

Cumulative impact analysis from a project perspective



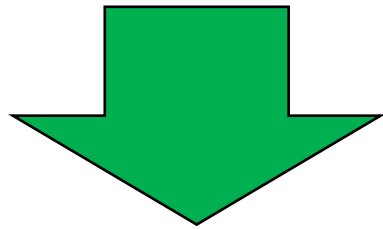
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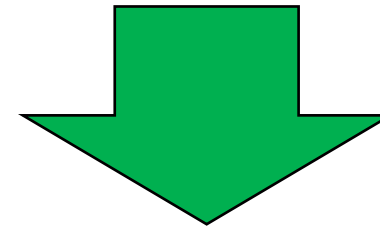
Two different ways to perform a CIAM

From the **Planner's**
Perspective



How **various actions** (projects) will affect a predetermined **group of VECs** in a preset area in predefined time

From a **Project's**
Perspective



How other actions (projects) can **exacerbate** the general future environmental conditions of a **project's the area of influence**

815

Approved infra-
corporate projects

298

Had an ESIA

6

Developed an ESIA

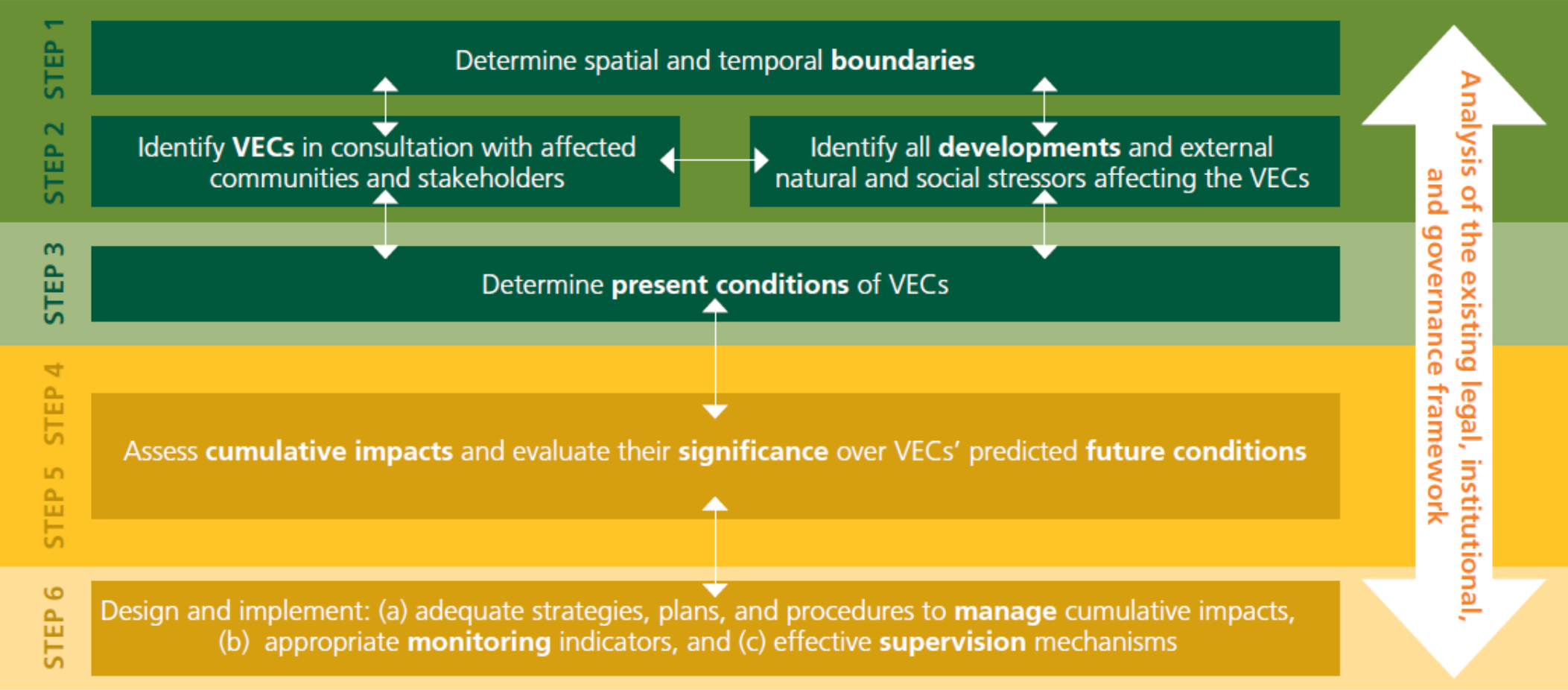
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Performed a CIAM
from the Planner's
perspective

304

Performed a CIAM or a
RCIAM from the Project's
perspective

CIAM – IFC’s Six-Step Approach



CIAM – IFC's Six-Step Approach

- STEP 1:** Determine **spatial** and **temporal** boundaries.
- STEP 2:** Identify (a) **VECs** in **consultation** with affected communities and stakeholders and (b) all **developments** and external natural and social **stressors** affecting the VECs.
- STEP 3:** Determine present **conditions of VECs**.
- STEP 4:** **Assess** cumulative impacts
- STEP 5:** **Evaluate the cumulative** impacts significance over VECs' predicted future conditions
- STEP 6:** Design and implement: (a) adequate strategies, plans, and procedures **to manage cumulative impacts**, (b) appropriate monitoring indicators, and (c) effective supervision mechanisms

Sound ESIA

STEP 1: Determine spatial and temporal boundaries

3. Evaluation of all relevant project activities that may cause some type of environmental impact.

STEP 2 (a): Identify the environmental components likely to be affected

STEP 3: Determine present conditions of VECs

6. An environmental impact analysis.
7. List of measures to prevent, mitigate, restore, and compensate for unwanted effects, and to stimulate the changes sought (environmental and social management plan)

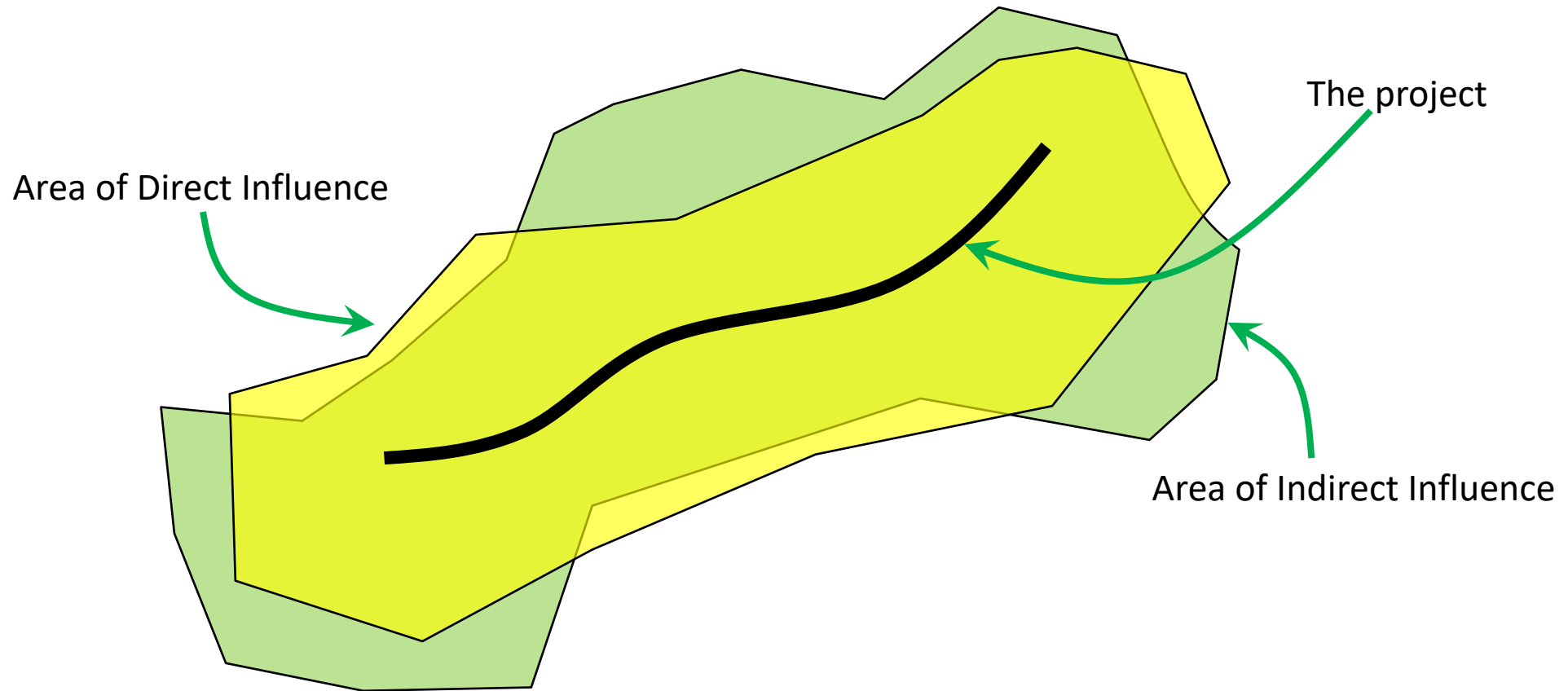
STEP 2 (b): Identify the environmental components in consultation with stakeholders

Sound ESIA

1. Delimitation of the **areas of direct and indirect influence**.
2. Definition of the timing of the **project's development phases** (pre- construction, construction, operation and maintenance and abandonment).
3. **Evaluation of all relevant project activities** that may cause some type of environmental impact.
4. Analysis of all the **environmental components likely to be materially affected** by the project activities.
5. A **baseline of the environmental components** prone to be affected
6. An **environmental impact analysis**.
7. List of **measures to prevent, mitigate, restore, and compensate** for unwanted effects, and to stimulate the changes sought (environmental and social management plan)
8. A **consultation process** in which project stakeholders had the opportunity to express their concerns about the project or the proposed measures to manage undesired impacts.

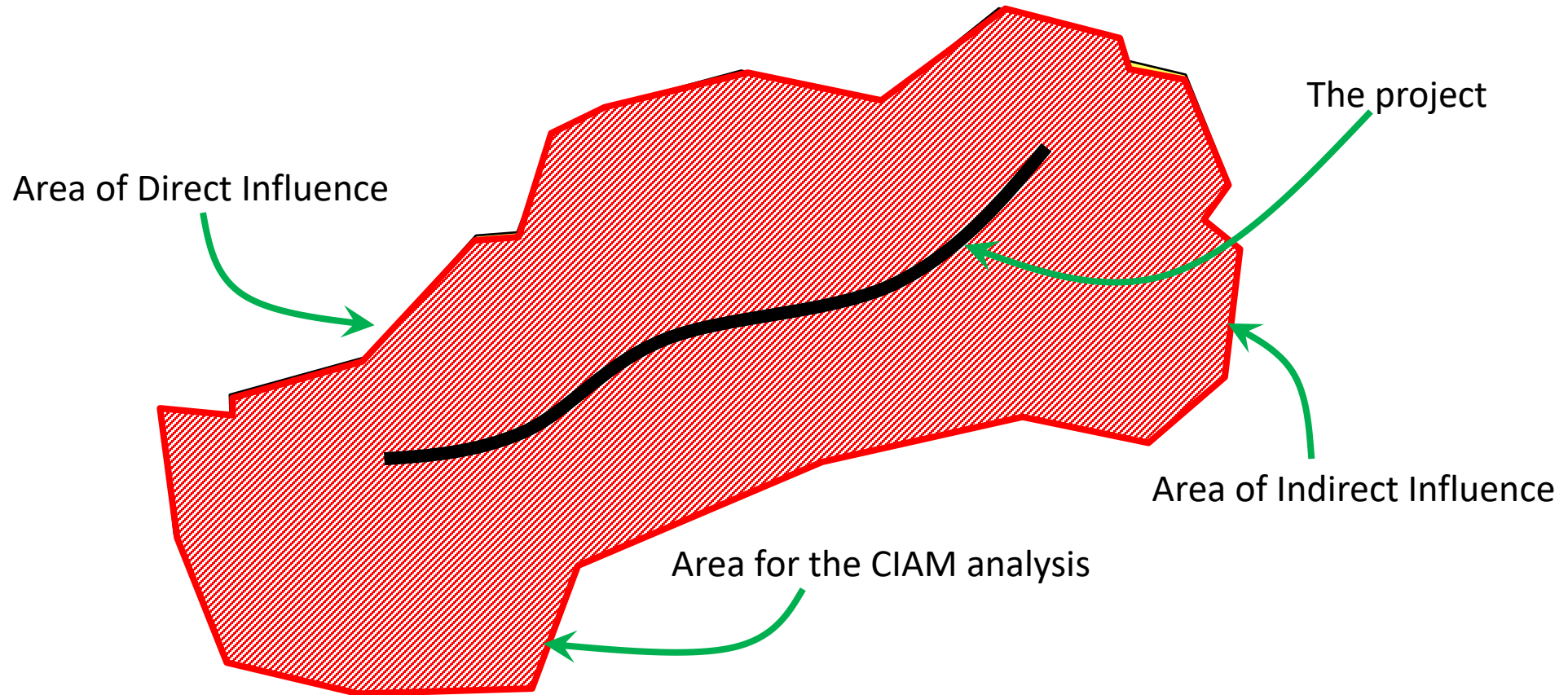
STEP 1(a): Determine **spatial** boundaries

The area of analysis for the CIAM is the union of the Project's areas of direct and indirect influence.

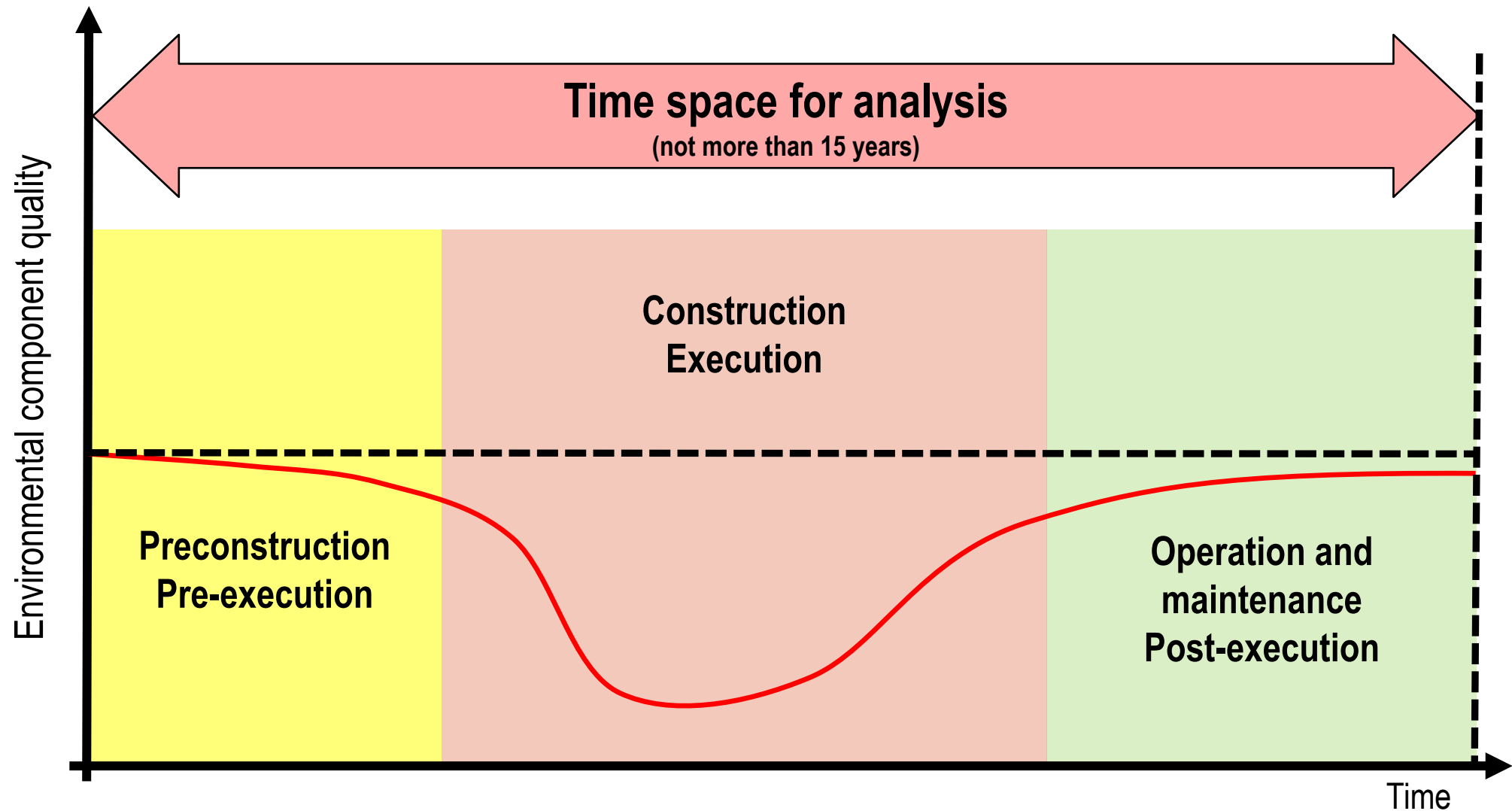


STEP 1(a): Determine **spatial** boundaries

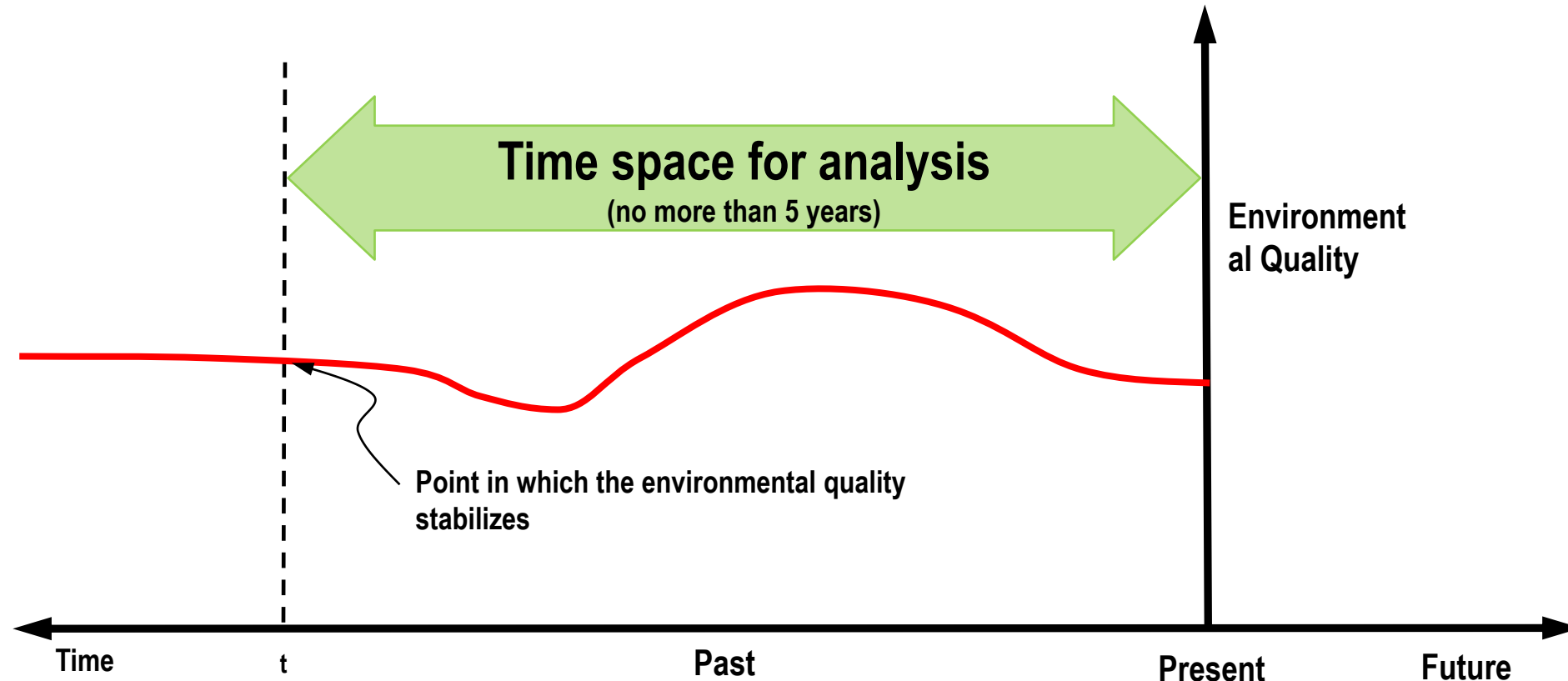
The area of analysis for the CIAM is the union of the Project's areas of direct and indirect influence.



STEP 1(b): Determine **temporal** boundaries (future)



STEP 1(b): Determine **temporal** boundaries



STEP 2 (a): Identify (a) VECs in consultation with (b) affected communities

ENVIRONMENTAL EVALUATION MATRIX LEOPOLD-PÁEZ METHODOLOGY

PROJECT: Test Project
PHASE: OPERATION

 Positive Impact
 Mild Negative Impact
 Moderate Negative Impact
 High Negative Impact

Environmental Factors	Project Action				Positive Interactions due to the Environmental Factor	Negative Interactions due to the Environmental Factor	Total Interaction due to the Environmental Factor
	Modification of habitat	Alteration of ground cover	Canalization	Noise and vibration			
Mineral resources	-2	4	6		0	2	-32
Soils			9	-4	1	1	69
Ocean water			8	7	1	0	56
Water quality	6	-5	-3	5	0	3	-48
Water recharge		-2	5	2	1	1	2
Climate (micro, macro)	-1	5	2	6	1	1	7
Positive Interactions due to the Project Action	0	0	3	1			
Negative Interactions due to the Project Action	3	3	1	1			
Total Interaction due to the Project Action	-31	-49	134	0			
<small>Juan Carlos Páez Zamora 2019</small>					Total		54



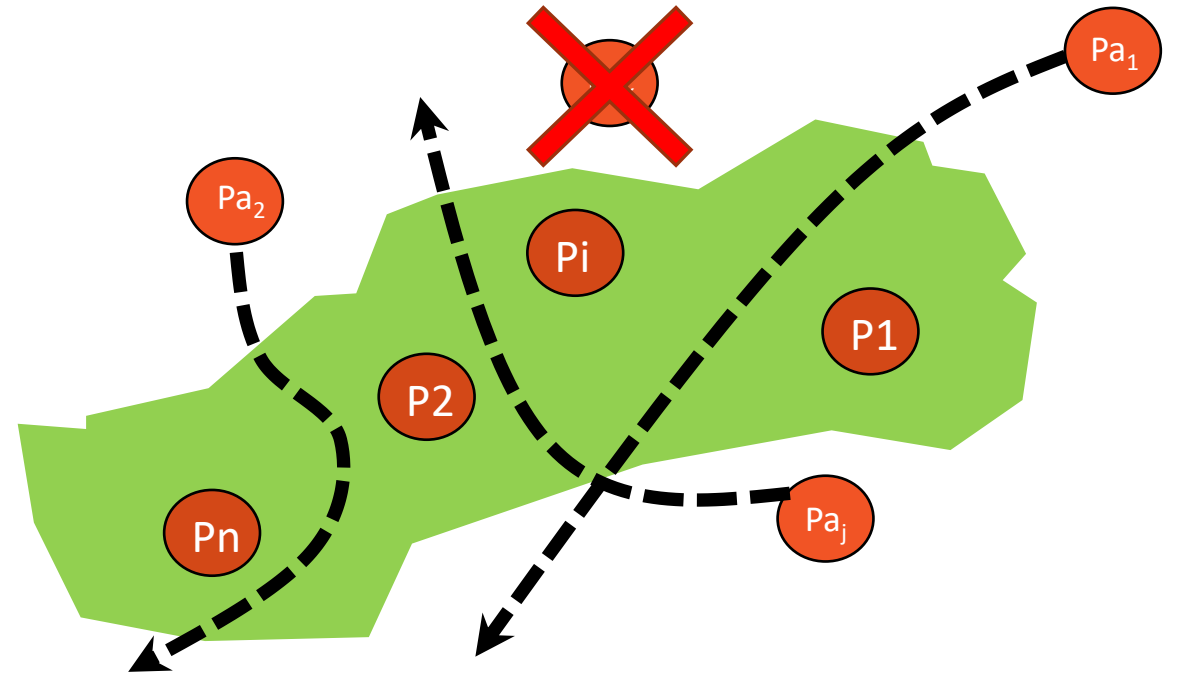
PRELIMINARY VECs
Mineral resources
Soils
Ocean water
Water quality
Water recharge
Climate (micro, macro)

The only sensitive environmental components of the area under analysis are those identified in the EIA. Therefore, these components (and no others) are the preliminary VEC's.

STEP 2 (c): Identify all **developments** and external natural and social stressors affecting the VECs

Past, present and future projects:

- Projects located (or that will be located) within the selected area.
- Projects that are (or will be):
 - (a) Near the selected area; **and**
 - (b) *Upstream* any flow (water, air, biomass, animals, etc.) that intersects the selected area and that is related to a *preliminary* VEC.



STEP 2 (c): Identify all **developments** and external natural and social stressors affecting the VECs

THE PROJECT

Set of actions which originated the EIA and the CIAM.

PAST PROJECTS

Projects in operation or abandoned (dismantled) that are affecting the selected VECs, if not already considered in the baseline.

PRESENT PROJECTS

Projects in execution or in an imminent execution stage (if not already considered in the baseline).

FUTURE PROJECTS

Projects that: i) their sponsor has requested to the authorities the green light to proceed with the environmental licensing process; ii) are included in the pipeline that the authorities are planning to undertake in the following years; iii) form part of the political speech of the authorities; iv) have the needed financing for their execution; v) a financing request has been submitted to a donor; vi) a procurement schedule has already been prepared; or vii) have a clear people's support, among others.

STEP 2 (c): Identify all **developments** and external natural and social stressors affecting the VECs

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<div style="text-align: center;"> Project Attributes Proyectos to be Considered </div>	a. Environmental licensing process has begun	b. Included in the government's pipeline of projects	c. Is part of the political speech of the authorities	d. Has a secure financing source for its execution	e. A financial request has been submitted to the international banking system	f. A procurement calendar has been published	g. A bidding process for its execution has been initiated	h. The Project's construction has been awarded	i. The Project's construction has already begun or it's about to begin	j. There is a high community support for the Project	k. Other
Future project 1											
Future project 2											
Future project 3			x	x	x				x		
Future project 4				x	x						
Future project 5					x				x		
Future project 6											
Present project 1									x		
Present project 2									x		
Present project 3									x		

STEP 2: Identify (a) **VECs** in consultation with (b) affected communities and stakeholders and (c) all **developments** and stressors

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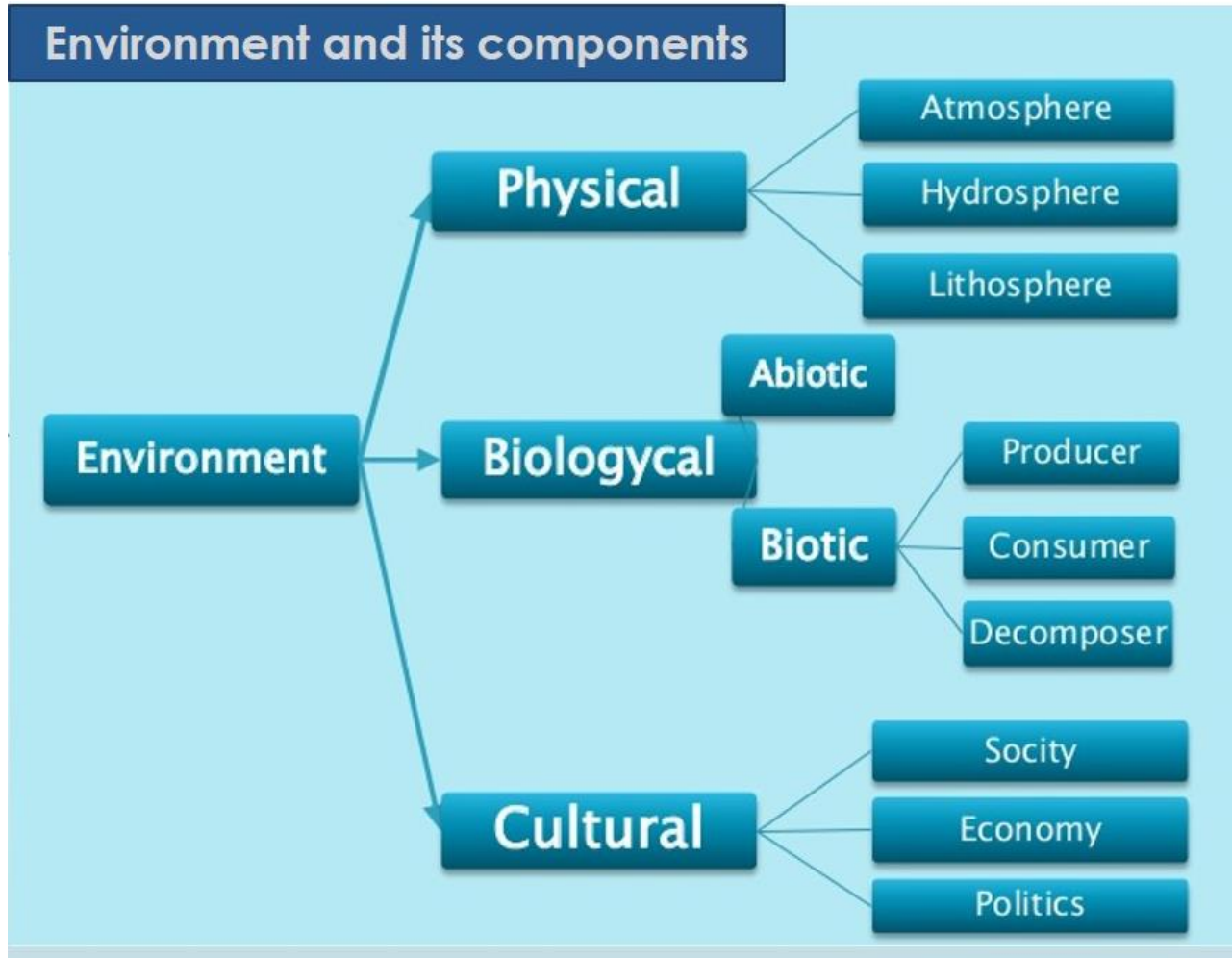
<div style="text-align: center;">Projects to be considered</div> <div style="text-align: center;">Environmental Components (EIA)</div>	Past project 1	Past project 2	Past project 3	Future project 3	Future project 4	Future project 5	Present project 1	Present project 2	Present project 3
Mineral resources	x	x							
Soils		x	x						
Ocean water									
Water quality					x	x			
Water recharge									
Climate (micro, macro)								x	x

STEP 2: Identify (a) **VECs** in consultation with (b) affected communities and stakeholders and (c) all **developments** and stressors

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<div style="text-align: right;">Final Projects</div> <div style="text-align: left;">Valued Ecosystem Components (VECs)</div>	Test Project	Past project 1	Past project 2	Past project 3	Future project 4	Future project 5	Present project 2	Present project 3
Mineral resources								
Soils								
Water quality								
Climate (micro, macro)								

STEP 3: Determine present conditions of the preliminary VECs



STEP 4: Assess the cumulative impacts

STEP 5: Evaluate the cumulative impacts significance over VECs' predicted future conditions

CUMULATIVE IMPACT MATRIX

PÁEZ ZAMORA METHODOLOGY

PROJECT: Test Project

■ Positive Impact
 ■ Mild Negative Impact
 ■ Moderate negative impact
 ■ High Negative Impact

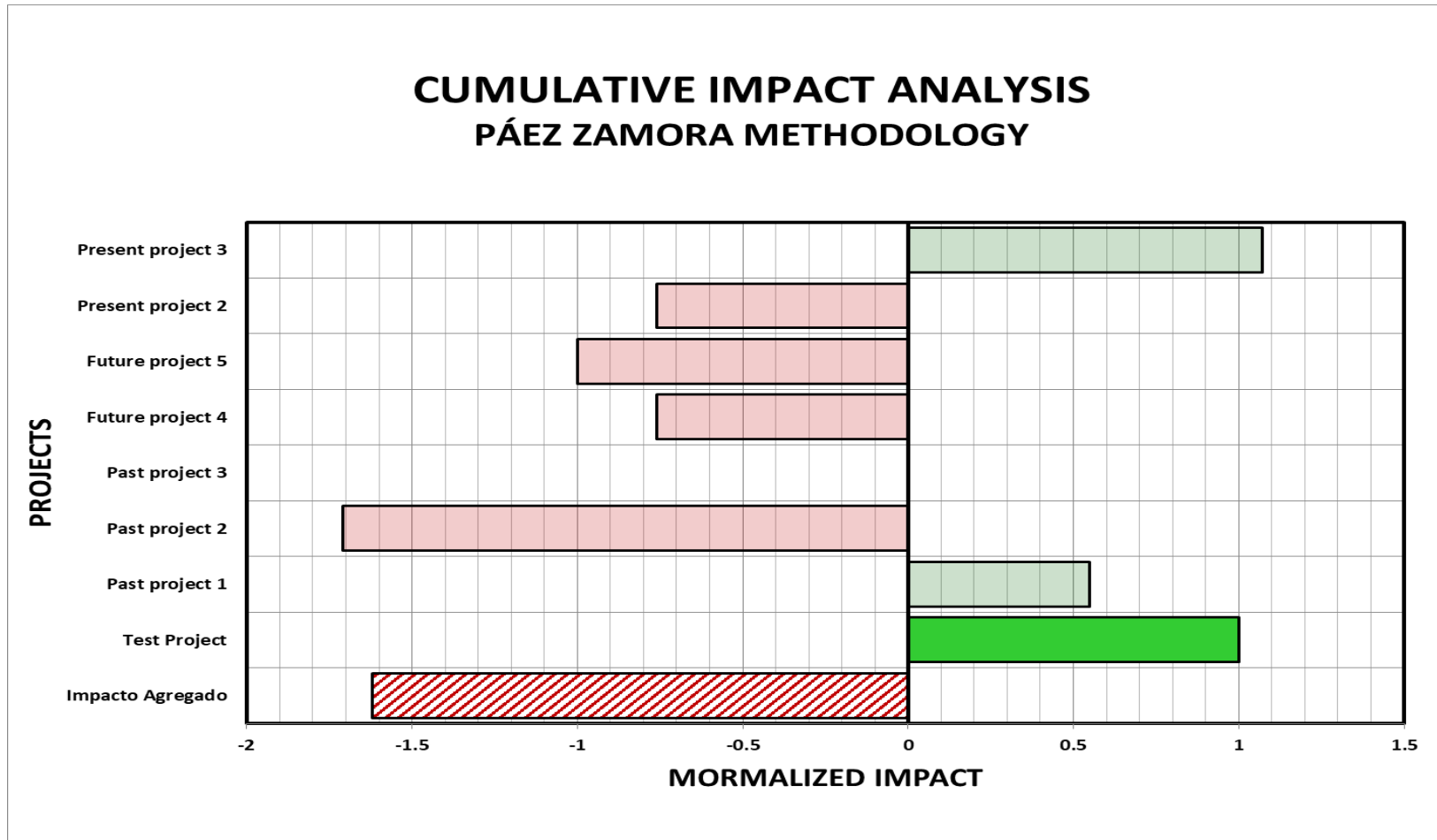
Valued Ecosystem Components (VECs)	Final Projects								Positive effects on the VEC	Negative effects on the VEC	Total effects on the VEC
	Test Project	Past project 1	Past project 2	Past project 3	Future project 4	Future project 5	Present project 2	Present project 3			
Mineral resources		7			7			7	3	0	112
Soils		5	-6		-8		-4		0	3	-124
Water quality	6	-2			-7			3	2	2	3
Climate (micro, macro)	7	6	-6		-3			-1	0	3	-59
			6		6			5			
Positive effects due to the project	1	1	0	0	1	0	0	2			
Negative effects due to the project	0	1	2	0	2	1	1	1			
Total effects due to the project	42	23	-72	0	-32	-42	-32	45			

Total	-68
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STEP 4: Assess the cumulative impacts

STEP 5: Evaluate the cumulative impacts significance over VECs' predicted future conditions



STEP 4: Assess the cumulative impacts

STEP 5: Evaluate the cumulative impacts significance over VECs' predicted future conditions

CUMULATIVE IMPACT ANALYSIS PÁEZ ZAMORA METHODOLOGY

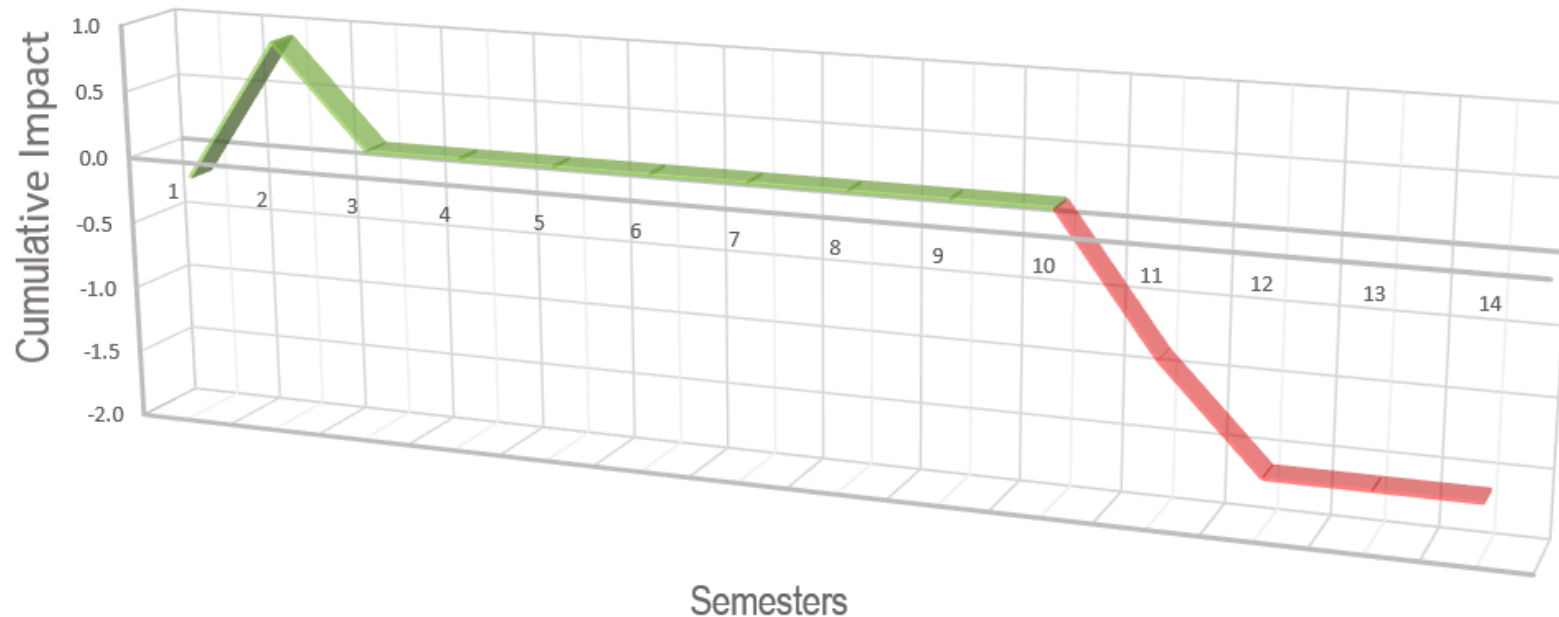
Scope of the analysis (years): 6

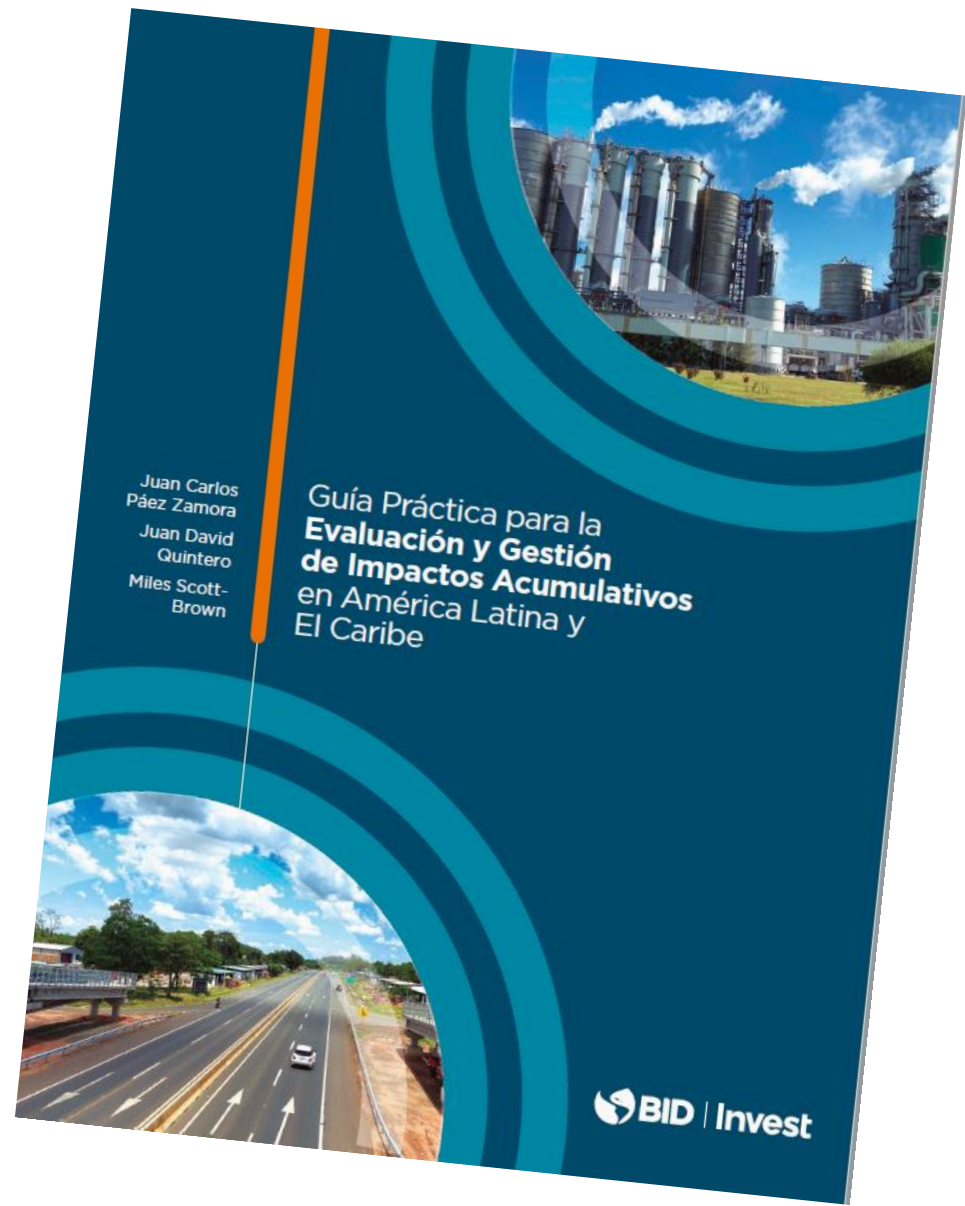
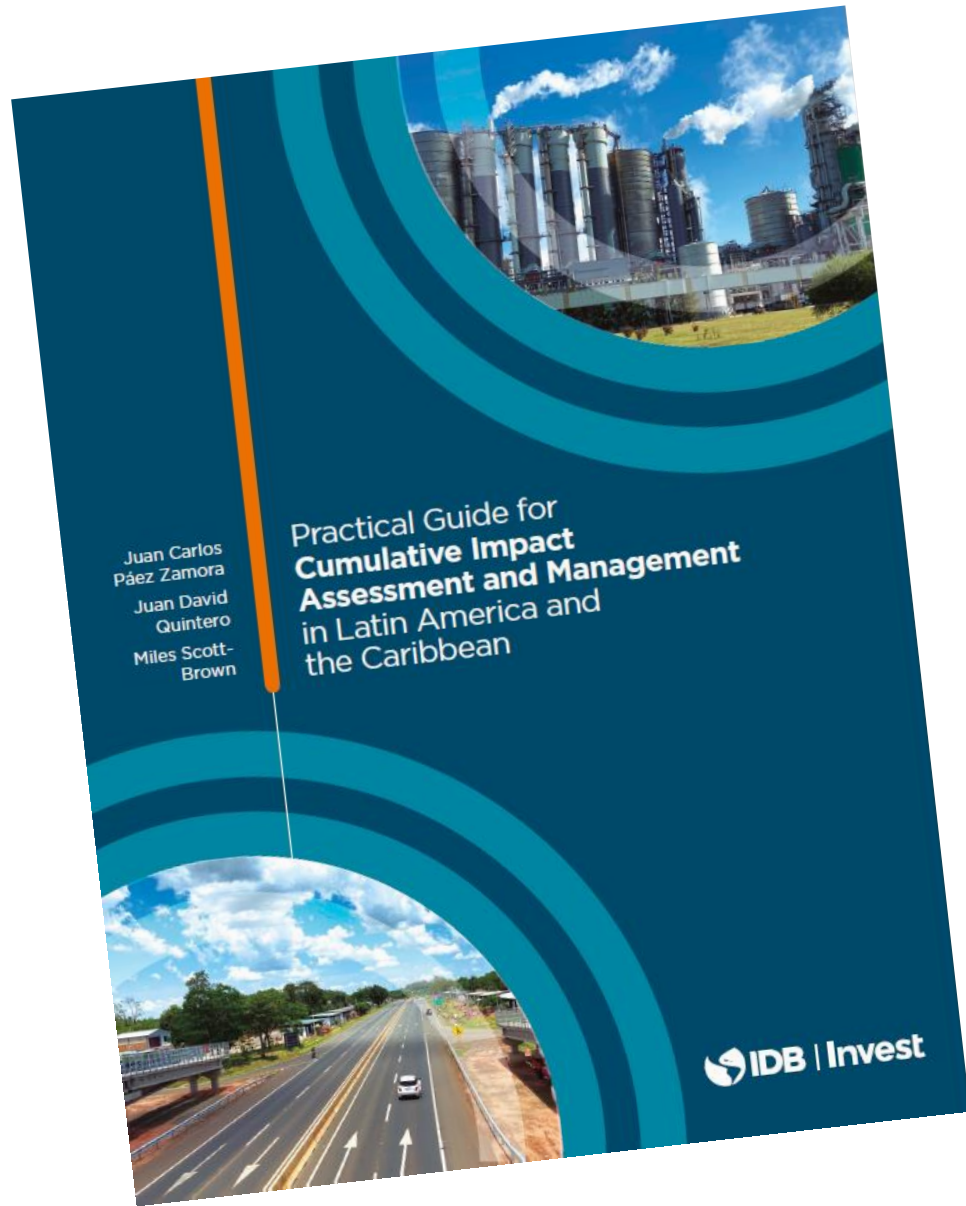
Projects	Aggregated Impact	Year in which the Project will be in operation	Year 0		Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
Test Project	42	0.0	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Past project 1	23	0.0	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Past project 2	-72	0.0	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Past project 3	0	0.0	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Future project 4	-32	5.5											█	█	█	█
Future project 5	-42	5.0											█	█	█	█
Present project 2	-32	1.0			█	█	█	█	█	█	█	█	█	█	█	█
Present project 3	45	0.5		█	█	█	█	█	█	█	█	█	█	█	█	█
TOTAL NORMALIZED CUMULATIVE IMPACT			-0.2	0.9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.9	-1.6	-1.6

STEP 4: Assess the cumulative impacts

STEP 5: Evaluate the cumulative impacts significance over VECs' predicted future conditions

Cumulative Impact Graph







Download the document
in English



Download the document
in Spanish

Word cloud of "Thank You" in various languages and scripts, including: danke, 謝謝, ngiyabonga, teşekkür ederim, dank je, gracias, thank you, tapadh leat, bedankt, obrigado, dziekuje, sukriya, terima kasih, merci, and many others.

Let's continue the conversation!

Post questions and comments in the IAIA23 app.



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