Principles of Environmental Mitigation Monitoring

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Session Learning Objectives

1. Provide a conceptual basis for environmental mitigation and monitoring

2. Recognize what an environmental indicator is and what information it provides

3. Discuss several simple strategies to incorporate environmental monitoring into projects

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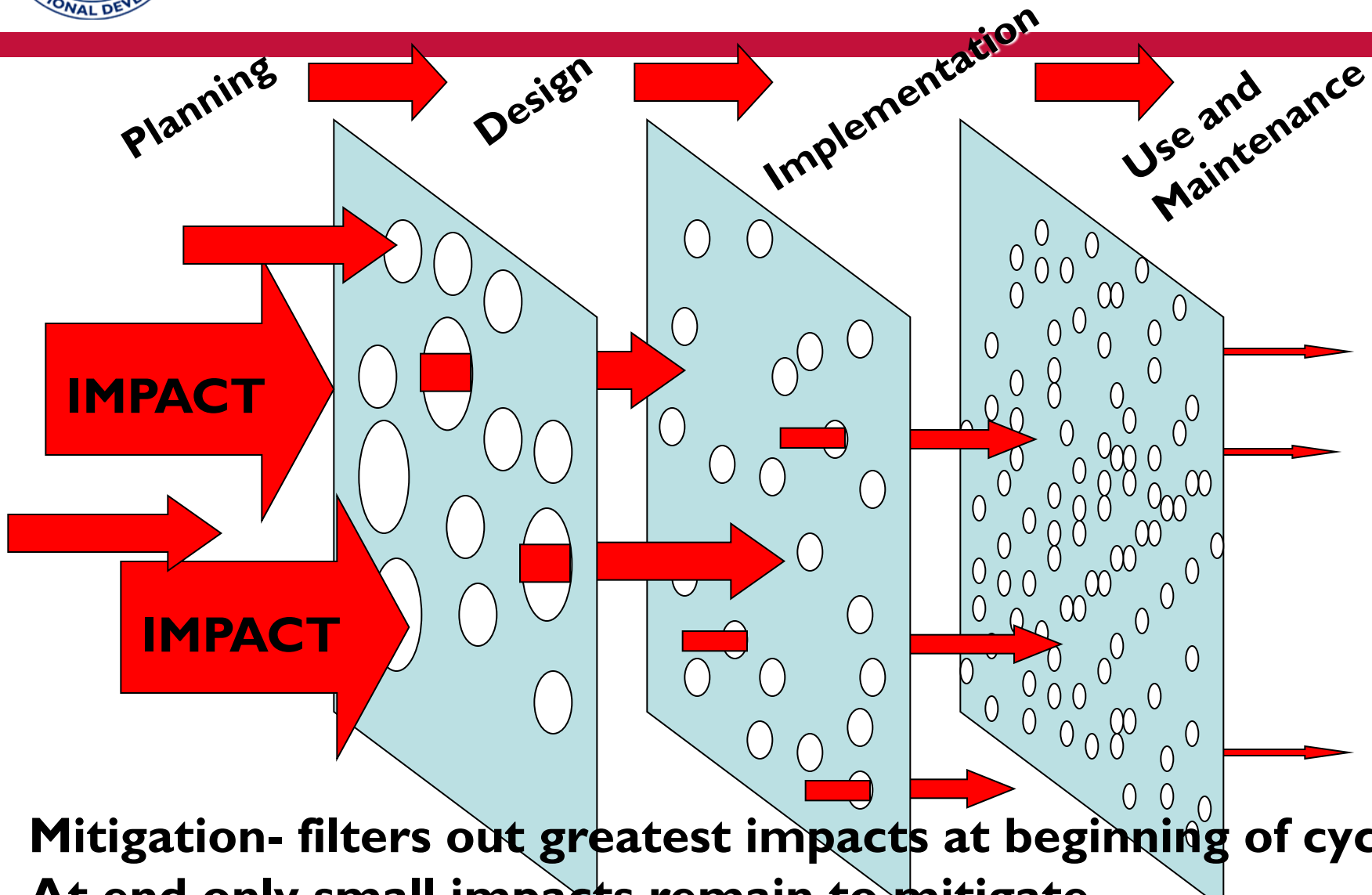
Definition of Environmental Mitigation:

✓ **Measures designed to reduce or eliminate undesired environmental impacts of a proposed action**

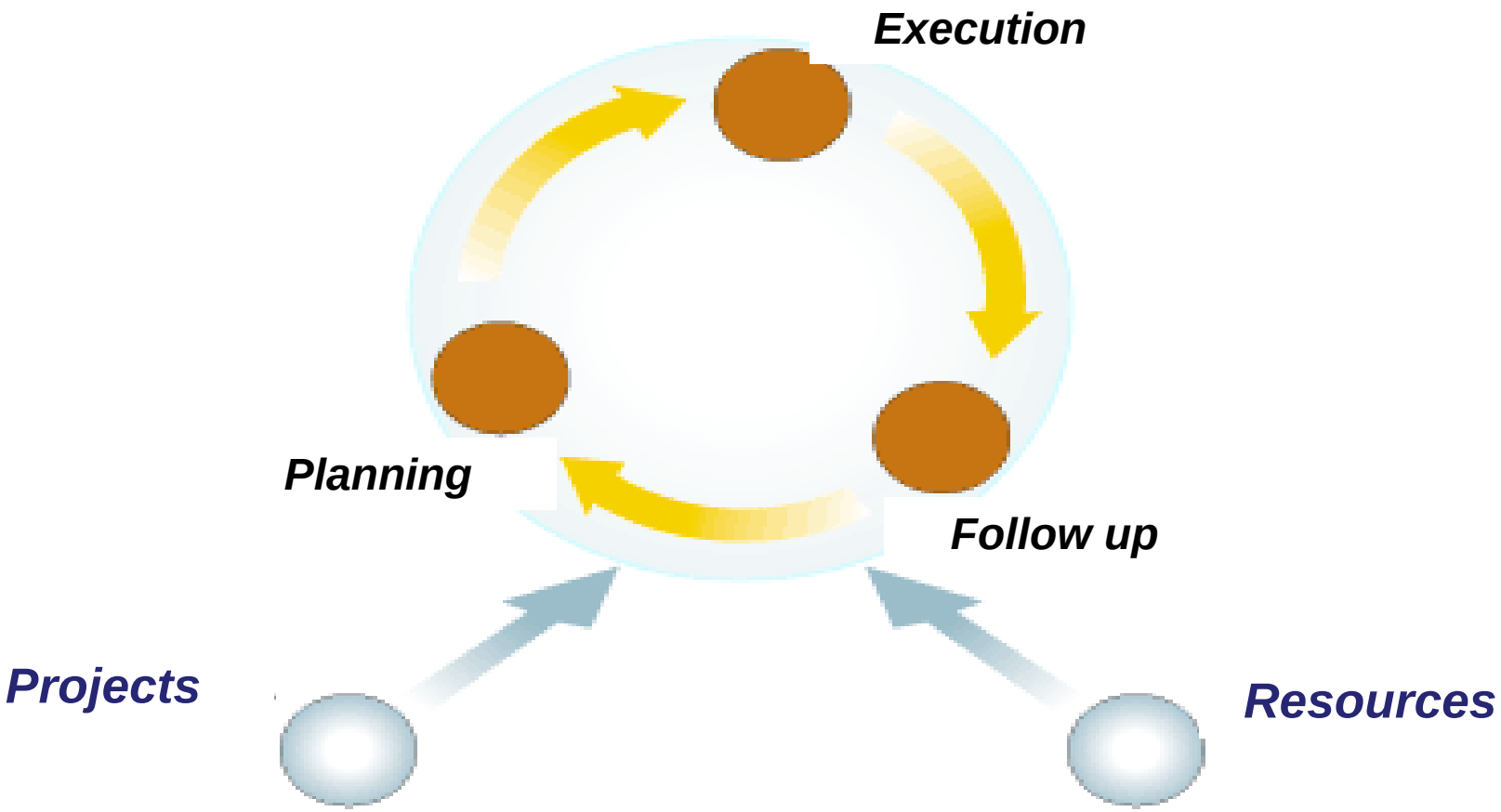
- **Mitigation is a key part of the environmental analysis process**
- **It is essential in order to achieve an environmental friendly design**



Mitigation- filters out greatest impacts at beginning of cycle
At end only small impacts remain to mitigate

Reminder: The best mitigation is good planning!

Global Planning



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MITIGATION in EMMPs contain… .

WHAT & WHY
What are the significant impacts that need to be mitigated? What are the proposed mitigation measures?

WHO
Who carries out mitigation measures? Who manages or verifies?

WHEN
At what stage in the project cycle is each measure implemented?

WITH WHAT RESOURCES
What is the budget? Who pays?

Adaptive mitigation

The EMMP allows modifications in the strategy or mitigation measures, when the monitoring indicates an unforeseen problem or unexpected result…

Environmental Monitoring is:

- A systematic measurement of key environmental indicators over time, within a particular geographic area, in order to determine the effects of project implementation short term and long term.

- Systematic evaluation of the implementation of mitigation measures

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- Why should we monitor projects?

Credit: M. Hendrickson/SMTN

- Why should we monitor projects?

-Ensure that the conditions detailed in the initial environmental assessment are being met
-Determine whether the context has changed, or if unforeseen environmental impacts have occured
-Assess whether mitigation measures are working or not
-Obtain information and data to make informed decisions in the future
-Continue improving the project

Monitoring Process

- Field monitoring should be carried out by more than one person, to receive the benefits of different perspectives of the group.

- Before going to the field, a clear monitoring methodology should be defined (key questions, indicators, etc.)

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Monitoring is responding to a series of questions:

1. Are we doing what we said we were going to do?
2. How effective were our mitigation measures?

Other questions:

- **Was the mitigation completed within an appropriate amount of time?**
- **Was the project implemented according to the standards? If no, why not?**
- **Were the project budgets estimated correctly?**
- **How can we improve this activity to diminish negative impacts and increase positive impact?**

Types of Indicators

Support – Resources	$100,000 designated for sewage treatment systems
Performance – Products produced	# Of sewage systems installed
Effectiveness results – Immediate results	% reduction of water contaminants X, Y and Z
Impact– Long-term results	% reduction of water-borne illnesses within the community

Examples of simple indicators

Erosion measures.

Erosion and loss of top soil in the upper watershed (above) is monitored by doing a visual cloudiness evaluation in the lower watershed (below).

Contamination from grey waters.

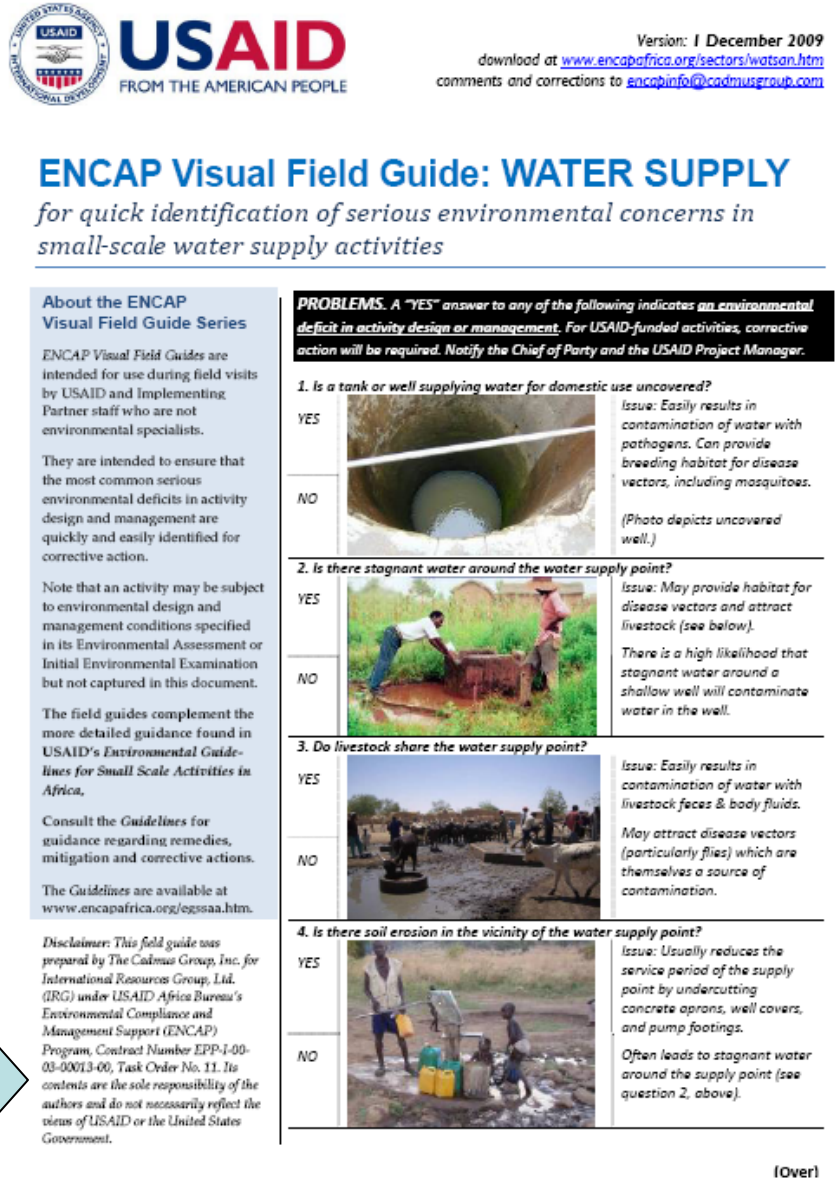
Visual inspection of a latrine (above) reveals a leak in the septic tank (below).

Good environmental monitoring. . .

. . .tell you clearly and cost-effectively if mitigation is sufficient and effective

- Do no more than needed. Prioritize the most serious impacts & issues
- Usually requires a combination of:
  - Environmental conditions indicators
  - Mitigation implementation indicators

Example:
ENCAP visual field guides



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Version: 1 December 2009
download at www.encapafrica.org/sectors/watsan.htm
comments and corrections to encapinfo@cadmusgroup.com

ENCAP Visual Field Guide: WATER SUPPLY

for quick identification of serious environmental concerns in small-scale water supply activities

About the ENCAP Visual Field Guide Series

ENCAP Visual Field Guides are intended for use during field visits by USAID and Implementing Partner staff who are not environmental specialists.

They are intended to ensure that the most common serious environmental deficits in activity design and management are quickly and easily identified for corrective action.

Note that an activity may be subject to environmental design and management conditions specified in its Environmental Assessment or Initial Environmental Examination but not captured in this document.

The field guides complement the more detailed guidance found in USAID's *Environmental Guidelines for Small Scale Activities in Africa*.

Consult the *Guidelines* for guidance regarding remedies, mitigation and corrective actions.

The *Guidelines* are available at www.encapafrica.org/egssaa.htm.

Disclaimer: This field guide was prepared by The Cadmus Group, Inc. for International Resources Group, Ltd. (IRG) under USAID Africa Bureau's Environmental Compliance and Management Support (ENCAP) Program, Contract Number EPP-I-00-03-00013-00, Task Order No. 11. Its contents are the sole responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government.

***PROBLEMS.** A "YES" answer to any of the following indicates an environmental deficit in activity design or management. For USAID-funded activities, corrective action will be required. Notify the Chief of Party and the USAID Project Manager.*

1. Is a tank or well supplying water for domestic use uncovered?

YES / NO

Issue: Easily results in contamination of water with pathogens. Can provide breeding habitat for disease vectors, including mosquitoes.

(Photo depicts uncovered well.)

2. Is there stagnant water around the water supply point?

YES / NO

Issue: May provide habitat for disease vectors and attract livestock (see below).

There is a high likelihood that stagnant water around a shallow well will contaminate water in the well.

3. Do livestock share the water supply point?

YES / NO

Issue: Easily results in contamination of water with livestock feces & body fluids.

May attract disease vectors (particularly flies) which are themselves a source of contamination.

4. Is there soil erosion in the vicinity of the water supply point?

YES / NO

Issue: Usually reduces the service period of the supply point by undercutting concrete aprons, well covers, and pump footings.

Often leads to stagnant water around the supply point (see question 2, above).

(Over)

"SMART" INDICATORS

Indicators should be:

- **S**pecific
- **M**easurable
- **A**chievable
- **R**ealistic
- **T**ime Limited

Making Mitigation & Monitoring effective

Realistic.
achievable within time, resources & capabilities.

Focused.
must correspond to impacts.

Funded.
Funding for all the activities

Considered on time.
Preventive mitigation is usually cheapest and most effective.

Considered early.
If M&M budgets are not programmed at the design stage, they are almost inadequate!

MONITORING in EMMPs contain. . .

WHAT
What are the indicators?

WHY
What is the purpose of each indicator?

WHEN & HOW
How & when will indicators be measured? How will the information be analyzed?

WHO
Who monitors, analyzes, reports, receives the information?

WITH WHAT RESOURCES
What is the budget? Who pays?

Mitigation Measure	Responsible Party	Monitoring Scheme			Est. Cost	Monitoring Log		
		Indicators	Data source/ Method	How Often		Date	Result	Follow-up

Summing up

Mitigation & Monitoring are a critical part of environmentally sound design:

- ✓ **Mitigation minimizes adverse environmental impacts**
- ✓ **Monitoring tells you if your mitigation measures are sufficient & effective**