USAID
FROM THE AMERICAN PEOPLE

Environmentally Sound Design & Management: A Foundation for Environmental Compliance

GEMS Environmental Compliance-
ESDM Training Series

Jordan ▪ March 2018

ENVIRONMENT – THE BIG PICTURE
WHAT IS ENVIRONMENT?

- Webster's defines it as "The *totality of circumstances* surrounding an organism or group of organisms, especially:
  - The complex of **physical, chemical, and biotic factors** (e.g. climate, soil, and living things) that affect and influence the growth, development, and survival of an organism or an ecological community
  - The complex of **social and cultural conditions** affecting the nature of an individual or community".

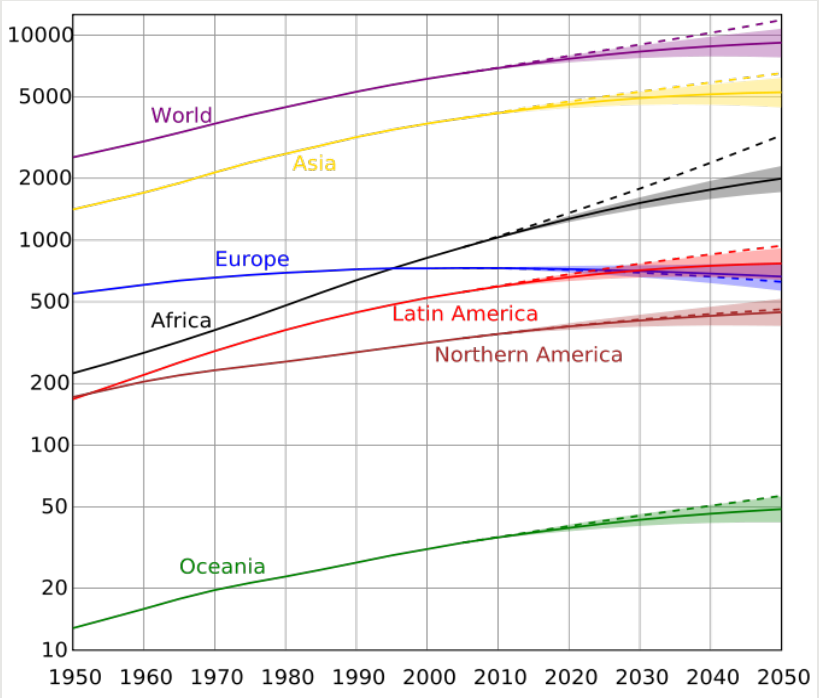
❖ USAID's environmental procedures are concerned with the "natural and physical environment," but in practice, social and cultural issues are often not separable

What are some "big-picture" environmental trends affecting human health and livelihoods in the Middle East? Are they important in Jordan?

I. POPULATION GROWTH

UN Population estimates:*

	2018	2050	% change
World	7.63 bn	9.77 bn	+28%
Western Asia**	272 mn	397 mn	+46%
Jordan	9.9 mn	14.2 mn	+43%
Less-Developed Regions**	6.37 bn	8.47 bn	+33%
Least Developed Countries (LDCs)	1.03 bn	1.92 bn	+86% (!)



* All data: "medium variant" projection.
UN Population Division (http://esa.un.org/wpp/unpp/panel_population.htm)
**includes Jordan

Increasing Population in Jordan & region → LEADS TO → Increased demands for water, land, timber, energy, infrastructure & social services. Increased waste production.

2. URBANIZATION

UN Population estimates:*

	Urban pop as % of total		Average annual rate of change to urban (2020- 2025)
	2020	2050	
World	56.2	66.4	.7%
Western Asia**	71.4	79.2	.4%
Jordan	84.8	89.3	.23%
Less-Developed Regions**	51.6	63.4	.9%
LDCs	34	49.5	1.49%

* UN Population Division (http://esa.un.org/unpd/wup/highlights/wup2014-highlights/wup2014/pdf
**includes Jordan

Urban population will grow more than 2X as fast as rural population for the foreseeable future

Most urban growth in the next 35 years in developing countries

LEADS TO

Increased urban environmental health hazards (given poor or no municipal sanitation & waste management capacity).

ENVIRONMENT AND DEVELOPMENT ARE NOT SEPARABLE

- Much of USAID's portfolio in the region is already a direct response to or directly affected by these environmental trends
- But good development does not simply respond to external environmental challenges. Good development …
  - is **AWARE** of its **potential adverse impacts on ecosystems, environmental resources and environmental quality and**
  - **PROACTIVELY seeks to limit** these adverse impacts, particularly **where they affect health and livelihoods**

Why? To avoid MISTAKES…

WHY ARE "ENVIRONMENTAL MISTAKES" MADE?

- Sometimes obvious (previous examples)
- But often difficult to foresee, predict

Often rooted in a few common design problems

- Failure to plan for the effects of increased scale
- Designing for average conditions
- Ignoring economic-environmental linkages
- Failure to understand system complexity

COMMON ROOT CAUSES #1

Failure to plan for the effects of increased scale

Or, failure to plan for success!

- The environmental effects of a small-scale animal husbandry project may be minor
- BUT if the project is successful, and many more individuals begin to hold larger numbers of animals, serious problems may arise. . .
  - Health hazards from animal waste
  - Fodder shortages (may lead to overgrazing and erosion and/or land conflicts)

COMMON ROOT CAUSES #2

Designing for average conditions, not expected variability

This schoolhouse is being rebuilt in makeshift fashion with plank walls and a split-bamboo roof.

Why?

Strong winds ripped the aluminum sheet roofing off the "permanent" structure and toppled the landcrete walls.

In this area, one or two storms every 5 years typically have winds of this strength.

Other "average conditions" to be careful of:

Rainfall, tides, water tables. . . What else?

Global change will affect both average conditions & expected variability

COMMON ROOT CAUSES #3

Ignoring economic-environmental linkages

- Household consumption depends on income
- Success in raising incomes in a community may increase
  - demand for building materials (concrete & timber); and land!
  - the number of livestock
  - demand for water (and sewerage)
  - generation of waste, including disposable packaging

All can have significant adverse environmental impacts!

Another failure to plan for success!

COMMON ROOT CAUSES #4

Failure to understand system complexity

Ponds excavated for fill to build-up ground level in villages for flood protection

↓

Ponds provided a source of organic carbon which settles to bottom of pond, seeps underground and is metabolized by microbes

↓

Creates chemical conditions that cause naturally occurring arsenic to dissolve out of the sediments and soils and move into groundwater

↓

Created conditions for mass arsenic poisoning when villages switched from surface water to "cleaner" tube wells.

Today ~3000 Bangladeshis die each year of **As**-induced cancer; 2 mn live with chronic **As** poisoning

HOW CAN WE AVOID THESE ENVIRONMENTAL MISTAKES (AND MAXIMIZE ENVIRONMENTAL BENEFITS)?

In short, how can we achieve . . .

Environmentally Sound Design & Management (ESDM)?

HOW DO WE ACHIEVE ESDM?

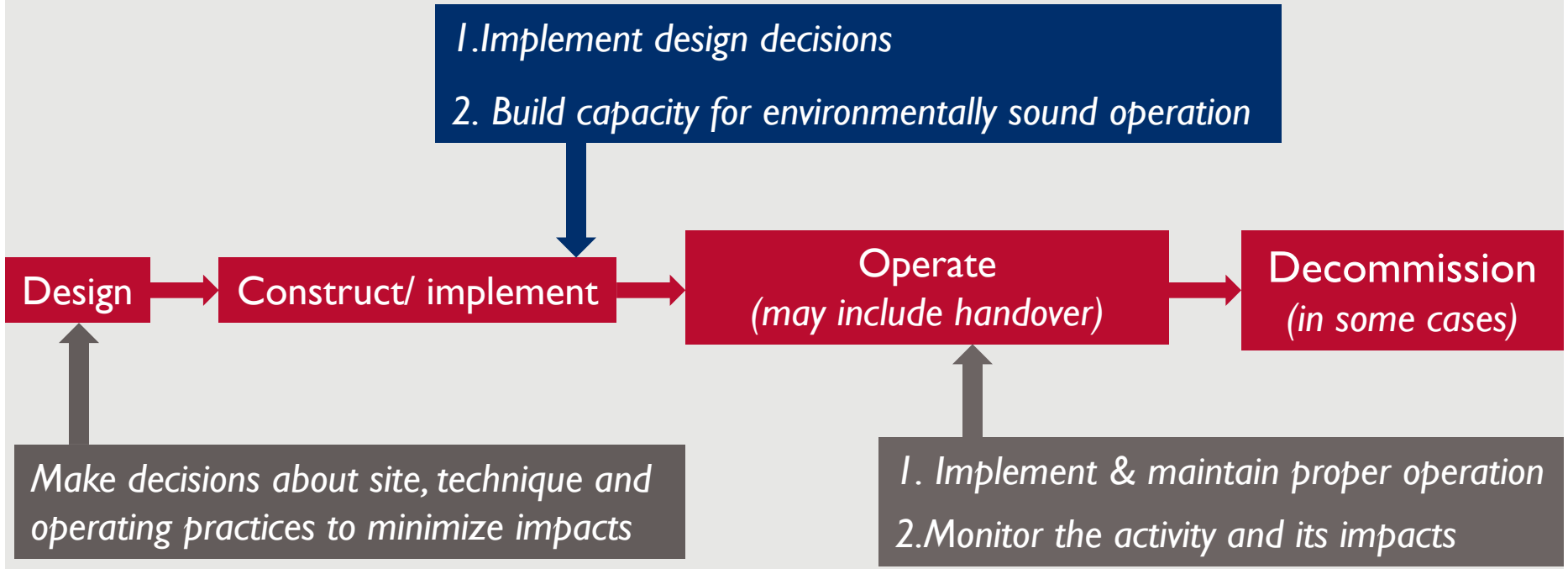
3 BASIC RULES:

1. Be prevention-oriented
2. Apply best development practices to environmental aspects of the activity
3. Be systematic

HOW DO WE ACHIEVE ESDM?

1. Be prevention-oriented

- Prevention occurs across the project lifecycle—but it starts with design!



ESDM IS PREVENTION-ORIENTED

- Prevention starts with DESIGN
- DESIGN starts with the choice of means
- Environmental impacts are one factor considered

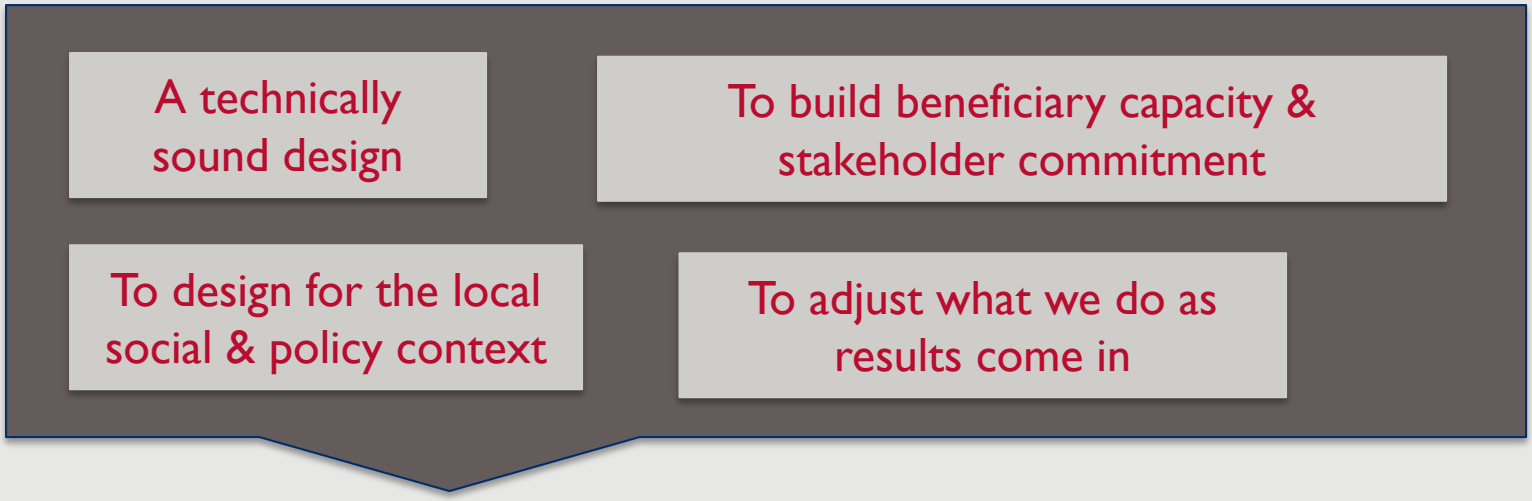
Objective: *Improve agricultural productivity*

Possible means:

How do we choose?

HOW DO WE ACHIEVE ESDM?
2. APPLY BEST PRACTICES

Apply general best development practices…



…to environmental aspects of the activity

AND design for climate change

BP #1: TECHNICALLY SOUND DESIGN

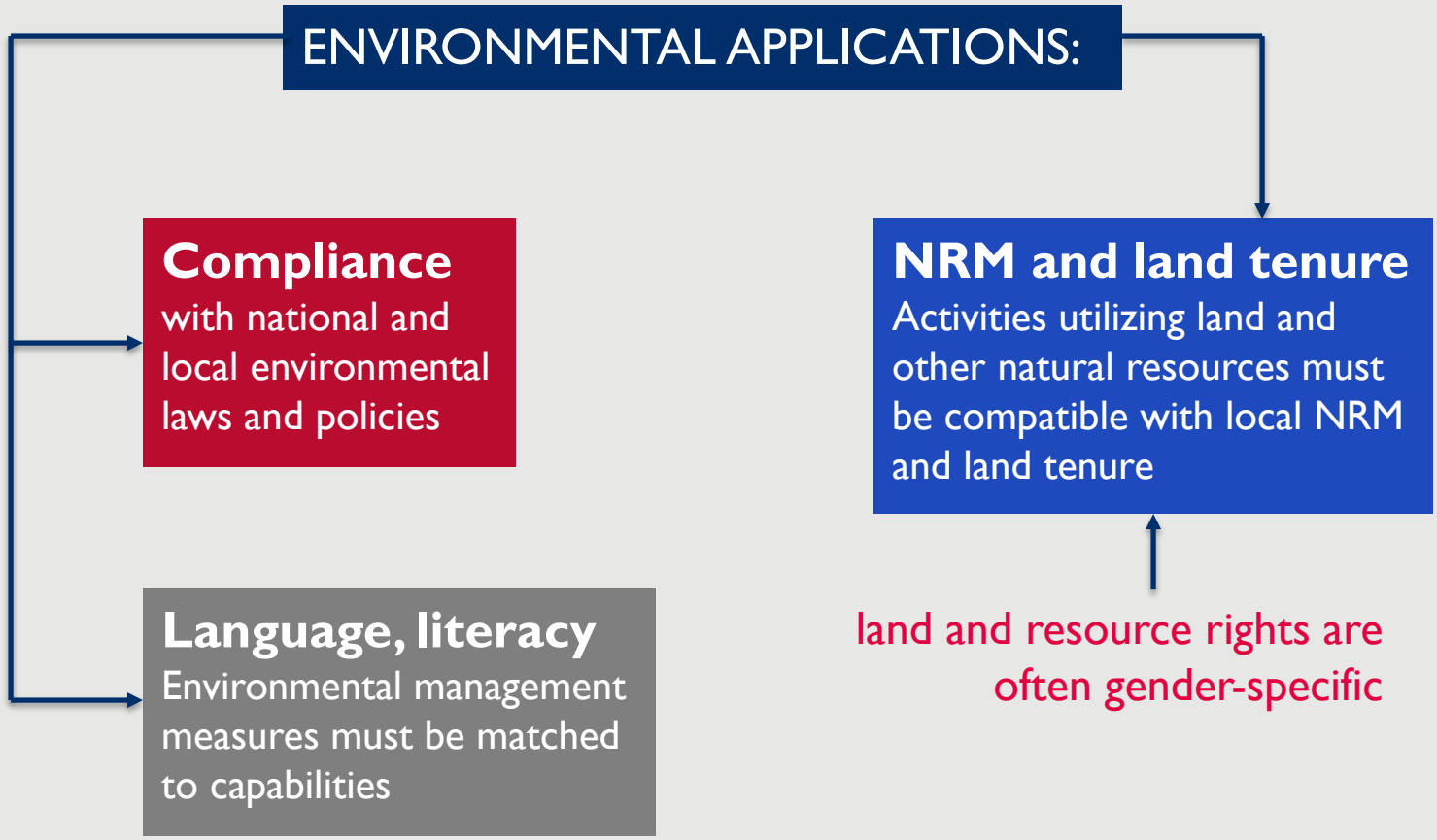
- Environmental application:
  - The design must be appropriate for local <u>environmental</u> conditions (rainfall, temperature, soils, flood, drought and earthquake potential, the built environment) taking into account likely climate change.

…Rainfall, temperature, soils, flood, drought, and earthquake potential, the build environment…

For example: Appropriate choice of siting?

For example: Appropriate choice of crops or trees?

BP #2: DESIGN FOR THE POLICY AND SOCIAL CONTEXT

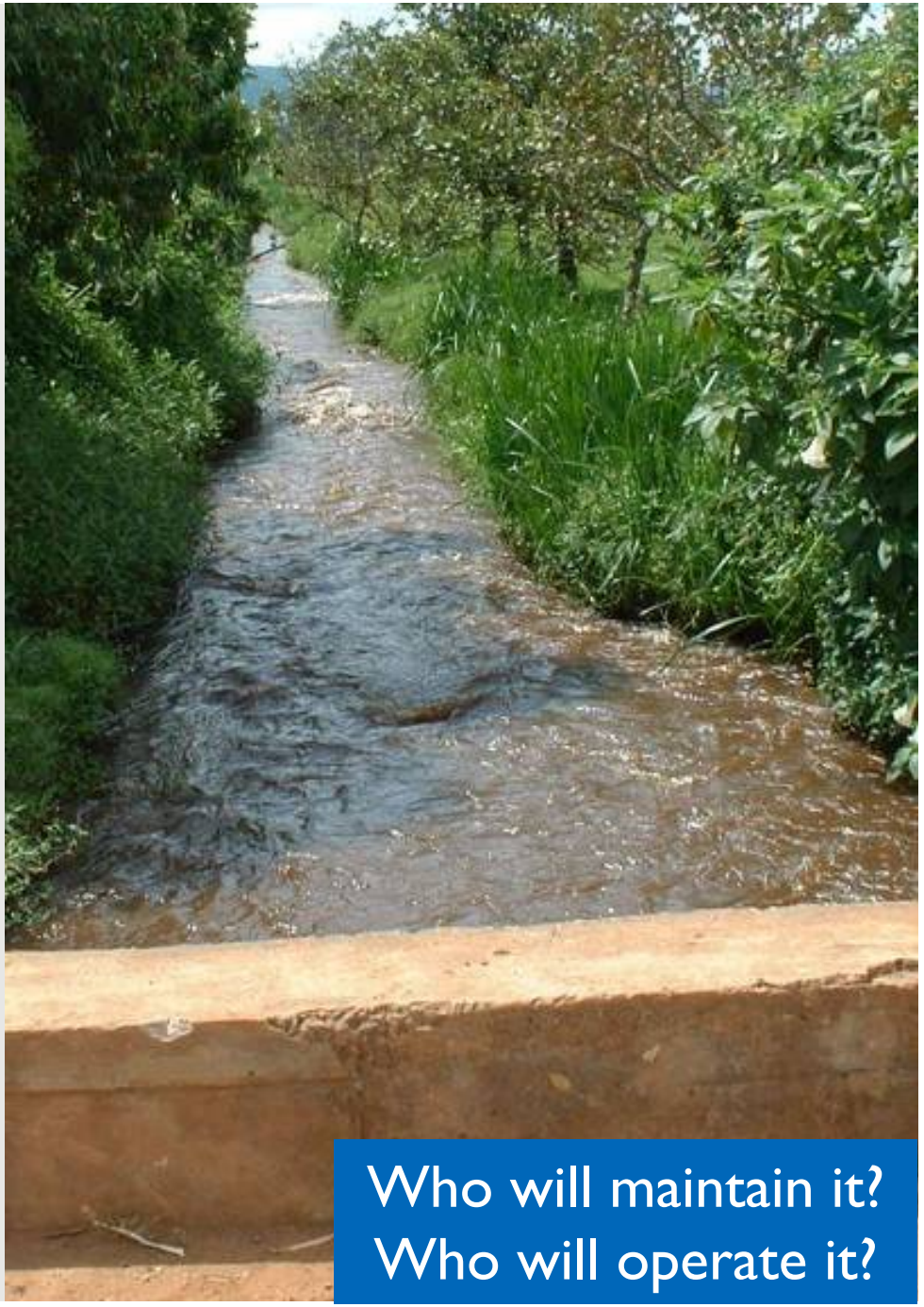


BP #3: BUILD STAKEHOLDER COMMITMENT & CAPACITY

Environmental application:

Proper maintenance and operation are critical to controlling environmental impacts

- Local beneficiaries need to be trained and committed to:
  - environmentally sound operation
  - maintain the equipment/ structure



. . . AND INVOLVE THE LOCAL COMMUNITY

Ethics require it
(environmental justice)

→ Local residents must live with the environmental impacts of activities!

LOCAL KNOWLEDGE is critical

- How often does the river flood?
- How often are crops rotated?
- Is there a land tenure problem?
- What do people value and need?

→ LISTEN to the community

TALK to both men and women

BP #4: ADJUST WHAT WE DO AS RESULTS COME IN

- Practice Adaptive management – adjusting implementation of our activity based on results from the field
- If our activity has unintended environmental consequences, we need to **DO SOMETHING ABOUT IT!**

Communities are often essential to monitoring results from the field

Adaptive environmental management requires:

- A project budget that funds environmental monitoring
- The flexibility to adapt the project in response to unanticipated adverse impacts
- Adjusting implementation of our project based on the experiences of others

BP #5: DESIGN FOR CLIMATE CHANGE

- As previously mentioned, climate change will affect future baseline conditions—projects must be designed to be ROBUST to these conditions
- While individual projects are rarely significant contributors to GCC, climate change is driven by the sum of many small actions
- Even small-scale projects should seek to reduce GHG emissions/increase sequestration and reduce climate vulnerability in the local area in a manner consistent with their development objectives - THIS IS USAID POLICY!

BEST PRACTICE: DESIGN FOR CLIMATE CHANGE

EXAMPLE ACTIONS IN SMALL-SCALE PROJECTS:

REDUCE GHG EMISSIONS

- Use alternative energy (PV, solar, windmill water pumping, etc.)
- Improve thermal performance in building design
- Buy carbon offsets for international travel.

REDUCE CLIMATE VULNERABILITY IN THE LOCAL AREA

- Prioritize water efficiency to reduce a project's contribution to the area's future water stress

INCREASE SEQUESTRATION

- Tree Planting
- Land management (sustainable grazing, cropping)

Solar water heating at a girls' school

Drip irrigation for horticultural prod'n

NOW, RULE 3 FOR ACHIEVING ESDM:

1. Be prevention-oriented
2. Apply best development practices to environmental aspects of the activity
3. BE SYSTEMATIC

HOW DO WE ACHIEVE ESDM?
3. BE SYSTEMATIC

- Take a systematic look at:
  - the possible adverse environmental impacts of an activity
  - ways to reduce these impacts

THE BEST WAY TO BE SYSTEMATIC:
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)!