



WS Nepal: CEDRIG Training Course – January 19 to 23, 2014

# CEDRIG

## Climate, Environment and Disaster Risk Reduction Integration Guidance

### Handbook

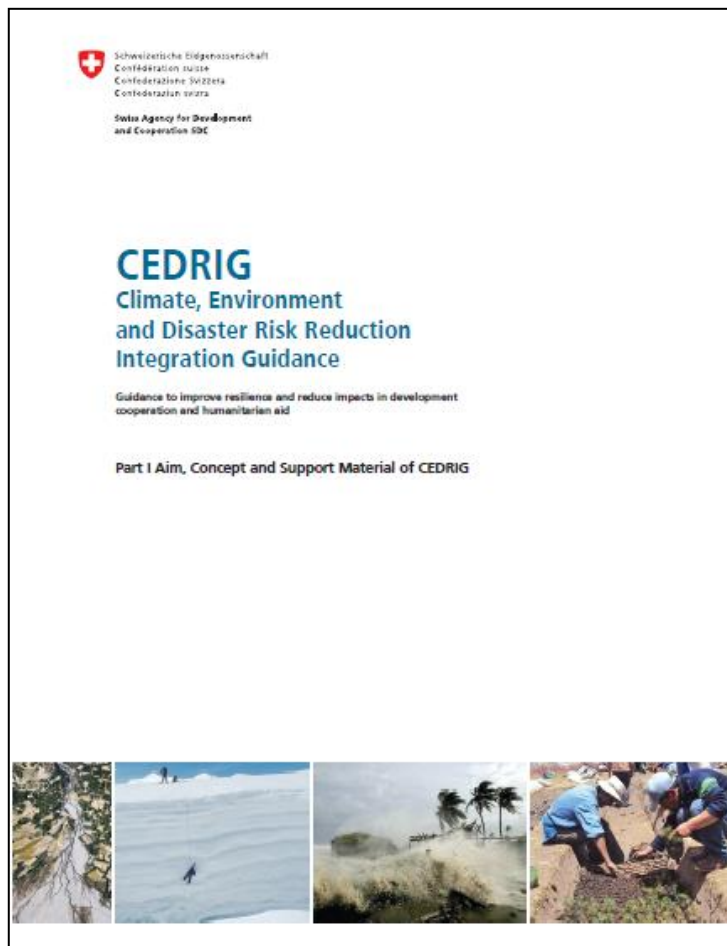


# Outlook

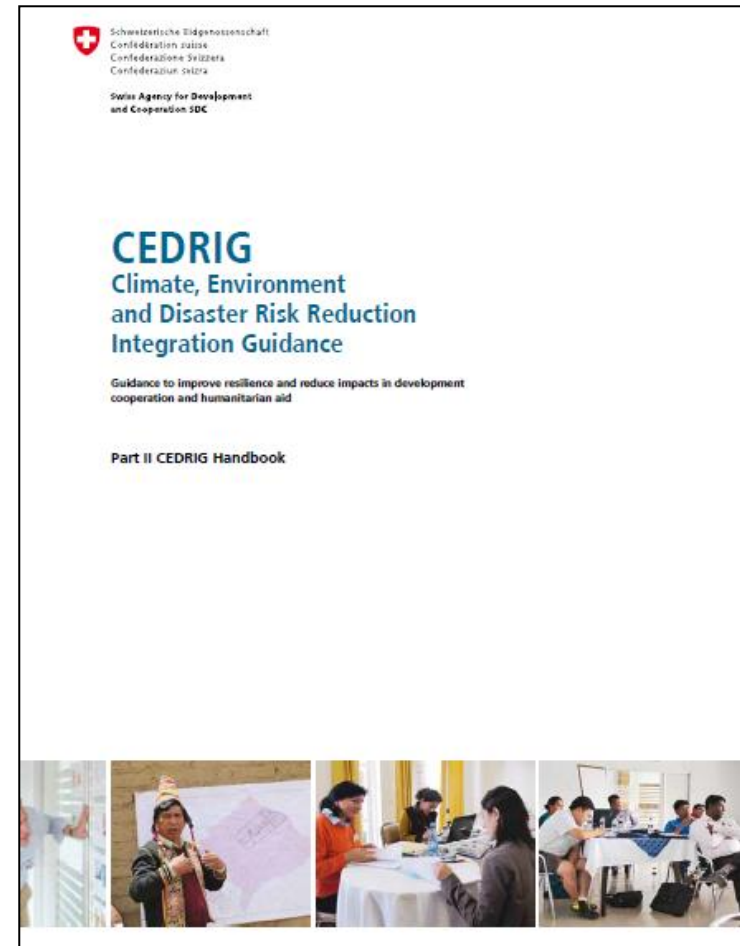
1. Structure
2. Perspectives
3. Module 1: Risk and impact screening
4. Module 2: Detailed evaluation of the strategic level
5. Module 3. Detailed Evaluation of the project level
6. Potentials and challenges

# Structure – Parts of CEDRIG

## **Part I: Aim, Concept and Support Material of CEDRIG**



## **Part II: CEDRIG Handbook**



# Two perspectives: Risks and Impacts

## **Risk perspective**

### **(risk for the activity)**

Advise to manage the potential risks of disasters

## **Impact perspective**

### **(Impact of the activity)**

Advise to reduce potential impacts (on GHG and on the environment)

#### **Risk Perspective**

Adaptation to Climate Change

Adaptation to degraded Environments

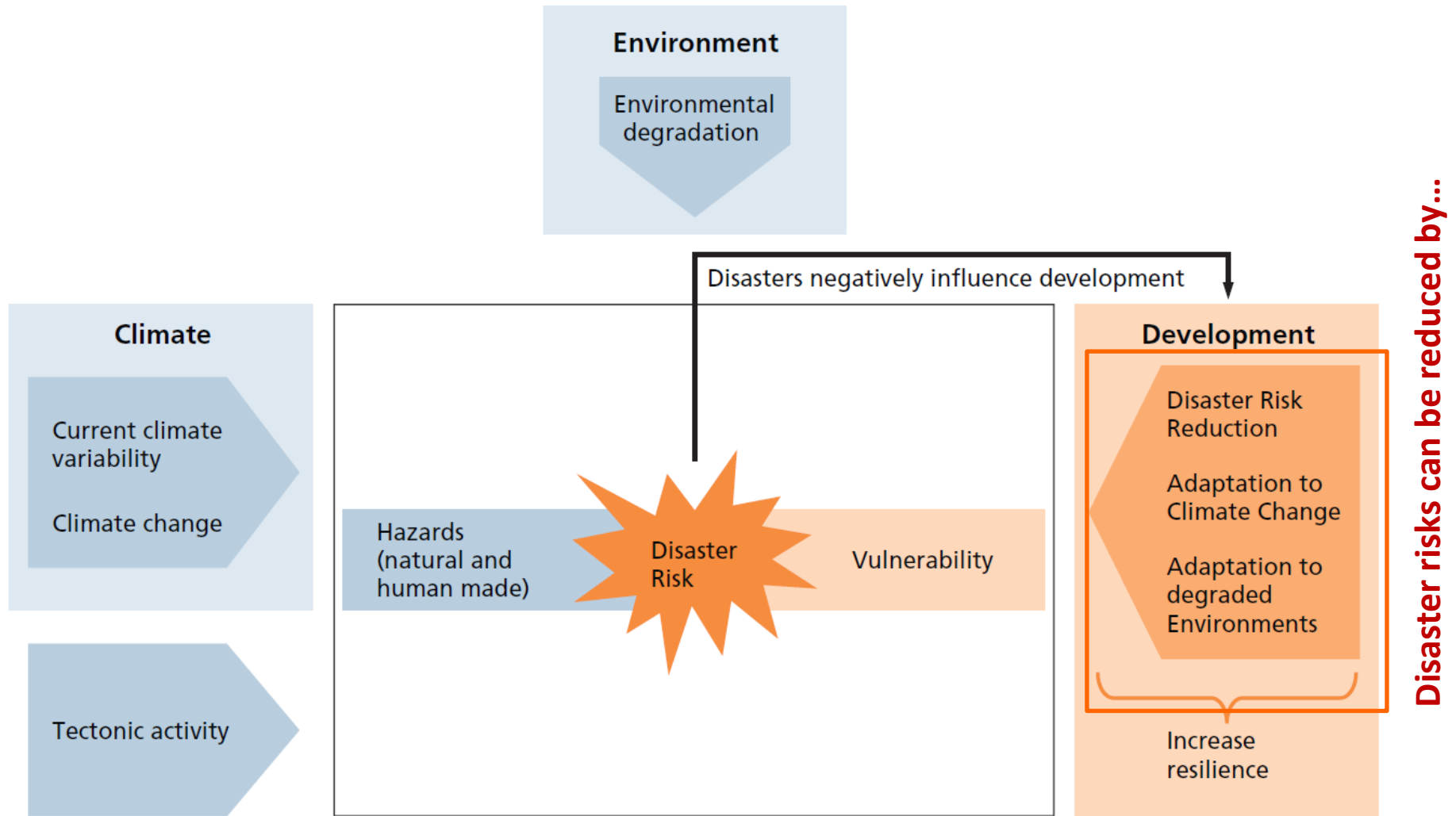
Disaster Risk Reduction

#### **Impact Perspective**

Climate Change Mitigation

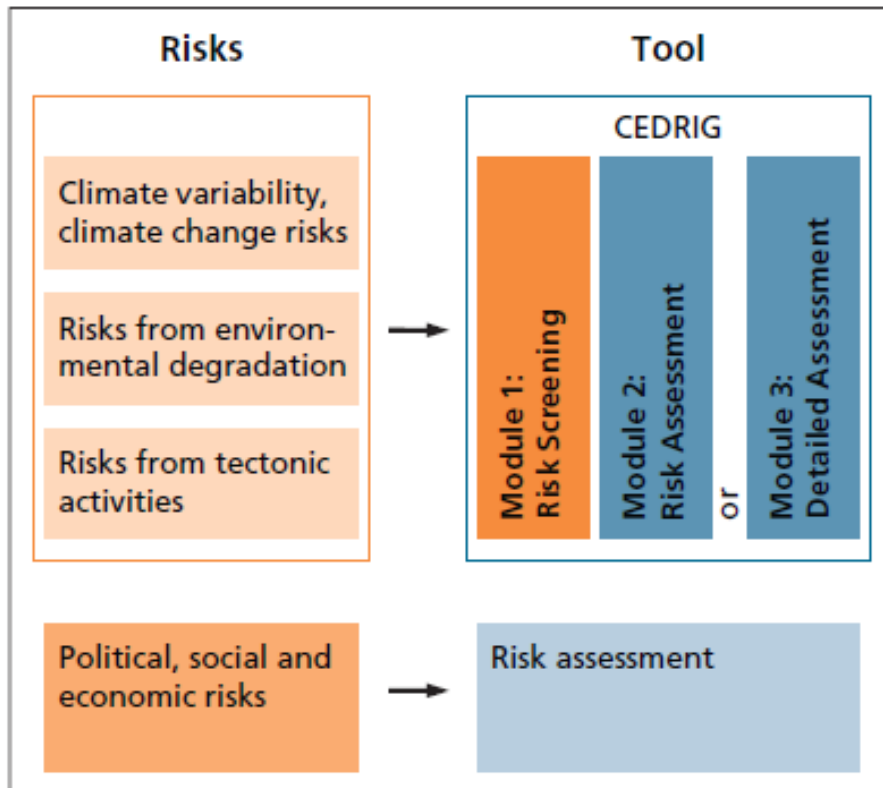
Environmental Impact Mitigation

# Risk perspective

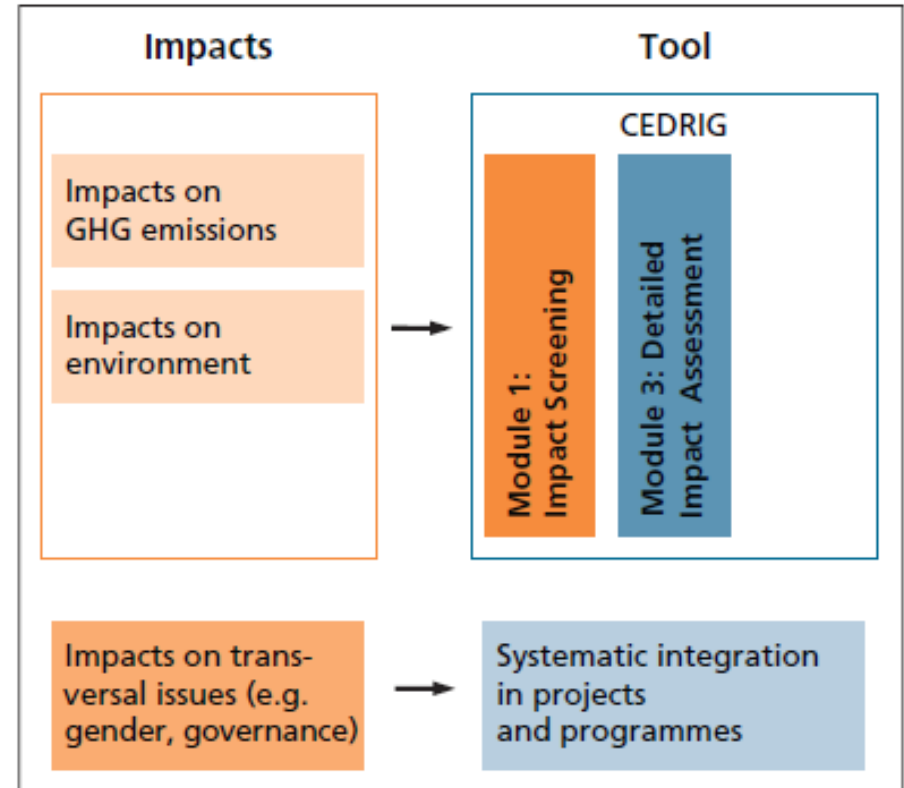


# CEDRIG and other tools

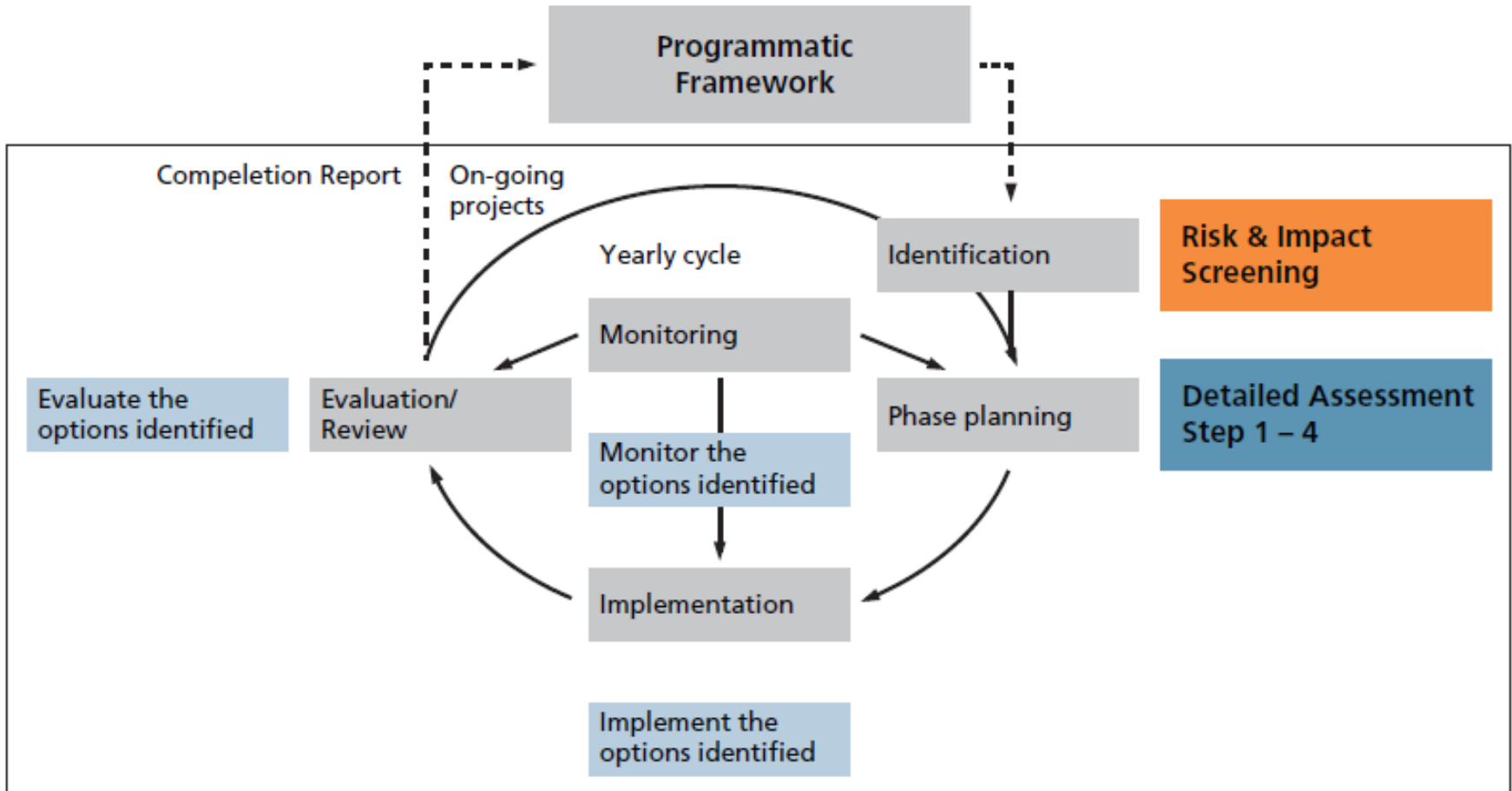
## Risk perspective



## Impact perspective

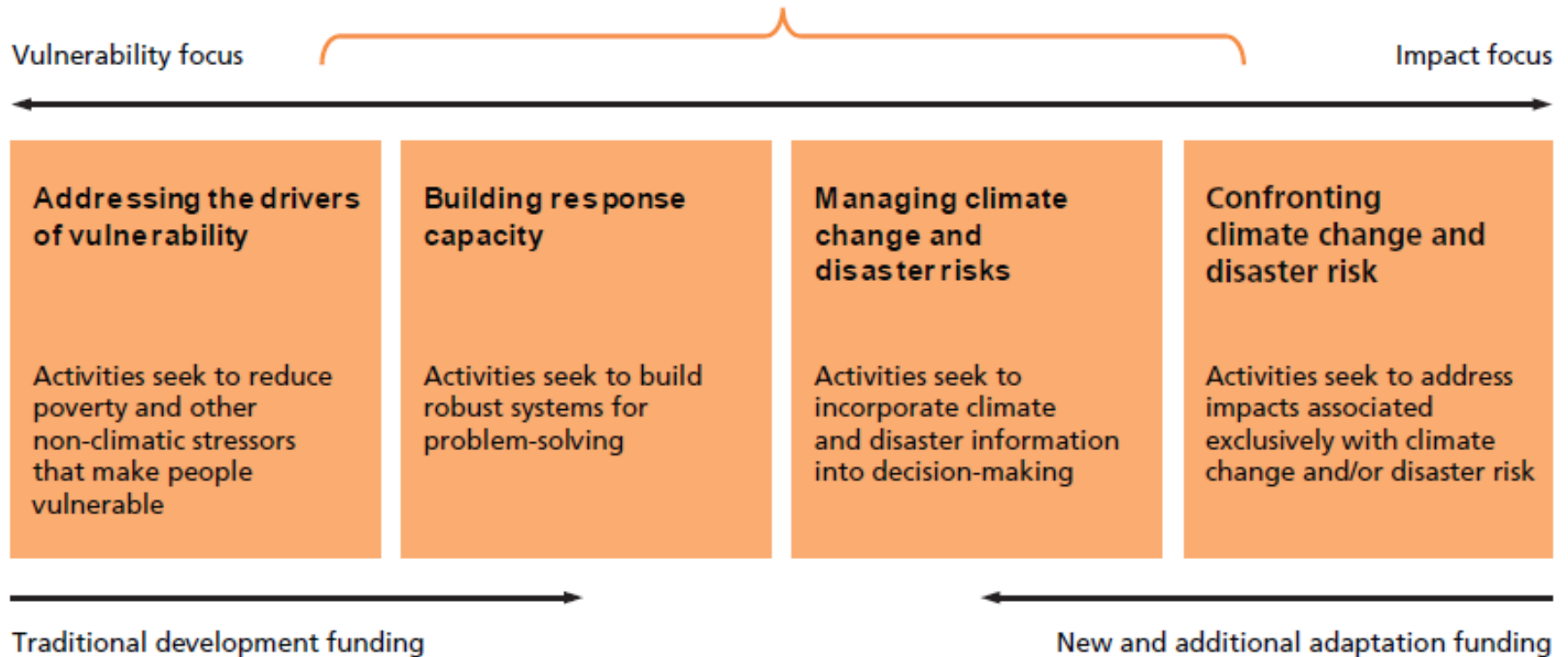


# Integration in the PCM



# Adaptation – development context

## Integrating Adaptation to Climate Change and DRR into development cooperation



Source: adaptation from McGray



# CEDRIG modules

## **Module 1: Risk and impact screening**

Filter to assess whether activities are at significant risk and need a detail assessment

## **Module 2: Detailed Assessment at Strategic and Programmatic Level**

Only risk perspective

Risk assessment Lens

## **Module 3: Detailed Assessment at Project Level**

Risk and Impact perspective

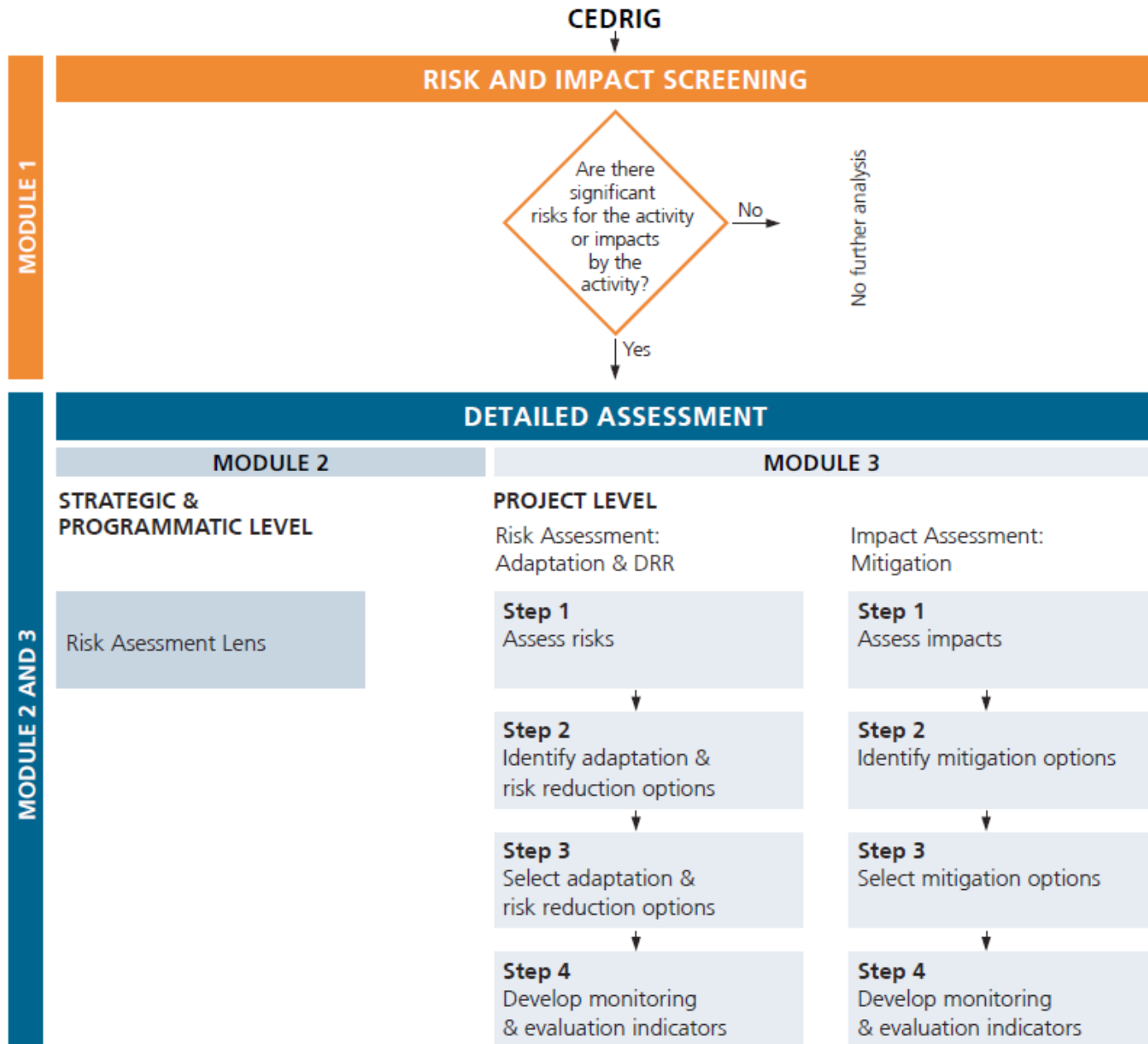
Detail evaluation of risks and impacts



# Characteristics of the modules

	<b>MODULE 1</b> Risk and Impact Screening	<b>MODULE 2</b> Detailed Assessment at Strategic & Programmatic Level  Risk Assessment Lens	<b>MODULE 3</b> Detailed Assessment at Project Level  Detailed Risk & Impact Assessment
<b>What for</b>	First screening	In depth assessment at strategic level	In depth assessment at project level
<b>What</b>	<ul style="list-style-type: none"> <li>› Disaster risks from climate variability, climate change, environmental degradation and/or tectonic activities</li> <li>› Impacts on GHG emissions and/or the environment</li> </ul>	<ul style="list-style-type: none"> <li>› Disaster risks from climate variability, climate change, environmental degradation and/or tectonic activities</li> <li>› Four step approach (steps A to D)</li> </ul>	<ul style="list-style-type: none"> <li>› Disaster risks from climate variability, climate change, environmental degradation and/or tectonic activities</li> <li>› Impacts on GHG emissions and/or the environment</li> <li>› Four step approach (steps 1 to 4)</li> </ul>
<b>How</b>	Proposed to conduct individually or participatory with involved project partners	Proposed to conduct in form of a workshop with project partners (assign at least three persons for preparation and planning of the workshop, moderation, preparation of thematic inputs)	Proposed to conduct in form of a workshop with project partners (assign at least three persons for preparation and planning of the workshop, moderation, preparation of thematic inputs)
<b>Length</b>	Max. 1-2 hours	Team process: 1.5 to 2 days  Plus variable time for preparation	Team process: 2 to 3 days  Plus variable time for preparation
<b>When</b>	Beginning of the planning process or new phase	As early as possible when strategy or programme planned	Elaboration of project document and credit proposal (as early as possible)
<b>Who</b>	NPO & country desk	SDC strategy team, ev. with selected partners	SDC programme officer and project team (including implementing partner)
<b>Integration</b>	Conclusions into entry proposal or in TOR for review, input in risk assessment	In the strategy or programme (Results framework)	In the planning document = PRODOC, Logframe and Credit Proposal (incl. its respective risk assessment part)

# Application process



# Supporting material

## (I) Background material and policy frameworks:

**HFA 2005:** Hyogo Framework for Action 2005-2015 (outlining the international commitments and framework with regard to DRR): <http://www.unisdr.org/2005/wcdri/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>.

## (II) Handbooks, manuals and tools:

**A. Olhoff and C. Schaer 2010:** A Stocktaking Report on screening tools developed by UNDP (providing an overview of different tools and guidances available in order to mainstream adaptation into development cooperation).

## (III) Knowledge platforms:

The Adaptation Learning Mechanism (**ALM**) (<http://www.adaptationlearning.net/>) is an interactive knowledge sharing platform implemented by the UNDP in collaboration with the World Bank, UNEP, UNFCCC

## (IV) Data tools:

**Adaptation Atlas** (<http://adaptationatlas.org/index.cfm>) provides useful country specific mapping facilities.

## Literature

**Birkmann, J. et al. 2009:** Addressing the Challenge: Recommendations and Quality Criteria for Linking Disaster Risk Reduction and Adaptation to Climate Change. In: Birkmann, Joern, Tetzlaff, Gerd, Zentel, Karl-Otto (eds.) DKKV Publication Series 38, Bonn.

## Impacts on GHG emissions and the environment - guidance manuals:

**EuropeAid** Sector scripts ([http://www.environment-integration.eu/component/option.com\\_docman/task.cat\\_view/gid.109/Itemid.278/lang.en/](http://www.environment-integration.eu/component/option.com_docman/task.cat_view/gid.109/Itemid.278/lang.en/)) provide a good overview.

## Calculating GHG emissions:

**The following link provides a guideline how to calculate GHG emissions in energy related projects:**

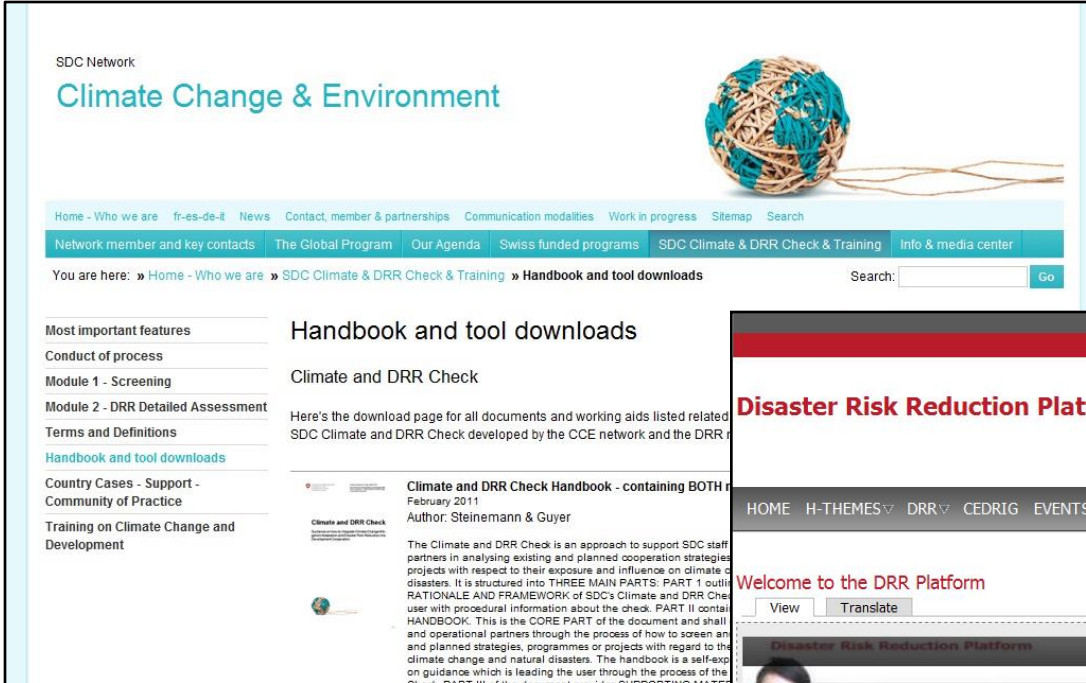
The **GIZ 2011a** (<http://www2.gtz.de/dokumente/bib-2011/giz2011-0445de-klimawirkungen.pdf>) provides a sourcebook containing a long list of sources regarding calculating GHG emissions.

## Defining indicators:

You may find some ideas with regard to different kind of environmental, climate and other issues related indicators in the **World Bank indicator database** (<http://data.worldbank.org/indicator/all>).

# Links and help - SDC

www.sdc-climateandenvironment.net



SDC Network  
**Climate Change & Environment**

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Network member and key contacts The Global Program Our Agenda Swiss funded programs SDC Climate & DRR Check & Training Info & media center

You are here: » Home - Who we are » SDC Climate & DRR Check & Training » Handbook and tool downloads Search:  Go

**Handbook and tool downloads**

Climate and DRR Check

Here's the download page for all documents and working aids listed related to SDC Climate and DRR Check developed by the CCE network and the DRR network.

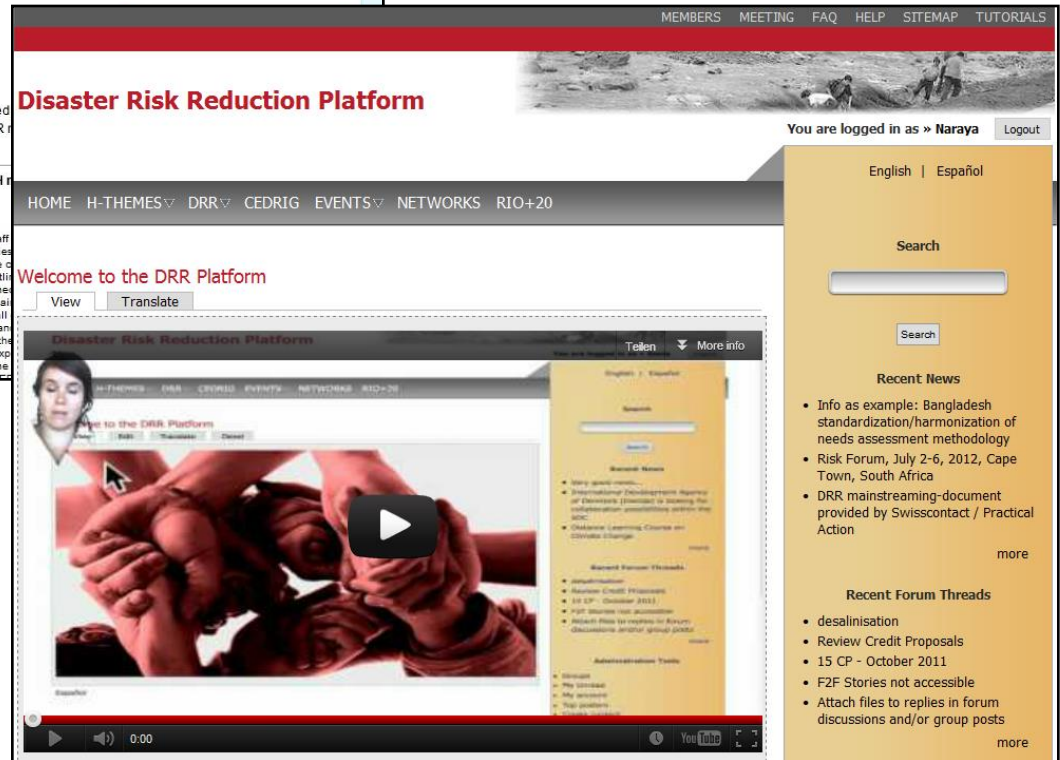
**Climate and DRR Check Handbook - containing BOTH PART I and PART II**  
February 2011  
Author: Steinemann & Guyer

The Climate and DRR Check is an approach to support SDC staff partners in analysing existing and planned cooperation strategies projects with respect to their exposure and influence on climate change and natural disasters. It is structured into THREE MAIN PARTS: PART I outlines the RATIONALE AND FRAMEWORK of SDC's Climate and DRR Check. PART II contains procedural information about the check. PART III contains the CORE PART of the HANDBOOK. This is the CORE PART of the document and shall be used by operational partners through the process of how to screen and plan strategies, programmes or projects with regard to the climate change and natural disasters. The handbook is a self-explanatory guidance which is leading the user through the process of the check. PART III of the handbook contains the CLIPCOACH, a self-explanatory guidance which is leading the user through the process of the check.

**Most important features**

- Conduct of process
- Module 1 - Screening
- Module 2 - DRR Detailed Assessment
- Terms and Definitions
- Handbook and tool downloads
- Country Cases - Support - Community of Practice
- Training on Climate Change and Development

www.sdc-drr.net



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- Risk Forum, July 2-6, 2012, Cape Town, South Africa
- DRR mainstreaming-document provided by Swisscontact / Practical Action

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- International Development Strategy of Switzerland (2014-2017) - a new vision for cooperation activities across the world
- Disaster Learning Course on Climate Change

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- 15 CP - October 2011
- F2F Stories not accessible
- Attach files to replies in forum discussions and/or group posts

Administrative Tools

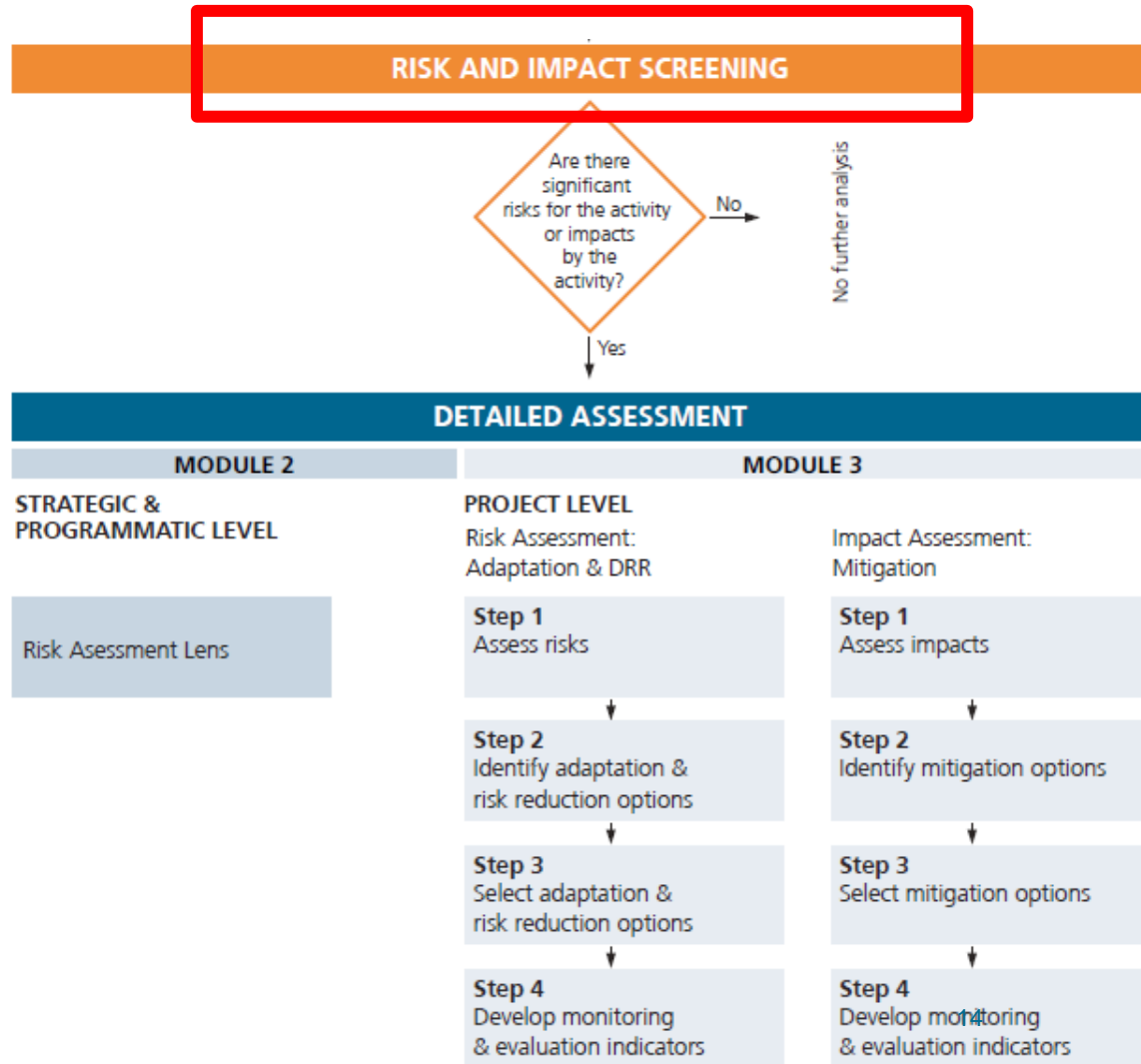
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# CEDRIG

## Module 1: Risk and impact screening



# Module 1 : Risk and impact screening



## Aim

- identifying whether an “activity” is **potentially at risk** from disasters emanating from climate change, environmental degradation and/or natural hazards
  - May have an **impact** on GHG emissions and/or the environment
- 
- To conduct a **rapid and basic assessment** of risks and impacts and make the decision whether to proceed with a Detailed Assessment (Module 2 or 3) or not
  - Applied at a very **early stage** of the planning phase
  - Can be conducted with only **minimal knowledge** of climate change, environmental degradation and natural hazards and without access to detailed climate data

# Module 1 : Risk and impact screening



## What to do

- **Beginning** of the planning or revision process
- **Strategic or operational** level
- A) **Risk** screening, B) **Impact** screening
- **Global assessment of risks and impacts**, take into account hazards, exposure, impacts, vulnerabilities and capacities

## Key questions:

- Are there any **significant disaster risks for the activity** caused by climate change, environmental degradation and/or tectonic activities, taking into account the vulnerability of the community or systems?
- Are there any **significant impacts on GHG emissions and/or the environment by the activity**, taking into account the capacities of the community or systems?



# Module 1 : Risk and impact screening



## Results

- **Rough estimation** of risks and impacts
- **Decision** whether to make or not a detailed assessment

## Instructions

- ✓ Risk screening, page 8
- ✓ Impact screening, page 11
- ✓ Tables in the DRR web page

RISK SCREENING				
Questions	Yes	Not sure <sup>1</sup>	No	Explanation <sup>2</sup>
<b>1. Exposure and hazards</b>				
1.1. Does the activity take place in at least one of the following areas or sectors?				
1.3 Are the objectives of the activity affected by one of the following hazards?				
1.4 Do the hazards above significantly endanger the achievement of the objectives of the activity?				The activity is significantly endangered if it is located in a sector and in a geographical area exposed to hazards. To answer the question, an overall evaluation of questions 1.1–1.3 is needed: .....
<b>2. Impacts and Vulnerability</b>				
2.1 If the activity is exposed to hazards mentioned above, which impacts do you expect?				
2.2 Are there particularly vulnerable groups potentially affected by the impacts (e.g. women, children)?				If yes, please specify which groups are affected: .....
2.3 Which of the following factors reduce their vulnerability? Which of the following factors increase their vulnerability?				
2.4 Do you estimate that communities and systems involved in the activity are potentially vulnerable to the impacts under 2.1?				Make an overall evaluation of 2.1. to 2.3: .....
<b>3. Overall estimation of the risk for the activity</b>				
3.1 Based on the evaluation 1.4 and 2.4, do you estimate that there are significant risks for the activity and that a Detailed Assessment should be carried out?	Yes	No		In general, it is recommended to do a Detailed Assessment if the activity is significantly endangered by impacts and the vulnerability is high. <sup>5</sup>
3.2 If a Detailed Assessment shall be carried out, go to Part II, Module 2 (for strategic and programmatic level) or Module 3 (for project level) part A.				

Table 1 Risk Screening.

# Module 1 : Risk and impact screening



## Results

- **Rough estimation** of risks and impacts
- **Decision** whether to make or not a detailed assessment

IMPACT SCREENING				
Questions	Yes	Not sure <sup>6</sup>	No	Explanation <sup>7</sup>
<b>1. Exposure and impacts</b>				
1.1. Does the activity take place in at least one of the following areas or sectors?				
1.2 Is there a risk that the activity produces the following negative impacts on GHG emissions and/or the environment?				
1.3 Is there a significant risk that substantial negative impacts are caused by the activity?				To answer the question, make an overall evaluation of 1.1 and 1.2: .....
<b>2. Capacities</b>				
2.1 Which of the following factors increase or reduce the capacity of people to reduce the impact of the activity?				
2.2 Do you estimate that women and men involved in the activity have the capacities to manage the risks of negative impacts identified in 1.3?				Make an overall evaluation of 2.1 taking into account 1.3: .....
<b>3. Overall estimation of the impact of the activity</b>				
3.1 Based on the evaluation 1.3 and 2.2 do you estimate that there are significant impacts by the activity and that a Detailed Assessment should be carried out?	Yes	No		In general, it is recommended to do a Detailed Assessment when assessed impacts are high and capacities of women and men to reduce those impacts low. <sup>10</sup>
3.2 If a Detailed Assessment should be carried out, go to Part II, Module 3 (for project level) part B.				

Table 2 Impact Screening.

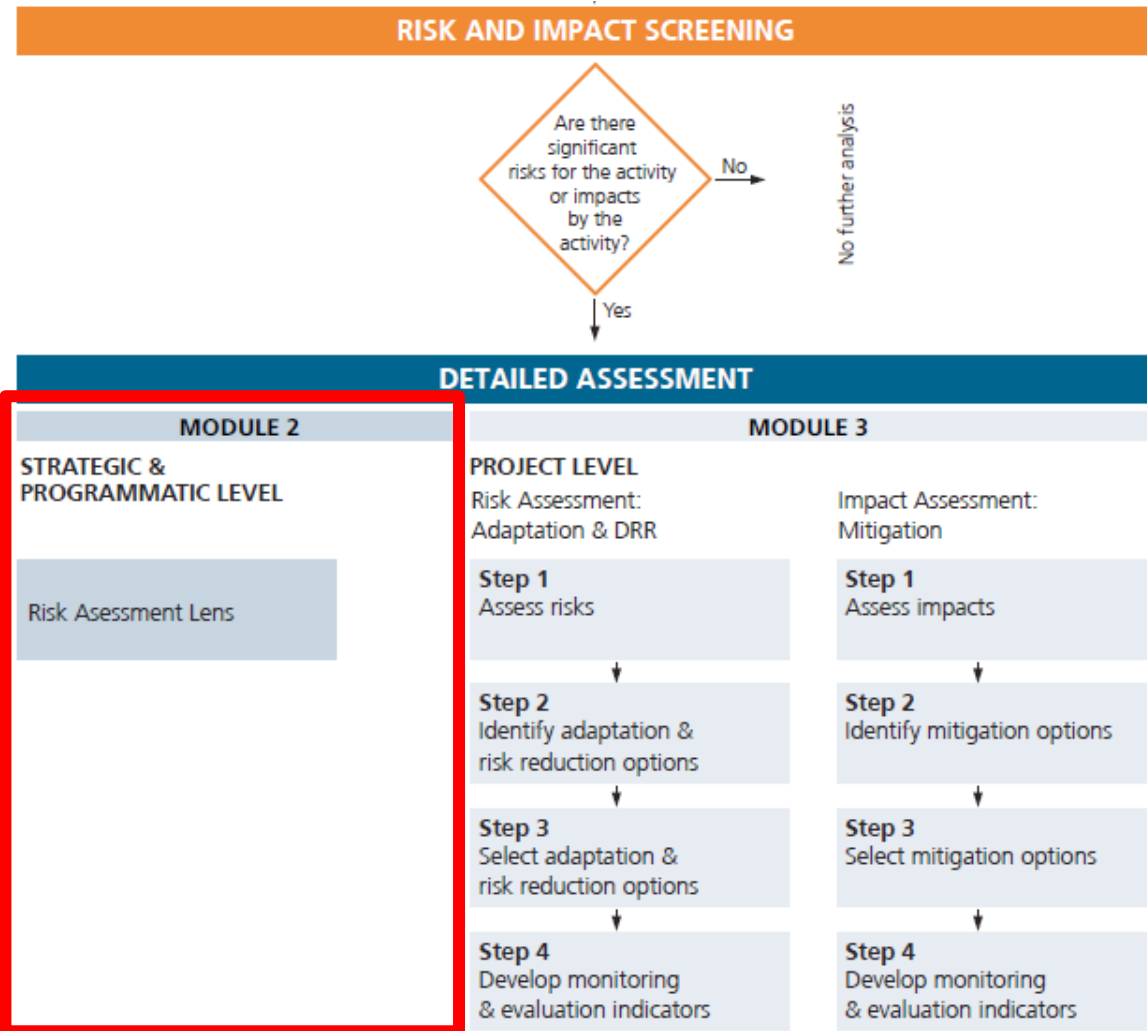
## Instructions

- ✓ Risk screening, page 8
- ✓ Impact screening, page 11
- ✓ Tables in the DRR web page



# CEDRIG

## Module 2: Detailed evaluation Strategic and programmatic level



## Module 2 : Detail assessment, strategic and programmatic level



### Aim

- The **Risk Assessment Lens** focuses on the assessment of disaster risks emanating from climate variability, climate change, environmental degradation and/or tectonic activities
- Appraise whether the **strategic goals, objectives or priorities** are at **risk from disasters** and conceive a strategy which is more effective at reaching its objectives
- Applied as **early as possible** in the planning of a new strategy or program or a new phase of an existing strategy and program
- **Entry point**: Strategic goals, objectives or priorities (Result frame)
- **4 steps** (A, B, C, D)



# Strategic and programmatic level



## What to do

- A. Analyze the context of climate change, environmental degradation and natural hazards
- B. Assess risks degree
- C. Integration of risks considerations
- D. Adjust the strategy if necessary

## Key questions

- What are the most **important natural hazards** also related to climate change and environmental degradation in the country, region or sectors?
- What are the relevant factors influencing current and future **vulnerability**?
- Which key national development **priorities, geographical areas,** and/or **sectors** are likely to be particularly **affected** by climate change, environmental degradation and/or natural hazards?



# Strategic and programmatic level



## What to do

- A. Analyze the context
- B. Assess to what extent the proposed strategic goals, objectives or priorities could be at risk from disasters and whether a business as usual strategy could lead to maladaptation**
- C. Integration of risks considerations
- D. Adjust the strategy if necessary

## Key questions

- How and to what extent could the strategic goals, objectives or priorities **be at risk from disasters?**
- To what extent the strategic goals, objectives or priorities could **lead to maladaptation?**



# Strategic and programmatic level



## What to do

- A. Analyze the context
- B. Assess risks degree
- C. Integration of disaster risk considerations in the strategy**
- D. Adjust the strategy if necessary

## Key questions

- Have natural **disaster risks** been **adequately considered** in the strategy?
- Does the strategy **adequately consider** national **adaptation** and/or **DRR strategies, policies** or plans?



# Strategic and programmatic level



## What to do

- A. Analyze the context
- B. Assess risks degree
- C. Integration of disaster risk considerations in the strategy
- D. Adjust the strategy if necessary**

## Key considerations

- Whether the goals, objectives or priorities of the strategy **are at risk**
- Whether the **identified disaster risks** have already been adequately **addressed** in the process of strategy development
- Whether the strategy needs to be **adjusted**
- How the strategy needs to be **adjusted** (e.g. reformulation and/or recommendations for considering the identified risks at project or sectoral level) in order to **enhance the resilience** of systems and communities





# Strategic and programmatic level



- Adequated consideration of disaster risks in the strategy or program

A. Analyse the context of climate change, environmental degradation and natural hazards	
What are the most important natural hazards also related to climate change and environmental degradation and/or natural hazards in the country, region or sectors? ...	
What are the relevant factors influencing current and future vulnerability? ...	
Which key national development priorities, geographical areas, and/or sectors are likely to be particularly affected by climate change, environmental degradation and/or natural hazards? ...	

Table 3 Proposed reporting format to assess the context of climate change, environmental degradation and tectonic activities.

B. Assess the strategic goals, objectives or priorities			
	To what extent could the strategic goals, objectives or priorities be at risk from disasters	Assess the potential for maladaptation	Outline possible adjustments to be made
Strategic goal, objective or priority 1	Assess how and to what extent the goals, objectives or strategic priorities could be at risk from disasters	Assess to what extent the goals, objectives or strategic priorities could incentivize activities that become riskier under a changing climate (settlements in flood-prone areas) or whether the strategy could support activities justified under a development perspective but perhaps not justifiable under a climate change adaptation perspective	Assess how the strategy shall be adjusted, e.g. reformulations or recommendations for considering the identified risks at project or sectoral level
Strategic goal, objective or priority 2	...	...	...

Table 4 Proposed reporting format to assess the strategic goals, objectives or priorities.

C. Integration of disaster risk considerations in the strategy		
		Explanation
Have disaster risks been adequately considered in the strategy?	Yes No	
Does the strategy adequately consider national adaptation and/or DRR strategies, policies or plans?	Yes No	

Table 5 Proposed reporting format to analyse whether disaster risk are already considered in the strategy.

D. Adjust the strategy (if necessary)		
		Type of adjustments
Does the strategy need to be adjusted due to the identified disaster risks?	Yes No	If yes, explain what kind of adjustments are needed (e.g. reformulations, recommendations at project level)

Table 6 Proposed reporting format to summarise eventual strategy adjustments.

## Instructions

- ✓ Risk context, page 15
- ✓ Risk evaluation, page 16
- ✓ Integration of the analysis, page 16
- ✓ Strategy adaptation, page 16
- ✓ Tables in the DRR web page

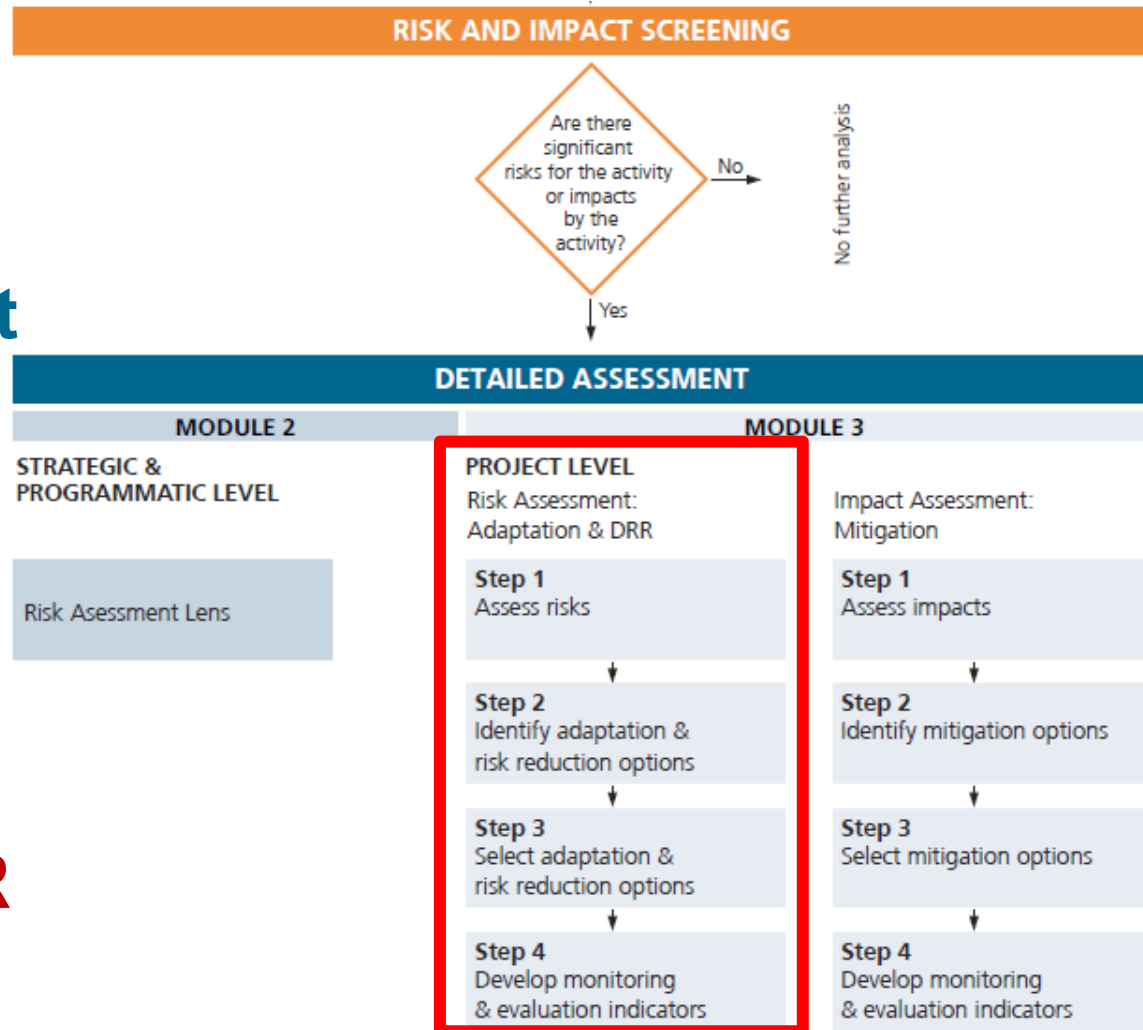


# CEDRIG

## Module 3: Detailed assessment Project level

### A) Detailed risks assessment

### Adaptation and DRR





# Module 3: Detailed risks assessment

## Step 1. Risk assessment



### Aim

- **Identify** the disaster risks emanating from climate change, environmental degradation and/or natural hazards for the **project activities**
- Use **screening results** from Module 1
- Builds the disaster risk equation:  
**Risk = Hazard \* Vulnerability**
- It is the most **complex and comprehensive** step of the Module 3
- **Entry points:** Logical framework, results from a former planning phase



# Step 1. Risks assessment



## What to do

- A. **Collect available data on climate variability and climate change, environmental degradation, tectonic activities and socio-economic information**
- B. Identify the most relevant hazards
- C. Identify assets most at risk
- D. Identify vulnerabilities and adaptive capacities
- E. Identify the most important impacts
- F. Perform a general and qualitative assessment of risks

## Key information

- **Historical data sets** for your area of concern including temperature, precipitation and extreme events (frequency and severity)
- **Environmental degradation** patterns and information regarding tectonic activities
- **Local knowledge** and qualitative assessments, information on the **socio-economic** and **environmental conditions** as well as the **policy environment**



# Step 1. Risks assessment



## What to do

- A. Collect available data
- B. Identify the most relevant hazards**
- C. Identify assets most at risk
- D. Identify vulnerabilities and adaptive capacities
- E. Identify the most important impacts
- F. Perform a general and qualitative assessment of risks

## Hazard assessment

- Identify and qualitatively **assess** the most **relevant natural hazards** being influenced by climate change and environmental degradation in the project area or **targeting the project's objectives** or main activities
- Local surveys or judgment of local people
- Severity and frequency of such events, whether these have changed over time, etc



# Step 1. Risks assessment



## What to do

- A. Collect available data
- B. Identify the most relevant hazards
- C. Identify assets most at risk**
- D. Identify vulnerabilities and adaptive capacities
- E. Identify the most important impacts
- F. Perform a general and qualitative assessment of risks

## Identify assets most at risk

- present **assets** and their geographical **distribution** in the project area
- Identify the **assets most at risk** from the **identified hazards**
- Use the concept of **livelihood assets** to identify the relevant assets and specify them



# Step 1. Risks assessment



## What to do

- A. Collect available data
- B. Identify the most relevant hazards
- C. Identify assets most at risk
- D. Identify factors influencing current and future vulnerability/adaptive capacities**
- E. Identify the most important impacts
- F. Perform a general and qualitative assessment of risks

## Identify vulnerability factors

- Factors (physical, human, social, economic and political) can either positively influence the adaptive/coping capacities of people or enhance the vulnerability of people
- Overview, interrelation and systemic view across different perspectives
- Consider **key factors** directly influencing project area and show how they interrelate between them

**Key question:** What are the relevant factors influencing current and future vulnerability and coping/adaptive capacity?.



# Step 1. Risks assessment



## What to do

- A. Collect available data
- B. Identify the most relevant hazards
- C. Identify assets most at risk
- D. Identify vulnerabilities and adaptive capacities
- E. Identify the most important impacts of hazards today and in the future**
- F. Perform a general and qualitative assessment of risks

## Impact identification

- **Impacts** of hazards differ substantially depending on available assets in a given area.
- **Combining the information** on relevant hazards (B), the assets most at risk (C) and the influencing factors (D)

**Key question:** What are today and in future the most important impacts of the identified hazards on the assets at risk?.





# Step 1. Risks assessment



## What to do

- A. Collect available data
- B. Identify the most relevant hazards
- C. Identify assets most at risk
- D. Identify vulnerabilities and adaptive capacities
- E. Identify the most important impacts of hazards today and in the future
- F. Perform a general and qualitative assessment of risks**

## Holistic risk assessment

- **Combined assessment** of relevant hazards and vulnerabilities. Qualitatively assess the **magnitude of disaster risk** on the project area/objective or main activity (low, high etc.)
- **General assessment** of risk at the level of the whole project (and not only at the level of single objectives and activities) in order to have a more **holistic risk perspective**
- **Vulnerable groups** such as women and/or children are especially at risk
- **Potential opportunities** for the project arising from climate change<sup>33</sup>



# Step 1. Risks assessment



- **Relevant information** on hazards influenced by climate change and natural environmental degradation and socio-economic data
- **Risk assesement** by area/objectif/activity

The result of this step may be summarised in the format of the following Table 7:

Risk assessment					
	Relevant current and future hazards to which the project is exposed	Vulnerability		Most important impacts of hazards today and in the future	Risk and general assessment
		Assets mainly affected by these hazards	Factors influencing current and future vulnerability and/or adaptive capacity		
Project area/objective or main activity 1	List most relevant hazards and roughly assess their frequency and severity today and in the future	List and specify relevant livelihood assets	List relevant influencing factors and mention in what direction they influence (enhancing or limiting adaptive capacity/ coping capacity)	Mention relevant impacts.	Provide an overall assessment of current and future risks. Include a qualitative assessment of the magnitude of the risks
Project area/objective or main activity 2	...	...	...	...	...
Project in general	...	...	...	...	Overall assessment of risks for the whole project

## Instructions

- ✓ Risks assessment, page 22
- ✓ Tables in the DRR web page

Table 7 Proposed reporting format for step 1.



# Step 1. Risks assessment

EXAMPLE 1 - ELEMENTS FOR THE RISK ASSESSMENT

Project area/ objective, main activity	Relevant current and future hazards to which the project is exposed	Vulnerability		Most important im- pacts of hazards today and in the future	Risk and general assess- ment
		Assets mainly affected by these hazards	Factors influencing current and future vulnerability/ adaptive capacity		
<ul style="list-style-type: none"> <li>› Rice produc- tion</li> <li>› Animal husbandry</li> <li>› Urban sanitation and water supply; Watershed management</li> <li>› Forest man- agement</li> <li>› Transport in- frastructure</li> <li>› Hydropower production</li> </ul>	<ul style="list-style-type: none"> <li>› Event hazards: droughts, heat waves, floods, storms, landslides, debris flows, rock-, snow-, ice-avalanche; tectonic hazards such as earthquake, volcanic activ- ity, tsunami</li> <li>› Gradual shift hazards: sea level rise, climate zone shifts, saliniza- tion of areas</li> </ul>	<ul style="list-style-type: none"> <li>› Human capital: skills, knowledge, health and ability to work</li> <li>› Social capital: social resources, including informal networks, membership of formal- ised groups and rela- tionships of trust that facilitate co-operation</li> <li>› Natural capital: natural resources such as land, soil, water and forests</li> <li>› Physical capital: basic infrastructure (roads, water &amp; sanitation, schools, ICT) and pro- ducer goods (tools and equipment)</li> </ul>	<ul style="list-style-type: none"> <li>› <i>Enhancing factors:</i> Access to and control over natural, human, social, physical and financial resources (refer to assets), e.g. high level of educa- tion, good quality infrastructure, reliable water source, diversif- ied income sources; user and property rights, decentralised organisation of public services, enabling policy environment, availability of an infor- mation and communi- cation system/channels and appropriate ICTs</li> </ul>	<ul style="list-style-type: none"> <li>› Water: Reduced fresh- water ability, decrease in water quality &amp; availability</li> <li>› Ecosystems: exceeded resilience of ecosys- tems, extinction of species, loss of habitats</li> <li>› Food: falling crop and timber productivity, decreasing fishery resources, soil erosion, desertification</li> <li>› Coasts: damage from floods and storms, coastal erosion</li> <li>› Health: impacts on hu- man health, increased frequency/severity</li> </ul>	

Example 1 Elements of risk assessment in step 1. The table shows possible examples for the respective part of step 1.

## Examples

- ✓ Elements for risk assessment, page 23
- ✓ Risk assessment, page 23
- ✓ Tables in the DRR web page



# Step 1. Risks assessment

EXAMPLE 2 - RISK ASSESSMENT					
Project area/ objective, main activity	Relevant current and future hazards to which the project is exposed	Vulnerability		Most important impacts of haz- ards today and in the future	Risk and general assessment
		Assets mainly affected by these hazards	Factors influenc- ing current and future vulner- ability/ adaptive capacity		
Rice produc- tion	Droughts are already occur- ring today and are projected to become even more severe in future. Gradual temper- ature increase will most likely continue.	Natural and financial capital	Low level of edu- cation of the com- munity in general and prevalence of highly vulnerable minority groups.	Rice fertility and harvest will decrease with an increase in temperature and with more severe droughts.	Severe risks to the communities in the project area, as they are highly dependent on rice production. They will face a severe loss of income and food shortages due to decrease in harvest. The risk is assessed as high also due to limited adaptive capacity.

## Examples

- ✓ Elements for risk assessment, page 23
- ✓ Risk assessment, page 23
- ✓ Tables in the DRR web page

Example 2 Exemplary table for step 1.



## Step 2. Identify adaptation and risk reduction options



### Aim

- identifying **possible** adaptation (to climate change and to degraded environments) and risk reduction **options**

### Catalogue of measures

- **Possible options** without considering feasibility, costs or other limiting factors
- **options** that are not yet included in the project. **Prevention** and **preparedness** before response.
- simple and short step closely linked with **step 3**
- **Order:** Sectors, development politics, capacity building, awareness, infrastructure, etc



## Step 2. Identify adaptation and risk reduction options



### What to do

- **step 1** is the starting point
- **brainstorming**
- **new options** as well as of adjustments of **already existing** options of the project, specific or general options for the whole project
- Options shall be considered **irrespective of their feasibility**
- Consider **local knowledge** which can be gathered through stakeholder consultations

**Key question:** What are adaptation or disaster risk reduction options to be considered and which traditional knowledge and adaptation & disaster risk reduction options may be included?



# Step 2. Identify adaptation and risk reduction options



## Results

- **Different categories** of adaptation and disaster risk reduction options
- **Traditional** knowledge

Brainstorming of adaptation and disaster risk reduction options						
	Relevant current and future hazards to which the project is exposed	Vulnerability		Most important impacts of hazards today and in the future	Risk and general assessment	Possible adaptation or risk reduction options
		Assets mainly affected by these hazards	Factors influencing current and future vulnerability/adaptive capacity			
Project area/ objective or main activity <i>Transfer from step 1</i>	Transfer from step 1	Transfer from step 1	Transfer from step 1	Transfer from step 1	Transfer from step 1	List and specify possible options
Project area/ objective or main activity <i>Transfer from step 1</i>	...	...	...	...	...	...
Project in general	...	...	...	...	...	List and specify general options

## Instructions

- ✓ DRR and adaptation options, page 27
- ✓ Tables in the DRR web page

Table 8 Proposed reporting format for step 2.



# Step 2. Identify adaptation and risk reduction options

EXAMPLE 3 – ADAPTATION AND disaster RISK REDUCTION OPTIONS ACCORDING TO TYPES AND SECTORS (SELECTED EXAMPLES)

Type \ Sector	Policy development	Capacity building	Awareness building	Particular adaptation/ disaster risk reduction
Water and Sanitation	<ul style="list-style-type: none"> <li>› Introduce water pricing</li> <li>› Encourage water efficient production</li> <li>› Government water transfer programmes</li> <li>› Securing rights of access to water supplies for small-scale farmers</li> </ul>	<ul style="list-style-type: none"> <li>› Expand monitoring for water supply and use</li> <li>› Develop capacity to model climate change effects on a regional scale</li> <li>› Develop early warning systems</li> </ul>	<ul style="list-style-type: none"> <li>› Awareness raising at community, household and school level with regard to water usage</li> <li>› Work with communities regarding awareness raising for water harvesting</li> </ul>	<ul style="list-style-type: none"> <li>› Enhance watershed management, rainwater harvesting</li> <li>› Promote Integrated Water Resource Management</li> <li>› Install more wells, construct dams</li> <li>› Technical flood control measures</li> <li>› Mangrove tree buffers</li> <li>› Restoration of vegetation or tree cover</li> <li>› Protect key water and sanitation infrastructure</li> </ul>

## Examples

- ✓ Options by sectors, pages 28 and 29
- ✓ Mitigation options, page 30
- ✓ Tables in the DRR web page

Example 3 Examples of adaptation and risk reduction options.





# Step 2. Identify adaptation and risk reduction options

**EXAMPLE 3 – ADAPTATION AND disaster RISK REDUCTION OPTIONS ACCORDING TO TYPES AND SECTORS (SELECTED EXAMPLES)**

Type	Policy development	Capacity building	Awareness building	Particular adaptation/ disaster risk reduction
<b>Water and Sanitation</b>	<ul style="list-style-type: none"> <li>› Introduce water pricing</li> <li>› Encourage water efficient production</li> <li>› Government water transfer programmes</li> <li>› Securing rights of access to water supplies for small-scale farmers</li> </ul>	<ul style="list-style-type: none"> <li>› Expand monitoring for water supply and use</li> <li>› Develop capacity to model climate change effects on a regional scale</li> <li>› Develop early warning systems</li> </ul>	<ul style="list-style-type: none"> <li>› Awareness raising at community, household and school level with regard to water usage</li> <li>› Work with communities regarding awareness raising for water harvesting</li> </ul>	<ul style="list-style-type: none"> <li>› Enhance watershed management, rainwater harvesting</li> <li>› Promote Integrated Water Resource Management</li> <li>› Install more wells, construct dams</li> <li>› Technical flood control measures</li> <li>› Mangrove tree buffers</li> <li>› Restoration of vegetation or tree cover</li> <li>› Protect key water and sanitation infrastructure</li> <li>› Promote filtration systems regarding polluted water systems</li> <li>› Install hand pumps on raised platforms above anticipated flood levels</li> <li>› Design water and sanitation infrastructure to withstand earthquakes</li> <li>› Install desalination systems</li> </ul>
<b>Agriculture and Rural Development</b>	<ul style="list-style-type: none"> <li>› Introduce payment for ecosystem services</li> <li>› Adopt land reforms that promote sustainable land management</li> <li>› Mainstream adaptation into local community management plans</li> </ul>	<ul style="list-style-type: none"> <li>› Promote soil conservation in farming practices</li> </ul>	<ul style="list-style-type: none"> <li>› Promote farmers' access to training, advisory services, financial services and market prices</li> <li>› Demonstrate year-round homestead vegetable gardening</li> <li>› Encourage the use of sustainable agriculture techniques to improve food security during dry periods</li> </ul>	<ul style="list-style-type: none"> <li>› Adopt drought-, flood- or salt-resistant crops and/or varieties</li> <li>› Soil conservation measures</li> <li>› Promote drip irrigation technologies</li> <li>› Promote stable vegetation covers</li> <li>› Create seed banks to allow replanting if crops fail, are damaged or destroyed</li> <li>› Include insurance or other forms of risk transfer</li> </ul>
<b>Forest/natural resource management</b>	<ul style="list-style-type: none"> <li>› Strengthen land planning and management institutions</li> <li>› Adopt land reforms that promote sustainable land management</li> </ul>	<ul style="list-style-type: none"> <li>› Implement adequate conflict prevention and management mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>› Awareness raising at school and community level in order to change behaviour of natural resource management</li> </ul>	<ul style="list-style-type: none"> <li>› Maintain a critical mass of diversified, natural forest ecosystems in forest regions</li> <li>› Use adapted species (drought, flood, fire resistance)</li> <li>› Build firebreaks and strengthen fire management systems and procedures (e.g. installation of surveillance towers, water reservoirs)</li> <li>› Facilitate monitoring through remote sensing technology</li> </ul>

## Examples

- ✓ Options by sectors, pages 28 and 29
- ✓ Mitigation options, page 30
- ✓ Tables in the DRR web page



# Step 2. Identify adaptation and risk reduction options

EXAMPLE 3 – ADAPTATION AND disaster RISK REDUCTION OPTIONS ACCORDING TO TYPES AND SECTORS (SELECTED EXAMPLES)				
Type	Policy development	Capacity building	Awareness building	Particular adaptation/ disaster risk reduction
<b>Health</b>	<ul style="list-style-type: none"> <li>Strengthen food safety regulation</li> <li>Strengthen programmes aimed at fighting the effects of malnutrition</li> <li>Develop emergency preparedness plans</li> </ul>	<ul style="list-style-type: none"> <li>Promote good sanitation practices</li> <li>Develop systems for monitoring drinking water, food quality</li> <li>Build capacity for emergency preparedness plans</li> <li>Strengthening local institutions and volunteers in order to respond to pre- and post-disaster measures.</li> <li>Train health workers and others to respond to crises such as drought</li> </ul>	<ul style="list-style-type: none"> <li>Awareness raising at e.g. household level in order that people know their preparedness plans (campaigns)</li> <li>Awareness raising regarding air and water pollution</li> <li>Public health and hygiene campaigns on water collection, conservation, non-contamination and coping with drought</li> </ul>	<ul style="list-style-type: none"> <li>Implement sanitation practices, use of mosquito nets</li> <li>Improve access of most vulnerable populations to health services</li> <li>Upgrade or modernise refrigeration facilities to ensure proper conservation of drugs and vaccines</li> <li>Promote access to community health</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>Education infrastructure planning keeping up with demographic patterns (e.g. in case of climate induced migration)</li> <li>Strengthening programmes under the control of education</li> </ul>	<ul style="list-style-type: none"> <li>Enhance quantity (through facilitating distance-learning) and quality (more interactivity) of education through appropriate ICTs</li> </ul>	<ul style="list-style-type: none"> <li>Awareness-raising on climate change and its effects in schools</li> </ul>	<ul style="list-style-type: none"> <li>Make educational infrastructure as “climate-resilient” and earthquake proof as possible</li> </ul>
<b>Energy</b>	<ul style="list-style-type: none"> <li>Take climate change impacts into account in strategic decisions on energy infrastructure development (e.g. reduce dependence on hydropower where stream flows are expected to decrease)</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building with regard to renewable energies</li> </ul>	<ul style="list-style-type: none"> <li>Awareness raising on links between energy supply, vulnerability, dependency of non-renewable sources</li> </ul>	<ul style="list-style-type: none"> <li>Reduce dependency on single sources of energy, and opt for more diverse energy sources</li> <li>Make energy conversion infrastructure more resilient to extreme climatic events and earthquakes</li> </ul>
<b>Urban Development</b>	<ul style="list-style-type: none"> <li>Take into account climate variability in urban development planning (e.g. need for higher-capacity drainage and flood protection systems)</li> <li>Relocate vulnerable population</li> <li>Take into account environmental perspective in urban development planning</li> </ul>	<ul style="list-style-type: none"> <li>Monitor trends in migration and human settlements to keep track of the most pressing needs and to integrate them in urban infrastructure investment planning</li> <li>Promote technically sound hazards and risk maps</li> </ul>	<ul style="list-style-type: none"> <li>Awareness raising among the population e.g. with regard to earthquakes.</li> </ul>	<ul style="list-style-type: none"> <li>Climate resilient and sustainable urban settlements</li> <li>Strengthen and upgrade key urban infrastructure and buildings to make them more climate resilient.</li> <li>Building shelters (floods, cyclones)</li> <li>Avoid building on or near slopes at risk of mudslides or landslides</li> <li>Wherever possible, design water and sanitation infrastructure to withstand the shock of an earthquake</li> </ul>
<b>Private sector development, employment</b>	<ul style="list-style-type: none"> <li>Undertaking public investments that enhance the resilience of essential infrastructure (e.g. transport, energy supply, water supply, telecoms) as a basis for private sector development</li> </ul>	<ul style="list-style-type: none"> <li>General and sector-specific capacity building programmes focused on the dissemination of adaptation-related good practices and the development of adaptation plans (specific focus on Small and Medium Enterprises)</li> </ul>	<ul style="list-style-type: none"> <li>Running awareness campaigns targeted at private enterprises about climate and environmental degradation related risks and challenges</li> </ul>	<ul style="list-style-type: none"> <li>Setting up financial services (e.g. subsidised loans) to support the implementation of Small and Medium Enterprises climate adaptation programmes</li> </ul>

## Examples

- ✓ Options by sectors, pages 28 and 29
- ✓ Mitigation options, page 30
- ✓ Tables in the DRR web page

Example 3 Examples of adaptation and risk reduction options.



# Step 2. Identify adaptation and risk reduction options

## EXAMPLE 4 – ADAPTATION OPTIONS ALSO SERVING AS MITIGATION OPTIONS

Please note that some adaptation options can also at the same time be climate change and environmental impact mitigation options. This is mainly the case for options within the agriculture, water, forestry and land use sector in general.

**Example:** Ensuring a critical mass of diversified forests or restoring soils in order to prevent soil and land degradation may at the same time sequester carbon and therefore serve both as an adaptation (to climate change and to degraded environments) and climate change mitigation options. Furthermore, using agricultural techniques such as contour bunding and check dams to delay the flow of rainwater and improve infiltration can also serve as adaptation and mitigation option. On the one hand, it helps to adapt to changing precipitation patterns, on the other hand it reduces negative impacts on the environment (e.g. if rainwater cannot be used one may otherwise have to pump the water from the aquifers).

You may consider these options also with a view to mitigation (climate change and environmental impacts) but without doing a detailed assessment according to part B (Impact Assessment; Mitigation), page 37.

Example 4 Adaptation options also serving as mitigation options.

## Examples

- ✓ Options by sectors, pages 28 and 29
- ✓ Mitigation options, page 30
- ✓ Tables in the DRR web page



## Step 3. Select adaptation and risk reduction options



### Aim

- Select the **most appropriate** options based on a chosen set of criteria
- Basis for an eventual **revision or adjustment**

### Evaluation Criteria

**Effectiveness in enhancing resilience:** reduces vulnerability and enhances resilience, benefits, no regret or low regret options

**Cost:** expensive or inexpensive, it includes investment , operation and maintenance, reconstruction costs, etc. Low costs do not immediately mean superiority

**Feasibility:** necessary human, legal, administrative, financial, technical and other resources available. General/public acceptance/willingness present. Options that can be implemented under the current operational framework will be favored.

**Sustainability:** Not only in terms of social, economic and ecological sustainability, but also in terms of sustainability without financial support from development cooperation.



## Step 3. Select adaptation and risk reduction options



### What to do

- Highly subjective depending on **perceptions**
- **Multidisciplinary** team
- **Decide** whether to include the newly identified options

### Assessment

- Collect **relevant data** on the selected key **criteria** and **score** the options. **Additional** criteria
- **Evaluate** the options taking into account all criteria (qualitative). which options are prioritized and shall be included into the project
- Assess from the “bird’s eye perspective”, from an overall perspective. Effective together, complement each other, short-, middle- and/or long-term options, **promising**
- Include the most promising and easy to integrate options into your project . You may therefore adjust or amend your main activities accordingly



# Step 3. Select adaptation and risk reduction options



## Results

- Most promising options are **selected and included** in the project

Assessment and selection of proposed options						
	Effectiveness in enhancing resilience	Cost	Feasibility	Sustainability	Further criterion?	Overall evaluation
Possible adaptation or risk reduction options	Explain how effective the option is enhancing resilience and score with	Explain how costly the option is and score with high costs	Explain how feasible the option is to implement and score with not feasible	Explain how sustainable the option is and score with e.g. low	Explain and score the options to the criterion of your choice accordingly.	Make an overall assessment of the option with regard to the outcome of the criteria scoring. Cost/benefit considerations shall be taken into account. Options with highest scores in all criteria shall be preferred.
<i>Transferred from step 2</i>	(0) not effective, (1) effective, (2) very effective  Consider in your assessment whether the option is "no-" or "low-regret"	(0), medium costs (1), low costs (2)	feasible (0), feasible (1), very feasible (2)	low (0), medium (1), high (2)		
...						

## Instructions

- ✓ Evaluation and selection, page 33
- ✓ Tables are in the DRR web page

Table 9 Proposed reporting format for the assessment and selection of adaptation and risk reduction options.



# Step 3. Select adaptation and risk reduction options

## Box 4 - Questions to consider while assessing the criteria

Effectiveness in enhancing resilience	Cost	Feasibility	Sustainability
<ul style="list-style-type: none"> <li>› Is the option reducing vulnerability and enhancing resilience?</li> <li>› Is the option providing co-benefits for other sectors?</li> <li>› Is the option flexible? Can it be adjusted in response to changing conditions?</li> <li>› Is the option a no- or low-regret option?</li> <li>› How big is the group of beneficiaries? (Options that provide small benefits to large numbers of people will often be favoured over those that provide larger benefits, but to fewer people.)</li> <li>› Is the option targeting the most vulnerable communities/people?</li> </ul>	<ul style="list-style-type: none"> <li>› Is the option relatively expensive or inexpensive compared to other options ("cost efficient")?</li> <li>› Are the initial costs of implementation high or low?</li> <li>› Are the costs over time (operation and maintenance, administration and staffing, etc.) high or low?</li> <li>› How high are the external costs of the option (take into account non-economic costs and economic and/or quantifiable costs)?</li> </ul>	<ul style="list-style-type: none"> <li>› Do necessary human, legal, administrative, financial and technical resources exist?</li> <li>› Is there a need to adjust other policies to accommodate the adaptation option?</li> <li>› Is the option acceptable to local stakeholders (socially, culturally)?</li> <li>› Are these resources available for use?</li> </ul>	<ul style="list-style-type: none"> <li>› Is the option socially, economically and environmentally sustainable?</li> <li>› Is the option sustainable in the longer term without financial support from external development cooperation?</li> </ul>

## Examples

- ✓ Questions to evaluate criteria, page 33
- ✓ Evaluation and selection, page 33
- ✓ Tables are in the DRR web page

Box 4 Questions to conclude the assessment and selection of the proposed options.



# Step 3. Select adaptation and risk reduction options

**EXAMPLE 5 - ASSESSMENT AND SELECTION OF PROPOSED OPTIONS**

	Effectiveness in enhancing resilience	Cost	Feasibility	Sustainability	Further criterion?	Overall evaluation
Drought resistant crop	2 The option is very effective, as it is directly linked to the main risk and hence enhances resilience.	1 Relatively high initial costs (purchase of crops), but no additional operational costs.	1 The option is feasible but faces some initial barriers (farmer's acceptance of the new seeds, training requirements, changes in practices)	1 Potentially large sustainability benefits. The new crop seeds need to be well established and accepted by the farmers to sustain after termination of the project.	None	The option contributes to increased climate resilience. Needs investments in training and awareness building in order to be effective and sustainable. However benefits are estimated as higher than costs.

## Examples

- ✓ Questions to evaluate criteria, page 33
- ✓ Evaluation and selection, page 33
- ✓ Tables are in the DRR web page

Example 5 Exemplary table for step 3.





## Step 4. Define monitoring and evaluation indicators



### Aim

- Define **indicators** for monitoring and evaluation regarding the **success of the selected options**
- Overall assessment of the measures regarding their contribution to **resilience enhancement**

### Define indicators

- To **monitor (and evaluate)** the impacts, outcomes and outputs
- **Challenging** task, **long-term** risks which may lead to a **discrepancy** between the project duration and the time horizon of **occurrence** of natural phenomena
- Development options have a strong **implicit climate change adaptation component**, which makes it **difficult to distinguish** between scenarios **with and without CCA**.
- **Benefits** have been achieved, **resilience enhanced** and/or whether there have been any adverse outcomes



## Step 4. Define monitoring and evaluation indicators



### What to do

- A. Define new or adjust impact, outcome and output indicators
- B. Overall assessment

### Definition of indicators

- Entry point: logical frame
- Define or adapt the outcome and output indicators related to the introduced measure
- Work with the Logframe, to adjust existing indicators or add new indicators



## Step 4. Define monitoring and evaluation indicators



### What to do

- A. Define new or adjust impact, outcome and output indicators
- B. Overall assessment and questions for the evaluation**

### Assessment

- Determine if **included measures**, are meeting the **overall target** of enhancing the **resilience** of communities and systems

### Key questions

Are the measures defined adequately **addressing the risks identified**?

Are the measures suited for **enhancing the resilience** of communities and system?



# Step 4. Define monitoring and evaluation indicators



- Defined indicators shall **be integrated** into the logframe

A Indicators for monitoring and evaluation	
<b>Goal (impact)</b>	<b>Impact indicators</b>
Goal 1	Define impact indicators
Goal 2	...
<b>Purpose (Outcome)</b>	<b>Outcome indicators</b>
Purpose 1	Define outcome indicators
Purpose 2	...
<b>Results (Outputs)</b>	<b>Output indicators</b>
Result1	Define output indicator (e.g. quantitative ones)
Result 2	...

Table 10 Proposed reporting format for the evaluation and monitoring indicators.

B Control questions
Are the measures defined adequately addressing the risks identified? ...
Are the measures suited for enhancing the resilience of communities and system? ...

Table 11 Proposed control questions for the overall assessment and evaluation.

## Instructions

- ✓ Indicators for the M&E, page 35
- ✓ Control questions, page 35
- ✓ Tables in the DRR web page



# Step 4. Define monitoring and evaluation indicators

EXAMPLE 6 - EXAMPLES OF IMPACT, OUTCOME AND OUTPUT INDICATORS			
	Impact	Outcome	Output
Policy development	<ul style="list-style-type: none"> <li>› Increased overall resilience through implementing policy actions</li> </ul>	<ul style="list-style-type: none"> <li>› Legislators pass policy provision in favour of pro-environmental land-management/ agricultural practices etc.</li> <li>› National climate change and/ or DRR plan established and implemented</li> <li>› Climate change and DRR is mainstreamed in the local political institutions</li> </ul>	<ul style="list-style-type: none"> <li>› Number of mechanisms for coordination (e.g. evacuation, climate change) between sectors is established</li> <li>› Number of e.g. districts with a written policy that includes environmental issues or climate change adaptation into official planning</li> </ul>
Capacity development	<ul style="list-style-type: none"> <li>› Increased overall resilience reached through implementing capacity development activities</li> </ul>	<ul style="list-style-type: none"> <li>› Perceived change in ability to respond to future change achieved</li> </ul>	<ul style="list-style-type: none"> <li>› Number of early warning system installed</li> <li>› Number of trainings in soils conservation provided</li> <li>› Local emergency response team established</li> </ul>
Awareness building	<ul style="list-style-type: none"> <li>› Reduced vulnerability through awareness building measures</li> </ul>	<ul style="list-style-type: none"> <li>› Change in behaviour reached (e.g. watershed management, soil conservation in farming practices)</li> </ul>	<ul style="list-style-type: none"> <li>› Number of schools and students for awareness raising reached</li> </ul>

## Examples

- ✓ Indicators, page 35
- ✓ Control questions, page 36
- ✓ Tables in the DRR web page



# Step 4. Define monitoring and evaluation indicators

## EXAMPLE 6 - EXAMPLES OF IMPACT, OUTCOME AND OUTPUT INDICATORS

	Impact	Outcome	Output
Particular adaptation/ disaster risk reduction	<ul style="list-style-type: none"> <li>› Increased overall resilience reached by reducing exposure to environmental and climate related disasters by implementing particular adaptation options</li> </ul>	<ul style="list-style-type: none"> <li>› Higher yields due to cultivation of drought resistant crops and improved water management</li> <li>› Perceived change in ability to respond effectively to future environmental and climate change achieved</li> <li>› Perceived change in individual vulnerability achieved</li> </ul>	<ul style="list-style-type: none"> <li>› Amount of drought resistant seeds available by farmers</li> <li>› Number of water and irrigation systems adapted</li> </ul>

Example 6 Examples of impact, outcome and output indicators.

## EXAMPLE 7 - POSSIBLE CONTROL QUESTIONS

- › Has the overall resilience of affected systems been improved?
- › In what sense have the measures enhanced resilience of the affected systems?
- › Are the risks which justified the measures still anticipated?
- › Have any impacts from climate change, environmental degradation and/or natural hazards been felt? If yes, did the measures work as intended?
- › Did the measures lead to any kind of maladaptation?
- › Have the implemented measures led to non-climate/DRR related benefits (no regret measure)?

Example 7 Possible control questions to be considered.

### Examples

- ✓ Indicators, page 35
- ✓ Control questions, page 36
- ✓ Tables in the DRR web page

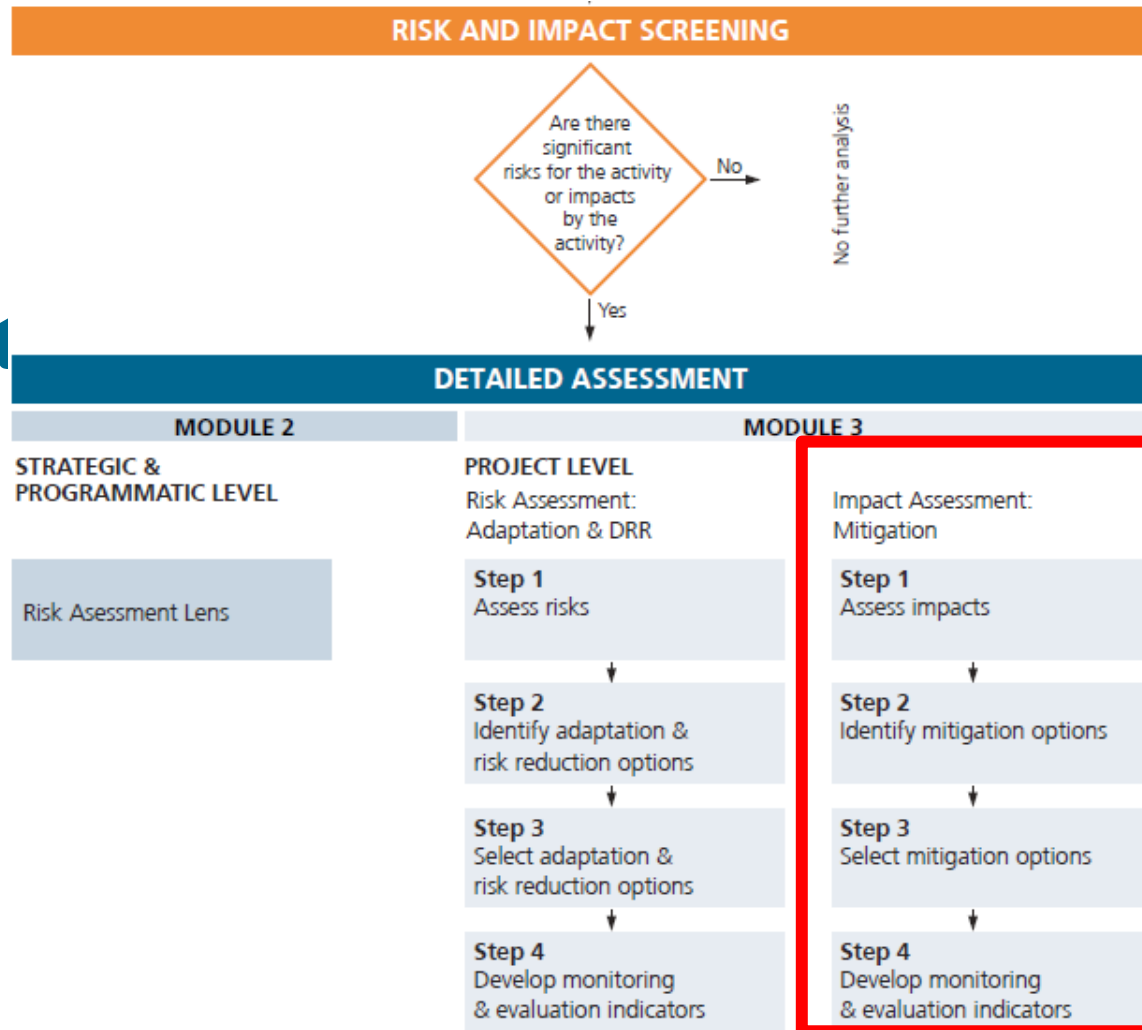


# CEDRIG

## Module 3: Detailed assessment Project level

### B) Detailed Impact Assessment

### Mitigation





# Module 3: Detailed Impact assessment

## Mitigation



### Aim

- Identify the main **impacts** of existing or planned activities on **GHG emissions** and the **environment**
- Climate Change and Environmental impact **mitigation**
- **Asses** if the activity has **impacts** on GHG emission and/or the environment
- Analyze how **projects can contribute** to reduce GHG emissions and negative impacts on the environment, alternative options are identify to **maximize those contributions**.
- **Entry point**: Logframe





# Mitigation



## What to do

### Step 1: Assess impacts on GHG emissions and/or the environment

Step 2: Identify options

Step 3: Select options

Step 4: Define indicators

## Impact assessment

- **List** the relevant project areas, objectives, main activities or sectors of the program or project already identified during the screening
- Identify **potential impacts** of those sectors, projects, programs on GHG emissions and the environment.
- **Key question:** Is there a risk that the activity produces the following negative impacts on GHG emissions and/or the environment?
- You may **qualify** these risks and **complement** them if needed.
- **Opportunities** regarding Climate Change mitigation



# Mitigation



## What to do

Step 1: Assess impacts

**Step 2: Identify climate change and environmental impact mitigation options**

Step 3: Select options

Step 4: Define indicators

## Identify options

- Brainstorm on **possible mitigation options** considering 2 categories
  - › Options **improving** existing processes, practices
  - › Options adding a **mitigation component** to the project
- Several mitigation options (mainly CC) may also serve as adaptation options



# Mitigation



## What to do

Step 1: Assess impacts

Step 2: Identify mitigation options

**Step 3: Select climate change and environmental impact mitigation options**

Step 4: Define indicators

## Select options

- **Evaluate** the identified mitigation options according to key **criteria** (effectiveness, cost, feasibility, sustainability, others)
- Consider possible **tradeoffs** arising from mitigation options.
- **Score** the options, evaluate the **cost** in function of the **benefits and efficiency**
- **Evaluate** the options from an **overall perspective** and define which one is the **priority** to be included in the project or program



# Mitigation



## What to do

Step 1: Assess impacts

Step 2: Identify mitigation options

Step 3: Select mitigation options

**Step 4: Define new or adjust impact, outcome and output indicators**

## Define indicators

- **Define or adjust** impact, outcome and output **indicators** for the measures to be implemented.
- Indicators might be the **amount of GHG** emissions reduced, the **amount of energy** saved or the **energy efficiency** improved, increase of **forest area**, reduction of **water pollution** from industry.
- **Overall assessment** is needed, whether the measures defined and included in the project are **adequately addressing the impacts** identified.



# Mitigation



## Results

- **Impact** on GHG emissions and/or the environment
- **Assessment** and **selection** of proposed options

### Result step 1) Assess impacts on GHG emissions and/or the environment

Impact on GHG emissions and/or the environment	
	Potential impacts of the project
Project area/objective or main activity	Describe and/or amend potential impacts identified in Module 1 (B, question 1.2)
Project area/objective or main activity	...

Table 12 Proposed reporting format for step1.

### Result step 2) Identify climate change and environmental impact mitigation options

Brainstorming of mitigation options	
	Possible mitigation options
Project area/objective or main activity <i>Transfer from step 1</i>	List and specify possible mitigation options addressing the identified impacts above
Project area/objective or main activity <i>Transfer from step 1</i>	...

Table 13 Proposed reporting format for step 2.

## Instructions

- ✓ Evaluation, page 39
- ✓ Identification, page 39
- ✓ Selection, page 39
- ✓ Indicators, page 39
- ✓ Assessment, page 39
- ✓ Tables in the web page



# Mitigation



## Results

- **Impact** on GHG emissions and/or the environment
- **Assessment** and **selection** of proposed options

### Result step 3) Select climate change and environmental impact mitigation options

Assessment and selection of proposed options						
	Effective-ness	Cost	Feasibility	Sustainability	Further criterion?	Overall evaluation
Possible mitigation option	Explain how effective the option is and score with	Explain how costly the option is and score with	Explain how feasible the option is to implement and score with	Explain how sustainable the option is and score with	Explain and score the options to the criterion of your choice accordingly.	Make an overall assessment of the option with regard to the outcome of the criteria scoring. Take into account also cost/benefits considerations. The option(s) with the highest scores shall be preferred.
Transferred from step 2	(0) not effective, (1) effective, (2) very effective	high costs (0), medium costs (1), low costs (2)	score with not feasible (0), feasible (1), very feasible (2)	e.g. low (0), medium (1), high (2)		
...						

Table 14 Proposed reporting format for step 3.

## Instructions

- ✓ Evaluation, page 39
- ✓ Identification, page 39
- ✓ Selection, page 39
- ✓ Indicators, page 39
- ✓ Assessment, page 39
- ✓ Tables in the web page



# Mitigation



## Results

- **Impact** on GHG emissions and/or the environment
- **Assessment** and **selection** of proposed options

### Result step 4) Define new or adjust impact, outcome and output indicators

Monitoring and evaluation indicators	
Goal (impact)	Impact indicators
Goal 1	Define impact indicators
Goal 2	...
Purpose (Outcome)	Outcome indicators
Purpose 1	Define outcome indicators
Purpose 2	...
Results (Outputs)	Output indicators
Result1	Define output indicator (e.g. quantitative ones)
Result 2	...

Table 15 Proposed reporting format for step 4.

### Result step 4) Make a final overall assessment

Control questions
Assess from an overall perspective, whether the measures defined are adequately addressing the impacts identified?
...

Table 16 Proposed control questions for the overall assessment and evaluation of step 4.

## Instructions

- ✓ Evaluation, page 39
- ✓ Identification, page 39
- ✓ Selection, page 39
- ✓ Indicators, page 39
- ✓ Assessment, page 39
- ✓ Tables in the web page



# Mitigation

### EXAMPLE 8 - NEGATIVE IMPACTS ON GHG EMISSIONS AND THE ENVIRONMENT

Sectors, project area/objective or main activity	Climate & environmental impacts
<b>Impacts increasing GHG emissions</b>	<ul style="list-style-type: none"> <li>› Relatively high methane emissions of ruminants and emissions from manure</li> <li>› Increase in electricity use can result in potentially higher emissions (compared to scenario without electricity)</li> <li>› Intensively or unsustainably managed forests can result in higher emissions</li> <li>› Road construction leading to higher traffic volume and higher air pollutants and GHG emissions</li> <li>› Some practices may lead to an increase in transport volume and higher GHG emission</li> <li>› Deploying ICTs in projects has considerable GHG emission potential</li> <li>› Unsustainable waste management practices may lead to increased GHG emissions</li> </ul>
<b>Negative impacts on water</b>	<ul style="list-style-type: none"> <li>› Use of pesticides or chemicals (in agriculture or industry) and unsound solid waste management can result in water pollution and enhanced health problems</li> <li>› Some practices can have adverse impacts on water quality and water quantity (e.g. by large pumping systems)</li> <li>› Unsustainable water practices can result in degradation of aquifers and result in lack of drinking water</li> </ul>
<b>Negative impacts on air</b>	<ul style="list-style-type: none"> <li>› Some practices in industries (e.g. brick) can have adverse impacts on air quality and result in severe health problems</li> <li>› Road construction leading to higher traffic volume (transport) and higher air pollutants</li> </ul>
<b>Negative impacts on ecosystems</b>	<ul style="list-style-type: none"> <li>› Intensively or unsustainably managed forests or lands can result in degraded forestal land</li> <li>› Loss of habitable land by unsustainable land management</li> <li>› Loss of biodiversity by unsustainable land management</li> </ul>
<b>Negative impacts on soil</b>	<ul style="list-style-type: none"> <li>› Inappropriate fertilizer use, compaction of soils, tillage of organic soils</li> <li>› Use of pesticides or chemicals (in agriculture or industry) can result in soil pollution</li> </ul>

## Examples

- ✓ Negative impacts, page 40
- ✓ Possible options, pages 40, 41 y 41
- ✓ Tables in the web page





# Mitigation

### EXAMPLE 9 - POSSIBLE MITIGATION OPTIONS IN SELECTED SECTORS

Sector	Climate change and environmental impact mitigation options
Use of Energy (in transport, building, household level etc.)	<ul style="list-style-type: none"> <li>› Improve energy efficiency e.g. in building (insulation of houses etc.), industry, etc.</li> <li>› Improve energy savings by reducing system losses</li> <li>› Change from fossil fuels to renewable energy sources</li> <li>› Opt for investment in energy-efficient and low-carbon transport modes</li> <li>› Use fuel efficient stoves and cooking methods</li> </ul>
Sector	Climate change and environmental impact mitigation options
Agriculture and soil	<ul style="list-style-type: none"> <li>› Modify agricultural practices, e.g. promote climate and environmental friendly farming which increases carbon stored in soil and soil quality (minimum tillage, organic farming and others)</li> <li>› Avoid burning biomass on fields but rather use it as a source of energy replacing fossil fuels or incorporate in soil to increase soil fertility, or producing biochar instead of burning</li> <li>› Avoid energy-intensive farming systems (high-input in fertilizers, pumping of groundwater and long distances to markets)</li> <li>› Promotion of sustainable technical approaches: organic and low input farming, efficient irrigation, use of local agro-biodiversity</li> <li>› Promote crop rotation to maintain soil quality, minimise erosion (reducing the risk of desertification), promote crops diversification and crop mixing</li> <li>› Avoid or minimise or use products with low toxicity</li> <li>› Use Integrated Pest Management approaches</li> <li>› Use local seeds where possible, produced and distributed through existing channels</li> </ul>
Water	<ul style="list-style-type: none"> <li>› Introduce water resource planning and water management systems</li> <li>› Avoid large pumping systems (farm ponds) which reduce groundwater quantity</li> <li>› Promote sustainable incentive schemes for water management</li> <li>› Promote less water-dependant crops in drier years</li> <li>› Protect and reforest water catchment areas to improve groundwater resources</li> <li>› Establish filtering systems</li> <li>› Treat wastewater for re-use in agriculture, industries and other sectors</li> </ul>
Land	<ul style="list-style-type: none"> <li>› Define protected areas</li> <li>› Develop financing mechanisms (payment for environmental services) to avoid land degradation</li> </ul>

## Examples

- ✓ Negative impacts, page 40
- ✓ Possible options, pages 40, 41 y 41
- ✓ Tables in the web page



# Mitigation

### EXAMPLE 9 - POSSIBLE MITIGATION OPTIONS IN SELECTED SECTORS

Sector	Climate change and environmental impact mitigation options
<b>Livestock</b>	<ul style="list-style-type: none"> <li>› Rehabilitate degraded pasturelands (e.g. by alleviating nutrient deficiencies, re-planting grasses)</li> <li>› More efficient use of fertilisers, particularly nitrogen</li> <li>› Control and use methane emissions from manure</li> <li>› Use and enforce environmental regulation to control some practices that have an impact on climate and environment (e.g. regulation of manure application on crop- and pasturelands)</li> <li>› Encourage communities to conserve coastal mangroves and other vegetation to reduce rate of erosion and protect fish breeding grounds</li> <li>› Establish/expand animal disease monitoring and control system</li> </ul>
<b>Forest</b>	<ul style="list-style-type: none"> <li>› Develop sustainable afforestation and re-forestation projects specifically designed to support environmental and poverty alleviation goals as well as carbon sequestration</li> <li>› Increase carbon density in forests</li> <li>› Develop financing mechanisms (“payments for environmental services”) to avoid deforestation and promote forest regeneration</li> <li>› Improve the enforcement of legislation aimed at preventing deforestation or unsustainable timber production activities</li> <li>› Adopt harvesting practices that minimise carbon losses and environmental depletion (e.g. maintaining partial forest cover, minimising losses of organic matter, avoiding most slash-and-burn techniques)</li> </ul>
<b>Waste</b>	<ul style="list-style-type: none"> <li>› Controlled incineration of organic waste, especially if associated with energy recovery, results in minor net CO<sub>2</sub> emissions and air pollutants</li> <li>› Recover landfill gas and use it as a renewable source of energy, for electricity and/or heat generation</li> <li>› Introduce sustainable waste disposal systems</li> <li>› Establish and maintain sites for sanitary and safe waste disposal operating at international standards</li> <li>› Limit waste movements through appropriate collection systems meeting accepted best practices</li> </ul>

## Examples

- ✓ Negative impacts, page 40
- ✓ Possible options, pages 40, 41 y 41
- ✓ Tables in the web page



# Mitigation

### EXAMPLE 9 - POSSIBLE MITIGATION OPTIONS IN SELECTED SECTORS

Sector	Climate change and environmental impact mitigation options
<b>Urban development and infrastructure</b>	<ul style="list-style-type: none"> <li>› Avoid an increase in transportation by supporting shorter distances and public transport</li> <li>› Improve traffic management systems and guiding route choice, so as to reduce congestion</li> <li>› Modify building standards to improve (in a mandatory way) the energy efficiency of buildings</li> <li>› Using green construction principles while designing infrastructure</li> <li>› Infrastructure development with environmental benefits (e.g. for water treatment, sanitation, clean energy supply)</li> <li>› Promote sustainable land-use planning in order to reduce land consumption and the resulting adverse environmental impacts</li> <li>› Incorporate erosion mitigation measures in road construction activities</li> </ul>
<b>Industry</b>	<ul style="list-style-type: none"> <li>› More efficient end-use electrical equipment; heat and power recovery; material recycling and substitution</li> <li>› Controlling emissions of non-CO<sub>2</sub> (e.g. fluorinated gases used in refrigeration and air conditioning systems)</li> <li>› Develop pollution mitigation and abatement plans, incorporating financial incentives where appropriate</li> </ul>
<b>Capacity building and advocacy</b>	<ul style="list-style-type: none"> <li>› Training in sustainable agricultural practices</li> <li>› Encouraging sustainable income diversity</li> <li>› Use of renewable locally produced building materials</li> <li>› Teaching adult learners and children about the causes and implications of environmental degradation, etc.</li> </ul>

Example 9 Examples of possible mitigation options. Depending on the context, the feasibility of the options need to be assessed. Please note that several measures in the agriculture and forest sector may also serve as adaptation options. A list of further mitigation options can also be found in Tearfund 2009c: ([http://tilz.tearfund.org/webdocs/Tilz/Topics/Environmental%20Sustainability/EA\\_C9465\\_web.pdf](http://tilz.tearfund.org/webdocs/Tilz/Topics/Environmental%20Sustainability/EA_C9465_web.pdf)).

## Examples

- ✓ Negative impacts, page 40
- ✓ Possible options, pages 40, 41 y 41
- ✓ Tables in the web page



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# CEDRIG

**Main potentials**

**Main limitations and  
challenges**

# Main potentials

- **Entry and end points:** logframe, results (planning references)
- **Flexibility:** can be applied at any phase of the project (planning, implementation, evaluation)
- **Vulnerability and resilience** as focus of the analysis
- To assess vulnerabilities based on the **capitals** allows the assessment of impacts and propose measures accordingly.
- **It is not** a tool to evaluate projects, but a tool to assess if the projects **take into account CC, E, DRR, if not to integrated them.**
- Understandable, **easy to apply**
- To tool allows to **raise awareness** and **build actors capacities**
- The tool can be adapted to **different context and sectors** (e.g. water sector in Bolivia)

# Main challenges

- It is needed to **build the capacities** in **COOFs** and main actors in the **communities** for the application of the guide
- The facilitator needs to have **thematic knowledge** to lead the process
- A **preparation** is needed with essential elements of the **project** and on climatic and risks **information** (responsible of the project)
- Based on the identify measure of step 2, develop a **set of measures** for the **sector** (e.g. water and irrigation)
- Verify that the selected **measures** are in **relation with the identify hazards** (additionality)
- Find **mechanisms** to **facilitate the integration** of risks and impact reduction in the projects.



# Thank you for your attention!

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