

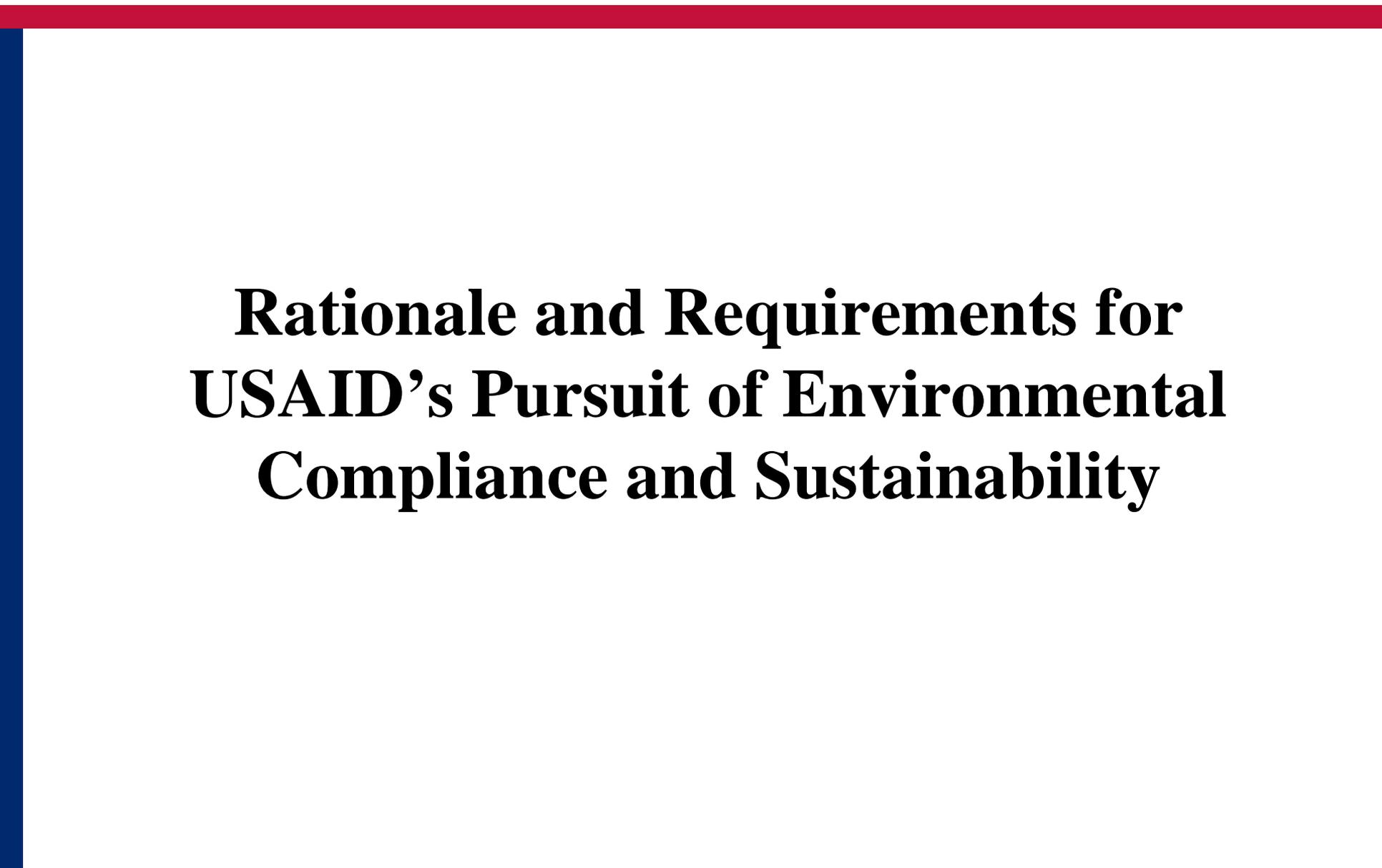


USAID
FROM THE AMERICAN PEOPLE

Session 2: Environmental Compliance for Environmentally Sound Design and Management

Will Gibson, USAID/Asia BEO

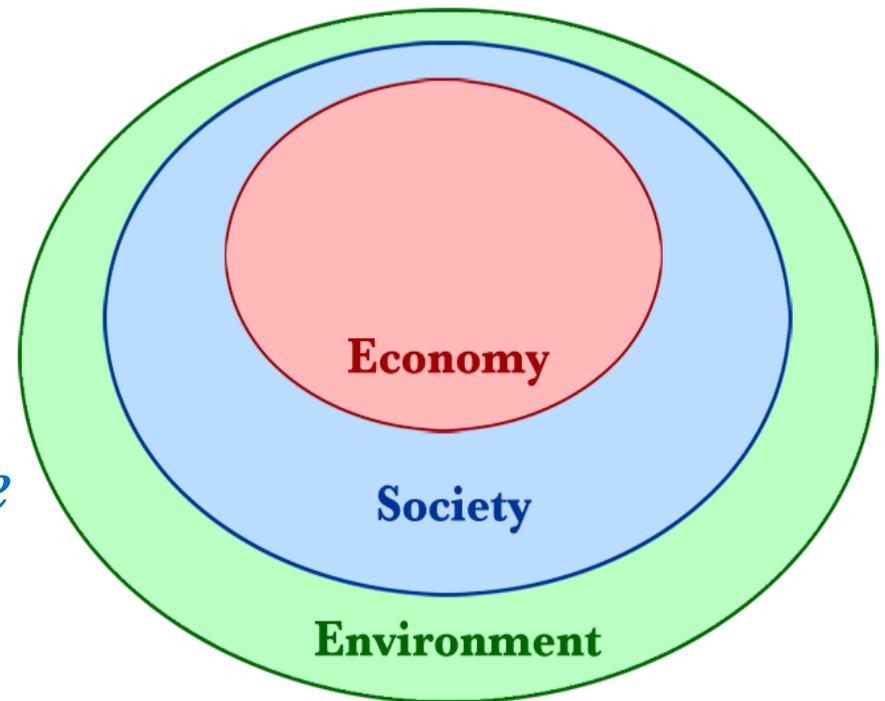
Asia Regional Environmental Compliance—ESDM Workshop
Bangkok, Thailand
July 2015



Rationale and Requirements for USAID's Pursuit of Environmental Compliance and Sustainability

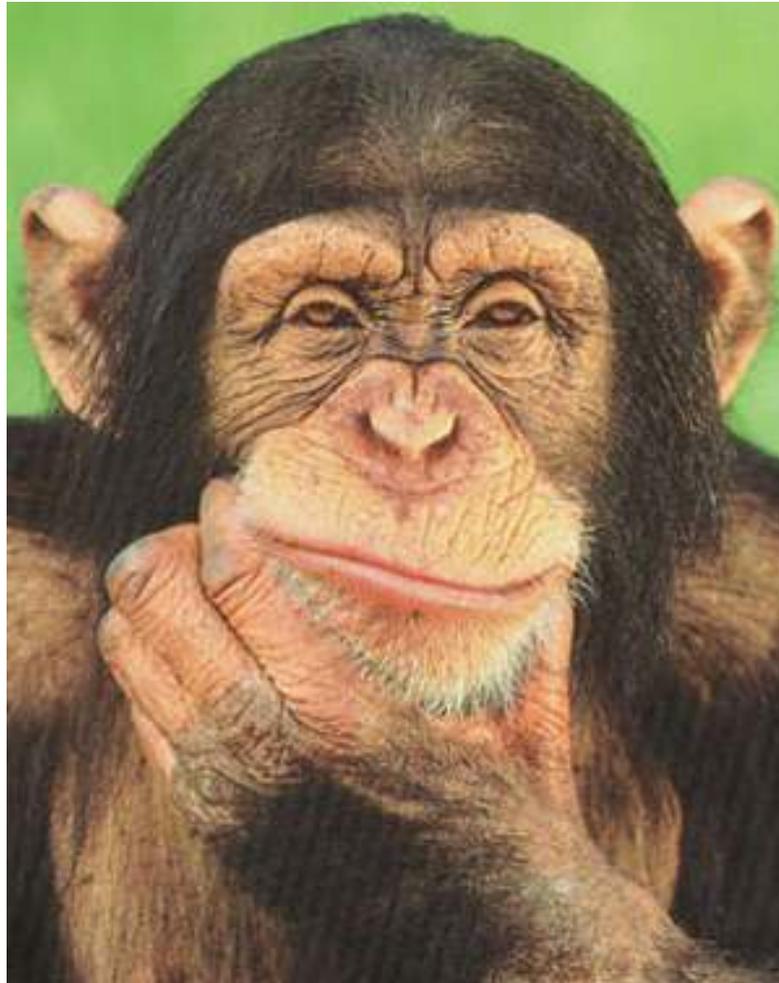
Sustainable Development Depends on a Sound and Healthy Environment

- Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs
- Economic and societal values are constrained by environmental limits
- They are *subsets of the natural environment*



From "Sustainable development" diagram at <http://www.sustainablecampus.cornell.edu/csi.cfm>

Why Incorporate Environmental Considerations into USAID Programs?



Chimpanzee

Environmental Considerations Support State-of-the-Art Development

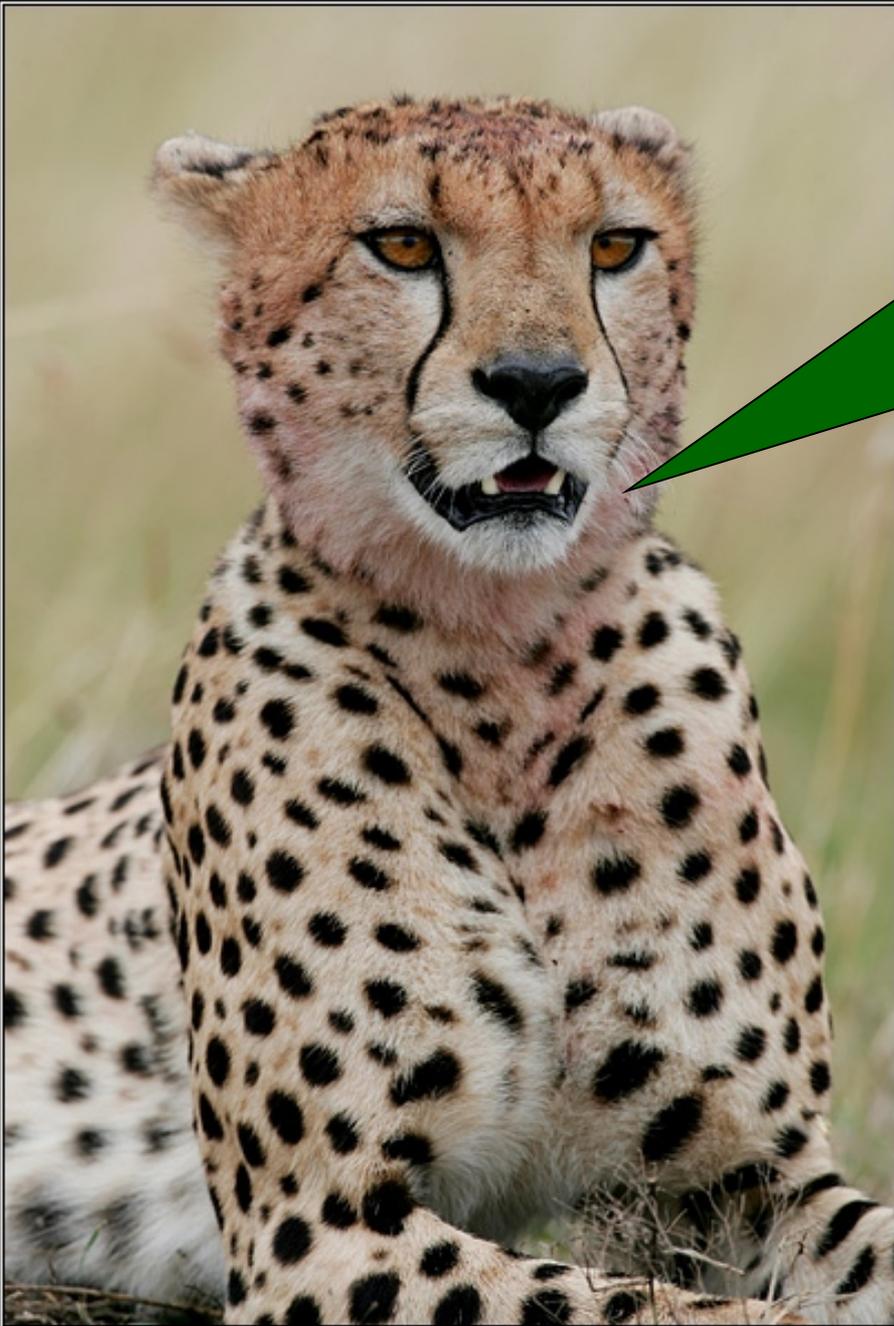


Fiery-throated hummingbird



**They Achieve Optimal
Programming Results**

Crested macaque



**They Help Avoid
Harming People
in Host Countries and
the U.S.**

Cheetah

They Promote Civil Society and Democracy through Transparency and Public Participation



Zebras



**They Avert Negative
Economic Growth**

lemur

**They Help to Avoid
Diplomatic Problems**



Morpho butterfly

They Engender Public Trust in USAID

Clownfish in anemone





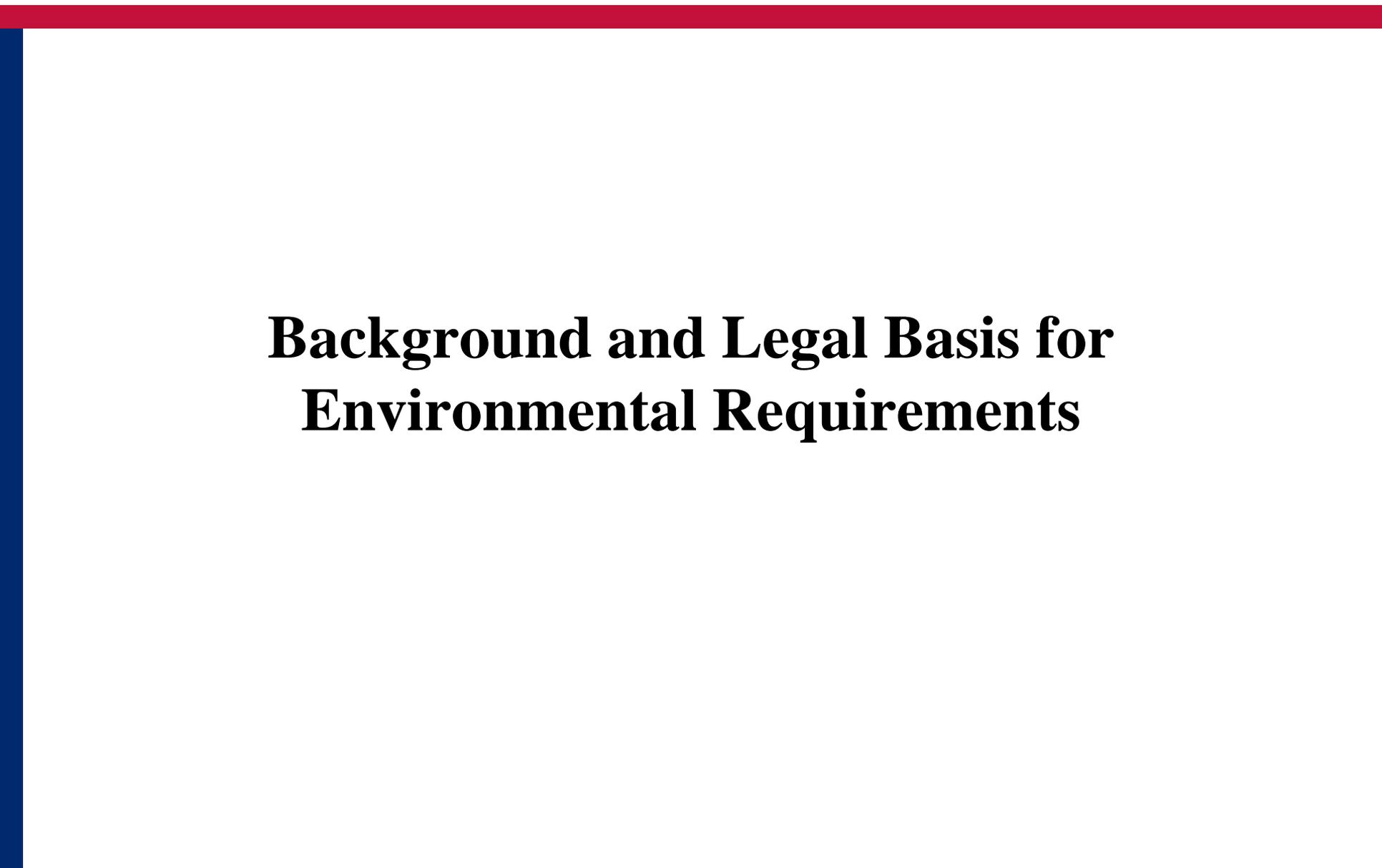
**22 CFR 216 Allows
USAID to Exist**

Blue and Gold Macaw



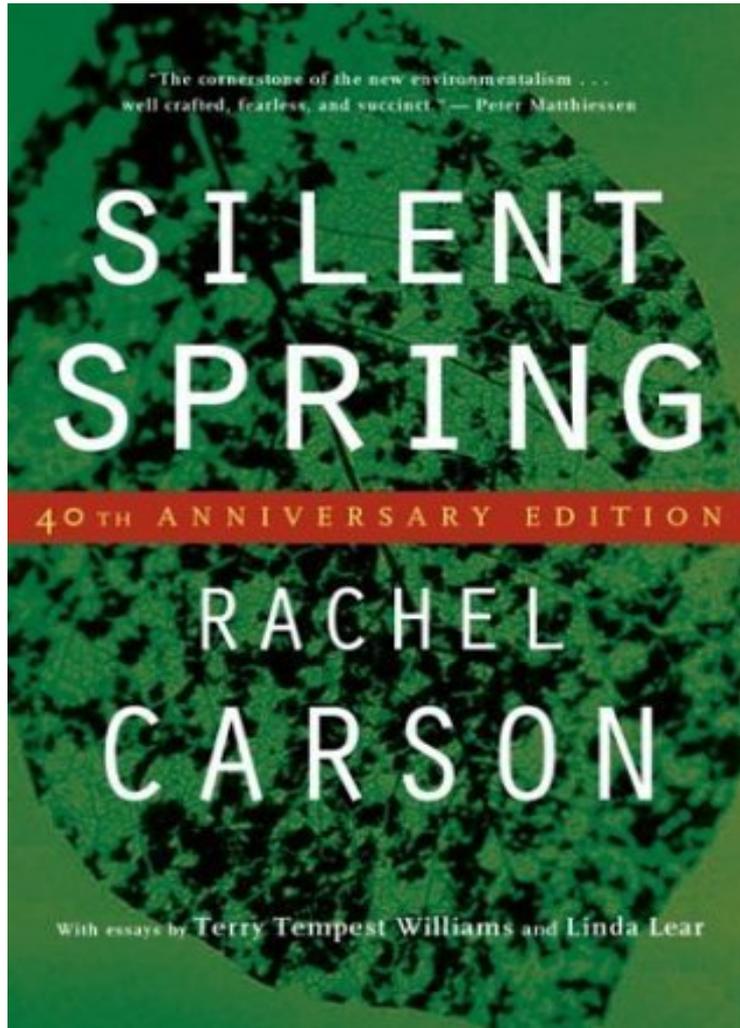
22 CFR 216 Is the Law!

Bengal tiger



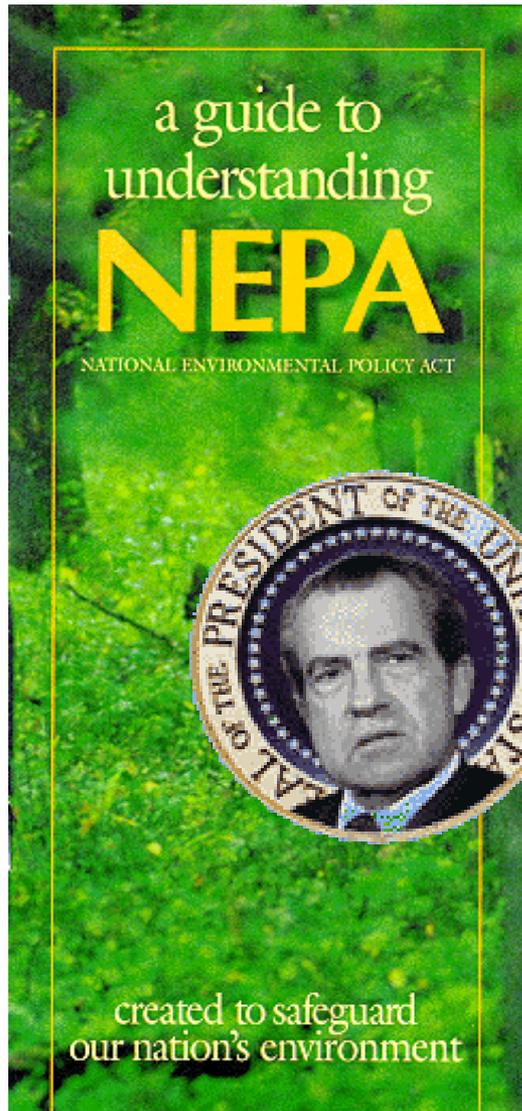
Background and Legal Basis for Environmental Requirements

Environmental Compliance: US Perspective



- Environmental movement takes off with Rachel Carson's 1962 book, "Silent Spring"
- Greater awareness across American society quite rapidly translates into alarm

US Congress Passes New Environmental Laws



Pertaining to:

- Clean Air– 1962
- Clean Surface Water – 1965
- National Environmental Policy (NEPA)– 1970
- Pesticides – 1972
- Endangered Species– 1973
- Safe Drinking Water– 1974

Nixon is president who signs NEPA



NEPA Requires *All* Federal Agencies To:

- Promulgate NEPA implementing regulations
- Conduct an environmental impact assessment (EIA) for federal agency programs, policies, plans, projects, activities, etc. significantly affecting the human environment
- Formalize a public process for ensuring environmental matters are considered in planning and decision-making



Council on

Environmental Quality

USAID Does Not Immediately Promulgate



- Agency lags on NEPA implementation, and
- In 1975, inappropriate use by USAID/Pakistan project of malathion results in 5 deaths and hundreds sickened, and
- Consortium of US NGOs successfully sued USAID to force NEPA compliance

USAID Eventually Complies

- USAID settled out of court
- In 1980 published Title 22 Code of Federal Regulations, Part 216 (Reg. 216) Environmental Compliance Procedures
- Established arrangement of BEOs to approve environmental compliance decisions
- Established Agency Environmental Coordinator Position



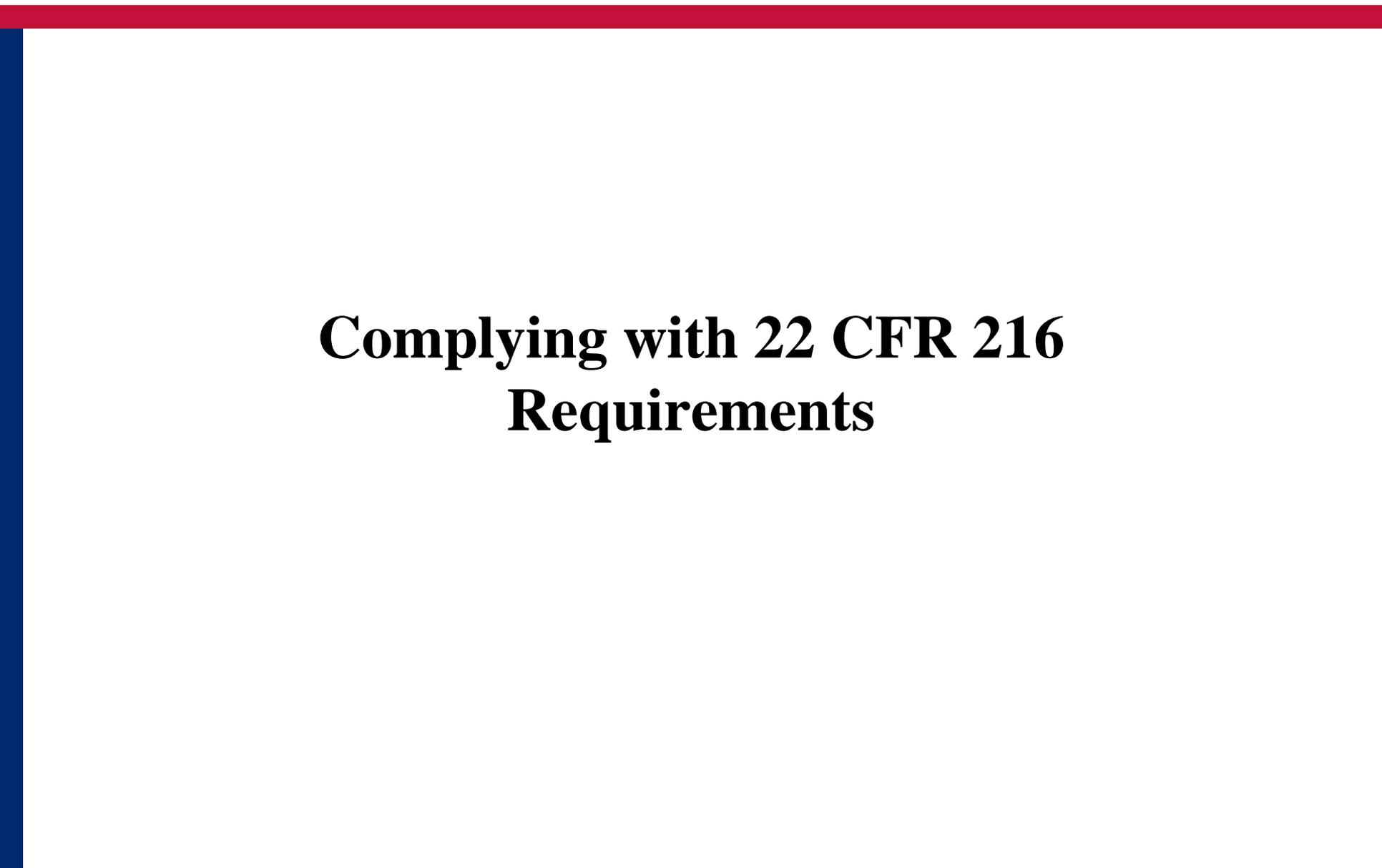
USAID's Environmental Compliance Procedures Are a Combination of:

- Foreign Assistance Act Section 117, 118, 119
 - 117--Utilize EIA and Promote Sustainable Development
 - 118--Conserve and Manage Tropical Forestry
 - 119--Conserve and Manage Endangered Species and Biodiversity
- 22 CFR 216 (Reg. 216)--USAID's NEPA Implementing Regulations published in 1980
- Automated Directives System (ADS) 201, 303 and 204

Compliance requirements apply to USAID officers *and implementers of USAID funds*

USAID's Environmental Compliance Procedures (Cont'd.):

- USAID Administrator (Agency Notice 121531) committed USAID regional bureaus to comment and provide *voting position recommendations* to Department of Treasury on MDB proposals
- *Title XIII International Financial Institution Act of 1977, as amended* requires USAID to ensure that other USG agencies analyze the environment, natural resources, public health and indigenous peoples impacts of projects well in advance of MDB Board votes
- **FY 2015 Appropriations Law** reinforced USAID's previous responsibilities under Title XIII, while expanding the scope of USAID's reviews and responsibilities

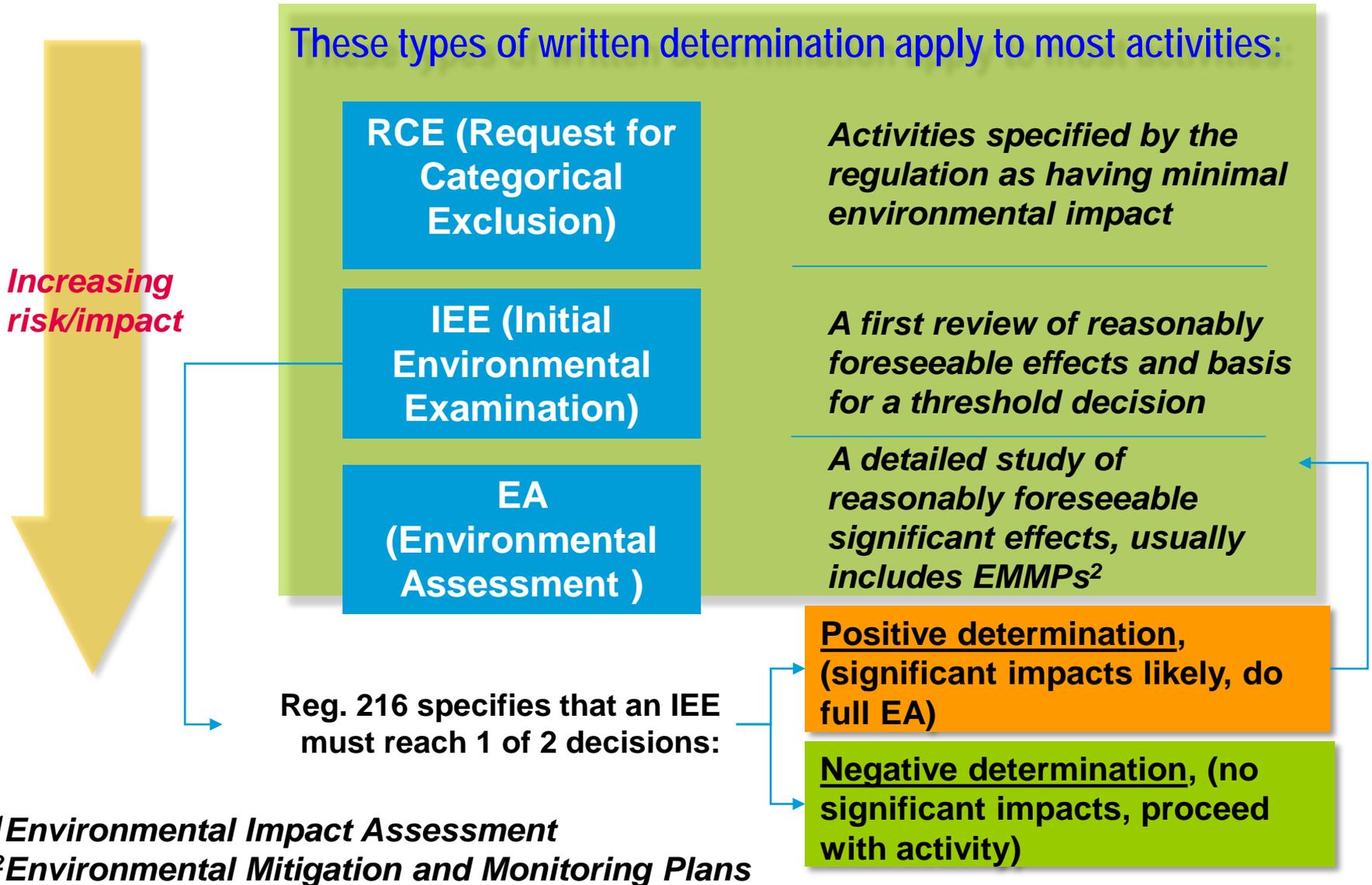


Complying with 22 CFR 216 Requirements

Reg. 216 Requires USAID to:

- Consider environmental consequences of financed activities before deciding to proceed *and adopt appropriate environmental safeguards*
- Define *environmental limiting factors* that may constrain development and identify and carry out activities that assist in restoring the renewable resource base upon which sustainable development depends
- Assist *host countries* to strengthen capabilities to appreciate and evaluate potential environmental effects of proposed strategies and projects, and to select, implement and manage effective environmental programs
- Document environmental review decisions *before funds are irreversibly committed* and maintain review-decision records

Reg. 216 EIA¹ Documents Identify/Consider Environmental Consequences





Initial Environmental Examinations (IEE):

- Document a systematic, prevention-oriented process that applies best practices and contributes to environmentally sound design and management
- Are drafted by the COR/AOR, reviewed by MEO, signed by Mission Director, submitted to BEO, who concurs or requests reconsideration of recommended Threshold Decision.
- Contain legally binding requirements, e.g., Conditions, Environmental Mitigation and Monitoring Plans (EMMPs), Limitations, etc. .-implementers should have a copy, which can be found at: <http://gemini.info.usaid.gov/egat/envcomp/>
- Are required prior to obligation of funds and activity initiation

**Represent a fundamental step on the path
to *sustainable development***

Reg. 216 Determinations

| If the IEE analysis finds... | The IEE recommends a... | Implications (if IEE is approved) |
|----------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------|
| No significant adverse environmental impacts | CATEGORICAL EXCLUSION | No conditions. Go ahead. |
| With specified mitigation and monitoring, no significant environmental impacts | NEGATIVE DETERMINATION WITH CONDITIONS | Specified mitigation and monitoring must be implemented |
| Significant adverse environmental impacts are possible | POSITIVE DETERMINATION | Do full EA or redesign activity. Conditions imposed by the EA must be implemented. |
| Not enough information to evaluate impacts | DEFERRAL | You cannot implement the activity(ies) subject to the deferral until the IEE is amended |
| Emergency/disaster funded with International Disaster Assistance money thru OFDA | EXEMPTION | See ADS 204.3.10 Environmental Review in International Disaster Scenarios |

RCEs are prepared, instead of IEEs, when none of the project activities will affect the environment

Applicability of a Categorical Exclusion

Under Reg. 216, **ONLY** activities fitting in a set of fifteen specific categories qualify as categorical exclusions*, including. . .

*See 22 CFR 216.2(c)(2) for full list

- Education, technical assistance, or training programs (as long as no activities directly affect the environment)
- Documents or information transfers
- Analyses, studies, academic or research workshops and meetings
- Nutrition, health, family planning activities *except where medical waste is generated*

 **No categorical exclusions are possible when an activity involves pesticides**

Applicability of a Negative Determination (with Conditions)

- The proposed action has only minor (not significant) environmental impacts that can be feasibly mitigated and controlled
- Applies only to *small scale projects*
- Commonly applies to:
 - Renovation and refurbishment
 - Health projects that generate medical wastes
 - Livelihood development activities
 - Small-scale water supply and sanitation
 - Small-scale road improvements





Applicability of a Positive Determination

Actions normally having a significant effect on the environment & requiring an EA (see 216.2(d)(1)(i-xi))

- River basin development
- Irrigation or water management
- Agricultural land leveling
- Drainage projects
- Large scale agricultural mechanization
- New lands development
- Resettlement
- Penetration road building or improvement
- Power plants
- Industrial plants
- Potable water & sewage, except small-scale

Sections 118 & 119 of the Foreign Assistance Act require an EA for. . .

- Activities involving procurement or use of logging equipment
- Activities with the potential to significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas

AND. . .

Other proposed actions that may have a significant impact on the environment e.g. new construction, restricted use pesticides, hazardous waste remediation, any project dealing with toxic substances

A Negative Determination with Conditions Should Require Implementers to:

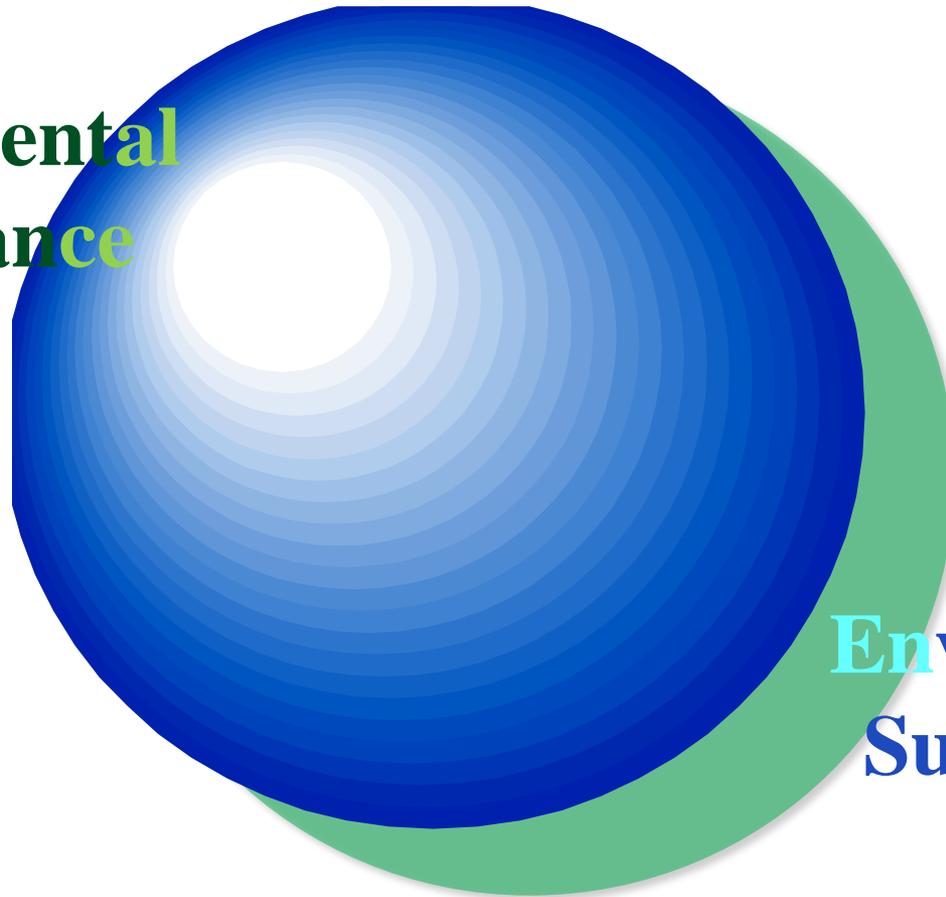
- Incorporate requirements into budgets and workplans
- Gather and analyze information to prepare adequate environmental safeguards--EMMPs
- Certify that EMMPs are indeed suitable and adequate to the activity
- Upon activity completion, in some cases provide documentation that the project was conducted IAW the applicable EMMPs
- Report environmental compliance findings in routine project reporting to USAID (quarterly reports, annual reports)

Positive Determinations Require Implementers to:

- Incorporate EA requirements into budgets and workplans
- Prepare an SS--essentially a planning document that gets reviewed and commented upon by the BEO before the EA proceeds
- Prepare an EA, which shall be BEO cleared before the project activities proceed
- Implement the selected alternative IAW with the EMMPs (in the cleared EA)

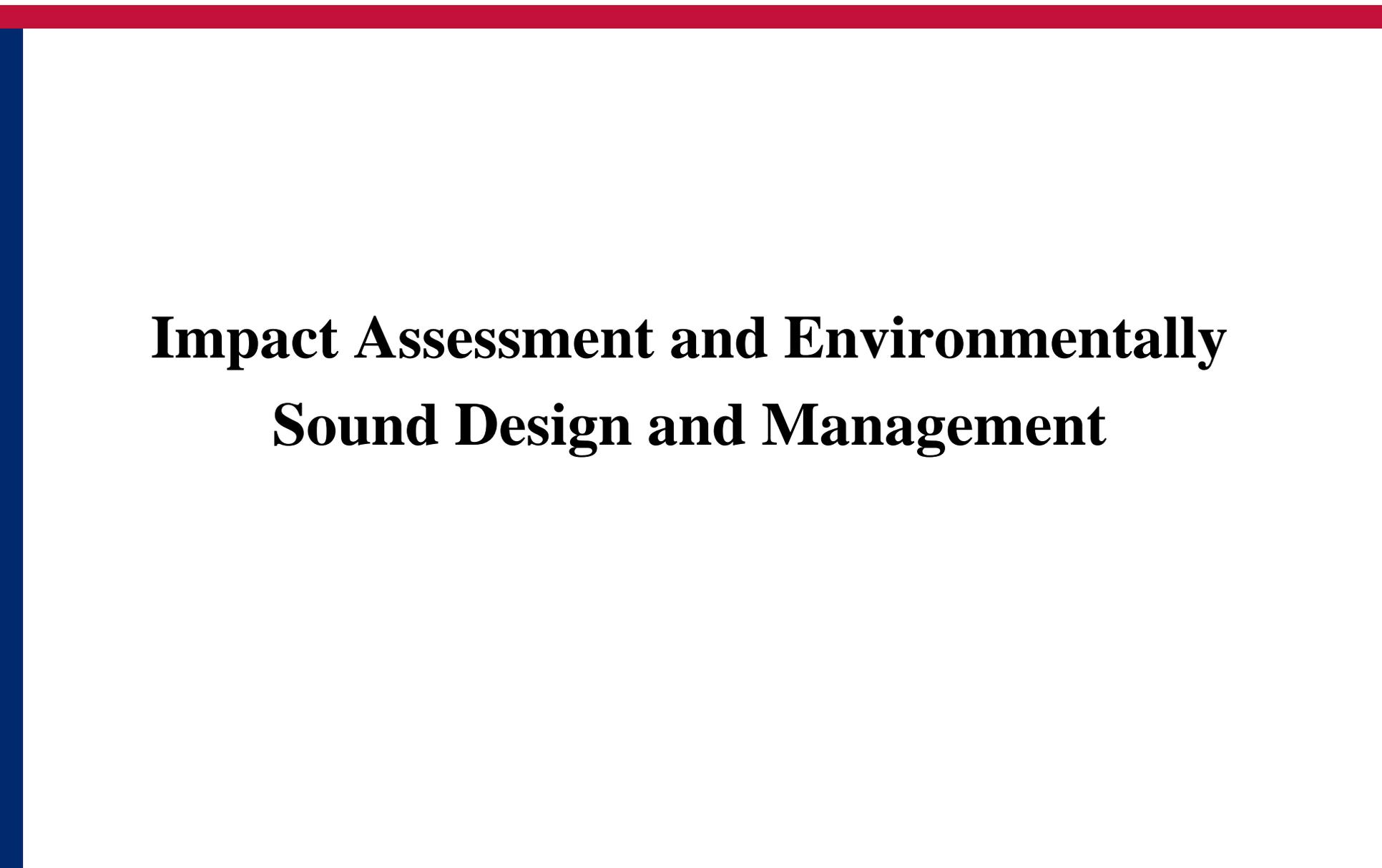
Efficiency Is Optimized When Compliance Exactly Coincides with Sustainability

**Environmental
Compliance**



**Environmental
Sustainability**

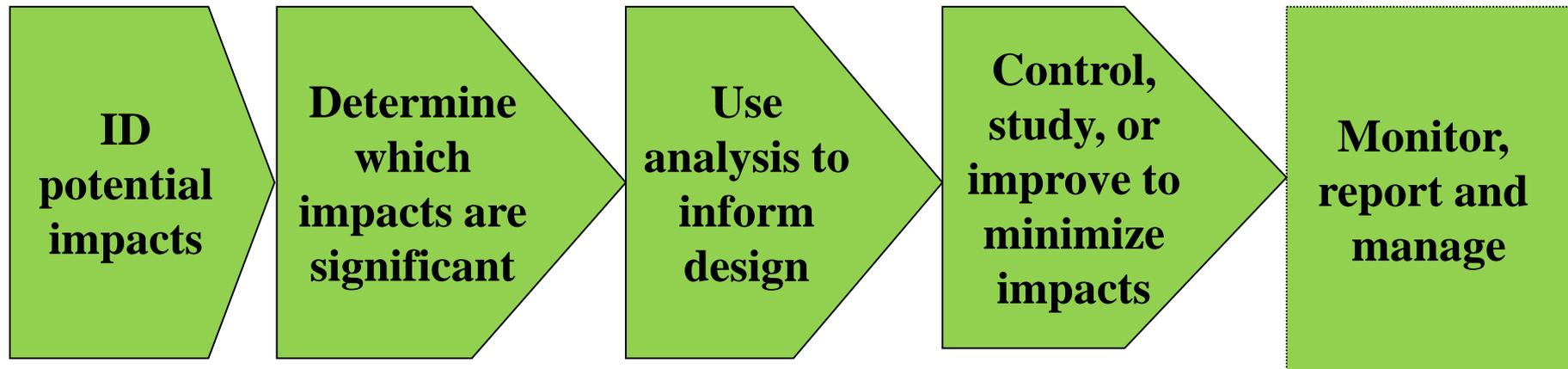
Examples of achieving of one without the other?



Impact Assessment and Environmentally Sound Design and Management

The ESDM Process

Be systematic, prevention-oriented and apply best management practices



Typical Project

- The USAID project supports increasing agricultural competitiveness
- Project activities include construction and operation of agro-processing centers
- It is anticipated that agro-processors will engage in:
 - *Collection of agricultural products*
 - *Refrigeration*
 - *Washing*
 - *Storage (temporary preservation)*
- Water for construction and operation will come from nearby stream (treatment with chlorine for operation uses)

Example Approach for Identifying Environmental Impacts

- “Jury of your peers” approach is rational and justifiable one—environmental expertise is helpful, but not required
- Subdivide the overall project into discrete activities to more easily conceptualize potential impacts, e.g.:
 - *Activity 1: Site preparation and construction--site selection, mobilization, site preparation/clearing, and construction/excavating*
 - *Activity 2: Establishing roads and utilities--constructing access ways and establishing power, water, sewer services*
 - *Activity 3: Operations and maintenance--operating agro-processing centers, incl. refrigeration, washing, drying, preserving, storing, etc.*
 - *Activity 4: Decommissioning and abandonment*

Example Approach for Identifying Environmental Impacts—Cont'd.

- Divide each activity into inputs and outputs and then use a mass balance approach—what goes in must come out
- Select categories for each input and output, e.g.:

| Activity 1--Site Preparation and Construction | |
|------------------------------------------------------|---------------------------------------------|
| Energy: | Air emissions: |
| Water: | Discharges to water: |
| Materials: | Solid wastes: |
| Supplies/consumables: | Spills and hazards |
| Chemicals: | Environmental alteration/impairment: |
| Other inputs: | Other outputs: |

- List under each category all aspects of the activity that could potentially interact with the environment
- Be exhaustive--insignificant aspects will get eliminated in the subsequent step

Potential Environmental Impacts for Site Preparation and Construction Activity

| INPUTS | | OUTPUTS | |
|------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activity 1 – Site Preparation and Construction | | | |
| Energy: Petroleum-based fuel Electricity Welding & cutting gases | | Air emissions: Dust Vehicle & generator exhaust Welding fumes | |
| Water: Equipment wash-down water (surface) Concrete mixing water (surface) | | Discharges to water: Contaminated storm water and wash water (silt, oils, etc.) Water from de-watering Discharge from portable toilets | |
| Materials: Concrete Asphalt Structural materials (wood, steel) Siding/roofing materials | | Solid wastes: Used or excess materials/supplies/consumables (see inputs) Used or excess chemicals Construction debris Asbestos-containing wastes PCB ballasts, transformers Hazardous materials that were stored Contaminated soils Excess soil, asphalt, concrete | |
| Supplies/consumables: Welding rod Lumber (forms) Gloves, rags Batteries | | Construction stakes Silt fence, straw bales Pallets Light bulbs (incl. fluorescent, metal-halide) | Spills and hazards: Potential fuels and chemical spills (see inputs) Potential occupational hazard from excavating and erecting structure Disturbing buried contaminants (incl. asbestos) Human trafficking, STDs, other social impacts from construction camps |
| Chemicals: Curing compounds Form oils Aerosols | | Concrete additives Paints Oils, lubricants, hydraulic fluid | Env. alteration/impairment: Wetland degradation Vegetation removal Habitat alteration and wildlife impacts from access, utilities, siting Loss of endangered species Drainage impairment Prehistoric/historic alteration Conversion of arable land |
| Other inputs: | | Other outputs: Traffic congestion | Noise Light 38 |

EXERCISE 1 (Approx. 15 Minutes)

Form 3 groups:

Group 1: Identifies Inputs and Outputs for Activity 2–*Establishing Roads and Utilities*

Group 2: Identifies Inputs and Outputs for Activity 3–*Operations and Maintenance*

Group 3: Identifies Inputs and Outputs for Activity 4–*Refurbishment, Decommissioning and Abandonment*

Identifying Environmental Impacts for Ag-Infrastructure Activities 2

| Project: Agricultural Infrastructure Construction and Operation | | |
|------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| ORDER | NAME | DESCRIPTION |
| Activity 1 | Site Preparation and Construction | Site selection, mobilization, site preparation/clearing, and construction/excavating. |
| Activity 2 | Establishing roads and utilities | Constructing access ways and establishing power, water, sewer services. |
| Activity 3 | Operations and Maintenance | Operating agricultural facilities, including agro-processing centers (refrigeration, washing, drying, preserving, etc) |
| Activity 4 | Refurbishment, Decommissioning and Abandonment | Refurbishment and decommissioning of facilities (construction aspects of refurbishment captured in Activity 1) |
| INPUTS | | OUTPUTS |
| Activity 2 – Establishing roads and utilities | | |
| Energy: | | Air emissions: |
| Water: | | Discharges to water: |
| Materials: | | Solid wastes: |
| Supplies/consumables: | | Spills and hazards: |
| Chemicals: | | Environmental alteration/impairment: |
| Other inputs | | Other outputs: |

Identifying Environmental Impacts for Ag-Infrastructure Activities 3

| Project: Agricultural Infrastructure Construction and Operation | | |
|------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| ORDER | NAME | DESCRIPTION |
| Activity 1 | Site Preparation and Construction | Site selection, mobilization, site preparation/clearing, and construction/excavating. |
| Activity 2 | Establishing roads and utilities | Constructing access ways and establishing power, water, sewer services. |
| Activity 3 | Operations and Maintenance | Operating agricultural facilities, including agro-processing centers (refrigeration, washing, drying, preserving, etc) |
| Activity 4 | Refurbishment, Decommissioning and Abandonment | Refurbishment and decommissioning of facilities (construction aspects of refurbishment captured in Activity 1) |
| INPUTS | | OUTPUTS |
| Activity 3 – Operations and Maintenance | | |
| Energy: | | Air emissions: |
| Water: | | Discharges to water: |
| Materials: | | Solid wastes: |
| Supplies/consumables: | | Spills and hazards: |
| Chemicals: | | Environmental alteration/impairment: |
| Other inputs | | Other outputs: |

Identifying Environmental Impacts for Ag-Infrastructure Activities 4

| Project: Agricultural Infrastructure Construction and Operation | | |
|------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| ORDER | NAME | DESCRIPTION |
| Activity 1 | Site Preparation and Construction | Site selection, mobilization, site preparation/clearing, and construction/excavating. |
| Activity 2 | Establishing roads and utilities | Constructing access ways and establishing power, water, sewer services. |
| Activity 3 | Operations and Maintenance | Operating agricultural facilities, including agro-processing centers (refrigeration, washing, drying, preserving, etc) |
| Activity 4 | Refurbishment, Decommissioning and Abandonment | Refurbishment and decommissioning of facilities (construction aspects of refurbishment captured in Activity 1) |
| INPUTS | | OUTPUTS |
| Activity 4 – Refurbishment, Decommissioning and Abandonment | | |
| Energy: | | Air emissions: |
| Water: | | Discharges to water: |
| Materials: | | Solid wastes: |
| Supplies/consumables: | | Spills and hazards: |
| Chemicals: | | Environmental alteration/impairment: |
| Other inputs | | Other outputs: |

Identifying Environmental Impacts for Ag-Infrastructure Construction/Operation—Cont'd

| Activity 2 – Establishing roads and utilities | |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Energy: Petroleum-based fuel Electricity Welding/cutting gases | Air emissions: Dust Vehicle Exhaust Welding fumes |
| Water: Equipment wash-down water (surface) Concrete mixing water (surface) | Discharges to water: Contaminated storm water and wash water (silt, oils, etc.) Fill material Water from de-watering |
| Materials: Concrete Asphalt Piping Electrical wiring and boxes Gravel Sand | Solid wastes: Used or excess materials/supplies/consumables (see inputs) Excess soil |
| Supplies/consumables: Welding rod Lumber (forms) Gloves, rags Construction stakes Silt fence, straw bales Pallets | Spills and hazards: Potential fuels and chemical spills (see inputs) Potential occupational hazard from excavating, trenching, grading, and making electrical connections |
| Chemicals: Asphalt Curing compounds Form oils Aerosols Concrete additives Paints | Environmental alteration/impairment: Wetland degradation Vegetation removal Habitat alteration and wildlife impacts from access, utilities, siting Drainage impairment Stream alteration Prehistoric/historic alteration Conversion of arable land |
| Other inputs | Other outputs: Traffic congestion Noise |
| Activity 3 – Operations and Maintenance | |
| Energy: Petroleum-based fuel Electricity Natural gas (heating and drying) Batteries (lift trucks) | Air emissions: Fugitive emission from operations (drying, fumigating, hulling, etc.) Vehicle/Generator Exhaust |
| Water: Water for operations/cleaning/sanitation | Discharges to water: Waste water to sewers or septic systems |
| Materials: | Solid wastes: Used or excess supplies/consumables Excess products, by-products |

Identifying Environmental Impacts for Ag-Infrastructure Construction/Operation—Cont'd

| | | |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Materials: | Solid wastes: Used or excess supplies/consumables Excess products, by-products Oily wastes from oil separators Used batteries Used oils Used light bulbs Excess chemical and chemical containers (see chemicals) | |
| Supplies/consumables: Packaging materials Gloves, rags Pallets | Spills and hazards: Potential fuels and chemical spills (see inputs) Potential occupational hazards from operations | |
| Chemicals: Fuels, lubricants Pesticides, fumigants, fertilizers | Water-treatment chemicals Paints Solvents | Environmental alteration/impairment: |
| Other inputs | Other outputs: Traffic congestion Noise Odor | |
| Activity 4 – Refurbishment, Decommissioning and Abandonment | | |
| Energy: Petroleum-based fuel Electricity Welding/cutting gases | Air emissions: Dust from deconstruction Vehicle Exhaust Welding fumes Asbestos fibers | |
| Water: Equipment wash-down water (surface) | Discharges to water: Contaminated storm water and wash water (silt, oils, etc.) | |
| Materials: | Solid wastes: Construction debris Asbestos-containing wastes | PCB ballasts, transformers Sored hazardous materials Contaminated soils |
| Supplies/consumables: | Spills and hazards: Disturbance of contaminated soils Potential occupational hazard from deconstruction | |
| Chemicals: | Environmental alteration/impairment: Drainage impairment Soil/geological disruption from derelict utility/road corridors | |
| Other inputs | Other outputs: Traffic congestion | Noise Odor |

Potential Environmental Impacts for Combined Ag-Infrastructure Activities

PROPOSED ENVIRONMENTAL ASPECTS COMBINED

| | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Energy: Petroleum-based fuel Electricity | Natural gas (heating and drying) Welding/cutting gases Batteries (lift trucks) | Air emissions: Dust (construction and deconstruction) Vehicle/generator exhaust Welding fumes Fugitive emission from operations (drying, fumigating, hulling, etc.) Asbestos fibers Chlorine gas for water treatment |
| Water: Equipment wash-down water (surface) Concrete mixing water (surface) Water for operations/cleaning/sanitation (surface) | Discharges to water: Contaminated storm water and wash water (silt, oils, etc.) Fill material Water from de-watering Wastewater to sewers or septic systems | |
| Materials: Concrete Asphalt Structural materials (wood, steel) Siding/roofing materials | Piping Electrical wiring and boxes Sand and Gravel | Solid wastes: Used or excess materials/supplies/consumables (see inputs) Excess products, by-products Oily wastes from oil separators Used batteries Used oils Used light bulbs Excess chemical and chemical containers (see chemicals) Excess soil Construction debris Hazardous materials that were stored (decommissioning) Asbestos-containing wastes PCB ballasts, transformers Contaminated soils |
| Supplies/consumables: Welding rod Lumber (forms) Gloves, rags | Construction stakes Silt fence, straw bales Pallets Packaging materials | Spills and hazards: Potential fuels and chemical spills (see inputs) Potential occupational hazard from construction, operation, decommissioning Disturbance of contaminated soils |
| Chemicals: Asphalt binder Curing compounds Form oils Aerosols Concrete additives | Paints Pesticides, fumigants, fertilizers Fuels, lubricants Solvents Chlorine (and other water treatment chemicals) | Env. alteration/impairment: Wetland degradation Vegetation removal Habitat alteration and wildlife impacts from access, utilities, siting Loss of endangered species Drainage impairment Prehistoric/historic alteration Conversion of arable land Stream alteration Prehistoric/historic alteration Soil/geologic alteration and disruption |
| Other inputs: | Other outputs: Traffic congestion Noise Odor | 45 |

Using Significance Determination Criteria as Filters

- 1. USAID or Host Country Requirements.** Subject to USAID or FAA requirements, e.g., endangered species, climate change impacts, etc. or specifically relevant legislation, regulation, and/or permit requirements. This will likely include effects associated with activities if (1) environmental regulations specify controls and conditions, (2) information must be provided to authorities, and/or (3) there may be periodic inspections or enforcement actions taken by authorities.
- 2. Community Concern.** Subject of anticipated concern or previously expressed complaints
- 3. Pollution Prevention Potential.** Based on technical and business conditions, has a high potential for pollution prevention or resource-use reduction.
- 4. High Environmental Risk.** Associated with potential impact to the environment from high environmental loading due to scale, severity, probability, and/or duration

For expediency, progressing from 1 to 4, stop applying filters as soon as you encounter a criterion that is valid

Applying the Significance Determination Filter

| Project Inputs and Outputs with Potential Environmental Consequences | Direct or Indirect Impacts | Significance Determination Filter | | | | Are Consequences Significant? (Yes or No) |
|-----------------------------------------------------------------------|--------------------------------|--------------------------------------------------|---------------------------------|-----------------------------------|----------------------------|-------------------------------------------|
| | | 1. Subject of USAID or Host Country Requirements | 2. Subject of Community Concern | 3. Pollution Prevention Potential | 4. High Environmental Risk | |
| OUTPUTS | | | | | | |
| Air Emissions: | | | | | | |
| Dust (construction and deconstruction) | Air quality impairment | | Y | | | Y |
| Vehicle/generator exhaust | " | | Y | | | Y |
| Welding fumes | " | Y | | | | Y |
| Fugitive emission from operations (drying, fumigating, hulling, etc.) | " | Y | | | | Y |
| Asbestos fibers | " | Y | | | | Y |
| Discharges to Water: | | | | | | |
| Contaminated storm water and wash water (silt, oils) | Impairment of receiving waters | Y | | | | Y |
| Water from de-watering | " | Y | | | | Y |
| Operations/cleaning/sanitation waste water to septic systems | Ground water contamination | Y | | | | Y |

Determining Significant Impacts—Assessing Environmental Risk

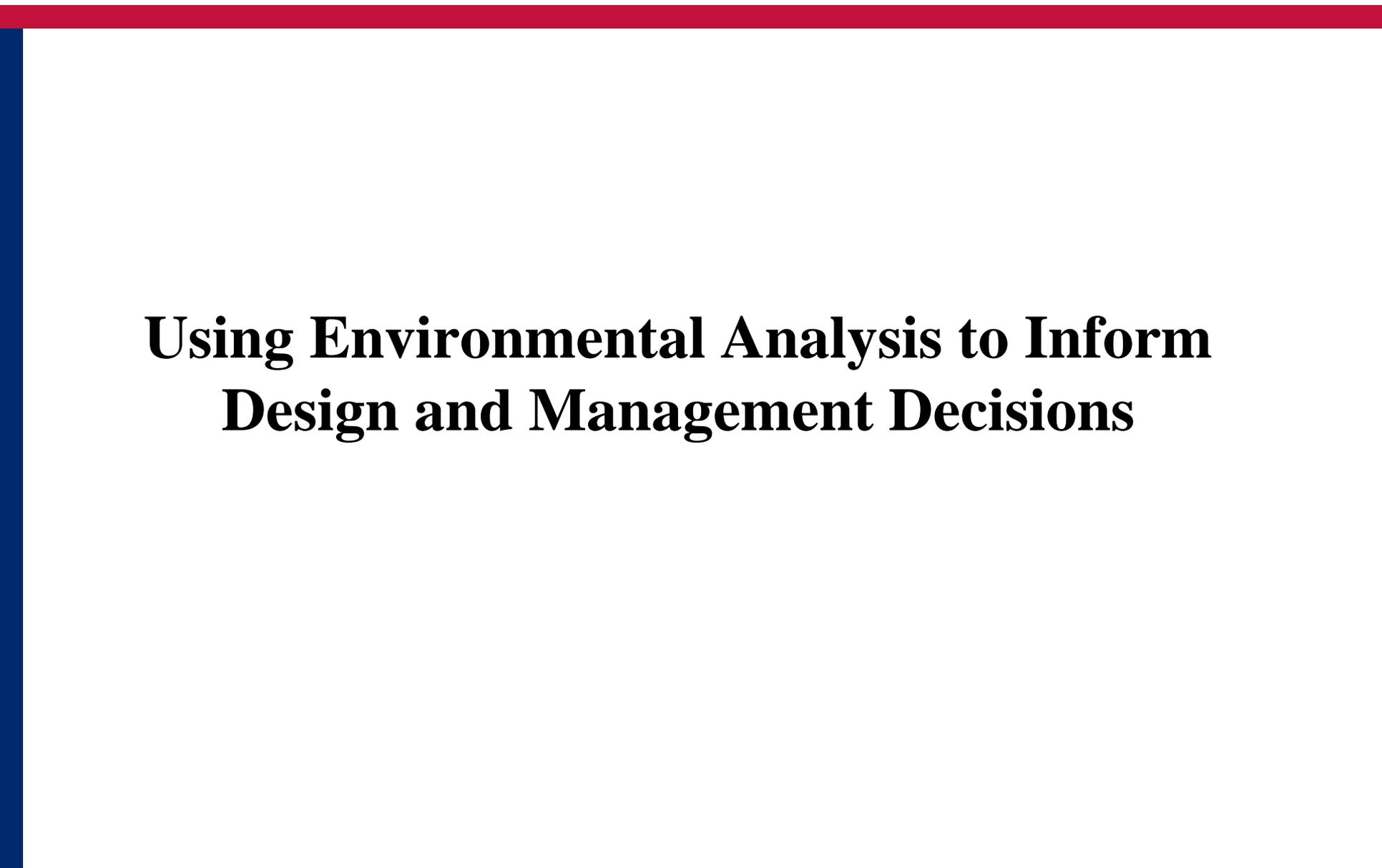
ENVIRONMENTAL RISK WORKSHEET

| Project Inputs and Outputs with Potential Effects | Environmental Risk Determination | | | | Avg. Score |
|---------------------------------------------------|----------------------------------|----------|-------------|----------|------------|
| | Scale | Severity | Probability | Duration | |
| INPUTS | | | | | |
| Energy: | | | | | |
| Petroleum-based fuel | 2 | 1 | 1 | 3 | 1.75 |
| Materials: | | | | | |
| Concrete, gravel, sand | 2 | 2 | 1 | 2 | 1.75 |
| Structural, forms, siding, and roofing materials | 2 | 1 | 1 | 1 | 1.5 |
| Piping and electrical wiring and boxes | 1 | 1 | 1 | 1 | 1 |
| Welding rod, small batteries, light bulbs | 1 | 1 | 1 | 1 | 1 |
| Construction stakes, silt fence, straw bales | 1 | 1 | 1 | 1 | 1 |
| Pallets | 4 | 3 | 5 | 5 | 4.25 |

DEFINITIONS USED IN DETERMINING ENVIRONMENTAL RISK

| Parameter | Rating Categories | | | | |
|--------------------|-----------------------------------------------|-----------------------------------------------------------------|----------------------------------------------|--------------------------------------------|--------------------------------------------------------|
| | 1 | 2 | 3 | 4 | 5 |
| Scale | Insignificant volume/quantity | Low volume/quantity | Medium volume/quantity | High volume/quantity | Very high volume/quantity |
| Severity | Minimal impact | Moderate impact but localized and readily containable | Moderate impact over multiple locations | Significant impact and/or regional | Extreme impact and/or potential for global impact |
| Probability | Very unlikely under any operating condition | Occurs during emergency conditions, but anticipated and managed | Occurs during routine maintenance activities | Occurs during major maintenance activities | Occurring during normal operating conditions |
| Duration | Spike situation extremely short-term duration | Less than one month | One to six months | Less than one year | Long-term duration greater than one year or continuous |

Assess risk level and then determine average score above which the projects will determine the effect significant based on environmental risk

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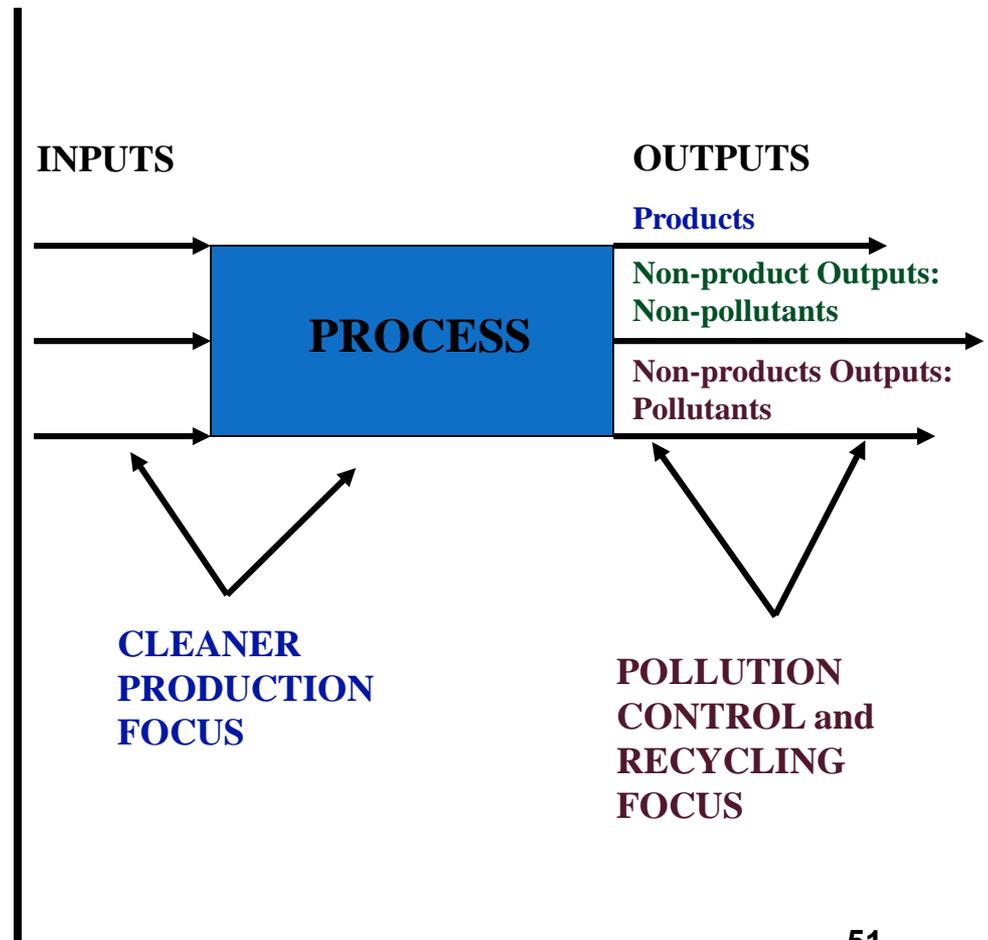
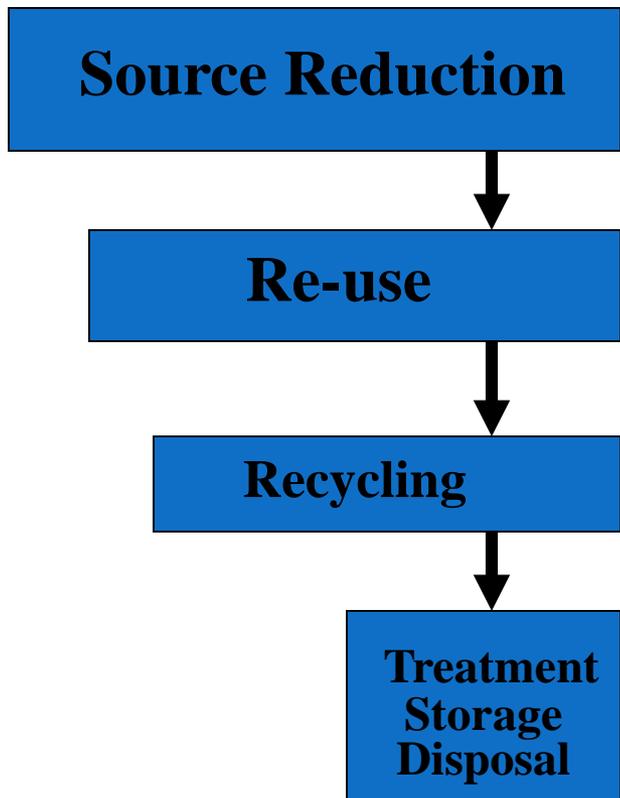
Using Environmental Analysis to Inform Design and Management Decisions

Mitigation Approaches–Pollution Control and/or Cleaner Production

Enterprises have two options for avoiding or reducing environmental degradation:

- ❖ **Pollution control**, which addresses problems *after* they have been created
- ❖ **Cleaner Production (CP)**--also know as Pollution Prevention--focuses improvements on production processes in order to reduce problems *before* they happen and *usually to increase the enterprise's bottom line*

Pollution Mitigation Hierarchy



Pollution Control and Cleaner Production Examples

Pollution Control Examples:

- Building an on-site WWTP
- Installing smokestack scrubbers
- Diluting wastewater to reduce toxicity
- Passing process exhaust through a filter system to remove particulates

These cost money

Cleaner Production Examples:

- Reducing liquid waste from production process
- Installing high-efficiency burners in boilers
- Eliminating raw material and product losses and spills
- Capturing process heat for space heating and other uses

These save money

Using Environmental Analysis to Inform Design Decisions

Impacts with *pollution prevention potential* are especially well-suited to design considerations/refinements:

| Environmental Concern | Design Consideration |
|-----------------------------------|--------------------------------------------------------------------------|
| Electricity Use | High efficiency motors, lighting, motion sensors, window placement, etc. |
| Natural Gas Use | Recycling of waste heat for drying |
| Battery Use (lift trucks) | High efficiency batteries |
| Packing Material Use | Re-useable totes, biodegradable packaging |
| Lubricant and Solvent Use | Environmentally-friendly specifications |
| Used or Excess Materials/Supplies | Reuse, recycle, reclaim |
| Excess Products/By-Products | Food shelters, livestock feed, compost |
| Water Treatment Chemicals | Evaluate alternative, non-chemical treatment |

Using Environmental Analysis to Inform Design Decisions

Impacts *subject to requirements* also can be suited to design considerations:

| Environmental Concern | Design Consideration |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Water used for operations/cleaning/sanitation | High efficiency nozzles, water re-reuse and recycling |
| Pesticide/fumigant/fertilizer use | Tailor IPM plans and fertilizer application BMPs , use target-specific biological and plant-based pesticides |
| Fugitive emission from operations (drying, fumigating, hulling) | Physically reduce emissions, use non-hazardous fumigants |
| Chlorine gas from water treatment | Evaluate alternative, non-chemical treatment |
| Disturbance of contaminated soils | Use alternate locations |
| Wetland degradation | Avoid wetland areas |

Using Environmental Analysis to Establish Necessary Controls

Impacts *subject to requirements and community concern*, if they cannot be eliminated, will require operational controls as mitigation:

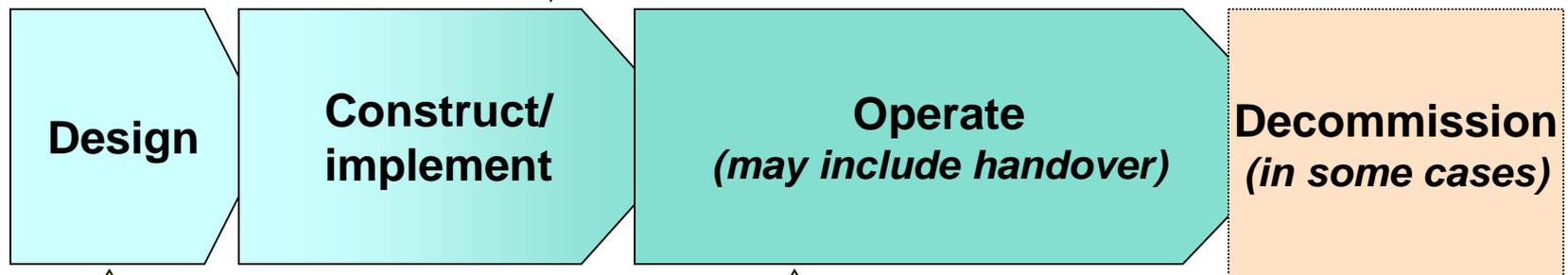
| Environmental Concern | Controls As Mitigation |
|------------------------------------------------------------|-------------------------------------------------------------------------|
| Contaminated storm water and wash water (silt, oils, etc.) | Design and implementation of storm and waste water BMPs and treatment |
| Used batteries, oils, fluorescent tubes | Documented waste management procedures, signs, segregated disposal bins |
| Potential occupational hazards from operations | Documented safety procedures, enforcement of PPE use |
| Construction dust | Dust control (speed limits, sprinklers) when conditions warrant |
| Vehicle/generator noise and exhaust | Operating time restrictions, maintenance requirements |

Mitigation and Monitoring

Mitigation and Monitoring in the Project Lifecycle

Mitigation and monitoring is a part of each stage of any activity.

- 1. Implementation of design decisions.
Monitoring of construction*
- 2. Where required,
capacity-building for proper operation*



- 1. Decisions made regarding site and technique to minimize impacts*
- 2. Operating practices designed*

- 1. Operating practices implemented*
- 2. Monitoring of:*
 - Operating practices*
 - Environmental conditions*

Mitigation and Monitoring Requirements Are:

- The actionable output of an EIA (e.g., an IEE or EA)
- Established in documented Environmental Mitigation and Monitoring Plans (EMMPs)
- Critical to environmentally sound design and management
- *Adaptively managed* to ensure environmental protection effectiveness

Positive and Negative Determinations with Conditions require EMMP development/implementation

EMMPs and Adaptive Management

- EMMPs should be annexed to IEEs, either:
 - Initially when the IEE is approved or
 - Later when activities, and appropriate safeguards, are better defined
- EMMPs should be captured in annual work plans, and therefore budgeted for and reviewed for adequacy at least annually
- Changes in activities, and their associated EMMPs, necessitate amending the IEE

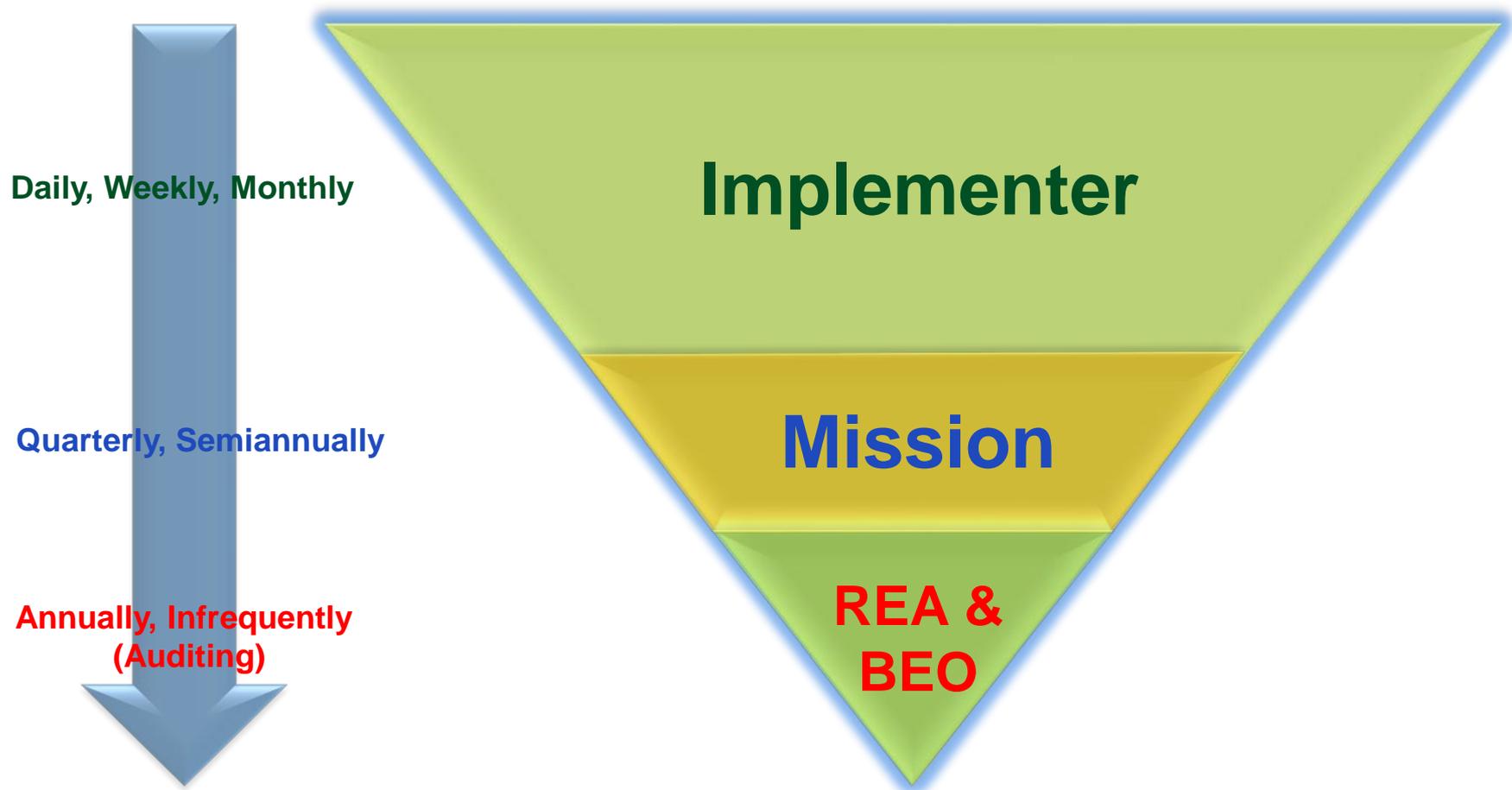
EMMPs results from comprehensive review of potential environmental effects associated with an activity

EMMPs and Adaptive Management—Cont'd.

EMMP Responsibilities specific to Implementing Partners:

- Address requirements in proposals and budgets
- Include monitoring requirements in workplans
- Review or prepare EMMPs and certify that, foreseeably, they will be suitable and effective
- Monitor project compliance with EMMPs and submit a Record of Compliance when activities are completed
- Report to USAID on progress in meeting requirements

Relative Frequency and Effort Required for Environmental Monitoring



Summarizing ESDM the Process

We were systematic, prevention-oriented and applied best management practices, i.e. we:

