



USAID
FROM THE AMERICAN PEOPLE



Cumulative Impact Assessment

GEMS Environmental Compliance-ESDM Training Series
Africa-Asia-Latin America-Middle East 2012-2014

Session Objectives:

- ✓ Understand USAID criteria for cumulative impact assessment
- ✓ Review role of cumulative impacts assessment (CI) in the project review process
- ✓ Develop a understanding of the framework for performing CIA
- ✓ Work through a project example on CI assessment

Definition of Cumulative Effects Assessment

The U.S. Council on Environmental Quality (1997) defines cumulative effects assessment (CEA) as:

“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.....”

Why account for cumulative impacts?

- Reg 216.6(d) states “*a Program Assessment may be appropriate in order to assess the environmental effects of a number of individual action and their cumulative environmental impact.*”
- ADS 201 and 204
- Multilateral development bank projects (e.g., IFC, World Bank)

A yellow speech bubble with a black outline and a tail pointing towards the left. It contains text about environmental compliance for ESDM.

It is an essential component of environmental compliance for ESDM

What are cumulative impacts/effects?



- Combined, incremental adverse or beneficial effects of human activity (spatial or temporal)
- Accumulate over time from one or more sources

**Individual minor actions that are insignificant on their own can collectively result in significant impacts over a period of time.*

Types of Cumulative Impacts



Interactive :

Greater than the sum of individual impacts

- **Magnification**
- **Synergistic**

Additive:

Equal to the sum of individual impacts

Examples of Cumulative Impacts

- Increases in pollutant concentrations in a water body , soil or sediments,
- Reduction of water flow in a watershed due to multiple withdrawals.
- Increases in sediment loads on a watershed or increased erosion.
- Interference with migratory routes or wildlife movement.
- Depletion of a forest as a result of multiple logging concessions.



Examples of Cumulative Impacts (cont'd)

- Increased pressure on the carrying capacity or the survival of indicator species in an ecosystem.
- Wildlife population reduction caused by increased hunting, road kills, and forestry operations.
- Secondary or induced social impacts, such as immigration, or more traffic congestion and accidents along community roadways owing to increases in transport activity in a project's area of influence.

Small Scale ≠ Small Impact!

Myth:

“Environmental impacts of small-scale activities are negligible.”

Reality:

Impacts of single poorly designed/implemented activity may be small overall, BUT

- Local impacts can be significant
- Numerous small-scale activities together can have significant cumulative impacts



Potable water supply near hospital morgue

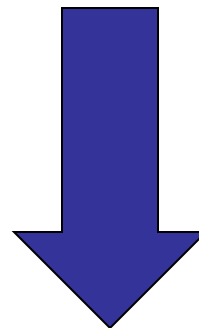


Total failure of latrines to contain pathogens

An example – a small scale activity



The environmental effects of a small-scale animal husbandry project may be minor...



With project success, more effects occur that cause incremental impacts on the environment.

What might some of these incremental impacts be?

What is cumulative impact assessment?

Purpose: To ensure that incremental effects from **various** actions are accounted for in project design.

Process: A systematic way to identify and analyze cumulative environmental and social change as a result of projects, programs, plans, and policies.



Identify valued environmental and social economic components (VECS)

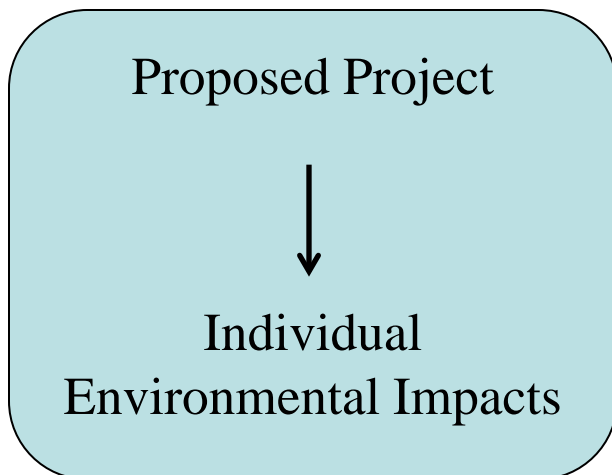
VECs = environmental and social attributes that are considered to be important in assessing risks

- Physical features, habitats, wildlife populations (e.g., biodiversity)
- Ecosystem services
- Natural processes (e.g., water and nutrient cycles, microclimate),
- Social conditions (e.g., health, economics), or
- Cultural aspects (e.g., traditional spiritual ceremonies)

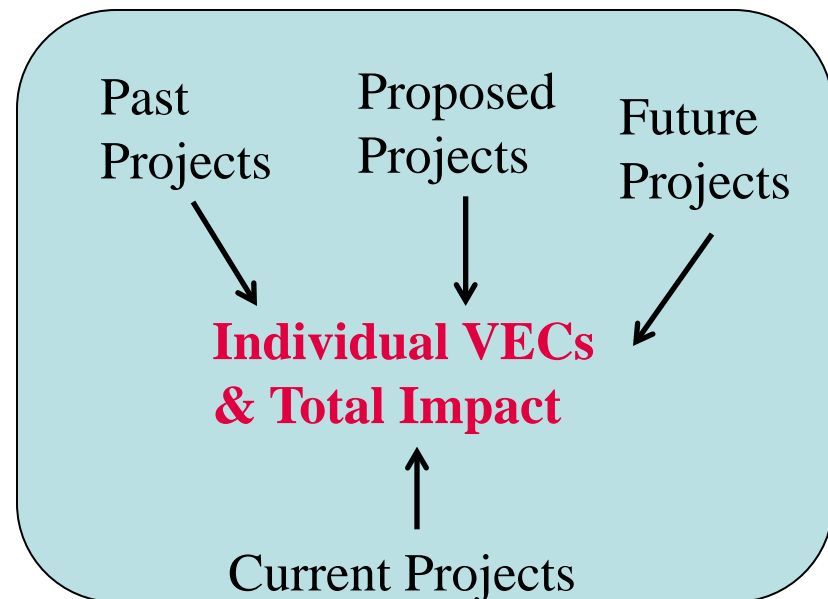


What is the difference between project impact assessment and a cumulative impacts assessment?

Traditional EIA Policy & Planning



Cumulative Impacts Policy & Planning

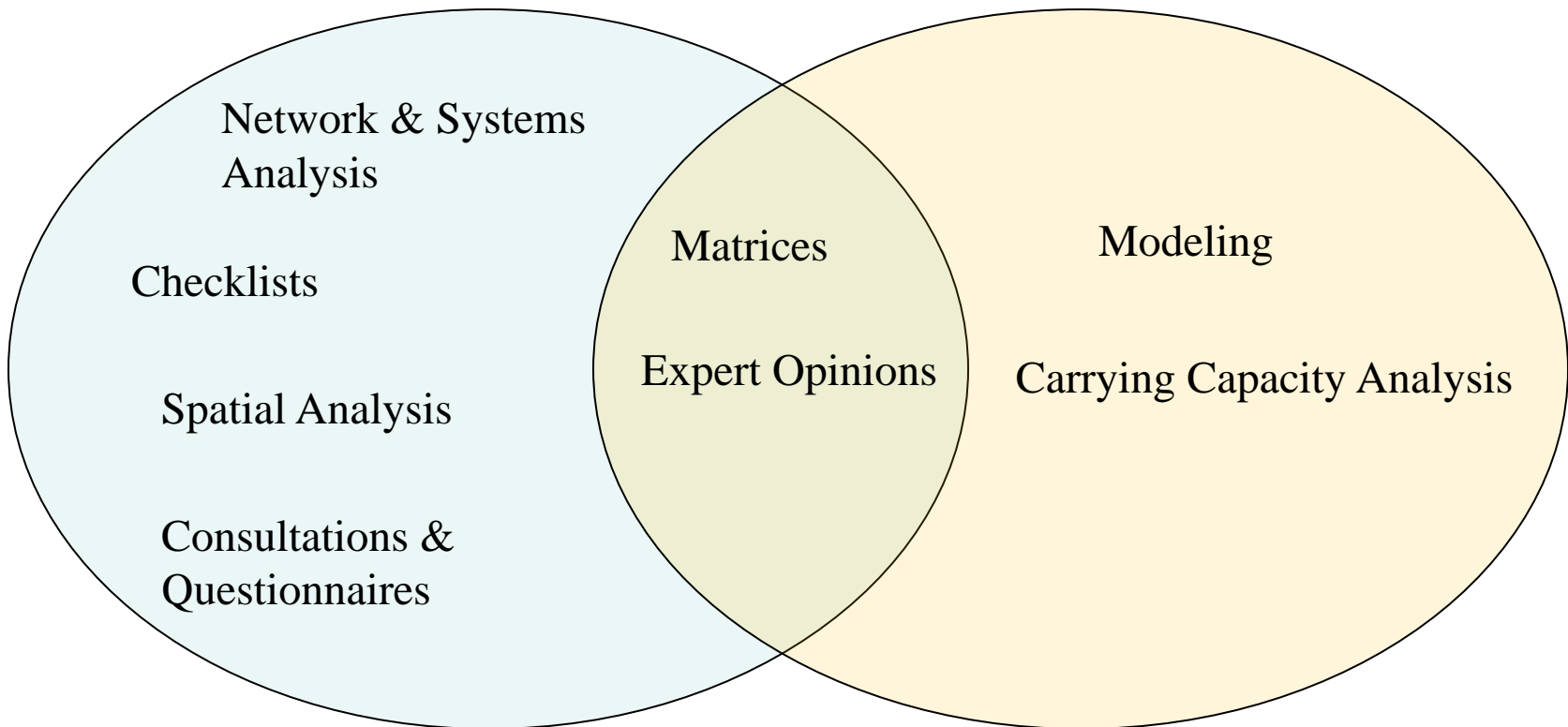




What tools do we use in cumulative impact assessment?

SCOPING & IMPACTS IDENTIFICATION

EVALUATION TECHNIQUES





General CEA Process in Six Easy Steps!!

1. Identify **incremental effects** of the proposed project and VECs
2. Identify **other past, present, and reasonably foreseeable future actions** within the space and time boundaries.
3. For the selected VECs, **collect appropriate information** on their indicators, describing baseline & historical indicators
4. **“Connect” the proposed project & other actions** in the study area to the selected VECs & indicators
5. **Assess significance** of cumulative impacts on each VEC over the time horizon for the study.
6. **Develop mitigation measures** for VECs or their indicators that may be negatively effected & for which the cumulative impacts are significant.

Sample Project Matrix

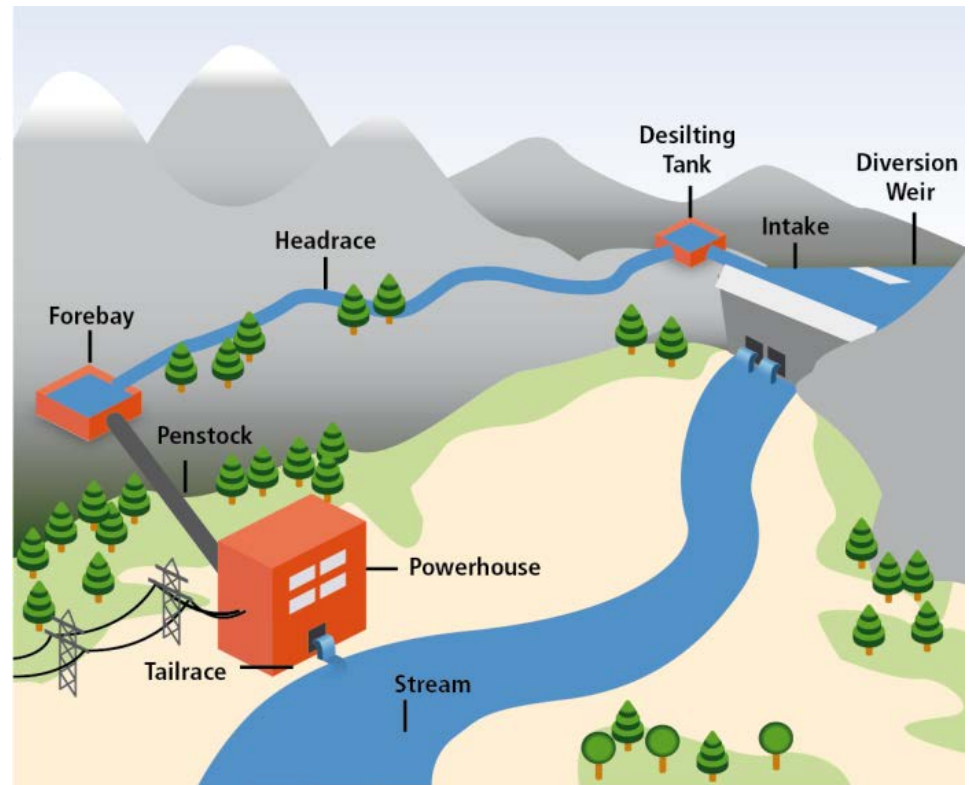
Project Activity	Environmental Components															
	Landforms/Terrain	Soils	Hydrology/Geology	Surface Water Quantity	Surface Water Quality	Fish	Invertebrate Fauna	Aquatic Vegetation	Air	Terrestrial Vegetation/Wetlands	Amphibians	Terrestrial/Semi-aquatic Wildlife	Rare/Endangered Species	Aboriginal Land Use	Recreational Land Use	Commercial Land Use
Well Servicing	0	0	3	0	0	1	1	1	0	0	0	3	3	1	1	1
Co-generation	0	0	0	0	0	1	1	1	3	0	0	3	3	1	1	1
Steam Injection	0	0	0	3	1	1	1	1	0	0	0	3	3	1	1	1
Bitumen Production	0	0	1	0	0	1	1	1	2	0	0	3	3	1	1	1
Makshes Plant	0	4	0	3	1		1	1	4	4	0	3	3	1	1	1
Deep Well Disposal	0	0	4	0	0									0	0	0
Water Use	0	0	4	4										1	1	1
Ancillary Facilities	0	3	4	3	1									3	2	2
Access/Transportation	0	2	2	3	1		3	4	1	3	2	4	4	3	3	3
Workforce	0	0	0	0	0	4	1	1	0	0	0	4	4	2	2	2
Pipelines	0	0	0	0	0	1	1	1	0	3	0	3	3	3	3	3
Upset Events	2	4	5	?	5	5	5	5	4	3	4	3	4	4	4	4



Activity – What kinds of cumulative impacts might be identified in designing this project?

Project: a small hydropower facility (<30 MW)

- River in a remote region with low access to electricity
- Communities utilize the river for subsistence fishing and transportation
- Forests cover 40% of surrounding hillsides and is habitat for 2 species of birds and 3 mammal species – all classified as threatened
- Infrastructure proposed: Transmission lines, turbines, generators, and construction camp, roads, and bridges.



Run of River Hydro (IPCC 2011)

Uncertainties in Cumulative Impact Assessment

- ❖ **Boundaries**
- ❖ **Timeframe**
- ❖ **CIA procedure**
- ❖ **Methods**
- ❖ **Tools**
- ❖ **Data requirements**
- ❖ **Complexity of the analysis**
- ❖ **Temporal and geographic boundaries**
- ❖ **Predictive abilities**



Summary

- ✓ Cumulative impacts are the additive AND interactive impacts of various projects and activities on environmental and social systems, temporally and geographically
- ✓ Limited information or knowledge is a major challenge in cumulative impact assessment
- ✓ CEA should be adapted to the context.
- ✓ Uncertainty is part of the CEA process.

Additional Resources

- **IFC, Good Practice Handbook: Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets, August 2013**
http://www.ifc.org/wps/wcm/connect/3aebf50041c11f8383ba8700caa2aa08/IFC_GoodPracticeHandbook_CumulativeImpactAssessment.pdf?MOD=AJPERES
- **U.S. Council on Environmental Quality**
<http://ceq.hss.doe.gov/NEPA/ccenepa/ccenepa.htm>
- **The World Bank**
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20742999~pagePK:148956~piPK:216618~theSitePK:244381,00.html>
- **IAIA CEA Wiki** <http://www.iaia.org/iaia/wiki/cea.ashx>
- **Cumulative Effects Assessment Practitioners Guide (Canada)**
https://www.ceaa-acee.gc.ca/Content/4/3/9/43952694-0363-4B1E-B2B3-47365FAF1ED7/Cumulative_Effects_Assessment_Practitioners_Guide.pdf