



ENCAP Visual Field Guide: CONSTRUCTION

for quick identification of serious environmental & occupational health and safety concerns in small-scale construction

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 or by host country regulation which are 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.encapafrika.org/egssaa.htm.

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A. Pre-construction Site Survey. A "YES" answer to any of the following indicates that construction on the site will pose higher-than-normal environmental risks. A site-specific environmental review setting out mitigation measures sufficient to address these risks will usually be required. Notify the Chief of Party and A/COTR.

A.1. Is the site within 30m of a permanent or seasonal stream or water body?

YES



Issue 1: Construction or operation may result in sedimentation or other contamination of the water.

Issue 2: Construction may interfere with drainage of upstream lands.

Image: a new hotel approaches completion on the shore of a fragile freshwater lake.

NO

A.2. Is the site heavily forested? In a permanent or seasonal wetland? In a relatively undisturbed ecosystem? In a protected area?

YES



Issue: These sites are high value due to their biodiversity and/or other "ecosystem services" (e.g. flood control, breeding habitat) they provide. Thus, any adverse impacts of facility construction or operation are far more likely to be significant.

Image: a new school site is carved out of a forested hilltop.

NO

A.3. Does the site show evidence of having been used as a waste dump?

YES



Issue: Hazardous materials such as pesticides may be present that pose a health danger to construction workers and users, particularly if disturbed. There is a higher chance that groundwater is contaminated and unusable. Dump sites attract and breed disease vectors.

NO

A.4. Is the site sloped at greater than 15 degrees?



Issue: Strongly sloped sites present high risks for erosion that can permanently degrade the site and runoff that can add sediment load to nearby surface waters and result in gully on adjoining lands & roads.

Image: The view downslope from a hilltop construction site shows erosion and runoff channels.

A.5. Is the site occupied or cultivated?

→ **Issue:** Displacing inhabitants or depriving owners or users of agricultural and other uses of land, can be a significant social impact if not addressed via compensation, resettlement, or negotiation.

YES	NO
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Find out about if the lumber is legal

In some countries, general construction lumber certified as being from a legal, well-managed concession is available on the domestic market.

Where this is the case, only such lumber should be used for USAID-funded construction, unless there are compelling reasons that make it impracticable on a particular project. (E.g., the site is in a remote location and no such lumber is locally available.)

Where timber is obtained locally, it should still be from a legal concession. (In some areas, this may simply mean that the local chief granted permission to cut the tree. In others, it may require a formal government license.)

Ask questions regarding the source of the lumber being used. Try to ascertain whether the lumber is legal, even if certified lumber is not available.

“Responsible Contracting” employed?

Environmental, Health and Safety deficits on construction sites can be remedied much more readily—and are less likely—when the contract governing the construction (1) mandates environmental compliance/good practice; (2) mandates health and safety compliance/good practice; and (3) establishes environment, health and safety performance as a key element of project performance, tied to compensation.

If use of this visual field guide results in a need for follow-up with the chief of party or A/COTR, find out from them if the construction contract embodies these principles of socially and environmentally responsible construction contracting.

If it does not, make use of the opportunity to educate project management or the A/COTR regarding this aspect of construction good practice. Refer them to the Construction chapter of the *Environmental Guidelines for Small-Scale Activities in Africa*, available at www.encapfrica.org/sectors/construction.htm.

B. Construction Management—Environmental Deficits. A yes answer to any of these questions indicates a deficit that will require corrective action. Notify the Chief of Party and USAID C/AOTR.

B.1. Is there standing water on the site? If yes, is there reason to believe the water has been standing longer than 4 days?

YES



Issue: Standing water breeds insect disease vectors, particularly mosquitoes. It takes 4 days for the malaria-bearing anopheles mosquito to hatch and mature to its flying adult form.

NO

Image: standing water fills a foundation excavation. (Photo: Sun Mountain International.)

B.2. Is there erosion from the cleared site or from material stockpiles? Gulying on surrounding lands clearly caused by runoff from the site?

YES



Issue: In addition to permanently degrading the site itself, erosion/runoff from the site can degrade nearby surface waters and damage adjoining lands.

NO

Image: Erosion started on the slope next to this new school during construction & continues now, undercutting the foundation. (Photo: Sun Mountain International)

B.3. Are fill, sand, and/or gravel being extracted from waterways or ecologically sensitive areas?

YES



Issue: “Mining” materials from streambeds and wetlands degrades water quality, ruins critical habitat, alters drainage and flow, and can create standing water.

NO

Image: In-stream gravel mining caused erosion and stopped flow in this creek. (Missouri Dept of Natural Resources)

B.4. Is demolition debris or construction waste disposed in the open?

YES



Issue: These wastes can pose physical hazards (e.g. broken glass; rusty torn roofing sheets) and toxic hazards (e.g. leaded paint), and can create breeding habitat for disease vectors.

NO

Image: Open construction waste dump with village in background.

B.5 Are there fuel, oil, paint or chemical spills to ground or streams?

YES



Issue: Such spills can poison soils, surface waters and groundwater.

NO

Image: the ground by this generator shed is stained with fuel and oil spills, despite the slab under the generator itself.

Minimum appropriate PPE

Answer "YES" to question C.2 if the answer to any of the following questions is "yes" OR if the PPE appears unused (new). (Note: you will probably not be able to evaluate all questions during a short visit.)

Hardhats Do you see <u>any</u> workers NOT wearing a hardhat in an area/ task where flying debris may be generated (e.g., demolition) or there is a risk of tools or materials falling from head height or higher?	Y	N
Footwear Do you see <u>any</u> workers wearing only <u>foam</u> flipflops or no shoes at all?	Y	N
Do you see <u>any</u> workers engaged in excavation, demolition, or working around heavy equipment, and NOT wearing hard-toed boots?	Y	N
Respiratory Protection Is the construction supervisor unable to give you a 2-strap N-95* dust mask on request?	Y	N
Do you see any workers mixing Portland Cement or polishing concrete or stone NOT wearing a 2-strap N-95 dust mask?	Y	N
Do you see any workers using <u>significant volumes</u> of products containing highly volatile solvents (like contact cement) but NOT wearing an activated carbon half-mask respirator?	Y	N
Hearing Protection. Do you see any workers using power tools or working close to them, but NOT wearing hearing protection?	Y	N
Safety Glasses Do you see <u>any</u> workers engaged in demolition, grinding, cutting, or using power tools, or working in close proximity to these operations NOT wearing safety glasses?	Y	N
Reflective Vests Do you see any workers working near roads or heavy equipment, or engaged in demolition NOT wearing a reflective vest?	Y	N

*a mask rated to capture 95% of airborne particulates

From Annex 1 of the "Small-Scale Construction" chapter of the Environmental Guidelines for Small Scale activities in Africa www.encapfrica.org/sectors/construction.htm

C. Construction Management—Health and Safety Deficits. A yes answer to any of these questions indicates a deficit that will require corrective action. Notify the Chief of Party and USAID AOTR/COTR.

C.1. Is there open access to the site?

YES		Issue: construction sites present many safety hazards to the public, from falls and crush injuries to toxic exposures.
NO		Image: children walk past the edge of a deep construction trench.

C.2. Is personal protective equipment (PPE) inadequate or does it appear little-used? (to evaluate question, see sidebar)

YES		Issue: PPE must be adequate and used consistently to fulfill its intended function: helping protect workers against injuries and disease
NO		Image: unmarked white boots and shiny hardhats indicate that this PPE has been put on for the site inspection.

C.3. Are there any unshored deep trenches (> 1.75m)? Is the spacing of ladder, stairs or other exits from deep trenches greater than every 10m?

YES		Issue: Trenches deeper than shoulder height are more prone to collapse and upon collapse can smother or crush workers.
NO		Photo: University of Auburn Extension for OSHA.

C.4. Is a latrine <u>with hand-wash station</u> absent from the site and its immediate vicinity?	YES	NO
→ Issue: In the absence of sanitary facilities, workers are likely to practice open defecation, a practice which substantially increases worker and community risks of oral-fecal route disease.		

D. Potential Deficits in Construction Management—Health and Safety. A yes answer to any of these questions indicates a potential deficit that may require corrective action. Notify the Chief of Party and USAID A/COTR.

D.1. Are painted surfaces being scraped or sanded?

YES		Issue: Paint containing lead is very common in Africa. Scraping or sanding releases lead dust, a toxic health hazard to workers and users of the building. Risks are particularly acute in schools and hospitals.
NO		Photo: Any flaking paint must be scraped during renovation work.

D.2. Are asbestos roofing sheets, linoleum, fiberboard ceiling or wall panels or pipe insulation being removed/disturbed?	YES	NO
→ Issue: Asbestos should be assumed to be present in all these products. When disturbed, carcinogenic asbestos fibers may be released.		

D.3. Is the site very dusty or noisy?	YES	NO
→ Issue: Dust and noise can (1) adversely impact nearby inhabitants; (2) interfere with the learning environment in schools; and (3) pose health risks to patients in health care facilities.		

Note: If there is more than one "yes" answer on this page, a full review of management practices at the site against minimum occupational health and safety practices in small-scale construction is strongly recommended. See next page.

Minimum Recommended Occupational Health and Safety Practices in Small-Scale Construction

Use this extended checklist if there is more than one “yes” answer to the questions on page 3. “NO” answers indicate a deficit that should be corrected.

About these minimum practices. Many countries in sub-Saharan Africa have occupational health and safety requirements that apply to construction sites and workers. On USAID-funded projects, compliance with such host country requirements is mandatory. More than this, USAID expects its construction projects to attain a level of protection of workers and public health as close to US standards as the local situation will allow. Under no circumstances, however, should this principle be interpreted to result in construction health and safety practices less protective than the minimum practices specified on this page, even where local requirements do not exist or are unclear. It should be assumed that failure to implement these minimum practices indicates serious and significant non-compliance with any host country requirements.

1. Policies and Training.

1a. All workers receive a safety and health induction that explains safe work practices, the proper use of personal protective equipment, & their safety and health protections under law.	Y	N
1b. The construction contractor has a written policy regarding worker health and safety, including a commitment to compliance with host country requirements.	Y	N
1c. The construction contractor has an internal system for (1) regular self-inspection of site against these standards and (2) tracking violations and accidents.	Y	N

2. Site Management

2a. Site boundary is well-marked and access actively controlled.	Y	N
2b. Good housekeeping practices are in place—the site is maintained in a generally orderly condition.	Y	N
2c. Safety signs posted—at minimum, to mark site boundary, hardhat areas, explosion and toxic hazards.	Y	N
2d. Smoking is banned altogether or restricted to a designated smoking area well away from flammable materials.	Y	N

3. Hygiene and First Aid

3a. First Aid kit is on-site, as is someone familiar with its use and trained in basic first aid.	Y	N
3b. Drinking water and sanitary facilities are provided (or are very close at hand), including hand-wash station.	Y	N
3c. All workers have an up-to-date tetanus vaccination.	Y	N

4. Personal protective equipment.

Already addressed via sidebar on pg 3. Note, however, that hazardous materials such as lead and asbestos not referenced in the sidebar will require additional protection.*

5. Scaffolding & Fall Protection

5a. Scaffolding must be able to carry at LEAST 4 times its maximum intended load without settling or displacement.	Y	N
5b. Scaffolding must be on solid footing—NOT boxes, loose bricks and stones, etc.	Y	N
5c. Scaffolding has guardrails, midrails and toeboards.	Y	N
5d. Scaffolding is at least 3m from any electric power line.	Y	N
5e. Scaffolding is inspected EACH DAY by a competent manager.	Y	N
5f. There are guardrails or at least ropes near the edge of floors and roofs where a drop is greater than 2m. Where not possible, workers in these areas wear a body harness and rope.	Y	N

6. Trenches

6a. Spoils are maintained at least 1m back from edge of trench.	Y	N
6b. Trench walls are shored or sloped back for ANY trench 1.75m or deeper.	Y	N
6c. *For ANY trench 1.75m or deeper, there is a means of exit (ladder, stair, ramp) at least every 10m.	Y	N

7. Toxics.

7a. Neither leaded paint nor asbestos in any form is used in new construction.	Y	N
7b. For rehabilitation or demolition, the contractor checked prior to commencing work whether lead-based paint, asbestos (including roofing sheets) and other toxics are present.	Y	N
7c. If present, a management plan exists that specifies safe practices to be followed and disposal procedures of any waste. Appropriate worker training and PPE is provided.*	Y	N

*see “Rehabilitation works involving asbestos” and “Rehabilitation works involving leaded paint,” annexes A and B to the Construction chapter of the Environmental Guidelines for Small-Scale Activities in Africa. www.encapafrika.org/egssaa.htm