

# Session 8.

## Core EIA Skills II:

### Environmental Monitoring & Environmental Mitigation and Monitoring Plans

#### Objectives

Establish the objective of environmental monitoring (determining clearly and cost-effectively if mitigation is sufficient and effective); brief the two types of environmental monitoring indicators & achieve a common understanding of the principles of environmental monitoring design.

Brief the EMMP concept; establish that EMMPs are critical to effective and systematic implementation of IEE/EA conditions; explain the mechanisms by which USAID is requiring IPs to develop and implement EMMPs.

Practice translating general IEE conditions into specific mitigation actions.

#### Format

Presentation; short group exercise

#### Summary

This session continues our acquisition of core EIA skills critical to life-of-project compliance. It has 3 major parts: (1) Principles of Environmental Monitoring, (2) Environmental Mitigation and Monitoring Plans, and (3) Translating general IEE or EA conditions to mitigation actions.

#### 1. Environmental Monitoring

**Definition.** Environmental monitoring is both:

- A. Systematic verification of the implementation of mitigation measures.
- B. Systematic observation of key environmental conditions.

Environmental monitoring is a necessary complement to mitigation. Its purpose is to tell us clearly and cost-effectively if mitigation is sufficient and effective.

Throughout this session, we will see that environmental monitoring must be highly targeted.

**A. Verifying Implementation of Mitigation Measures.** We can verify (and quantify!) implementation of mitigation measures in two ways: via paper reports and via field inspection. In each case, we use **mitigation implementation indicators**. For example, monitoring of medical waste management in a clinics activity could ask the beneficiary clinics to attach their waste management plan. A field inspection would spot check that key elements of the plan were being implemented.

Good environmental monitoring is targeted and takes the simplest effective approach. It usually requires a combination of environmental conditions indicators and mitigation implementation indicators.

**B. Observing environmental conditions.** The environmental conditions observed are those:  
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- That correspond to impacts and mitigation measures. For example, a key potential impact of an irrigation project is groundwater contamination. Therefore, **ground-water quality** is monitored.
- Upon which the project depends for its success. For example, a water supply project depends on clean source water. Therefore, **source water quality** is monitored.

We observe and measure environmental conditions by using **environmental indicators**, which are signals of or proxies for the stock and quality of key environmental resources, or of environmental health and ecosystem function.

Indicators can require complex equipment to measure (e.g. testing water for pesticide residues), but they can also be very simple—and often for small-scale activities simple indicators are best. (For example, groundwater levels can be measured in a shallow well using a rope and bucket.)

A key principle of monitoring is choosing the simplest indicator that meets your needs.

**NOTE: environmental indicators are NOT “F” indicators or core program performance indicators.**

To distinguish the impacts of your activity from other factors, thought needs to go into the times and places that indicators are measured.

For example, consider an agricultural processing facility that draws water from a stream. The facility has potential to adversely impact surface water quality. A good monitoring approach would:

- Take water samples from the stream at the intake point and downstream from the seepage pits.
- Take samples from these different locations at the same time.
- Take samples during both high and low flow periods during the processing season.

**What is the relationship of monitoring to environmental compliance?** Initial Environmental Examination and Environmental Assessment conditions are mitigation requirements. IEEs (and EAs) are useless unless the conditions they establish are implemented! USAID’s environmental procedures therefore require implementation of IEE/EA conditions (mitigation) and monitoring this implementation.

## 2. Environmental Mitigation and Monitoring Plans (EMMPs)

**The need.** In Asia/ME missions and programs and across the agency, implementation of IEE and EA conditions is the weakest element of life-of-project environmental compliance.

A key lesson learned from 40 years of EIA experience world-wide is that it is almost impossible to systematically carry out the mitigation measures that result from the EIA process unless an EMMP exists, and is incorporated into a project’s workplan and budget.

**The concept.** Environmental Mitigation and Monitoring Plans (EMMPs) are a framework for specifying and organizing mitigation and monitoring, and assuring that it responds systematically to IEE/EA conditions.

In their most basic form, EMMPs are a simple table that sets out:

- ALL the mitigation measures being implemented in response to IEE/EA conditions
- The monitoring that will determine whether the mitigation is sufficient and effective.
- Who is responsible for both mitigation & monitoring..

EMMPs may also include **budgeting** information for mitigation and monitoring and a **monitoring log section where** monitoring results can be recorded. We illustrate the EMMP concept at the end of the *session with an extended example*.

(Note that EMMPs are also known as EMPs (Environmental Management Plans), EMPRs (Environmental Mitigation Plan and Report), and similar acronyms. EMMP is the most widely used term. EMMP formats likewise vary. IEEs or awards sometimes specify an EMMP format, but more often the IP has flexibility in designing/adopting/adapting a format that meets the needs of the particular project. The formats used in this workshop are the most common and are acceptable in most contexts.)

**ME IEEs requiring EMMPs.** USAID’s environmental procedures require that environmental mitigation required by IEEs and EAs is implemented and monitored, but do not require EMMPs *per se*. However, almost all new ME IEEs (and those in other regions as well) do require that EMMPs be developed and implemented.

This requirement can be operationalized either as technical direction from the C/AOR or as a provision of new contracts and agreements.

(Title II Cooperating Sponsors are required to develop EMMPs by the Agency’s DFAP guidance.)

**EMMP submission and approval.** EMMPs should be approved by the C/AOR; sometimes there is additional review by the MEO or REA. C/AORs should require that they are submitted together with the project’s workplan or PMP.

### 3. Translating IEE Conditions to Mitigation Actions

IEE conditions are often written very generally. For example, an IEE might specify that “wells shall be sited to minimize the possibility of contamination.” (Or even more generally: wells shall be sited and constructed consistent with good practices.”)

Implementing this IEE condition (which begins with developing an EMMP) requires that it be translated into specific mitigation actions.

In this case, the project would need to develop or adopt a set of specifications for well location that can then be referenced in the EMMP.

For example, the project might adopt the following, based on the *Sector Environmental Guidelines*:

The following MINIMUM distances from potential sources of contamination will be observed for well siting:

- 150 ft (45.7 m) from a preparation area or storage area of spray materials, commercial fertilizers, or chemicals that may cause contamination of the soil or groundwater.
- 100 ft. (30.5 m) from a below-grade manure storage area.
- 75 ft (22.9 m) from cesspools, leaching pits, and dry wells.
- 50 ft (15.2 m) from a buried sewer, septic tank, subsurface disposal field, grave animal or poultry yard or building, privy, or other contaminants that may drain into the soil.
- The distance between a septic tank leach field and a down-gradient well should be greater than 100 ft (30.5 m) if the soil is coarser than fine sand and the groundwater flow rate is greater than 0.03 ft/day (0.01 m/day).<sup>2</sup>

The EMMP could then list the concrete mitigation action as “compliance with project well siting criteria,” and attach those criteria as an Annex.

In this session, we will work in groups through a set of actual examples of “general IEE conditions” and discuss how to translate them into specific mitigation actions.

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<sup>2</sup> Source: Driscoll, Groundwater and Wells, Second Edition, as cited in the *Small Scale Guidelines*.

## **Key resource**

The *Sector Environmental Guidelines* are a key resource for design of mitigation and monitoring measures. The *EMMP Factsheet* is included as an annex to this sourcebook. It includes formats and how-to guidance.