



The Background

International Regulation
Indian Context
Best Practices
Jurisdiction
Evolution

Challenges
The Way Forward

CEIAs



Global Perspective Around CEIAs

Neena Singh, Partner ERM



CSE Workshop
on EIAs: Delhi, 2016



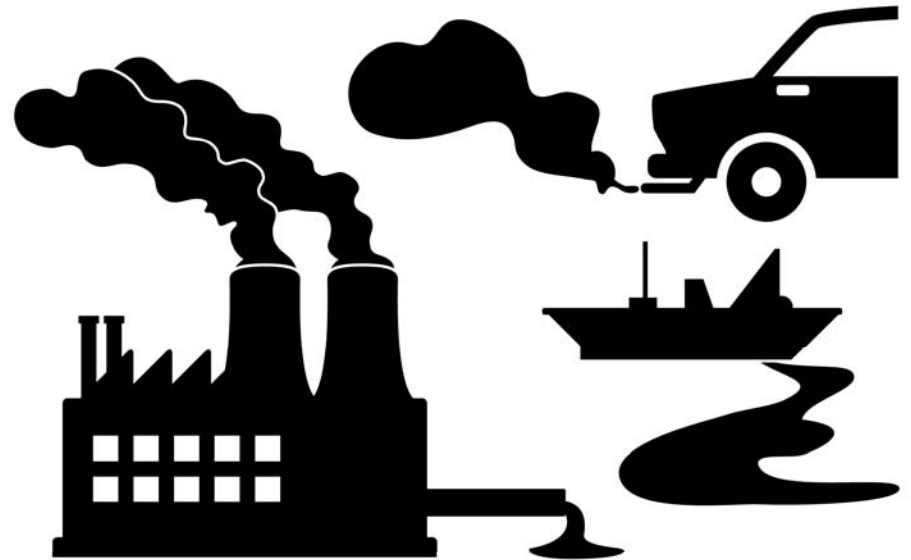
What is a CEIA?

- **Cumulative Environmental Impact Assessment (CEIA)**

typically assesses the potentially significant environmental and social impacts that may result from combined effects of industries and development stressors at a range of spatial and temporal scales;

- CEIA utilizes a **VEC (Valued Environmental Components)** based impact assessment approach;

- VECs are **environmental and social attributes** that are considered to be important in assessing risks; **VECs are the ultimate recipient of impacts because they tend to be at the ends of ecological pathways.**



Why do a CEIA?

- Because a proposed project is likely to have significant impacts on regional “**Valued Ecosystem Components (VECs)**” which are also impacted by other actions/trends (sources)
- Because the impacts from different sources (**stressors**) can interact in additive or synergistic ways, not always easy or straightforward to predict, requiring in-depth analysis
- Because impacts from other stressors can undermine the project’s objectives and/or result in unexpectedly severe impacts
- Because looking at the broader picture might reveal new opportunities for better overall outcomes
- Because the most feasible and cost-effective mitigation measures might not lie within the context of the proposed project

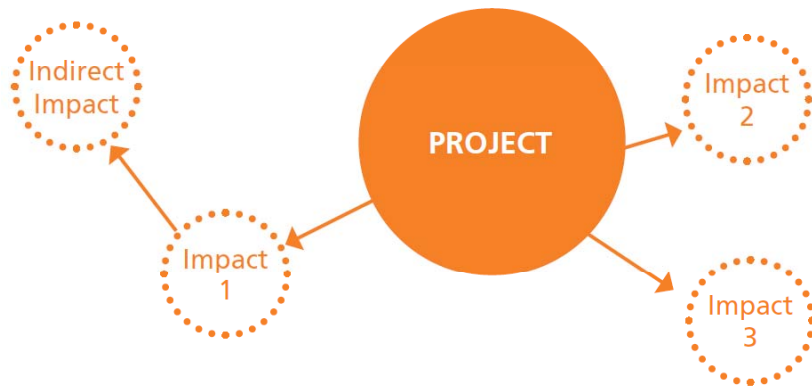
What are VECs?

- VECs are environmental and social attributes that are considered to be important in assessing risks - they may be:
 - physical features (air/water/ land/acoustic environments)
 - natural processes (water /nutrient cycles, microclimate)
 - habitats, wildlife population, biodiversity
 - ecosystem services
 - social wellbeing (health, socioeconomics, etc.)
 - cultural aspects.
- In CEIAs it is good practice to focus the assessment and management strategies only on VECs – *resulting in appropriate scope and time and cost savings*

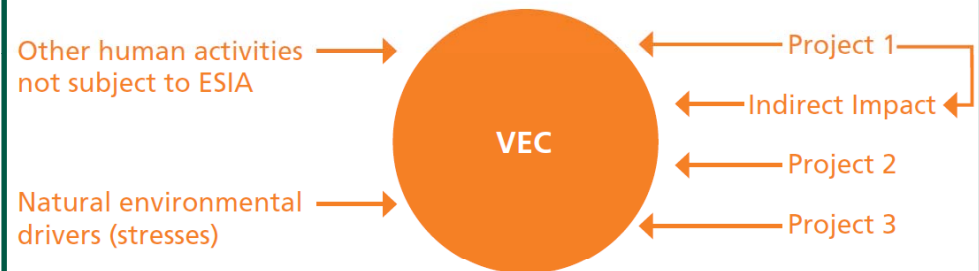


ESIA and CEIA

ESIA: Project-Centered Perspective

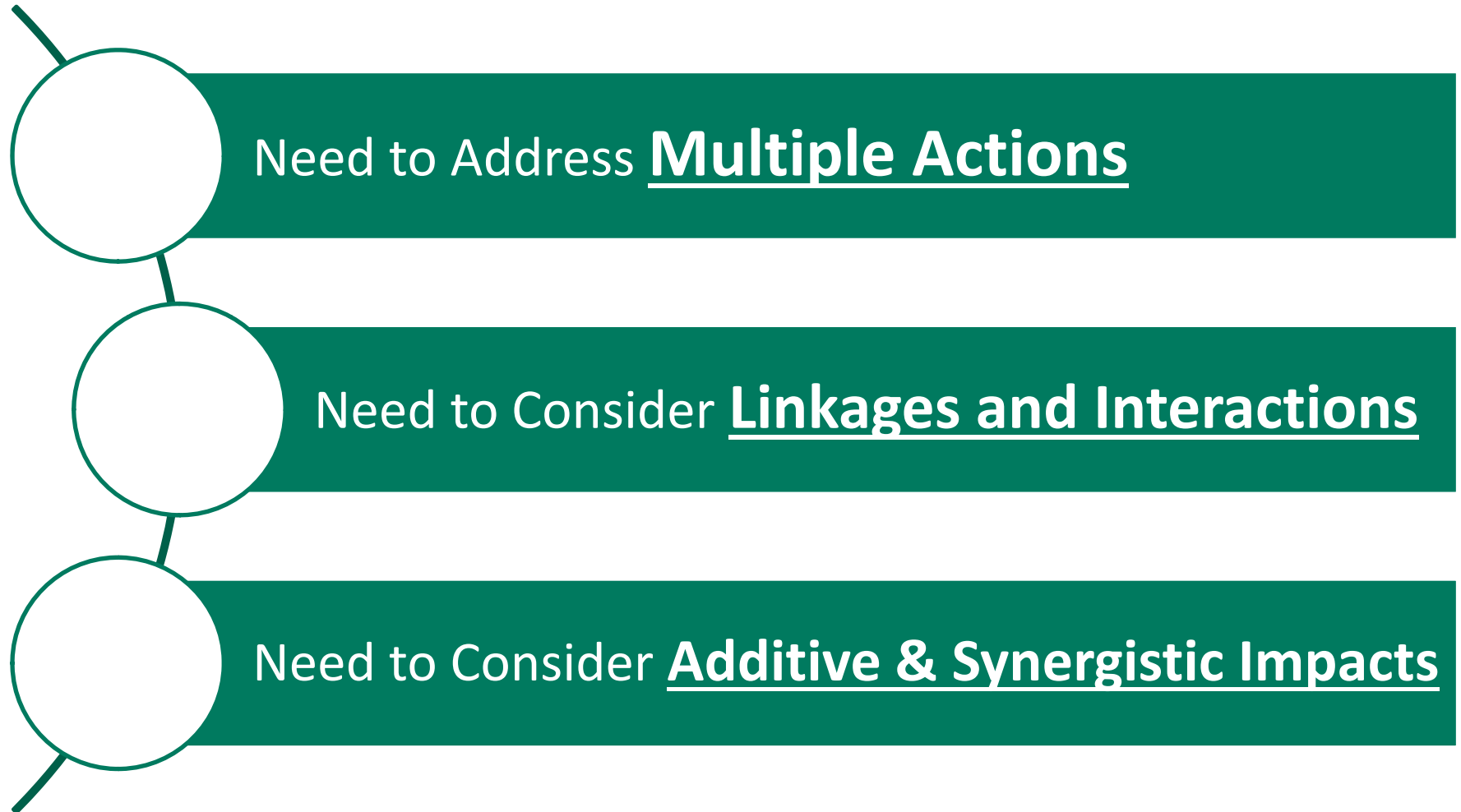


CEIA: VEC-Centered Perspective



Source: IFC, 2013. Good Practice Handbook Cumulative Impact Assessment and Management

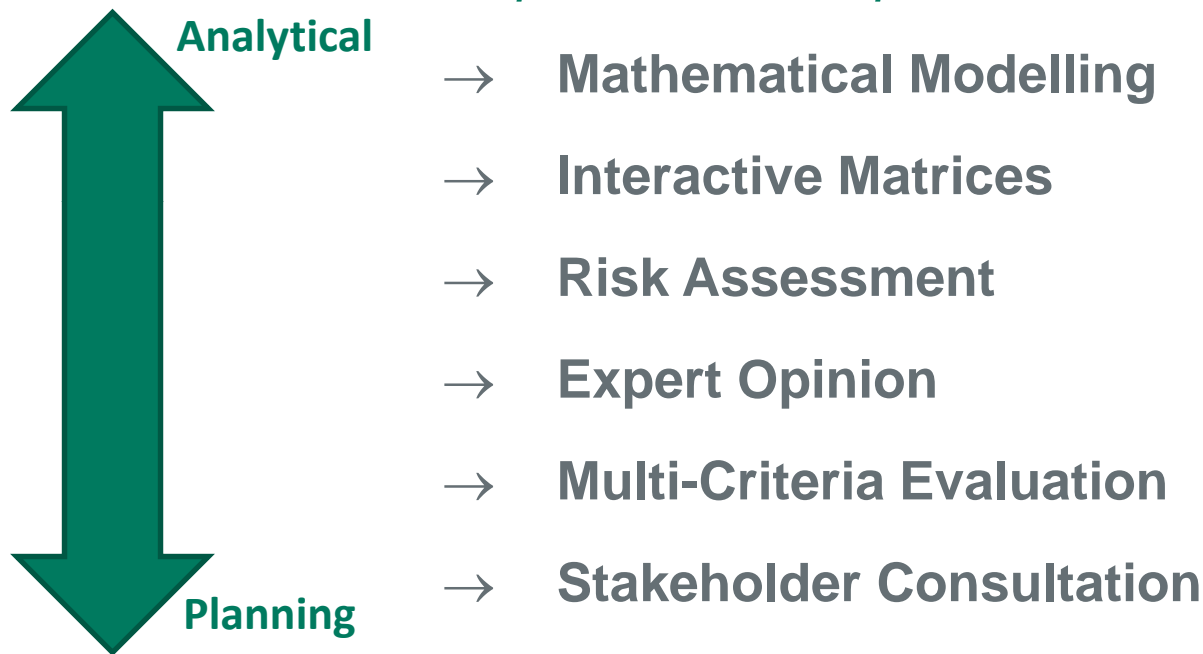
Specific Requirement for a CEIA



Important Points to Remember (Contd..)

■ CEIA Techniques

*Less prescriptive than that for project level EIA;
a combination of both qualitative and quantitative tools is required*




■ Interdisciplinary Approaches

Likely to be most successful for a CEIA; drawing on a wide range of expertise to fully understand potential impacts

Important Points to Remember (Contd..)

■ Significance of Cumulative Impacts

Postulate cause-effect relationships and identify critical pathways or processes of impact accumulation 

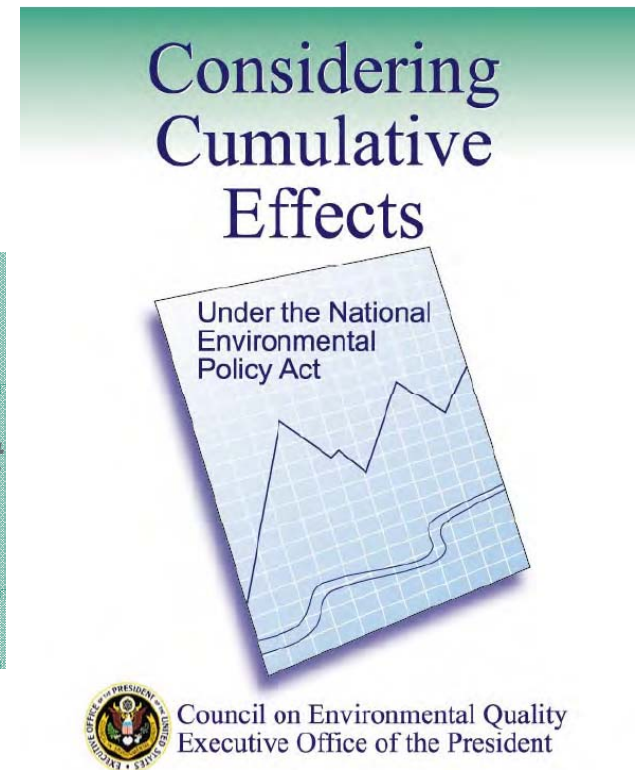
- *Significance can be evaluated against an **“ecosystem’s threshold disturbance level”** (threshold refers to the point at which added disturbances within the ecosystem or region will result in major system deterioration or collapse and are related to an ecosystem’s carrying capacity; indicators to be developed for VECs and accordingly thresholds to be defined)* 
- ***“Carrying capacity”** within the context of CEA can be thought of as the ability of a natural system to absorb the effects of development or human population growth without significant degradation or breakdown*
- *Communities need to determine the **“societal limits of acceptable change”** in environmental components resulting from natural resource extraction and development*

CEIAs – The Experience in Developed Nations

■ The US Experience

- The US Council for Environmental Quality (CEQ) established under the US National Environmental Policy Act, 1969 (NEPA) came to the view that a conventional project and site-specific approach to environmental assessment has its limitations when it comes to assessing potential cumulative effects on environmental resources.
- The first guidance document ‘**Considering Cumulative Effects Under the National Environmental Policy Act**’ was published by CEQ in Jan 1997.

This Guidance Document defines cumulative effects assessment (CEA) as follows: “the impact on the environment which results from the incremental impact of the action when added to their past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action.”



CEIAs – The Experience in Developed Nations (Contd.)

■ The Canadian Experience

- The Canadian Environmental Assessment Agency in 1994, published a Reference Guide for the Canadian Environmental Assessment Act: **Addressing Cumulative Environmental Effects**.
- This Guide formed the basis of the Agency's response to questions about conducting Cumulative Effects Assessments, and has been widely used and referenced. It was updated in 1999 (**Cumulative Effects Assessment – Practitioners Guide**) to meet requirements under the Canadian Environmental Assessment Act.
- The Canadian Environmental Assessment Act (CEAA, 2012) requires that each EA of a designated project take into account **any cumulative environmental effects** that are likely to result from the designated project in combination with the environmental effects of other physical activities that have been or will be carried out
- **Operational Policy Statement (OPS) assessing Cumulative Environmental Effects** under CEAA, 2012 - a Policy Paper on CEAs

Cumulative Effects Assessment Practitioners Guide

Prepared for:
Canadian Environmental Assessment Agency

Prepared by:
The Cumulative Effects Assessment Working Group
(Hegmann, G., C. Cooklin, R. Creasey, S. Dupuis, A. Kennedy,
L. Kingsley, W. Ross, H. Spaling and D. Stalker)
and
AXYS Environmental Consulting Ltd.
























CEIAs – The Experience in Developed Nations (Contd.)

■ The South African Experience

- Integrated Environmental Management (IEM) is a key instrument of South Africa's National Environmental Management Act (NEMA).
- IEM provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. It includes the use of several environmental assessment and management tools that are appropriate for the various levels of decision-making
- As part of this IEM, the **Department of Environmental Affairs and Tourism (DEAT)**, has published a Guidance Document on **Cumulative Effect Assessment** in 2004 – this serves as a guide for assessing cumulative impacts



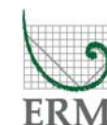
CEIAs in Latin American Countries (LAC)

Argentina 	Depends on province.	Guyana 	No.
Belize 	EIA process must consider CI.	Haiti 	No.
Bolivia 	EIA process must consider CI.	Honduras 	Authority could require an “EIAC”.
Brazil 	EIA process must consider CI.	Jamaica 	EIA process must consider CI.
Chile 	EIA process must consider CI.	Mexico 	EIA process must consider CI.
Colombia 	No.	Nicaragua 	Authority could require CI in EIA.
Costa Rica 	EIA process must consider CI. Authority could also require an “EEA”.	Panama 	No.
DR 	No.	Paraguay 	EIA process must consider CI.
Ecuador 	No.	Peru 	Depends on sector.
El Salvador 	No.	Uruguay 	EIA process must consider CI.
Granada 	No.	Venezuela 	No.
Guatemala 	Authority could require an “EEA”.		

CI: Cumulative Impacts; EIA: Environmental Impact Assessment; EEA: Cumulative Impact Assessment (*evaluación de efectos acumulativos*); EIAC: Cumulative Impact Assessment.

13 Source: WBG 2015.

ERM: The business of sustainability



CEIAs in the APAC Region

Hong Kong

- CEIA is mandatory under HKEIA Ordinance
- There is no mandatory approach and is often very weak citing that there is little information on other projects to do a quantitative assessment.
- Some cases where specific actions come out of the CEIA. An example aligning reclamation dredging and filling works with other similar reclamation works to avoid breaches of water pollution criteria by having too many concurrent activities in a certain area. This was a government project hence easier to develop and manage a multi-project schedule.
- Local NGOs argue the CEIA in HK is one of the weakest aspects of local EIAs. They are right. It is too easy and acceptable to say there is limited publicly available information on separate projects.

CEIAs in the APAC Region

China

CIA has been dealt with under a “Planning EIA” Law since 2003. A Planning EIA looks at the environmental assimilative capacity for discharges to air, water, etc and establishes a total “mass load control” for criteria pollutants within the entire planning area (typically an industrial park

It has had some success. Individual projects may not be approved unless a higher level Planning EIA has been undertaken and approved.

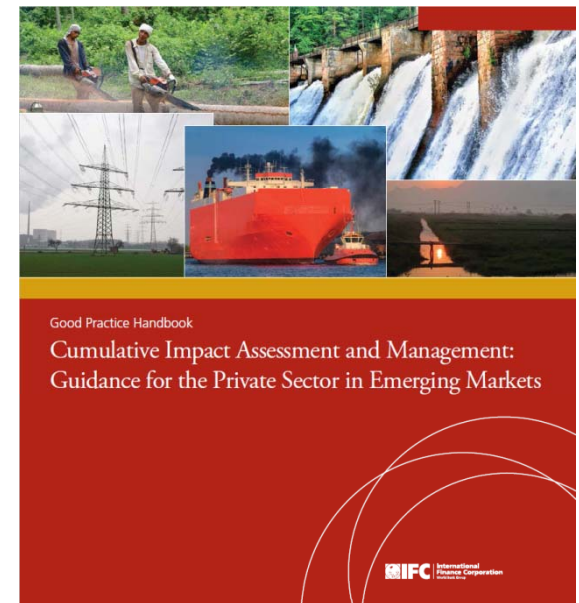
A Planning EIA approval for the wider area is now a pre-requisite for approval of most individual project EIAs in China (all of those in designated industrial areas).

Issues: The idea of mass load controls above is good in principle but in many cases baseline levels of criteria pollutants already exceed ambient standards. So if ambient SO₂ already exceeds national standards, at what level do you set a mass load control??

CEIAs – The Main Drivers in Emerging Economies

The Main Drivers – Multilateral Banks (World Bank, IFC, ADB, etc.)

- The Multilateral Banks (World Bank, IFC, ADB, etc.) are the major drivers for CEIAs in developing countries
- Cumulative Effects Assessment in Environmental Assessment has been included by ADB as part of Safeguard Policy Statement (SPS) of 2009
- The International Finance Corporation (IFC), the private sector arm of the World Bank Group has brought out a Good Practice Handbook on CEIAs – it presents an useful approach for developers in emerging markets for conduct of a rapid cumulative impact assessment (RCIA). **This is one of the most used handbooks in CEIA Practice.**



CEIAs – The Global Perspective

- The Developed Nations (US, Canada, South Africa, Australia, etc.) have developed Guidance Notes and Practice Handbooks for CEIAs to meet country specific legislation on Environmental Assessments. These legislation require cumulative impacts to be assessed as part of the project specific assessments undertaken by project sponsors.
- However CEIAs have not been proposed as a specific mandatory tool and seeded in regulation and have not actually been mainstreamed in regulatory frameworks.
- The CEIA practice in developed nations is more voluntary and not mandatory and oftentimes cumulative impacts are mostly addressed in a preliminary and qualitative manner as part of the project level assessments.

CEIAs – The Indian Scenario

- CEIAs have not been mainstreamed in the Indian Regulatory Framework and its requirement has also not been mentioned under the EIA Notification of 2006 or its subsequent amendments
- CEIAs only find a passing mention in **Section 9 of Form I of the EIA Notification** – where cumulative effects due to proximity to other existing or planned projects with similar effects are required to be listed

CEIAs – The Indian Scenario (Contd..)

- However regulatory agencies like the Expert Appraisal Committee of the MoEF&CC have requested for conduct of CEIAs / Regional Assessments for complex projects on a case to case basis. The National Green Tribunal (NGT) has at times has also recommended similar studies against appeals submitted before them. Similar initiatives have also been taken up for large scale multi sectoral projects being developed by multilateral banks (ADB, World Bank, IFC, etc.) Typical examples include:
 - CEIA for Cascade hydropower developments within a river basin (*e.g. Assessment of Cumulative Impacts of Hydropower projects on Terrestrial and Biodiversity Values in Alaknanda and Bhagirathi River Basins, Conducted by ERM for Wildlife Institute of India , 2012*)
 - CEIA Frameworks for Large and Complex Coastal Regions (*e.g. Gulf of Kachchh – A Framework for Cumulative Environmental Impact Assessment, Gujarat Ecology Commission, under World Bank aided ICZM Project, 2014*)
 - CEIA for ultra mega Power Stations within industrial zones (*e.g. Rapid CEIA for 3600 MW Thermal Power Plant at Cuddalore, Tamil Nadu, IL&FS, 2012 – After NGT Order*)

CEIA Practice – Typical Challenges

- **Complicated Multi Stakeholder Analysis** (must address multiple actions and additive/interactive effects at different time and spatial scales involving multiple stakeholders)
- Information on proposed developments may be **limited by commercial considerations**.
- Identifying and describing “**predictable future development**” and “**external natural and social stressors**” in sufficient detail to assess their social and environmental impacts and effects is a difficult process.
- Stakeholders may assign **different priorities to VECs**.

CEIA Practice – Typical Challenges *(Contd..)*

- **VEC baseline conditions and acceptable thresholds** are often unavailable because of lack of data or agreed scientific methodologies.
- Limited knowledge and understanding on the **relationships and tolerances of ecological systems.**
- **Attribution of impacts** is a process dominated by uncertainties, and getting individual project sponsors to accept responsibilities and impact management is not always a straightforward task.
- **Institutional barriers** (e.g. legal mandates and organizational interests) rarely match boundaries of cumulative effects problems

CEIA Practice – Typical Challenges *(Contd..)*

- **Exercising leverage** over government and over other developers can be an overwhelming task for private developers, which often may produce negligible results.
- **Engaging stakeholders** in discussing strategic cumulative impacts, when the discussion is promoted by a specific developer sponsor, tends to be confusing and could be counterproductive.
- **Project sponsors** may not share data collaboratively or define mitigation strategies jointly.

The Way Forward

- To facilitate the assessment and management of cumulative impacts, practitioners have called for, and in some developed countries governments are now beginning to develop -
Regional Enabling Frameworks for CEIA
- This ideally involves implementation of collaborative approaches to cumulative impact management through information exchange networking, pooling resources for implementation of shared management initiatives, and participation in multi-stakeholder and/or regional monitoring



Regional Enabling Frameworks for CEIA

- Creating transparent mechanisms for disclosing available information on proposed developments;
- Establishing regional thresholds for VEC condition;
- Making available information on current state/trends in VEC condition;
- Making available information on the impacts of existing developments;
- Possibly providing regional modeling tools; and
- Developing a framework for regional cumulative impact mitigation and monitoring.



About ERM



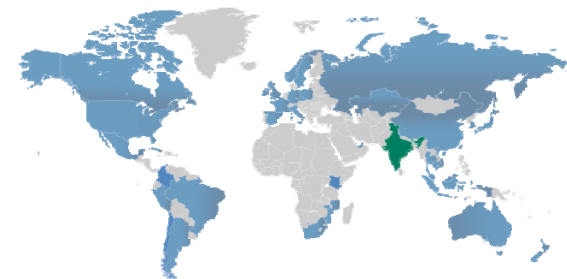
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We have worked in
over
160
countries in the past
3 years



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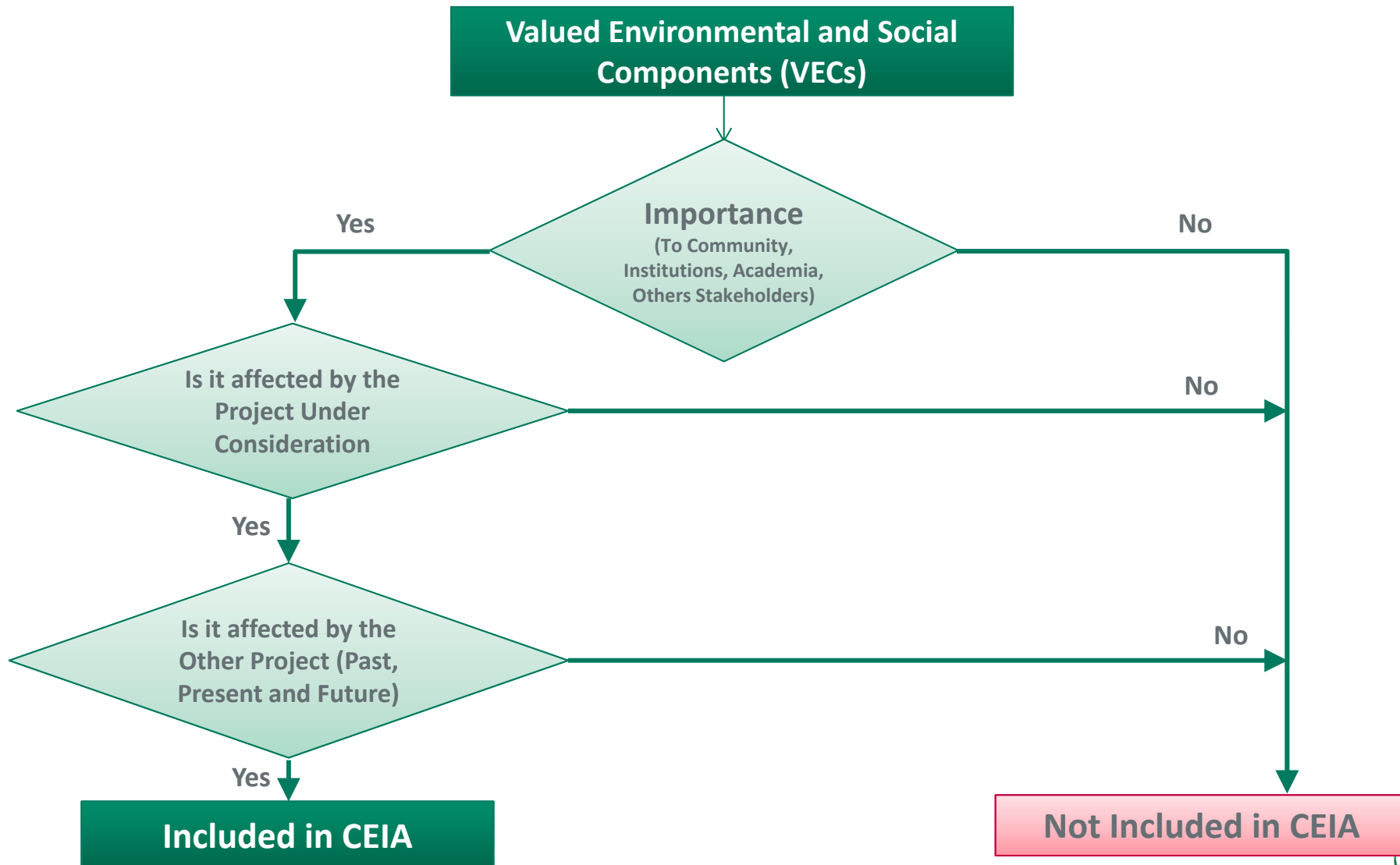
A person wearing a white hard hat and a high-visibility safety vest with the ERM logo on the back stands on a metal walkway or bridge. They are looking out over a large dam structure where water is cascading over the spillways. The scene is bathed in a warm, golden light, suggesting sunrise or sunset. The background shows a forested hillside under a hazy sky.

ERM enjoys the
***highest brand
preference*** in the
**EHS&S
consulting sector.**

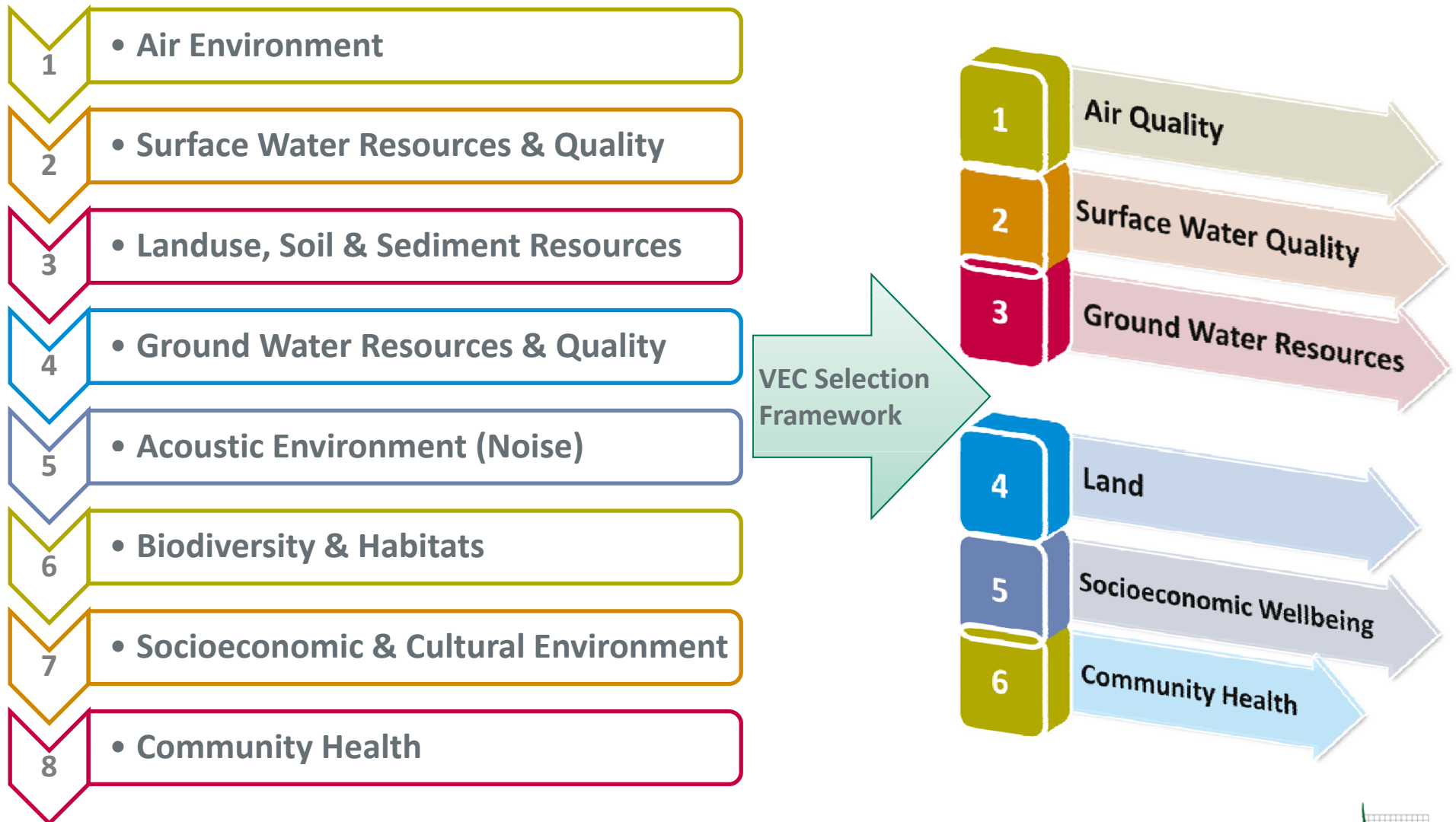
*According to Global
Survey by Verdantix, an
independent research
firm*

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Logical Framework for Identification of Key VECs



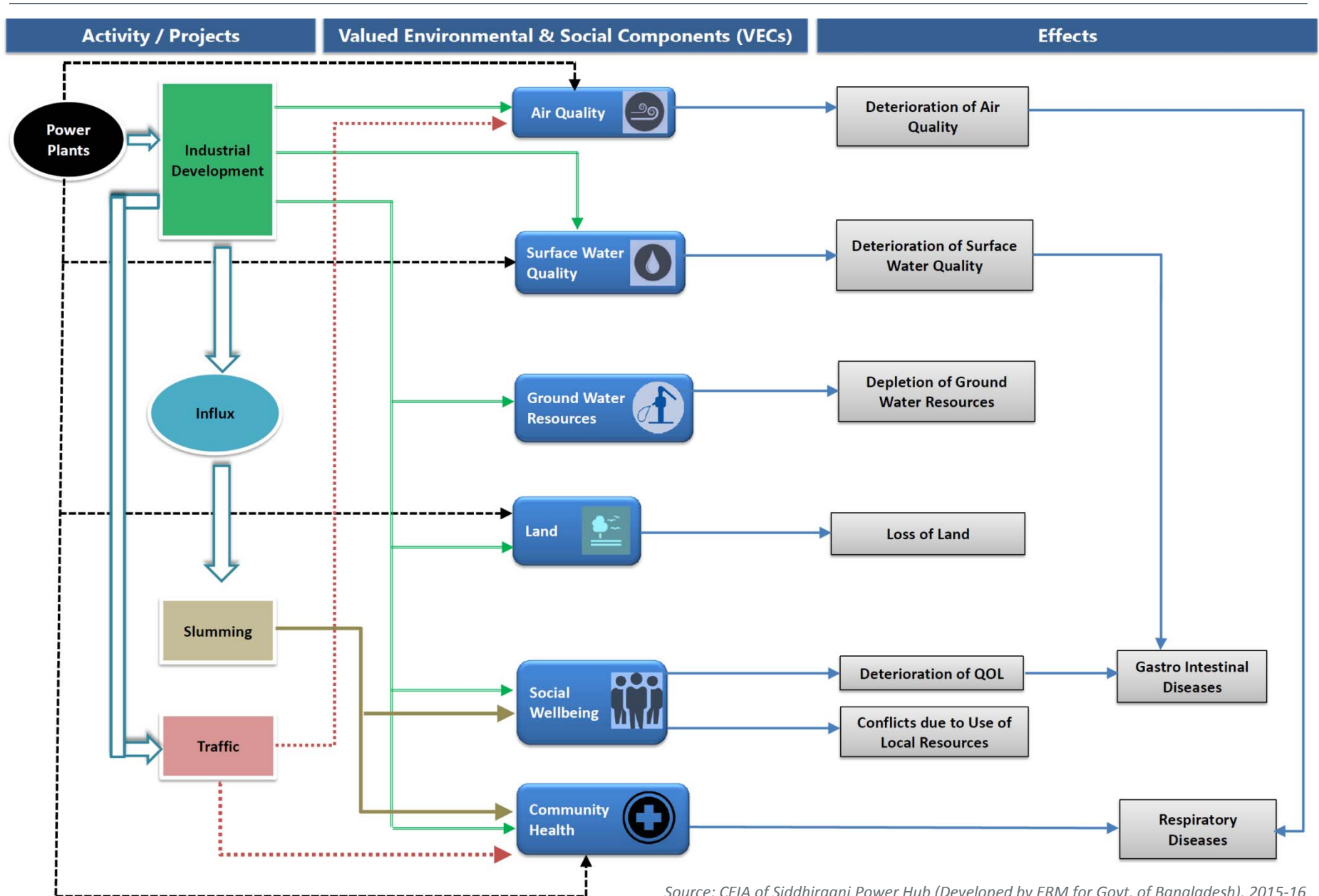
Selection of VECs for Final Analysis – Example



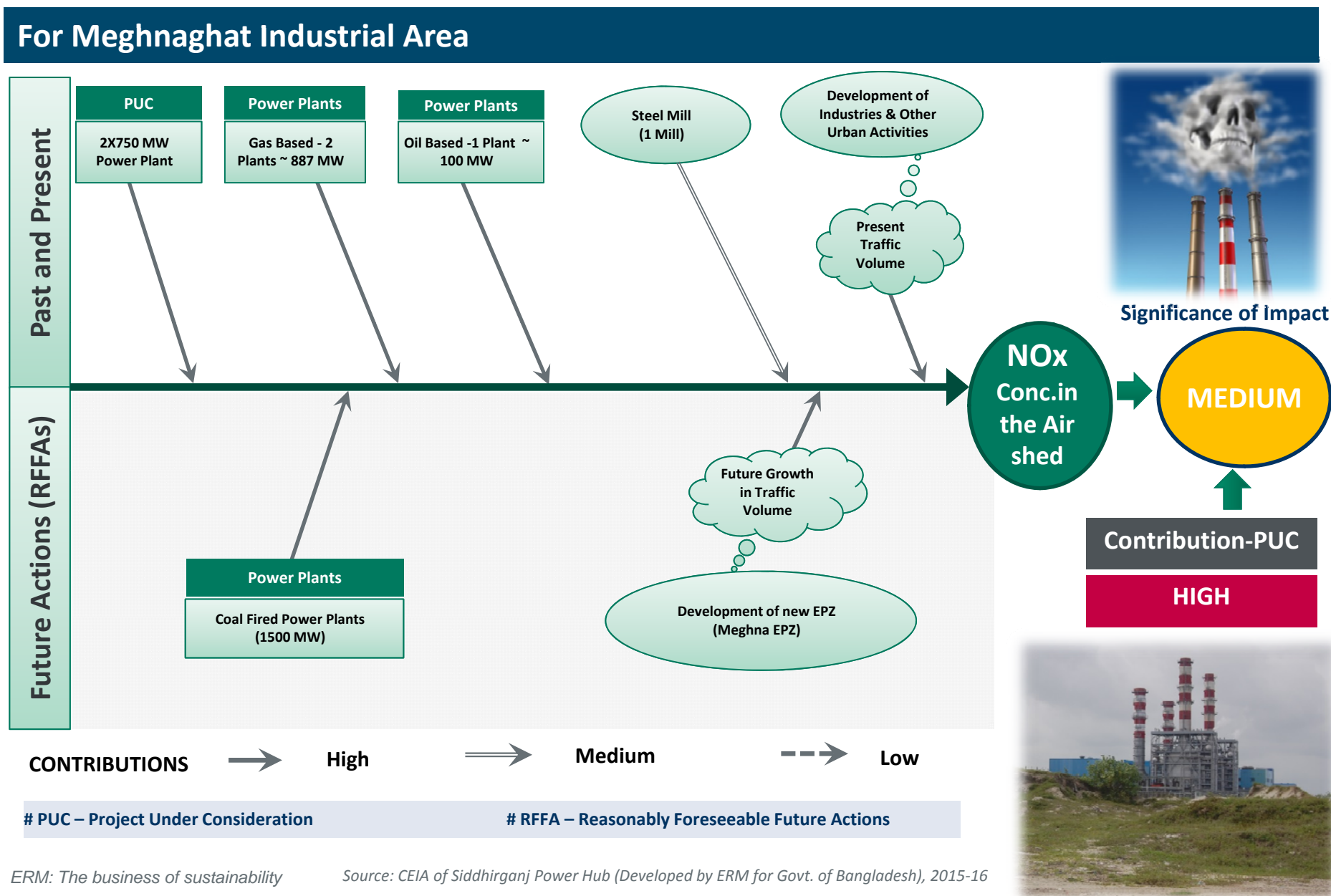
Source: CEIA of Siddhirganj Power Hub (Developed by ERM for Govt. of Bangladesh), 2015-2016



Cause Effect Relationship

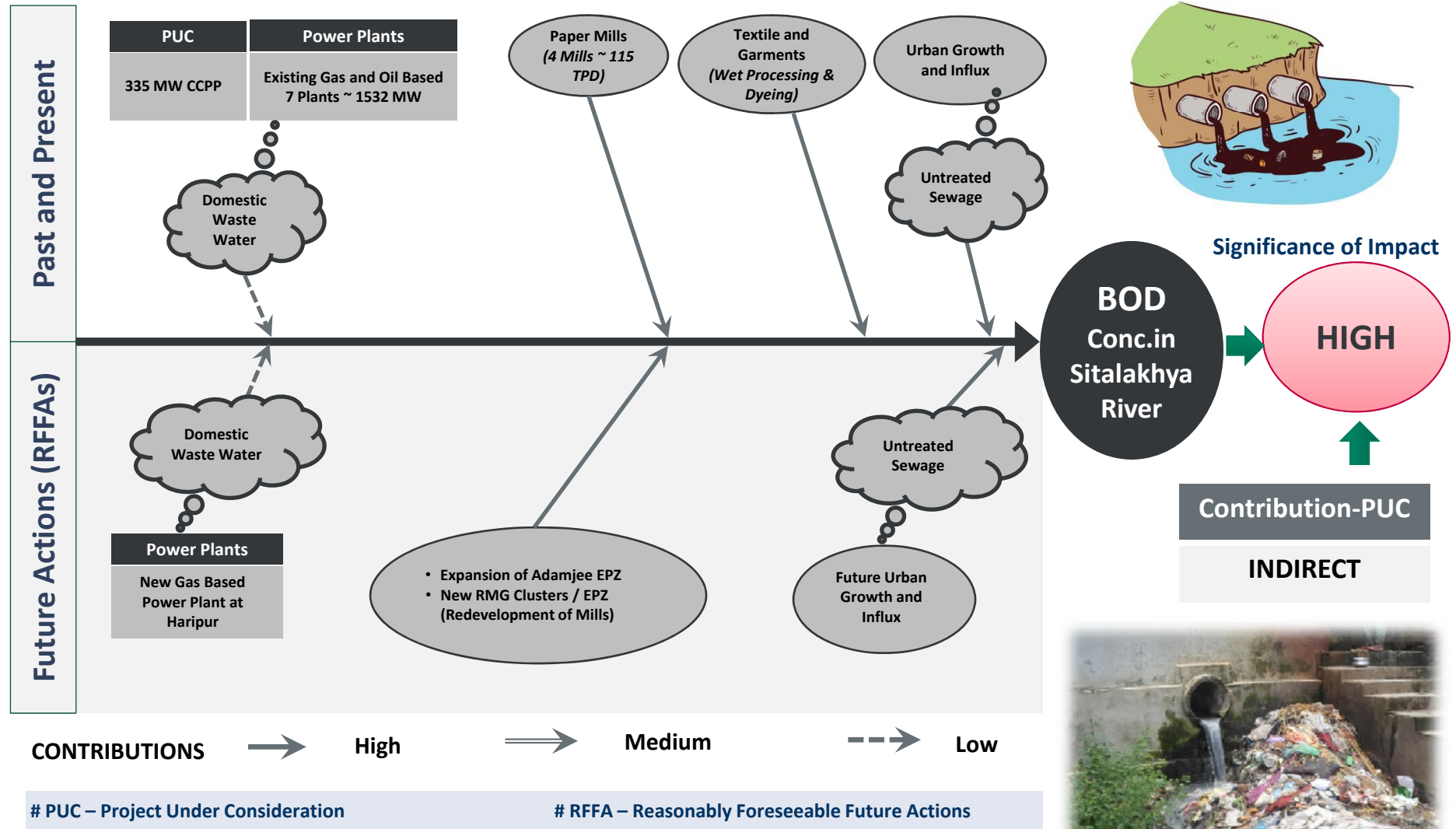


Cumulative Impacts on Air Quality (NOx) – Example#1




Cumulative Impacts on Surface Water Quality (BOD)- Example#2

For Siddhirganj Industrial Area



Indicators for VECs and Thresholds - Example

No.	VEC	Indicator	Threshold Level
VEC1	Air Quality	1. Concentration of PM in the air shed	<ul style="list-style-type: none"> • PM₁₀ - 150 µg/m³ (NAAQS, Bangladesh) • PM_{2.5} - 65 µg/m³ (NAAQS, Bangladesh)
		2. Concentration of NOx in the air shed	<ul style="list-style-type: none"> • NOx - 100 µg/m³ (NAAQS, Bangladesh)
VEC2	Surface Water Quality	1. Temperature of the river waters	<ul style="list-style-type: none"> • < 40°C (ECR 97, Bangladesh)
		2. BOD Concentrations, representative of the organic loading in the rivers	<ul style="list-style-type: none"> • < 10 mg/l (Class E Waters – used for processes and industrial cooling) • < 6 mg/l (Class D Waters – used by fisheries) (ECR 97, Bangladesh)
		3. Toxic metal contamination (Cr, Cd and Pb) in the river waters	<ul style="list-style-type: none"> • Cd 13 mg/kg, Cr III- 180 mg/kg, Cr VI-78 mg/Kg, Pb- 530 mg/kg
		4. Ecological health of the rivers	<ul style="list-style-type: none"> • Diversity indices >3 indicates clean water; • 1-3 indicates moderately polluted water; and • <1 indicates heavily polluted water
VEC3	Ground Water Resources	1. Depletion of ground water resources	<ul style="list-style-type: none"> • Depletion rate ≤ natural replenishment rate
VEC4	Land use	1. Loss of agricultural land and wetland	<ul style="list-style-type: none"> • Loss of agricultural land/ wetland ≤ National land conversation rate of agricultural land for industry and urbanization
VEC5	Social Wellbeing	1. Access to quality sanitation facilities	<ul style="list-style-type: none"> • 100% access to quality sanitation facilities and comparison with national trends
VEC6	Community Health	1. Number of reported cases of respiratory diseases	<ul style="list-style-type: none"> • Reported case of respiratory disease in the industrial areas vis-à-vis national trends 

Source: CEIA of Siddhirganj Power Hub (Developed by ERM for Govt. of Bangladesh), 2015-16