ESIAs for Large Scale Infrastructure: Energy

GEMS Environmental Compliance-ESDM Training Series

Kabul • July / August 2016
SESSION OBJECTIVES:

• Understand importance of construction activities in USAID programming
  – USAID funded facilities, buildings, and infrastructure must be designed/constructed to appropriate engineering standards to minimize risk to humans and environment

• Characterize potential adverse impacts of construction activities.

• Discuss USAID approach to assessing and mitigating impacts + preparation of compliance documentation.

• Understand construction “best practices” from partner perspective, consider evolving needs.
SMALL SCALE VS LARGE SCALE CONSTRUCTION

• SMALL SCALE CONSTRUCTION

  – Total “disturbed area” of less than 1000m².

  – Types of small-scale construction:

    • Road rehabilitation (e.g., < 10 KM rural market feeder roads)
    • Rehab of schools and health clinics (e.g., medical waste incinerators).
    • Warehouse/storage units.
    • WASH projects (e.g., boreholes, latrines).
SMALL SCALE VS LARGE SCALE CONSTRUCTION

LARGE SCALE CONSTRUCTION

– New, paved roads
– Hospitals.
– Agricultural warehouses; pharmaceutical storage; cold storage.
– Large WASH municipal projects, e.g., water treatment facilities, flood protection for climate resiliency.
DIRECT, ADVERSE IMPACTS OF CONSTRUCTION

- Disturbance to existing landscape/habitat; devegetation
- Sedimentation/fouling of surface waters
- Standing water
- Excess water use
- Contamination of ground and water supplies
  - Septic tank issues.
- Occupational and community health and safety hazards
- Increased air and noise pollution
- Adverse impacts of materials sourcing
- Damage to sensitive or valuable ecosystems
- Compaction of the soil and grading of the site
ADDITIONAL IMPACTS OF CONSTRUCTION

• Use of unsustainably extracted timber
• Displacement of populations
• Worker impacts
  – Waste management issues
  – Spread of disease
• Damage to aesthetics of site/area
• Potential adverse impacts on workers
• In-migration of population to take advantage of new infrastructure such as schools or health posts
• Effects on fish spawning associated with siltation of streams from soil erosion at a construction site
• The spread of disease from insect vectors breeding in flooded and abandoned quarries and borrow pits
• Inefficient/non-renewable energy use
CONSTRUCTION PRINCIPLES/MITIGATION MEASURES

• Appropriate siting.
• Environmental compliance best practices.
  – Revegetation
• Occupational health and safety compliance best practices.
• Monitor environment, health and safety performance.
  – Water quality monitoring, usage.
• Minimize greenhouse gas emissions and adapt to climate change by minimizing vulnerability through project design.
• Use of alternative/renewable energy.
• Practice environmentally and socially responsible construction contracting.
USAID CONSTRUCTION SURVEY AND WORKING GROUP

$5.6 Billion
Estimated Construction Value

June 1, 2011 - June 30, 2013
USAID Construction Awards (2011-2013)

<table>
<thead>
<tr>
<th>Number and Estimated Value of Construction</th>
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<tbody>
<tr>
<td>Large &gt; $50 million</td>
<td>23 awards</td>
<td>$3 billion</td>
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<tr>
<td>Medium $1-10 million</td>
<td>271 awards</td>
<td>$2 billion</td>
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<tr>
<td>Small &lt; $ 1 million</td>
<td>318 awards</td>
<td>$0.1 billion</td>
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EXAMPLE: KAJAKI DAM TURBINE 2 INSTALLATION

- Part of the larger “Kandahar Helmand Power Project” activity
- USAID-Funded project: $75 million
- Initiated December 2010
- IPs: GFA and the Afghan Government
Located in Helmand province at the site of a dam first installed by royal government in 1950s

Hydroelectric turbines installed by USAID in 1975, only turbines 1 and 3 currently operational

Reservoir capacity: 1.01 billion m³

Electrical capacity without turbine 2: 33 MW

– Construction will bring electrical capacity to 51 MW
EXAMPLE: KAJAKI DAM UNIT 2 INSTALLATION

Potential impacts:

• Security
  – Monitoring
  – Unexploded Ordinances

• Construction in a river:
  – Diversion
  – Pollution
  – Further agitating the water flow

• Waste management

• Land clearing and deforestation

• Fire risk: very dry area

However, as planned, no “new” buildings or land will be cleared

Cumulative: Increased electrical capacity: need transmission lines
EXAMPLE: KAJAKI DAM UNIT 2 INSTALLATION

Challenges

• **Security**
  - *How did this effect ability to follow environmental compliance procedures?*
    - Assessment
    - Monitoring
    - Mitigation

• **Delay**

• **Ensuring sustained benefits**
EXAMPLE: KAJAKI DAM UNIT 2 INSTALLATION

Successes:

• Established camp at Kajaki

• Completed detailed assessment and inventory of unit 2 pars stored at Kajaki and long term procurements for the unit

• Successfully solicited installation of the unit to regional firms before transition to the Afghan government

• Related projects have increased generation and upgraded transmission in Kandahar city
EXAMPLE: POWER TRANSMISSION AND CONNECTIVITY (PTEC)

Background

• $970 Million
• Medium and High voltage transmission lines in north east and south East
• Upgrade of existing transmission lines sub stations, distribution
• Update of existing power facilities
• New transmission, distribution, and sub stations to connect North East and South East
• Lines will be along existing road ways
• Geographic scale: Kabul to Kandahar
Environmental Concerns

- Land tenure
- Aesthetic impacts
- Agricultural impacts
- Spills of hazardous materials
- Creation of electric and magnetic fields
- Disturbance of habitat of endangered species
- Earthquakes and other disasters
- Conflict

Cumulative?
ESIA FOR LARGE SCALE INFRASTRUCTURE

- ESIA for large scale infrastructure construction: focus on Energy generation transmission and distribution. We may be able to adapt the Cumulative Impacts session so that it uses energy as an example.

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Impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones.
KEY POINTS

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

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

- Required under US NEPA
  - And thus in 22 CFR 216 documents
- Required element of MDB ESIA studies
- Required under most host country ESIA laws and regulations
- Well-established element of ESIA good practice
- Not doing so can lead to serious failures of development
  
  *even at small scales*

Source: FAO: duckweed treatment of biodegester effluent
Thank you