Special Topic:
Construction Activities

GEMS Environmental Compliance-
ESDM Training Series
Tanzania • February 2017
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. Provide highlights from recent USAID construction survey and working group.

• Understand construction “best practices,” consider evolving needs.
USAID INFRASTRUCTURE WORK

• USAID infrastructure investments range from small-scale projects such as community water tanks to large power plants and water treatment facilities.

• USAID also makes direct infrastructure investments in schools, hospitals, health clinics, and other public buildings, as well as rural farm to market roads, trunk roads, and bridges.

• Agency’s infrastructure projects are a critical component of development programs in post-conflict and post-disaster countries (but are not limited to those situations).

• Agency-wide Construction Risk Working Group (CRWG) piloted construction risk screening tool in six Missions (Ethiopia, Jordan, Nepal, Pakistan, Haiti, Jamaica)

• Construction Risk Management – Mandatory Reference for ADS Chapter 201 (draft Jan. 2017)
SMALL SCALE VS LARGE SCALE CONSTRUCTION

• SMALL SCALE CONSTRUCTION
  – USAID AFR Bureau guidance: 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 (East Africa regional roads > 10 KM).
– Hospitals.
– Agricultural warehouses; pharmaceutical storage; cold storage.
– Large WASH municipal projects, e.g., water treatment facilities, flood protection for climate resiliency.
DIRECT, ADVERSE ENVIRO 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
ADDITIONAL IMPACTS OF CONSTRUCTION

• 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.
INFRASTRUCTURE ACTIVITIES AND ENVIRONMENTAL COMPLIANCE

– Need to consider environmental compliance/impact assessment components of infrastructure activities.

– Many infrastructure activities will have a significant effect on the environment and an EA or EIS might be required.

– Smaller infrastructure activities will usually be assigned appropriate conditions (i.e., mitigation measures) within the context of an IEE.
TYPICAL CONSTRUCTION PROGRAMMING IN TANZANIA

– Farm to market rural roads (farm to market) (>1,500 km)
– power substations and transmission lines
– small scale, e.g., repair/rehab of schools/health centers (WASH)
– agricultural storage facilities
– Irrigation projects, e.g., Dakawa:
  • upgrade of pump station, electrical work.
  • preparing boundary flood protection infrastructure, new operations building, internal access roads.
  • Rehabilitate and line main canal w concrete; upgrade secondary canals.
COMMON CONSTRUCTION CHALLENGES

– Water availability for construction and operation.
– Not enough power.
– Volatile land use issues.
– Capacity of contractors to implement work.
– Approval for building permit from county and national governmental agencies.
ILLUSTRATIVE CONSTRUCTION SUCCESSES

- Getting involvement from GOT and USAID.
- Green architecture (efficient energy use)
- Significant roads work underway.
- Upgraded power lines and substations.
- Irrigation projects.
## EXAMPLE EMMP FOR CONSTRUCTION PROJECT

### Activity 1: Lab Facility Construction

<table>
<thead>
<tr>
<th>IEE condition</th>
<th>Mitigation Measures</th>
<th>Roles &amp; Responsibilities</th>
<th>Monitoring Measures and timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit soil erosion from excavation</td>
<td>Terracing and levelling the project site to reduce run-off velocity and increase infiltration of rain water into the soil. Re-vegetate exposed areas on the site to mitigate further erosion of soil.</td>
<td>Project contractor</td>
<td>Monitor nearby water body for suspended solids at the beginning of construction and thereafter daily as construction progresses</td>
</tr>
</tbody>
</table>
## EXAMPLE EMMP FOR CONSTRUCTION PROJECT

### Activity 1: Lab Facility Construction

<table>
<thead>
<tr>
<th>IEE Condition</th>
<th>Mitigation Measures</th>
<th>Roles &amp; Responsibilities</th>
<th>Monitoring Measures and Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce fine particle/dust discharge</td>
<td>Install cyclone separators in areas where fine particles/dust is generated</td>
<td>Implementing partner, Project contractor</td>
<td>Daily observations and carry out periodic (monthly) checks during production period.</td>
</tr>
<tr>
<td></td>
<td>Provide and install ventilation systems in the plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Train operators on efficient equipment setup</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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></th>
<th>Number of Awards</th>
<th>Estimated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large &gt; $50 million</td>
<td>23 awards</td>
<td>$3 billion</td>
</tr>
<tr>
<td>Medium $1-10 million</td>
<td>271 awards</td>
<td>$2 billion</td>
</tr>
<tr>
<td>Small &lt; $1 million</td>
<td>318 awards</td>
<td>$0.1 billion</td>
</tr>
</tbody>
</table>
• Dosteus Lopa
  USAID/Tanzania Mission Environmental Officer (MEO)
  wmagangi@usaid.gov

• Global Environmental Management Support (GEMS)
  Project
  GEMSCORETeam@cadmusgroup.com