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# Masterclass on Climate Resilient Infrastructure Public-Private Partnerships



AFRICAN DEVELOPMENT BANK GROUP



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# Recap of Module 1: Introduction to Climate-Resilient PPPs

1

There is a need to address the **infrastructure gap**

2

Global **climate change** is really happening

3

In Africa, **climate hazards** are **impacting infrastructure**

4

There are **economic and social benefits** in addressing climate risks

5

**Risk** = Hazard x  
Exposure x  
Vulnerability

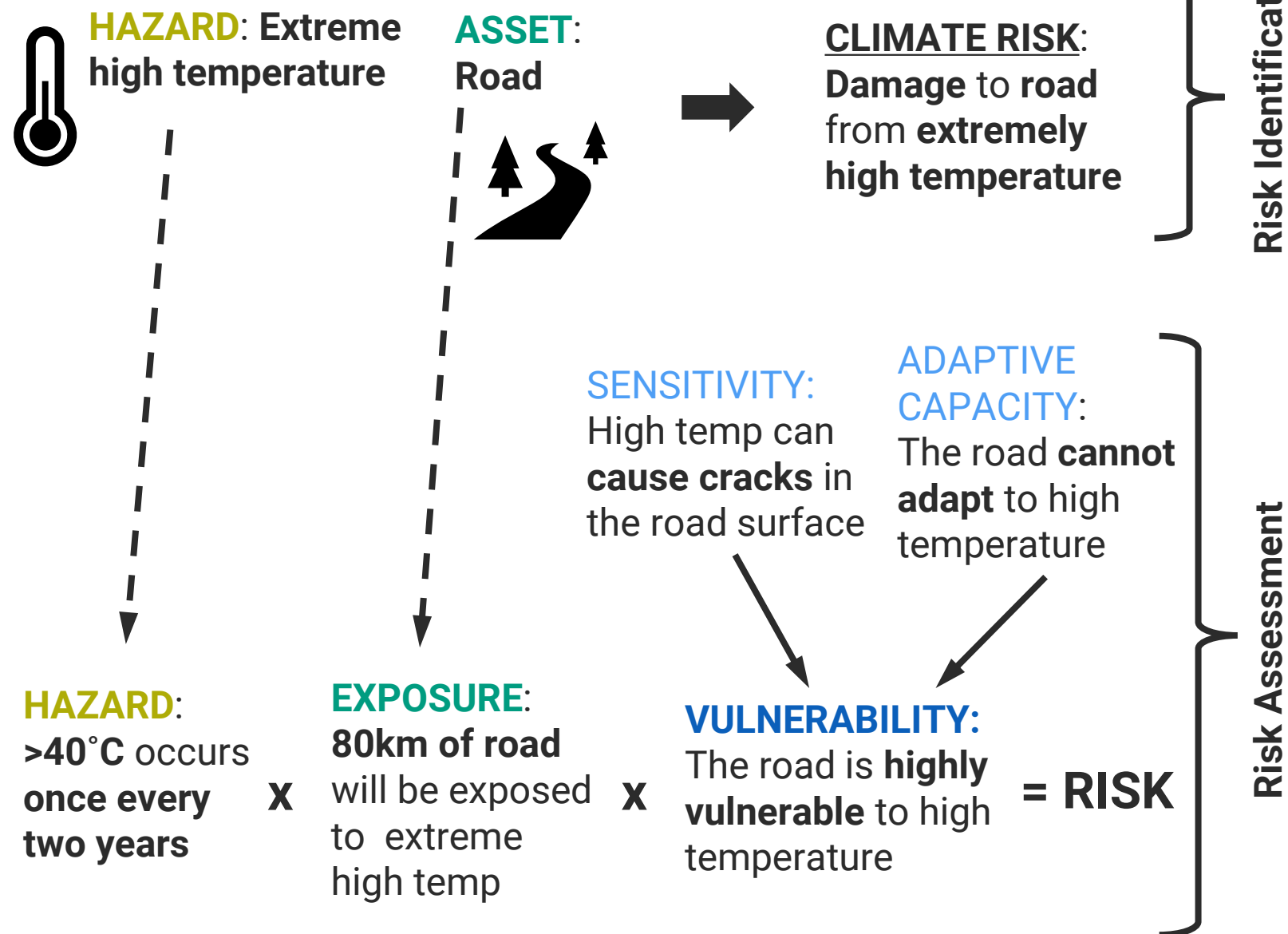
6

**CRIO Handbook** is available as a resource

# Illustration of Climate Risk Terms through Example

- **Hazard**: Natural or human-induced events that cause damage or disruption.
- **Asset**: A man-made or natural object which has value.
- **Climate Risk**: The potential for adverse consequences of a climate-related hazard
- **Exposure**: The presence of the asset in places that could be adversely affected
- **Sensitivity**: the degree to which a system is impacted by exposure.
- **Adaptive capacity**: The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.
- **Vulnerability**: The propensity or predisposition to be adversely affected. Vulnerability is a function of:
  - Sensitivity
  - Adaptive capacity

## Example: Extreme Temp & Road



# Recap: Alignment with National Policies and Development Goals

1

Government agencies play a central role in encouraging PPPs for resilient infrastructure as they provide the overarching enabling environment for climate resilience.

2

Investments should be aligned with national policies, to help address country's vulnerabilities to climate change.

# Recap: Integrating climate resilience into the PPP lifecycle

1

Climate resilience can be incorporated into every stage of the PPP project cycle.

2

Key to this is conducting in-depth climate risk assessments early.

3

Both private and public parties should be motivated to consider climate risk.

# Module 2: Risk Assessment

## a) Incorporating climate resilience in the Project Identification Phase of PPPs



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At the end of this Module, participants will be able to:

- Recall options for addressing climate risk across the PPP cycle.
- Explain the purpose of and outline the methodology for implementing a High-level Climate Screening.
- Demonstrate the implementation of a High-level Climate Screening in a simulated scenario.
- Explain the purpose of and outline the methodology for implementing a Climate Risk Assessment.
- Discuss uncertainties in the Climate Risk Assessment.



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## Outline

More principles on Climate Risk

Project Identification Phase

Exercise – High-Level Climate Screening





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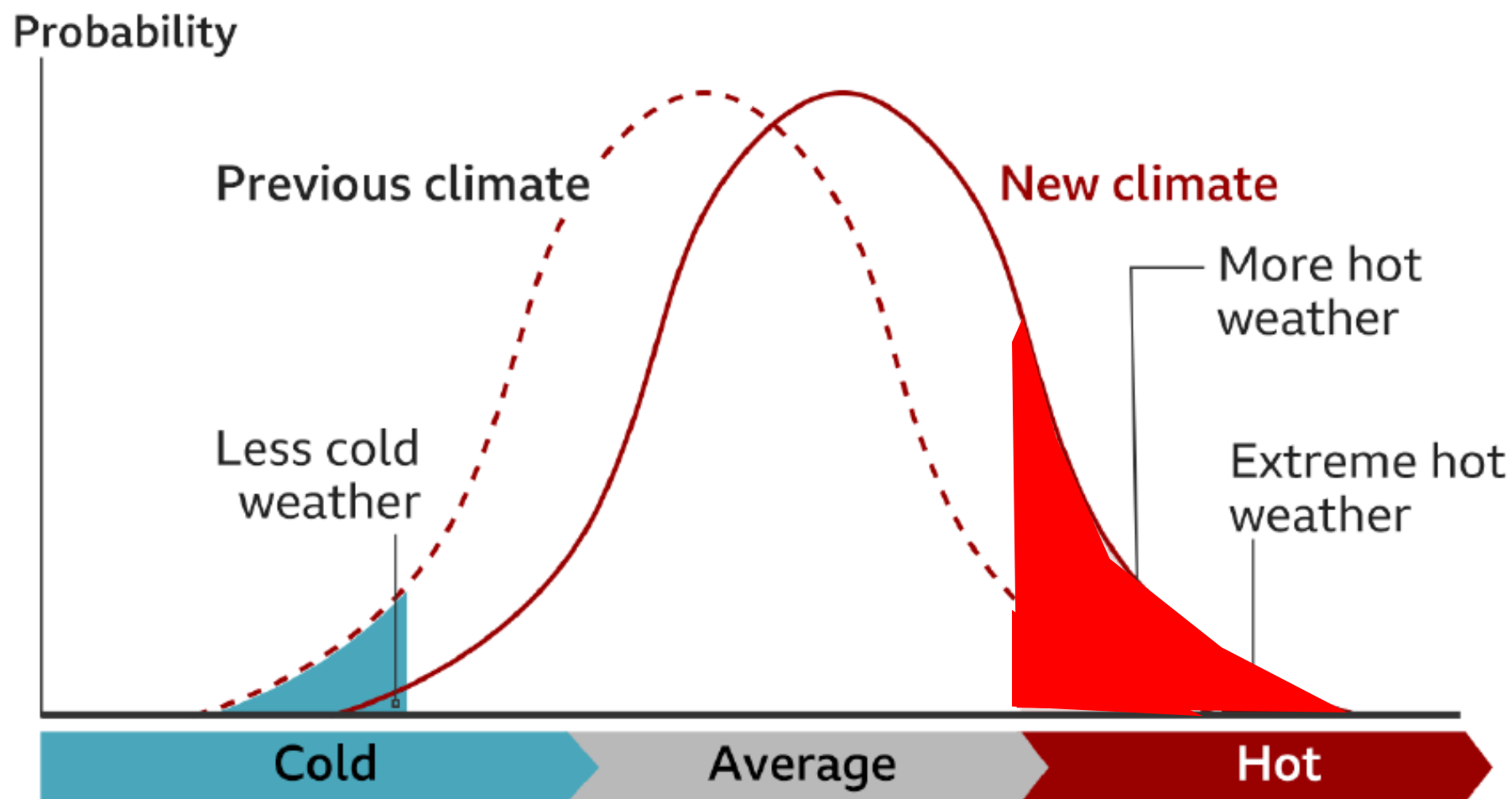
## Outline

More principles on Climate Risk

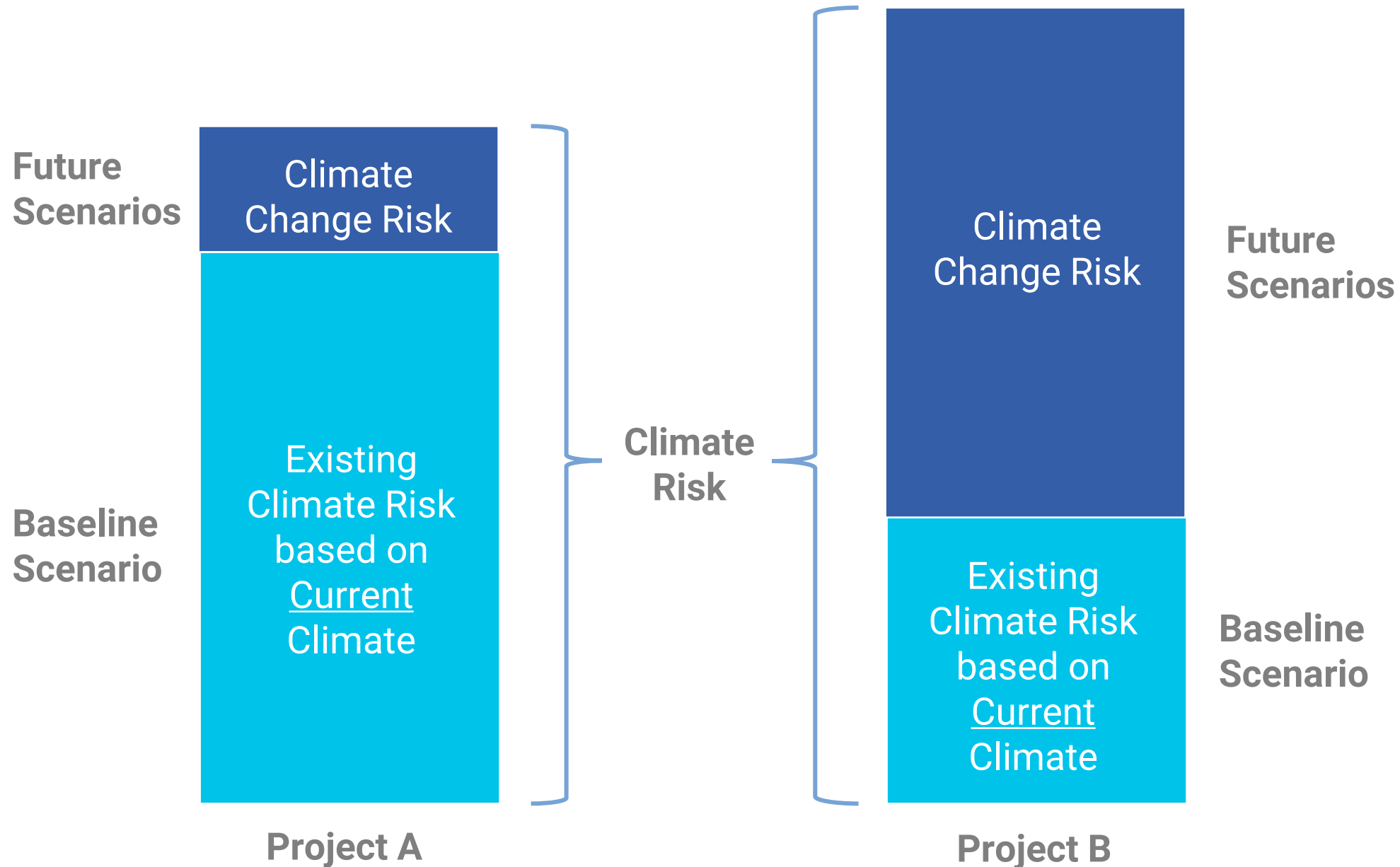
Project Identification Stage

Exercise – High-level Climate Screening

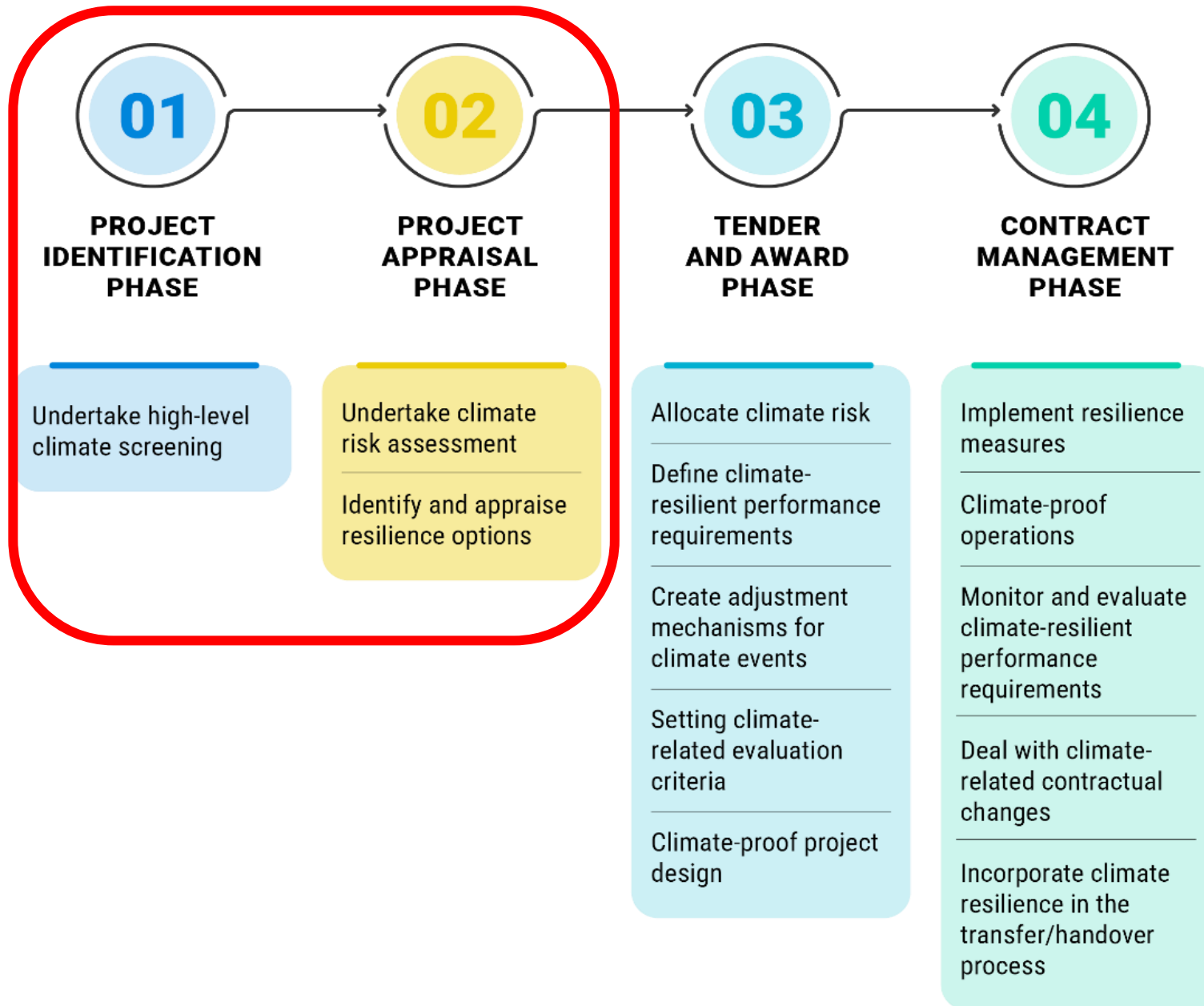
## A small shift makes a big difference



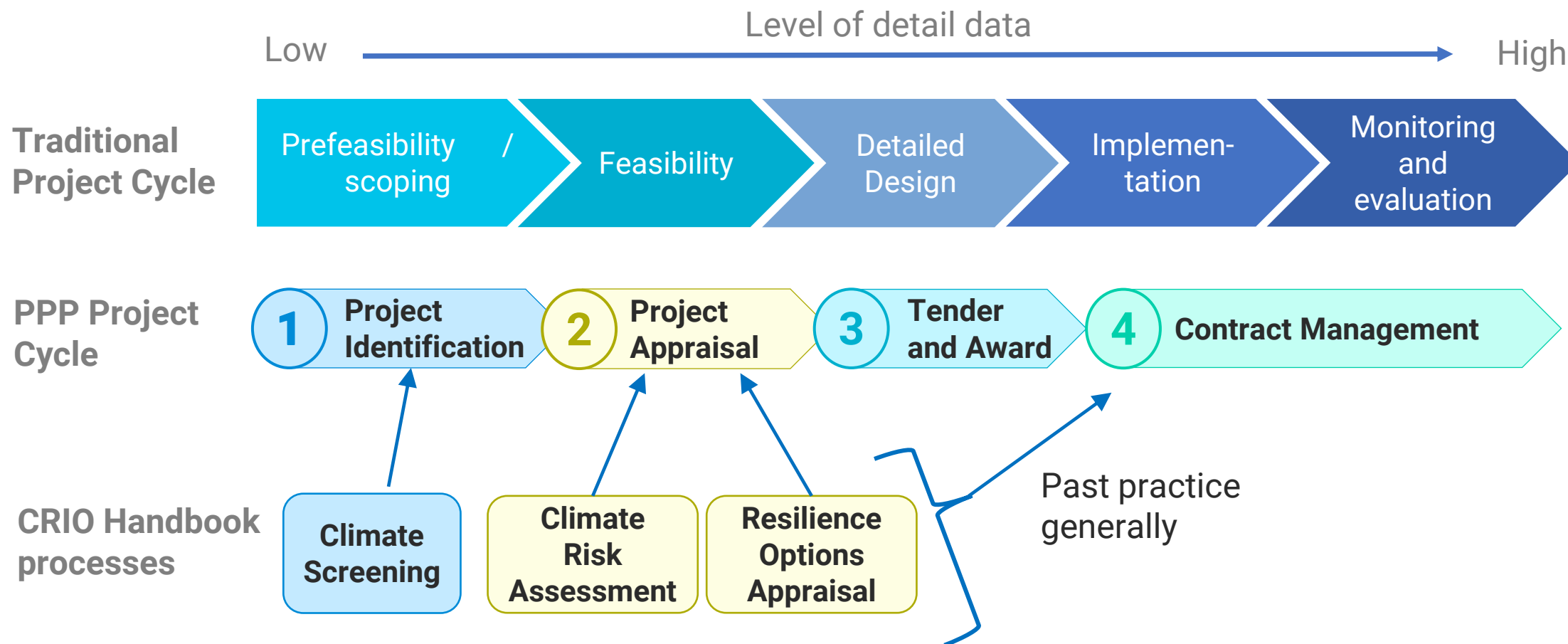
# Climate Risk or Climate Change Risk ?



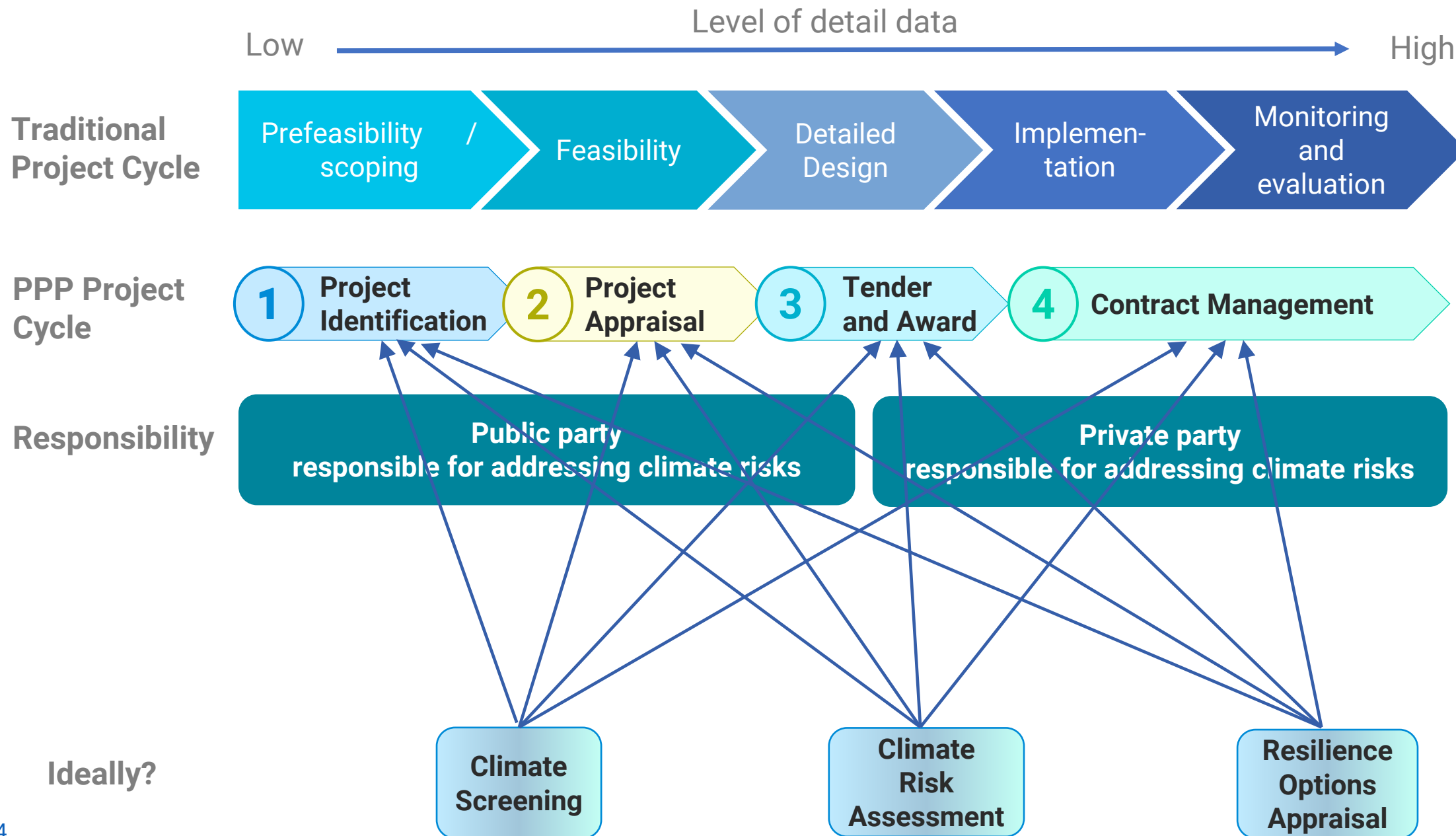
# When to assess and address Climate Risks?



# When to assess and address Climate Risks?



# When to assess and address Climate Risks?





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## Outline

More principles on climate risk

Project Identification Stage

Exercise – High-level Climate Screening

The PPP Project Identification Phase should answer two big questions...

## PPP

- Is this a good project?
- Is it best procured as a PPP?

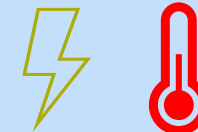
How do climate scenarios and climate risks impact our answers?



Identifying climate risks early allows us to answer some crucial questions about the project...



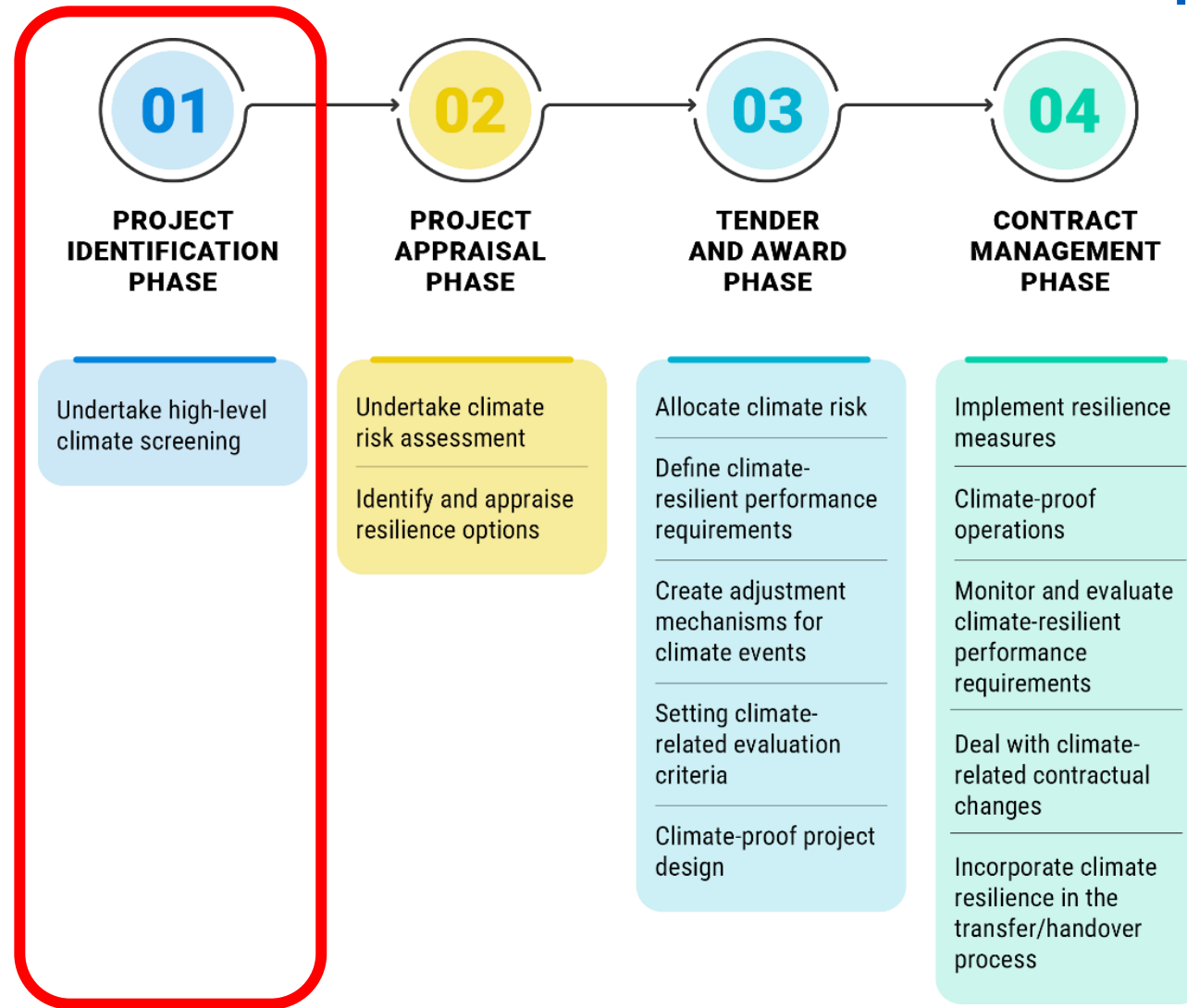
## Climate resilient PPP



- Whether we want to proceed with the project despite potential climate risks?
- Whether the project location and/or scope needs to be changed to minimize risk?
- Whether climate risk impacts the decision to pursue the project as a PPP?



# Project Identification Phase: Climate resilience intervention points



## CROSS-CUTTING TOPICS



Decision-making under uncertainty



Mobilising climate finance



Stakeholder engagement



Gender-sensitive considerations



Nature-based solutions



## PROJECT IDENTIFICATION PHASE

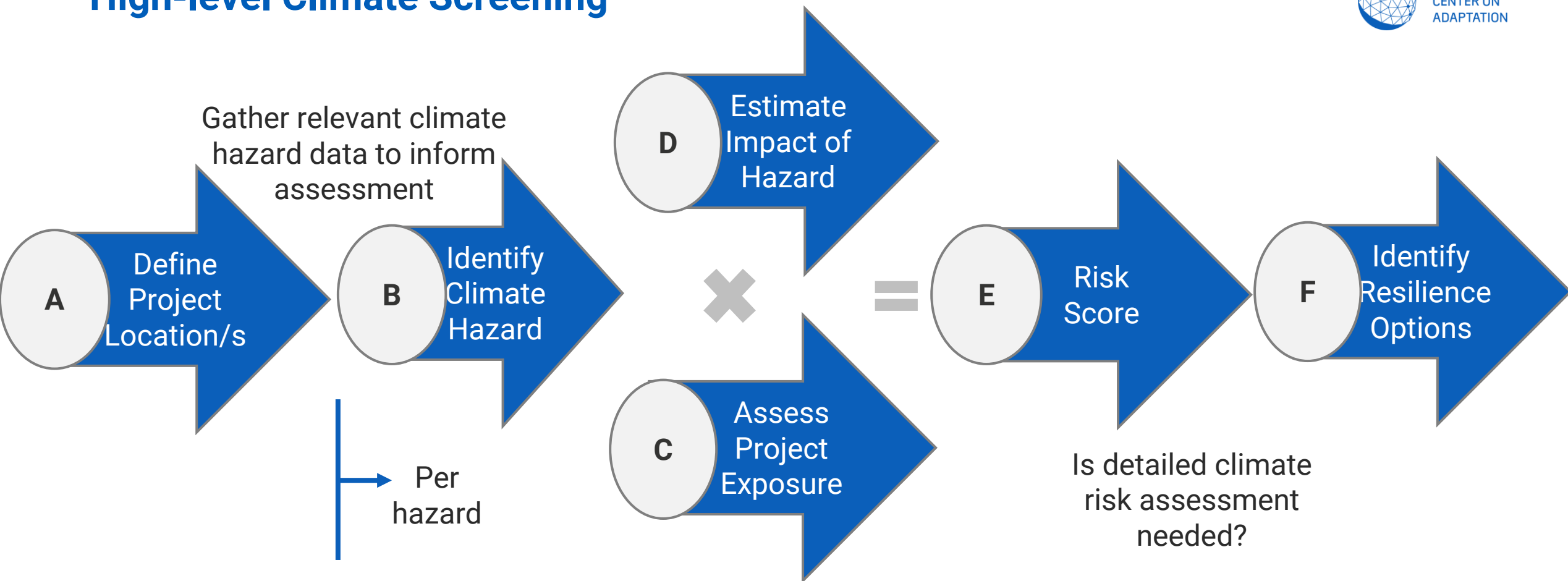
Undertake high-level  
climate screening

1 Identify climate hazards that could affect the proposed project

2 Assess the exposure of the project and end users to the identified climate hazards

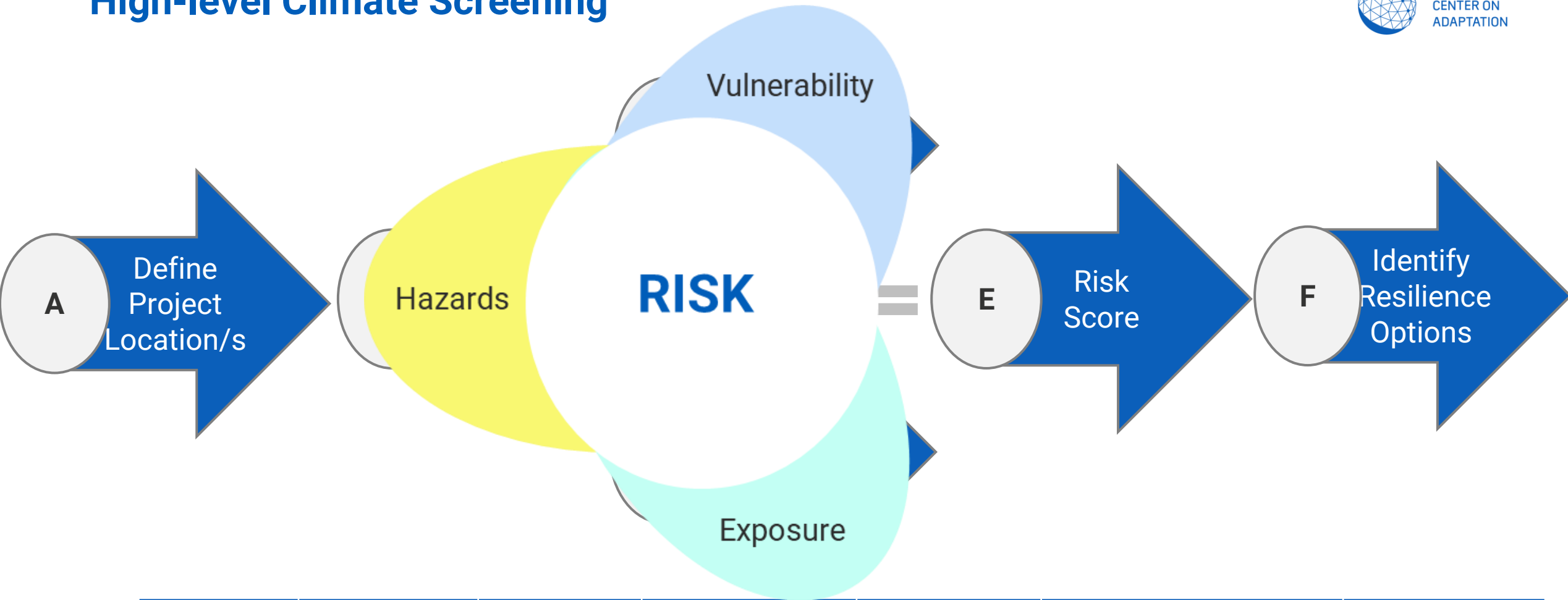
3 Estimate the impact of hazards on the project and its components

# High-level Climate Screening



Asset Location	Climate Hazard	Exposure	Impact (Vulnerability)	Risk Score	Resilience Options	Residual Impact
A	B	C	D	E = C X D	F	G = E-F

# High-level Climate Screening



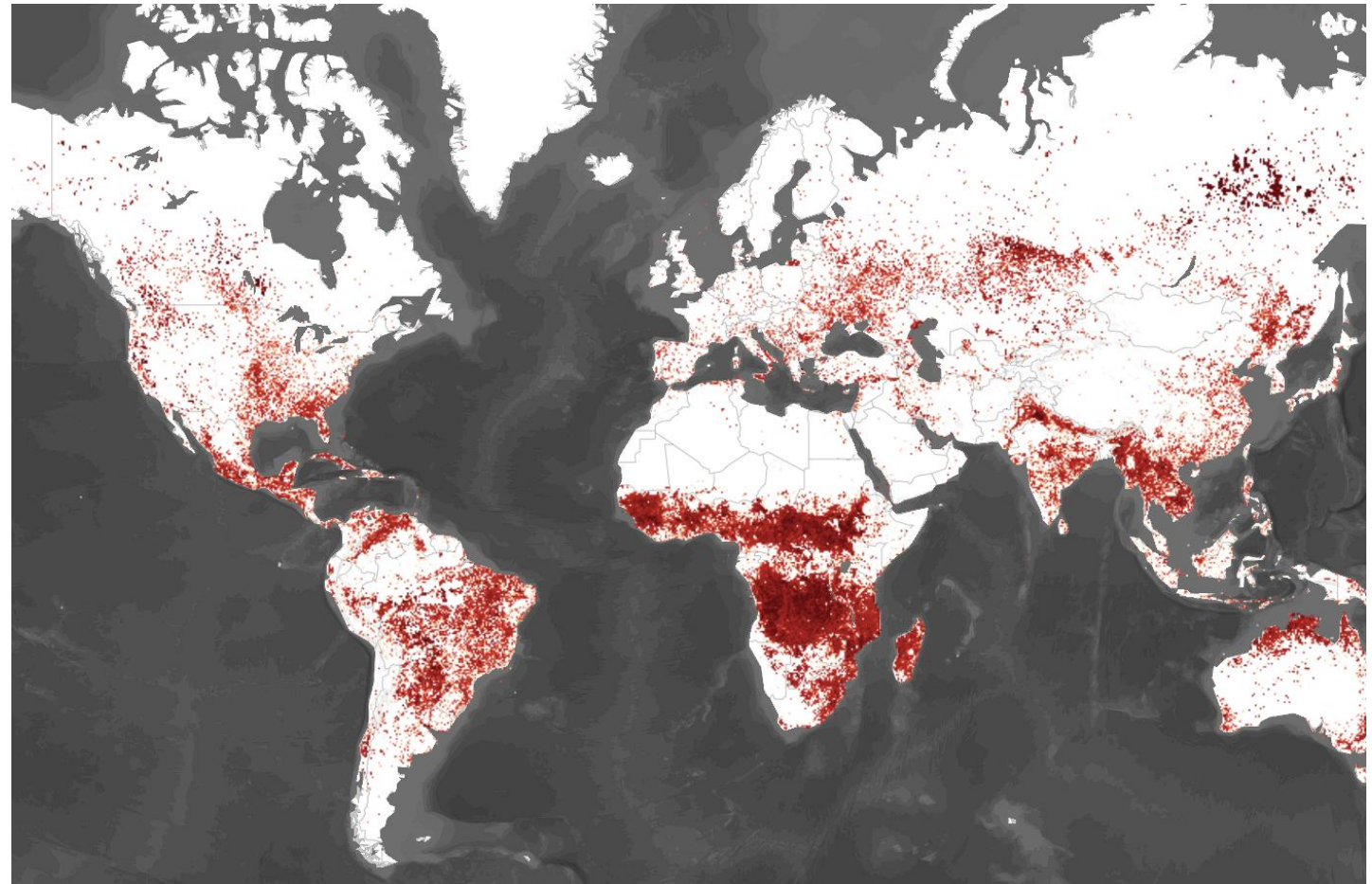
Asset Location	Climate Hazard	Exposure	Impact (Vulnerability)	Risk Score	Resilience Options	Residual Impact
A	B	C	D	$E = C \times D$	F	$G = E - F$

# High-level Climate Screening: Identify Climate Hazards

Use publicly available regional or national climate models and open-source databases  
No hard and fast rule on what models/database to use



Open-source databases allow users to view historical data on exposure to natural hazards, like this heat map of frequency of active fires



Source: [Global Risk Data Platform](#)

Simply, what is the likelihood of project infrastructure or users being exposed to the hazard occurring during different phases of the project?

Exposure Level	Definition	Exposure rating
High	Hazard is <b>very likely to occur</b> during construction and operational phases of the project	3
Medium	Hazard is <b>somewhat likely to occur</b> during construction and operational phases of the project	2
Low	Hazard is <b>unlikely to occur</b> during construction and operational phases of the project	1

# High-level Climate Screening: Estimating Impact of a Hazard

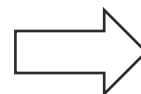
Simply, how severe are the consequences of the hazard likely to be?

Impact Level	Definition	Impact rating
High	Hazard (if it occurs) is likely to cause <b>major damage or disruption</b> during construction and operational phases of the project	3
Medium	Hazard (if it occurs) is likely to cause <b>moderate damage or disruption</b> during construction and operational phases of the project	2
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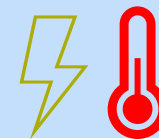
# High-level Climate Screening: Risk Score

Combining Exposure and Impact gives us a Risk Score

		Impact scoring		
Exposure scoring		High	Medium	Low
	High	9	6	3
	Medium	6	3	2
	Low	3	2	1



**Climate resilient PPP**



- Whether we want to proceed with the project despite potential climate risks?
- Whether the project location and/or scope needs to be changed to minimize risk?
- Whether climate risk impacts the decision to pursue the project as a PPP?



# High-level climate screening vs generic risk assessment

Generic risk assessment:

Category	Risk Description	Likelihood	Consequence (Damage)	Risk Rating	Risk Mitigation Actions	Residual Risk Rating
A	B	C	D	$E = C \times D$	F	$G = E - F$

High-level climate screening:

Location	Climate Hazard	Exposure	Impact	Risk Score	Resilience Options	Residual Impact
A	B	C	D	$E = C \times D$	F	$G = E - F$

Climate risk assessment:

Asset Type	Risk Description	Hazard Score	Vulnerability	Risk Impact	Resilience Options	Cost Benefit Analysis
A	B	C	D	$E = C \times D$	F	$G = E - F$

## 1. Data Collection

- Initial effort during Project Identification Stage.
- Ongoing data collection

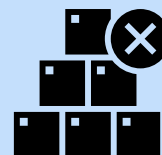
## 2. Broader Resilience

Best practice in early-stage screening considers both aspects of climate resilient infrastructure:



### Resilience of infrastructure

A high-level screening of the climate hazards that the infrastructure project could be exposed to, and the ways in which the project design could improve resilience of the infrastructure



### Resilience through infrastructure

A high-level risk screening of the proposed area in which the infrastructure is to be situated, as well as of the community and end-user, to identify how project infrastructure can make the surrounding area/community more resilient to the climate hazards

# An assessment of resilience through infrastructure...

To assess resilience through infrastructure, ask these 3 questions:

Resilience characteristic	Y/N	Details
<b>Absorptive capacity</b>  Does the project increase the system's ability to absorb the impacts of climate change and minimize its consequences?		
<b>Adaptive capacity</b>  Does the project increase the system's ability to adjust to climate impacts by undergoing changes?		
<b>Recovery and restorative capacity</b>  Does the project support the system's ability to return to normal or improved operations and system reliability after an impact?		

## 3. Stakeholder Engagement

- Map key stakeholders.
- Understand their interests, concerns and influence



### 4. Terms of Reference (ToR) for a Climate Risk Assessment (CRA)

Procurement options:

- Stand-alone CRA appointment; or
- Incorporated into appointment of Transaction Advisor (add to scope of feasibility study)

How to define scope?

- Use a standard framework (e.g. Steps 2.1, 3.1 and 3.2 from CRIO Handbook 2025 pgs 19-54)
- Use a good example – see GCA website procurement page
- Bespoke scope, based on specific project needs

What project-related data is available to support the CRA?

*Prepare a Climate Risk Assessment in accordance with the methodology described in the Climate Resilient Infrastructure Officers (CRIO) Handbook 2025 published by the Global Centre for Adaptation (available at this link: <https://gca.org/reports/climate-resilient-infrastructure-officer-handbook/> )*

*Specifically, the Climate Risk Assessment to be undertaken shall entail the following sequential steps with reference to the CRIO Handbook:*

- *A: Undertake a climate risk screening (pgs 19-31)*
  - *1. Identifying climate hazards that could affect the proposed project*
  - *2. Assessing the exposure of the project and end users to the identified climate hazards at the project's location*
  - *3. Estimating the impact of hazards on the project and its components*
- *B: Undertake a detailed climate risk assessment (pgs 34-40)*
  - *1. Collate data required for the climate risk assessment*
  - *2. Analyze the hazards to which the project and its end users are exposed for a range of scenarios*
  - *3. Assess the vulnerability of the project and its end users for each scenario*
- *C: Resilience options identification and appraisal (pgs 40-)*
  - *1. Establish objectives for climate resilience*
  - *2. Identify applicable resilience options and associated co-benefits*
  - *3. Conduct an economic analysis of applicable resilience options*
  - *4. Combine technical and economic evaluation to prioritize preferred resilience options, valuing risks and benefits*

**Add details to make it specific to the project concerned !!!**

# Recap: Project Identification Phase

1

We should be asking:  
Is this a good project?  
Should it be procured  
as a PPP? And does  
climate change  
impact our answers  
to either question?

2

High-level screening  
of climate hazards  
identifies which  
hazards are  
significant to a  
project

3

Early-stage  
screening should  
look at resilience of  
infrastructure and  
resilience through  
infrastructure





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## Outline

More principles on climate risk

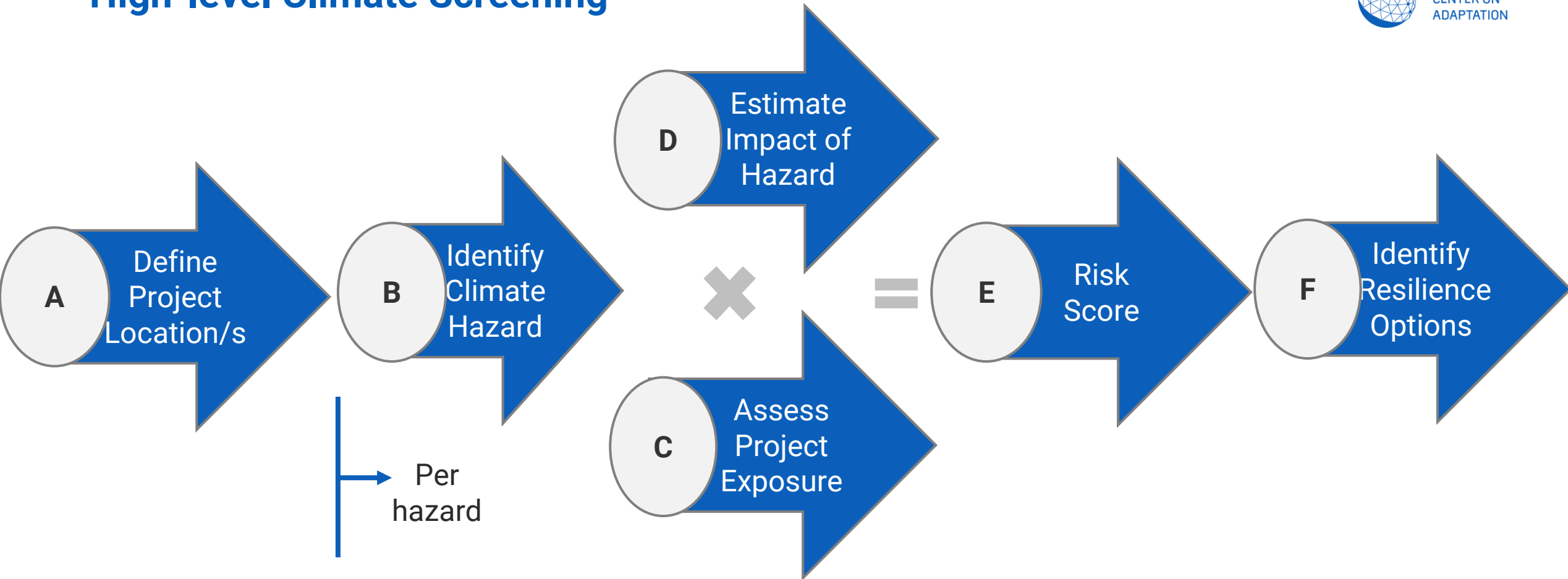
Project Identification Stage

Exercise – High-level Climate Screening

## Exercise: High-level Climate Screening

1. Selection of a project
2. First row together
3. Separate into groups & fill out further rows
4. Report-back

# High-level Climate Screening



Asset Location	Climate Hazard	Exposure	Impact (Vulnerability)	Risk Score	Resilience Options	Residual Impact
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# High-level Climate Screening Exercise

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