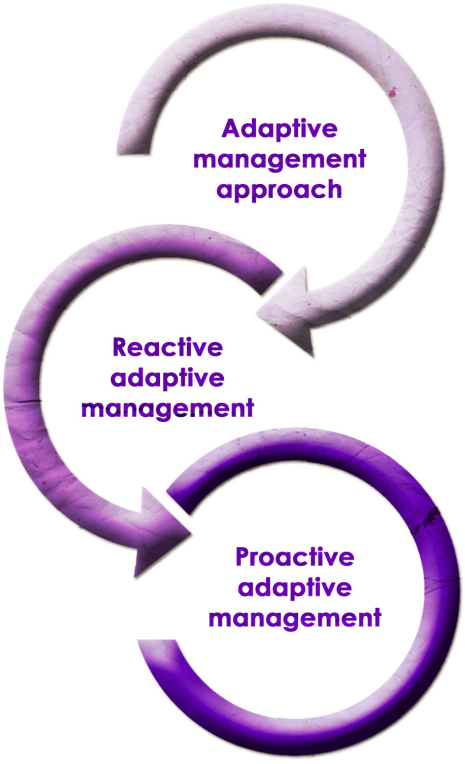
D. How do we manage institutional adaptive capacity

Adaptive management approach

Adaptive management approach is useful in addressing uncertainties and improving performance, entailing:

(a) systematical monitoring and evaluation of results

(b) adjustment in actions based on what has been learned (e.g. observing fish stocks and catch reveals the threat of overfishing; in order to provide for sustainable harvests fishing quotas are established)



Reactive adaptive management

Reactive adaptive management or 'learning by doing', though well known, is not always practiced. If a solution fails, try something else.

Proactive adaptive management	Proactive adaptive management means actively seeking improvements; it expects much on the management and requires open communication; an ability to 'think outside of the box'; reviewing activities and learning from errors; and exploring other options.

Exercise—Adaptive capacity analysis

(Refer to Annex 2—Matrices)

Mechanics:

1. Participants retain their previous grouping
2. Each group is given a matrix sheet, which they will discuss and fill up
3. Groups are given 1 hour to do the exercise
4. Conduct plenary presentations and discussions
   - Group representatives present their collective output
   - In processing the presentations, the trainer should:
     (a) note factors considered by the group in coming up with their responses
     (b) acknowledge challenges faced by the group
     (c) observe how the exercise contributed to their understanding and skill in applying a framework for institutional adaptive capacity

Why the need for institutional adaptive capacity

Adaptation is about taking systematic and strategic action. It requires experienced experts and appropriate institutional structures and processes. The objective of capacity building is:

(a) to develop a comprehensive strategic approach for developing capacities to act on adaptation. This is in preparation for effective implementation of a climate change action plan. Preparation partly entails a change management process—where experts and institutional structures and processes come in. Building experience is critical for long term success; it requires learning by practice
(b) to foster institutional learning and adaptive management. The application of this module should be part of the planning process

What is institutional adaptive capacity and where is it applied

- **Institutions** are establishments or entities where systems of rules, decision making procedures and programs are present. These programs give rise to social practices they assign roles to participants and guide interaction

- **Capacity development** entails building capacities to manage resources efficiently in order to achieve desired results in a sustainable manner

- **Capacities for adaptation** are those that enable countries, communities and institutions to undertake adaptation measures and continue to adapt on an on-going basis

- **Levels of implementation**
  (a) Human resources development. The development of the staff—from the managers to clerks—through coaching, training and mentoring for technical, management and soft skills
  (b) Organizational development. To achieve change management through monitoring and evaluation, discussing adaptive management processes, steering and planning and knowledge management
  (c) Network development. Other partners—members of TWGS, interagency committees. This requires network management through development and steer cooperative systems to benefit from comparative advantages and economies of scale. Ensuring partners' cooperation and support to undertake climate change adaptation actions is vital in this process
  (d) System development in the policy field. Achieved through policy advice, which can be realized with lawful and participatory negotiation and process designing

How do we assess institutional adaptive capacity

- Frameworks for analyzing institutions' capacity to adapt:

(a) assets-based frameworks—identifies the institution's current resources to adapt (e.g. human resource)

(b) organizational adaptive capacity—includes access to capital, systems in place, data collection and storage, knowledge, access to information, awareness and motivation. This is the adopted by the International Union for the Conservation of Nature (IUCN)
(c) functions-based framework—the institution's capacity to adapt and resources available within the organization. This was developed by the World Rresources Institute in 2009 as the National Adaptive Capacity Framework

National Adaptive Capacity Framework

Adaptation involves specific processes within planning and management. These are functions that institutions need to build capacities for climate change adaptation—the process of assessment, planning, coordination, information management and implementation.

What else must be done to integrate adaptation into these processes?

- **Assessment** refers to the capacity for research or optimize information in decision making (e.g. the production of country data, vulnerability assessment, climate change impact assessment, evaluation of adaptation processes)

- **Planning** assigns significance to specific issues, areas, sectors or populations over various time horizons. This is where the projections of climate change for 2020 aand 2050 may be of use. Since vulnerable areas have been identified, prioritization of activities, projects and programs can follow

- **Coordination** of actions of various actors at multiple levels is needed to avoid duplication. This could be **vertical (cross scales from nation to sub-national agencies, and inter-sectoral coordination between private and public sector) or horizontal (relations across national agencies)**

- **Information management** entails the collection, analysis, and provision of knowledge in support of adaptation activities (e.g. projected climate variables, the status of natural and human systems and coping strategies). Information is not only managed but shared to all stakeholders

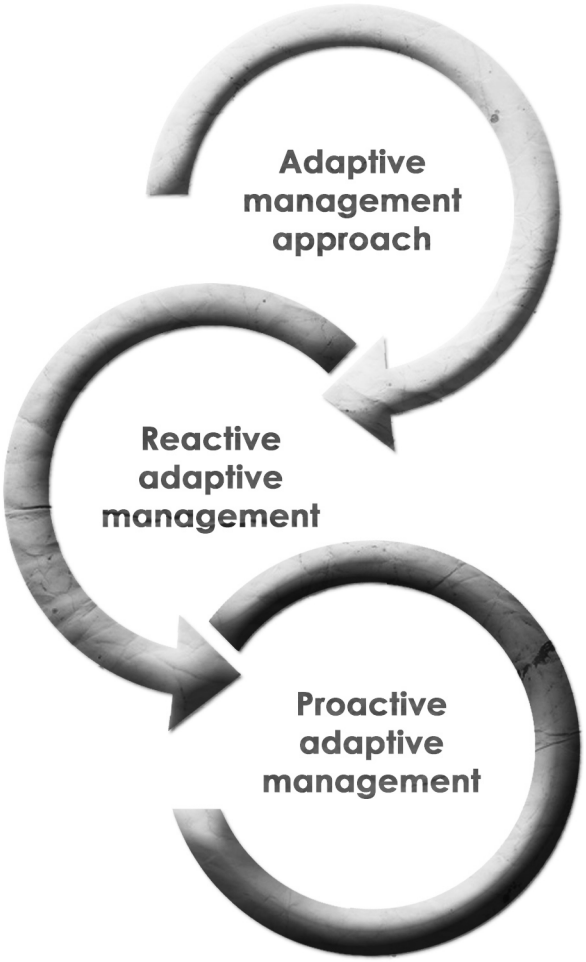
- **Implementation or climate risk reduction** pertains to the prioritization of climate risks, evaluation of options for addressing the risks and finance and implement risk reduction measures (e.g. climate proofing for development policies, fundraising for adaptation projects discreet risk reducing adaptation measures)

How do we manage institutional adaptive capacity

- **Adaptive management approach** is useful in addressing uncertainties and improving performance, entailing:
  (a) systematical monitoring and evaluation of results
  (b) adjustment in actions based on what has been learned (e.g. observing fish stocks and catch reveals the threat of overfishing; in order to provide for sustainable harvests fishing quotas are established)

- **Reactive adaptive management or 'learning by doing'**, though well-known, is not always practiced. If a solution fails, try something else.

- **Proactive adaptive management** means actively seeking improvements; it expects much on the management and requires open communication; an ability to 'think outside of the box'; reviewing activities and learning from errors; and exploring other options



Overview of MODULE 10

Duration

4 hours

Objectives

At the end of the module, the participants would have:
1. consolidated the outcomes of previous exercises
2. identified post-training activities within their organization

Coverage

A. Consolidation of outputs
Exercise 1—Output consolidation
B. Action planning
Exercise 2—Action plans

Suggested Methodology

Group work, plenary presentation and discussions

Outputs

Participants presented and discussed their (i) consolidated outputs and (ii) post-training action plan

Resources

Supplies & equipment

- Manila paper, meta cards, markers, masking tape
- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentations of instructions and templates:
  (a) Consolidation of outputs
  (b) Post training activity action plan preparation

A. Consolidation of outputs

Duration

2 hours

Objectives

At the end of the activity participants would have consolidated and presented their outputs for the training activity

Key Points

Description of outputs consolidation templates:

- Brief profile of the case study (2 slides)
- Relevant climate trends and projections (1 slide)
- Vulnerability assessment (2 slides)
- Adaptation measures (1 slide)
- Impact chain (Summary)
- Monitoring framework (1 slide)
- Conclusion

Suggested Methodology

Exercise 1—Output consolidation

(a) Group work

1. Participants retain their previous grouping
2. Participants are oriented on how to prepare the consolidated outputs
3. Groups submit their outputs for documentation

(b) **Plenary presentation and discussion.** If time permits, all groups should report. Each group has 10 minutes to present, make clarifications and give feedback. The training team should fairly determine which groups will present if not all can be accommodated

Resources

Supplies & equipment

- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentationpresentation: Output consolidation template

B. Action planning

Duration

2 hours

Objectives

At the end of the activity participants would have:
1. reviewed the highlights of the training activity
2. prepared a post-training activity action plan

Key Points

- Summary of what had transpired during the training activity
- Presentation and discussion of action plan exercise

Suggested Methodology

Exercise 2—Action plans

(a) Group work

1. Participants retain their previous grouping
2. Participants are oriented on how to prepare the consolidated outputs
3. Groups submit their outputs for documentation

(b) **Plenary presentation and discussion.** If time permits, all groups should report. Each group has 10 minutes to present, make clarifications and give feedback. The training team should fairly determine which groups will present if not all can be accommodated

Resources

Supplies & equipment

- White board, white board markers
- LCD projector, computer

Visual aids

- PowerPoint presentation: Action plan template

Topics for Discussion

A. Consolidation of outputs
Exercise 1—Output consolidation
B. Action planning
Exercise 2—Action plans

Present and discuss general and specific objectives of the module. Participants are able to present and discuss their consolidated outcomes of previous exercises and identified post-training activities within their organization—(i) reviewed highlights of the training activity and (ii) prepared a post-training activity action plan

A. Consolidation of outputs

• Outline of the consolidation	(a) Brief profile of the case study (2 slides) (b) Relevant climate trends and projections (1 slide) (c) Vulnerability assessment (2 slides) (d) Adaptation measures (1 slide) (e) Impact chain (Summary) (f) Monitoring framework (1 slide) (g) Conclusion
• References	These are the materials from which responses to the matrices can be culled.
• Present and discuss	Give a detailed account of the impact chain, cross-checking with references in the exercises.

Exercise 1—Output consolidation
(Refer to Annex 2—Matrices)

Mechanics:
1. Participants retain their previous grouping
2. Groups are given 1 hour to do the exercise
3. Conduct plenary presentations and discussions

- Group representatives present their collective output
- In processing the presentations, the trainer should:
  - (a) note factors considered by the group in coming up with their responses
  - (b) acknowledge challenges faced by the group
  - (c) observe how the exercise contributed to their understanding and skill in assessment an planning

B. Action planning
(Refer to Annex 2—Matrices)

Feasible entry points for adaptation:
- Policy formulation: to allow for an enabled policy environment for climate change adaptation
- Planning process: to ensure that CCA is mainstreamed into development plans
- Budgeting process: to ensure that CCA activities are allocated resources needed for them to be implemented and monitored

Feasible operational planning and implementation: CCA activities become integrated into the work and financial plans

Monitoring and evaluation: CCA actions need to be included in the regular monitoring and evaluation process given the uncertainties of climate-related factors and the possibility of maladaptation

What has been covered in the training activity
- Identified climate stimuli
- Identified vulnerabilities
- Identified and prioritized adaptation options
- Prepared an M&E framework for adaptation

Elements and instructions for the exercise. Mechanics are similar to Exercise 1.

Annex 1

Training Templates

Annex 1.1
Documentation Templates

Documentation Sheet

Time of Training:

Session Title:

Date/s:

Time	Topic/Activity	Highlights of Topic/Activity	Issues/Concerns/Comments

Documentation Report Outline

I. Background and Rationale

1. Information on the context of the training activity
2. The importance and contribution of the activity vis-à-vis the over-all project goals and objectives

II. Objectives and Outputs

- What the training activity wants to achieve

III. Participants, Date and Venue

- A summary of the profile of participants (Annex 1: Participants List)
- Description of venue and covered dates

IV. Course Design and Schedule

- Brief description/listing of the modules (Annex 2: Module/Session Guides)
- Indicative schedule (Annex 3: Indicative Schedule)

V. Highlights

ACTIVITY	OUTPUTS
• Date/Time • Gen. Statement of Activities	• For each activity, what are the salient points/outcomes • Highlights: to include • Issues and concerns • Resolutions • Annex the outputs

VI. Findings and Recommendations

- Over-all consolidation of assessment of the following based on daily and over-all reflections:

	FINDINGS	RECOMMENDATIONS
• Content		
• Process		
• Resource Persons/ • Facilitators		
• Management/ • Administrative		

Annex 1.2
Evaluation Plan

Evaluation Considerations

Evaluation Objectives	Levels of Evaluation	Evaluation Criteria	Sources of Information	Information-Collection Methods	Information-Collection Methods
1. Define the degree of attainment of the training activity (general and specific) objectives 2. Define the contribution of the following factors in the attainment of the training activity (general and specific objectives • Training Design • Training methods • Training materials • Learning environment/ facilities • Facilitators/ resource persons • Training team 3. List recommendations for improvement of succeeding similar activities	*Reaction level* Was the training activity appropriate to the level and needs of the participants? *Learning level* What did the participants learn from the training activity	1. Degree to which the training activity objectives have been achieved 2. Quality and quantity of training content 3. Quality and quantity of training materials 4. Trainers/resource persons command of the subject matter and methods 5. Appropriateness of training methods to the level and background of the participants 6. Adequacy of administrative and logistical support	1. Oral feedback both formal and informal from • Participants • Facilitators/ resource Persons • Training team • Observers • Others, e.g. colleagues 2. Training activity evaluation questionnaire results 3. Training activity outputs, e.g. action plans, workshop outputs 4. Participants' records, e.g. profiles	1. Questionnaire 2. Observations 3. Group activities, discussions, i.e. reflection sessions, meetings, etc 4. Individual interviews 5. Records review	• Before • During • Immediately after the training activity

Annex 1.3

Administrative Templates

Template Overview

I. Activity Development

(i) Activity Design

- ❑ Background/ rationale
- ❑ Objectives
- ❑ Participants profile
- ❑ Venue/date
- ❑ Coverage
- ❑ Workshop flow
- ❑ Indicative schedule

(ii) Facilitators Guide

a. Session outline
- ❑ Title
- ❑ Duration
- ❑ Objectives
- ❑ Key points
- ❑ Suggested methodology
- ❑ Resources
  - Supplies & equipment
  - Visual aids
  - Handouts

b. Visuals
- ❑ Boards (chalk/whiteboard)
- ❑ Screen
- ❑ Overhead projector
- ❑ LCD
- ❑ Computer
- ❑ Panels
- ❑ Extension cords

(iii) Documentation Plan

a. What to document
- ❑ Content
- ❑ Process
- ❑ Outputs

b. How to document
- ❑ Audio
- ❑ Visual
- ❑ Written

(iv) Evaluation Plan

a. What to evaluate
- ❑ Formative
- ❑ Outputs

b. How to evaluate
- ❑ Formative
- ❑ Summative

(v) Management Plan

a. Facilitators/ Resource persons
- ❑ TOR/Contracts

b. Administrative/ Logistics
- ❑ Administrative checklist

c. Finances
- ❑ Budget

II. Activity Preparation

(i) Participants

a. Invitation
- ❑ Over letter
- ❑ Activity design
- ❑ Administrative & logistic advisory

b. Profile
- ❑ Refgistration form

(ii) Materials Preparation

a. Visuals
- ❑ Posters/charts
- ❑ Computer-generated presentations

b. Audio

c. Handouts

III. Activity Proper

(i) Documentation

(ii) Evaluation

(iii) Management

a. Facilitators/ Resource persons

b. Administrative/ Logistics
- ❑ Administrative checklist

c. Finances

IV. Post Activity

(i) Report preparation

- ❑ **Documentation packaging**
- ❑ **Report write-up**

(ii) Filing/Database

- ❑ **Rates/Contract**
- ❑ **Dietary restrictions**
- ❑ **Schedule**

Administrative Checklist

I. Logistics

(i) Training Room

- ❑ Tables
- ❑ Chairs
- ❑ Size/shape/ space
- ❑ Lighting
- ❑ Ventilation
- ❑ Access
- ❑ Electricity source
- ❑ Outlets
- ❑ Acoustics
- ❑ Area for putting up outputs

(ii) Equipment

a. Audio equipment
- ❑ Microphone
- ❑ Sound system

b. Visuals
- ❑ Boards (chalk/whiteboard)
- ❑ Screen
- ❑ Overhead projector
- ❑ LCD
- ❑ Computer
- ❑ Panels
- ❑ Extension cords

(iii) Materials

a. Kits
- ❑ Folders
- ❑ Design & schedule
- ❑ Writing pad/ notebook
- ❑ Pens/pencils
- ❑ Other information/ handouts
- ❑ Nametags
- ❑ Registration forms

b. Handouts
- ❑ Production
- ❑ Reproduction
- ❑ Packaging
- ❑ Distribution

c. Certificates

d. Invitations

II. Administrative Concerns

(i) Transportation
- ❑ Modes
- ❑ Schedule

(ii) Food
- ❑ Rates / Contract
- ❑ Dietary restrictions
- ❑ Schedule

(iii) Lodging
- ❑ Rates
- ❑ Amenities
- ❑ Accessibility
- ❑ Schedule
- ❑ Contract

(iii) Honorarium/tokens
- ❑ Checklist
- ❑ TOR/Contract

Document Checklist

Title of Course:

Indicative Dates/Venue:

Type of Packaging:

No. of training packs to be prepared:

Participants ____ + Training. Team ____ + File Copy ____ = ____

Document Title	Participants	Facilitator	Comments *e.g. when to be distributed (session/date/time)*

Materials Monitor

Document Title	Materials	Date Required	Comments

Room Arrangements

Activity Title

Date/Time:

Room:

Equipment Requirements:

Set-up:

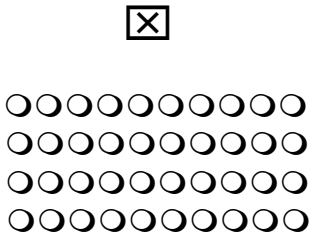
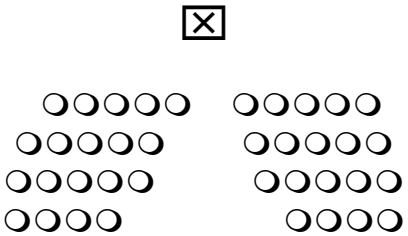
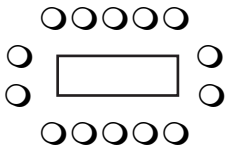
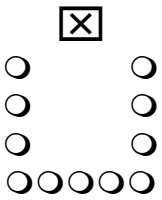
Table

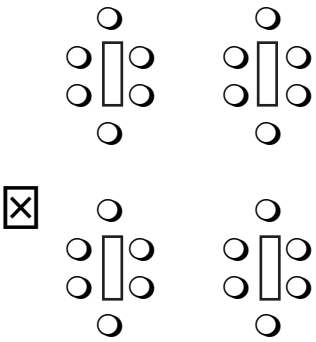
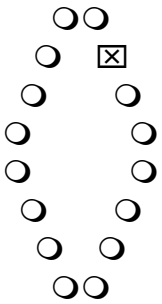
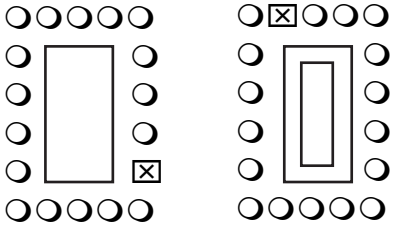
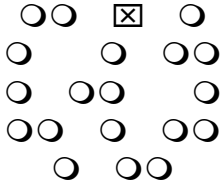
Chair

Board (White/Chalk)

Equipment

Seating Arrangement Tips

Type	Layout	Description
Traditional Seating		• Best used for short lectures to large groups • Communication tends to be one way • Trainer cannot see the learners in the back
Modified Traditional		• There is more participation • Allows the trainer to see all the learners • Reduces space between trainer and learners as trainer can move up aisle • Best used for short lectures to large groups
Rectangle		• The seats at the short dimensions of the table are often seen as leadership positions • If used, the learners should be forced to take distinctly different positions every now and then (i.e. randomly shift the name cards) • Fewer people can communicate face-to-face
Horseshoe		• On-verbally encourages participation by allowing eye contact between the trainer and all the learners • The trainer is able to move closer to each learner • Works well when all learners must be able to see a demonstration • Works good when learners will be involved in large group discussions

Type	Layout	Description
Modular		• Learners can work in small groups on exercises and projects • Communication between trainer and learners is more difficult • Trainer must move between groups during lectures and activities • Good for courses that require a lot of group work
Circle		• Most democratic and unencumbered with no status symbol • With no table each person is "totally revealed" • Subtle nonverbal communications are possible • Good for T-groups and sensitivity training • There will be conversations, shorter inputs, and more members will participate when they sit at a round table rather than at a square table
Square		• More formality than a circle • Nobody can see all the faces of the other participants • Depending where visual aids are placed, one side may become the "head of the table • A solid table normally encourages more conversation • Tables with a hole in the middle tends to make some people less talkative, while encouraging others to speak for longer periods of time
Scatter-Shot		• May appear haphazard but good for experiential training • Permits quick change of learner focus • Produces tremendous investments of learner energy • Works well with multiple role plays • Learners can quickly form into large groups • Bad for note taking

❍ Participants

☒ Trainer

Annex 2
Matrices

Module 5: Step 1—Assess Vulnerability

Matrix 3: Assess current vulnerability

	A	B	C
System of interest	Current climate variability	Current sensitivity to climate variability	Current adaptive capacity
Example:	Example:	Example:	Example:
Coral reef	Sea level temperature increase	• Only 30% of the coral cover is in good condition • Coral is known to be sensitive to temperature increase of 10°C	• Good diversity in coral species in the coral reef • Community established marine protected area

Matrix 4: Assess potential vulnerability

	D	E	F	G
System of interest	Current change signals of concern	Potential biophysical impacts	Potential socioeconomic impacts	Rate the need for action (--, -, 0, +, ++)
Example:	Example:	Example:	Example:	Example:
Coral reef	• ↑ sea surface temperature T > 1°C by 2020 • ↑ rainfall intensity • Storm surge	• ↑ incidence of coral bleaching • Siltation of municipal waters	↓ decreasing quantity of coral reef fishes, affecting income security of fishing households	++

Module 5: Step 2—Identify Adaptation Options

Matrix 5: Identify adaptation options

	H		I	J
	Potential biophysical impacts	Potential socioeconomic impacts		
	Rate need for action			
System of interest	Potential climate change vulnerabilities & Need for action		Adaptation options	Relevant actors & stakeholders

Matrix 4: Assess potential vulnerability

	D	E	F	G
System of interest	Current change signals of concern	Potential bio-physical impacts	Potential socioeconomic impacts	Rate the need for action (--, -, 0, +, ++)

Matrix 5: Identify adaptation options

	H	I	J
System of interest	Potential climate change vulnerabilities & Need for action	Adaptation options	Relevant actors & stakeholders

Module 7: Step 3—Select Adaptation Measures

Matrix 7: Select adaptation options

K	L	M	N	O	P
Adaptation options	Effectiveness	Cost	Feasibility	Criterion 4	Overall evaluation

Matrix 8: M&E framework

Potential climate change vulnerabilities and need for action			Achievement of intended results Extent of the intended change (quality, quantity, time, geographic coverage)	
No adaptation scenario Baseline	Adaptation measures selected	Link with the overall plan	Possible indicators	Sources of data, means and schedule for collection

Module 8: Step 4—M&E Framework

Module 9
NATIONAL ADAPTIVE CAPACITY (NAC) FRAMEWORK

This Answer Sheet is intended for capturing answers to the questions in the National Adaptive Capacity (NAC) Framework. NAC is used to assess a country's performance of five sets of adaptation functions, in order to identify opportunities and priorities for building adaptive capacity and implementing key activities. If you have not yet read the NAC Framework introductory document, you should do so before beginning this answer sheet. The document is available at http://www.wri.org/project/vulnerability-and-adaptation/nac-framework.

The NAC framework is divided into three broad categories of Planning, Alignment, and Risk Management. Each of these three categories include several functions. These functions each have several capacity questions associated with them. You may need to create more Risk Management tabs if there are multiple priority areas. You will answer the capacity questions by assessing whether or not several "Elements to Look For" are present for each. Figure 1 illustrates the NAC framework structure, using the Planning functions as an example.

Module 9
Figure 1:

Main categories	Functions	Capacity questions	Elements to look for
Planning	Assessment	A	1
			2
			3
		B	1
			2
	Prioritization	A	1
			2
		B	1
			2

Module 9
Planning Functions

Function category	Capacity questions	Elements to look for	Adequate/ Inadequate	Responsible Agency/ Office
Assessment	To what extent has a national vulnerability and impacts assessment been conducted?	Assessment includes exposure to climate impacts.		
		Assessment includes socioeconomic drivers of vulnerability.		
		Assessment takes into account community-level assessments.		
		Assessment methodology is made transparent.		
		Assessment(s) cover(s) all sectors and regions.		
		Broad set of stakeholders were engaged in assessment development.		
	To what extent have existing adaptation efforts been systematically inventoried?	Community-based activities have been inventoried.		
		Academic studies have been reviewed.		
		Activities in a large number of sectors have been reviewed.		
	Is there an assessment of climate risks to priorities in major existing national planning documents?	Key documents explicitly address climate change.		
		Key documents have been reviewed for climate sensitivity and resilience.		
		Assessments are available freely in the public domain.		
	Is there a system in place for regularly updating the above assessments in the future?	An institution (or institutions) has (or institutions have) a mandate to produce A, B, and C iteratively over time.		
		Sufficient budget is provided for ongoing assessment(s).		
		The mandated institution coordinates appropriately with other institutions.		

Prioritization	Has an institution identified where, how, and to whom adaptation is a priority nationally?	National adaptation priorities are clearly articulated in a public document.		
		Prioritization processes take into account vulnerability and impact assessment information (See Assessment Function 1A above).		
		Prioritization processes take into account key documents (e.g., 5-year plans, PRSPs, key sector policies, etc.) that reflect existing national development priorities.		
		Prioritization processes take into account input from local-level institutions.		
		Prioritization processes are transparent and publicly documented.		
		Prioritization involves a range of stakeholders – including vulnerable and marginalized groups – in order to assure that priorities are informed by a broad range of perspectives.		
	Is there a system in place for reviewing and adjusting priorities over time?	A time period and process have been set for revisiting priorities.		
		The institution that leads prioritization reports to an appropriate authority.		
		Prioritization decisions can be enforced by officials and members of the public.		
		Resources have been allocated to support convening and other prioritization costs.		

Module 9

Alignment Functions

Function category	Capacity questions	Elements to look for	Adequate/ Inadequate	Responsible Agency/ Office
Coordination	Have key services, sectors or activities been identified where coordination may be needed for successful adaptation?	Vertical coordination needs have been considered.		
		Needs for coordination across sectors and ministries have been considered.		
		Coordination needs are clearly articulated in a public document.		
	Has an authoritative body been tasked with adaptation coordination among relevant bodies?	A coordination body has been established.		
		The coordination body has a clear mandate.		
		The coordination body has appropriate membership.		
		Staff serving the coordination body have appropriate skills and knowledge.		
		The coordination body regularly reports to an appropriate authority.		
		Sufficient resources have been provided for coordination activities.		
	To what extent have clear coordination processes been established?	A description of the coordination process is available in a public document.		
		There is a system for monitoring and review of the coordination mechanism.		
		There is a process for managing conflicts that may arise during coordination.		
		Participants in coordination have sufficient flexibility to participate constructively.		
	To what extent do conditions allow coordination to improve over time?	A process and time period have been set for reviewing coordination activities.		
		A process and time period have been set for revisiting coordination needs and priorities.		
		Resources have been provided for the review of coordination activities.		

Coordination	To what extent is the coordination mechanism functioning effectively?	The coordinating body meets regularly.		
		Participants in coordination report regularly to the organizations they represent.		
		Coordination participants and their stakeholders report positively on the body's activities.		
		Findings from coordination reviews are taken on board.		
Information	To what extent are there appropriate systems for data gathering?	The country has climate observation/monitoring systems that are regularly maintained and updated.		
		The country has demographic information systems that are regularly maintained and updated.		
		Environmental monitoring/observation systems are regularly maintained and updated.		
		Methods for data gathering are transparent and publicly available.		
		Raw data is readily available publicly and undergoes regular review.		
		Sufficient budget is provided for ongoing data gathering.		
	To what extent are there appropriate systems for information analysis?	There is a process for updating key climate-related definitions, such as (but not limited to) 'normal precipitation levels', 'drought', and important system 'thresholds'.		
		Consolidation and analysis of historical climate information occurs.		
		The status of vulnerable ecosystems is periodically analyzed.		
		The status of vulnerable human systems is periodically analyzed.		
		Climate scenarios are developed using all available projections and their uncertainty estimates.		
		Analysis is made publicly available and undergoes regular review.		
		Sufficient budget is provided for ongoing information analysis and for improving skills and knowledge.		
		The analysis produced is easily available to the public.		

Information	Has an appropriate national platform (or network) for public information sharing on adaptation been identified (or created)?	An institution(s) has a mandate to disseminate information broadly.		
		The mandated institution(s) coordinate(s) appropriately with other institutions.		
		A diversity of information users have access to the platform.		
		There is a system for monitoring and evaluation of information dissemination.		
		Monitoring and evaluation findings are taken on board.		
		Sufficient budget is provided for ongoing information dissemination.		
	To what extent is relevant information reaching key stakeholders who need it?	Representatives of key government agencies say they have the information they need.		
		Representatives of lower levels of government say they have the information they need.		
		Representatives of the public (including vulnerable populations) report that they have access to this information.		
		Key stakeholders are using information in decision-making and project implementation.		
		Key information is publicly available via a variety of channels.		

Module 9
Climate Risk Reduction Functions

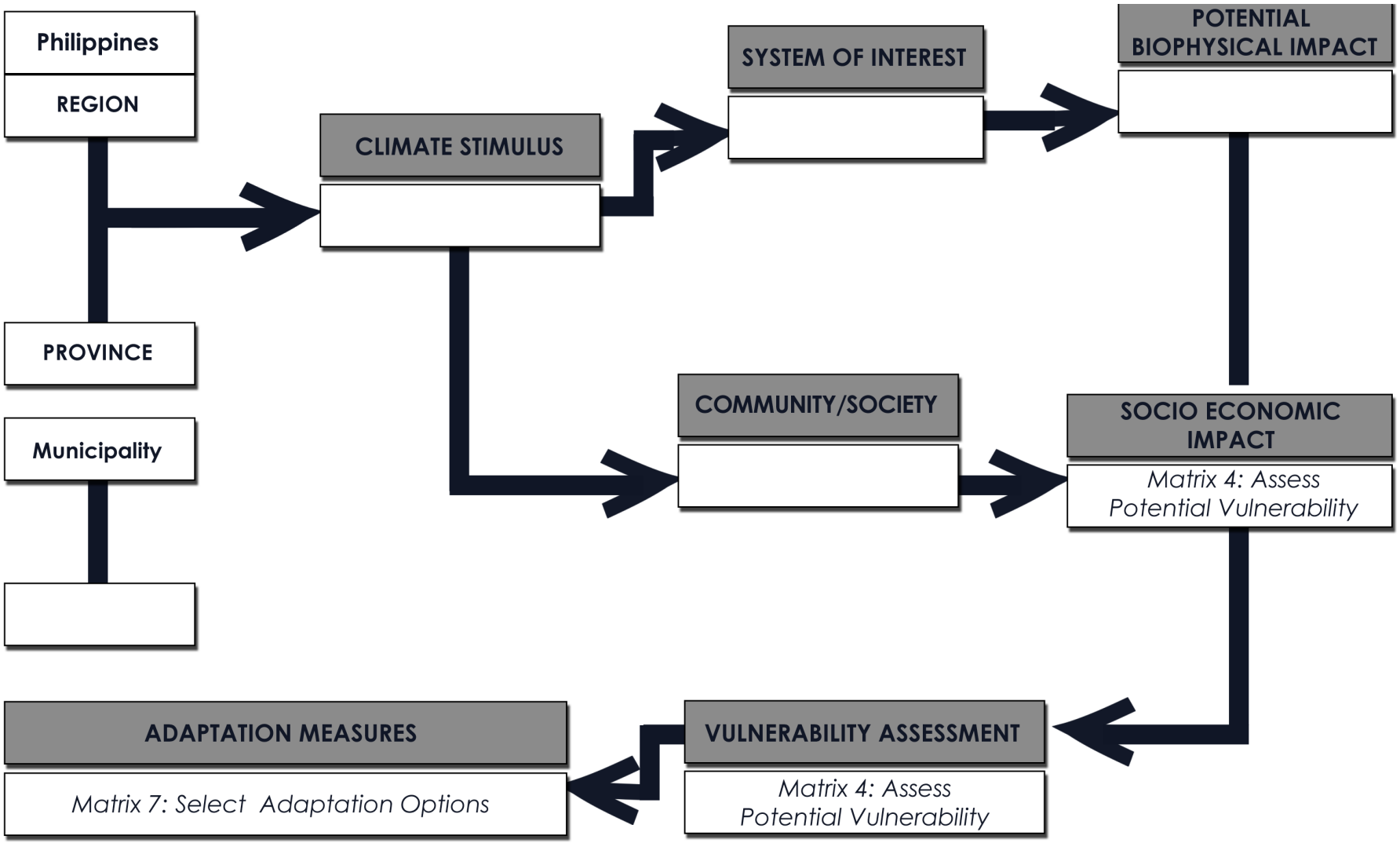
Function category	Capacity questions	Elements to look for	Adequate/ Inadequate	Responsible Agency/ Office
Risk Reduction	To what extent has climate risk been assessed for the priority area?	A systematic risk assessment has been conducted.		
		Risk assessment takes into account bio-physical, socio-economic, and policy factors.		
		Risk assessment considers infrastructure, natural resources management, and social protection programs, as appropriate.		
		Assessment methodology is made transparent and readily available to public and other agencies.		
		An institution has a mandate to conduct risk assessment iteratively over time.		
	Have adaptation options for the given priority area been thoroughly considered?	Consideration of options included an appropriate breadth of possible solutions: • "Soft" and "hard" options. • Infrastructure-based, ecologically-based, and social protection-based options. • Existing adaptation and/or risk reduction projects were reviewed for appropriate replicable options.		
		Cost analysis, including total costs and cost effectiveness, was conducted.		
		Environmental implications of options were considered.		
		Social implications of options were considered, including implications for women and marginalized groups.		
		Options were evaluated for their short-, medium-, and long-term efficacy.		
		A broad set of stakeholders were engaged in consideration and selection of options.		
		Processes exist for reviewing options selected based on new risk assessments over time.		
		Authorities make publicly available a process description and justification of options selection.		

Risk Reduction	To what extent are selected adaptation options implemented on the ground?	Projects/programs/policies are developed to implement selection option(s), as appropriate.		
		Appropriate authority is tasked with implementation.		
		Sufficient budget is provided in support of implementation.		
		A system exists for reviewing effectiveness of implementation.		
		Projects/programs/policies are achieving stated objectives and timelines.		
		Mechanisms exist for adjusting non-performing projects/programs/policies.		
		Mechanisms exist for integrating new risk assessment information into projects/programs/policies over time.		

Module 10
Action plan template guide

Matrix 5:dentify Adaptation Options	Matrix 8: M&E Framework			Matrix 6: Select Adaptation Options
Potential Climate Change vulnerabilities and need for Action	Adaptation Measures selected			Relevant Actors and Stakeholders
Vulnerabilities to Climate Change	Adaptation Measure/s	Next Steps	Timeline	Who Has the Capacity to Take Action?

Module 10
Impact Chain



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Vella, J. (1995), *Twelve (12) Principles for Effective Adult Learning.* Training Through Dialogue

PHOTOS

Alvarez, Victor Ace B. (Photographer). (2008) *Venice of the Philippines.* On M8: p.4

Kintanar, Victor D. (Photographer). (2008) *Fresh Water by the Sea.* On M2: p.8

Razon, Rosemarie B. (Photographer). (2008) *Water for Agriculture.* On M3: p.2

Rivera, Noel T. (Photographer). (2008) *The Breath at Dawn.* On M2: p.10

Rivera, Noel T. (Photographer). (2008) *Ripples to Wave.* On M6: p2

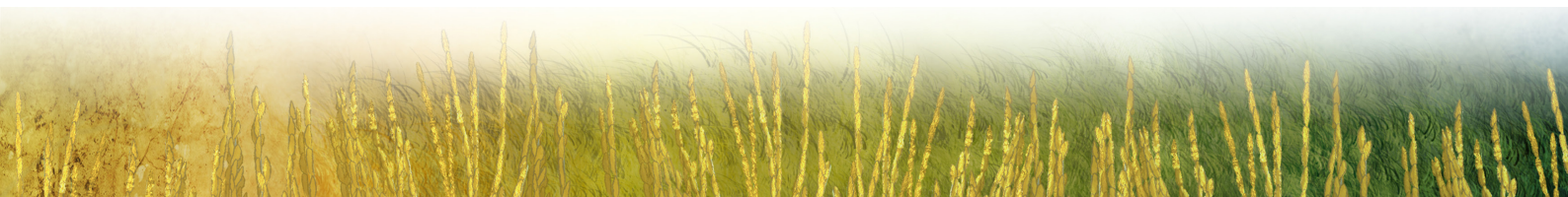
Tingle, Roger A. (Photographer). (2009) *Our Environment.* On M3: p.3

Vicente, Rodolfo L. (Photographer). (2009) *Ice Cream Vendor.* On M2: p.7

Victoriano, Danilo O. (Photographer). (2008) *Butil at Tubig.* On M9: p.3

Victoriano, Karlo Emmanuel M. (Photographer). (2008) *Saganang Tubig.* On M2: p.10

Villanueva, Mary Christine P. (Photographer). (2008) *Katuwang sa Pananim.* On M2: p.7



About the Cover

The cover depicts the reality of climate change as ordinary people see it—on the first panel, inundated plains at the foot of a denuded mountain and on the next, a valley beset by drought. These characterize fears, questions about the alarming shift in weather conditions.

The succeeding panels, meanwhile, portray an almost-perfect setting, where the dry season is warm but not scorching and the wet season with just enough rain. These illustrate a hope of keeping things from getting any worse; of preventing total devastation.

The overall picture idealizes the concept of nature coexisting with industry: communities enjoy the benefits of urbanization without harming the environment. In this ideal, people go about their daily lives, like birds keeping true to their migratory nature, all the while adjusting, adapting.

On the foreground is the palay plant persisting, overcoming adversity to ripen and become rice, finally. The palay is a fitting focal point of the artwork because it embodies sustenance for Filipinos, for which the CP4D Training Toolkit was tailor-fit.

The growth of the palay from a short and unripe shoot to a tall and golden stalk denotes a progression. It represents the strengthening of the trainer's competency in imparting knowledge on climate proofing for development and, subsequently, the adult learners' deepening understanding of the subject.