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SECTOR ENVIRONMENTAL GUIDELINE CONSTRUCTION

Full Technical Update 2017

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Until and unless this document is approved by USAID as a Sector Environmental Guideline, the contents may not necessarily reflect the views of the United States Agency for International Development or the United States Government.

FRONT COVER:
Haitian construction workers in the Dominican Republic are part of an estimated population of 0.9 to 1.2 million undocumented migrants. The USAID Global Labor Program is supporting research and advocacy for international standards to protect their rights. / Ricardo Rojas

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ABOUT THIS DOCUMENT AND THE SECTORAL ENVIRONMENTAL GUIDELINES

This document presents guidelines for one sector of the *Sector Environmental Guidelines* prepared for USAID under the Agency's Global Environmental Management Support (GEMS) program. Guidelines for all sectors are accessible at http://www.usaidgems.org/sectorGuidelines.htm.

Purpose. The purpose of this document is to support the environmental impact assessment (EIA) process for common USAID sectoral development activities by providing concise, plain-language information regarding:

- The typical, potential adverse impacts of activities in these sectors, including impacts related to climate change
- How to prevent or otherwise mitigate these impacts, both in the form of general design guidance and specific design, construction, and operating measures
- How to minimize vulnerability of activities to climate change, as well as contributions of activities to climate change
- More detailed resources for further exploration of these issues
- How to develop environmental compliance applications.

Environmental Compliance Applications. USAID's mandatory life-of-project environmental compliance procedures require that the potential adverse impacts of USAID-funded and managed activities be assessed prior to implementation via the processes defined by 22 CFR 216 (Reg. 216) and the analyses which are documented via the Initial Environmental Examination (IEE), the Environmental Assessment (EA) and the Environmental Impact Statement (EIS). They also require that the environmental management/mitigation measures ("conditions") identified by this process be written into award documents, implemented over the life of project, and monitored for compliance and sufficiency. Internationally, this process is recognized as an environmental impact assessment (EIA) and it is used throughout this document to allow its application globally.

The procedures are USAID's principal mechanism for environmental impact assessment of USAID-funded activities – and thus for protecting environmental resources, ecosystems, and the health and livelihoods of beneficiaries and other groups. They strengthen development outcomes and help safeguard the good name and reputation of USAID.

The *Sector Environmental Guidelines* directly support environmental compliance by providing information essential to assessing the potential impacts of activities and to identifying and designing appropriate mitigation and monitoring measures.

However, the Sector Environmental Guidelines *are* ***not*** *specific to USAID's environmental procedures. They are generally written and are intended to support environmental impact assessment of these activities by all actors, regardless of the specific environmental requirements, regulations, or processes that apply, if any.*

Region-Specific Guidelines Superseded. These *Sector Environmental Guidelines* replace the following guidance: Small-Scale Construction http://www.usaidgems.org/Sectors/construction.htm

This document serves as an introductory tool to Agency staff when initiating the design of construction projects. This document is not intended to act as a complete compendium of all potential impacts, as site-specific context is critical to determining those impacts. Further, the Guidelines are not a substitute for detailed sources of technical information or design manuals. Users are expected to refer to the accompanying list of references for additional information.

Comments and corrections. Each sector of these guidelines is a work in progress. Comments, corrections, and suggested additions are welcome. Email: gems@cadmusgroup.com.

Advisory: *The Guidelines are advisory only. They are not official USAID regulatory guidance or policy. Following the practices and approaches outlined in the Guidelines does not necessarily assure compliance with USAID environmental procedures or host country environmental requirements.*

CONTENTS

TABLES

FIGURES AND BOXES

ACRONYMS

ACM	Asbestos-containing Material
ADS	Automated Directives Systems
BIM	Building Information Modeling
CFR	Code of Federal Regulations
EA	Environmental Assessment
E&S	Environmental and Social
EHS	Environment, Health, and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMMP	Environmental Mitigation and Monitoring Plan
ENCAP	Environmental Compliance and Management Support
EPA	US Environmental Protection Agency
ESDM	Environmentally Sound Design and Management
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
FAR	Federal Acquisition Regulation
FPIC	Free, Prior, and Informed Consent
GEMS	Global Environmental Management Support
HEPA	High-efficiency Particulate Air
IEE	Initial Environmental Examination
ILO	International Labor Organization
LRDP	Land and Rural Development Program
MCE	Mercury-containing Equipment
MSDS	Material Safety Data Sheet
MSE	Micro and Small Enterprises
OHS	Occupational Health and Safety
OSHA	Occupational Health and Safety Administration
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
SEG	Sector Environmental Guidelines
SMART	Stormwater Management and Road Tunnel
SMP	Social Management Plan
TMP	Transport Management Plan
UN	United Nations
USAID	United States Agency for International Development

BACKGROUND AND OVERVIEW

USAID's Construction Sector Environmental Guidelines (SEG) provides guidance on key requirements for mandatory environmental compliance procedures. These procedures are USAID's principal mechanisms for assuring environmental impact assessment of USAID-funded activities – and thus for protecting environmental resources, ecosystems, and the health and livelihoods of beneficiaries and other groups.

The construction SEG aims to embody these principles and provide guidance on environmental impact assessment for the engineering design, siting, building, maintenance, occupation, and use of infrastructure developed as part of USAID's global construction portfolio. This guidance assumes an equal emphasis on the management of environmental and social aspects for a successful and sustainable project.

For all projects, there are site-specific environmental and social factors whose applicability should be considered:

- Environmental factors such as increasing and competing water use demands, decline of species biodiversity, degradation of ecosystem services and climate change and unpredictability of weather patterns, all add a further layer of complexity to risk assessment and management.
- Social factors that are fundamental to understanding the issues involved in the management of social impacts include social license to operate, free and prior informed consent, the protection and promotion of human rights, consideration of impacts and benefits agreements, and sustainable livelihoods.

This document was prepared to help USAID comply with Section 117 of the Foreign Assistance Act of 1961[1] and 22 CFR 216 (Regulation 216), which requires that environmental impact assessment and appropriate mitigation be implemented for all USAID projects. The SEG also helps address health and safety, social, and security impacts of construction projects throughout the design, pre-construction, and construction phases.

[1] USAID. 1961. The Foreign Assistance Act of 1961, as amended. Last updated: April 08, 2013. Available at https://www.usaid.gov/ads/policy/faa

CONSTRUCTION

USAID's global construction portfolio includes a broad range of activities. Projects range in size from very large to very small. Many are primarily small-size construction, while others involve minor infrastructure completed as part of a project whose primary objective is not construction, e.g., where construction is part of health and education projects.

Virtually all development activities, including housing, sanitation, water supply, roads, schools, community centers, storage silos, healthcare, and energy equipment installation, involve construction. The term "construction" is specifically defined in the Federal Acquisition Regulation to include many types of structures (see Box 1), but construction also consists of a set of diverse activities: demolition; site-clearing; grading, leveling, and compacting soil; excavating; laying pipe; installing equipment; or erecting structures. The development benefits of construction come not from the construction itself, but from the buildings and infrastructure that are its result.

Since 2014, the estimated USAID-funded construction underway at any one time has averaged more than $2 billion. USAID has determined that, where construction activities are identified and addressed early in the program cycle, performance is generally good and risk is relatively low. Fundamentally, good planning leads to appropriate resource allocation, which facilitates implementation, enhances sustainability, and improves health and safety through implementation.

The details of the construction carried out in support of any development action or site will vary. Even though construction activities in general share a set of features and potential adverse environmental and social (E&S) impacts, some of these general impacts cannot be applied in different settings and cultures around the world. Each project needs to consider its unique context when developing solutions.

When undertaking construction planning it is also important to remember the bigger picture development challenges that may indirectly impact the way a project can be developed, such as political instability, weak governance, and corruption. All of these can impact project planning, schedule, design and implementation. In addition, the following important components of assessing E&S risk must be integrated into construction-related works:

- Collection of background and baseline data to inform determination of construction-induced E&S impacts, their management, and related decision-making (for 22 CFR 216 environmental reviews)
- An examination of E&S requirements that are less widely understood, such as gender

BOX 1: WHAT IS CONSTRUCTION?

According to the Mandatory Reference for ADS 303 , "construction" means "construction, alteration, or repair (including dredging and excavating) of buildings, structures, or other real property and includes, without limitation, improvements, renovation, alteration and refurbishment. The term includes, without limitation, roads, power plants, buildings, bridges, water treatment facilities, and vertical structures". (ADS Reference 303MAW)
https://www.usaid.gov/sites/default/files/documents/1868/303maw.pdf

APPLYING THESE GUIDELINES

This SEG is intended to be a reference framework for environmental and social (E&S) management for USAID. The SEG is intended to aid compliance with USAID regulations and to assist in disseminating good practice, in particular for smaller size projects and construction projects that do not trigger formal USAID or other EIA requirements to avoid, minimize, or mitigate potential impacts. This document is designed for those working on projects that have construction elements either as a primary or secondary objective including:

- Project/Activity Managers
- Activity Manager or Agreement Officer's Representative/Contracting Officer's Representative
- Environmental officers (e.g., Mission Environmental Officers)
- Regional Environmental Advisors
- Bureau Environmental Officers
- Implementing partners

This document includes the following sections:

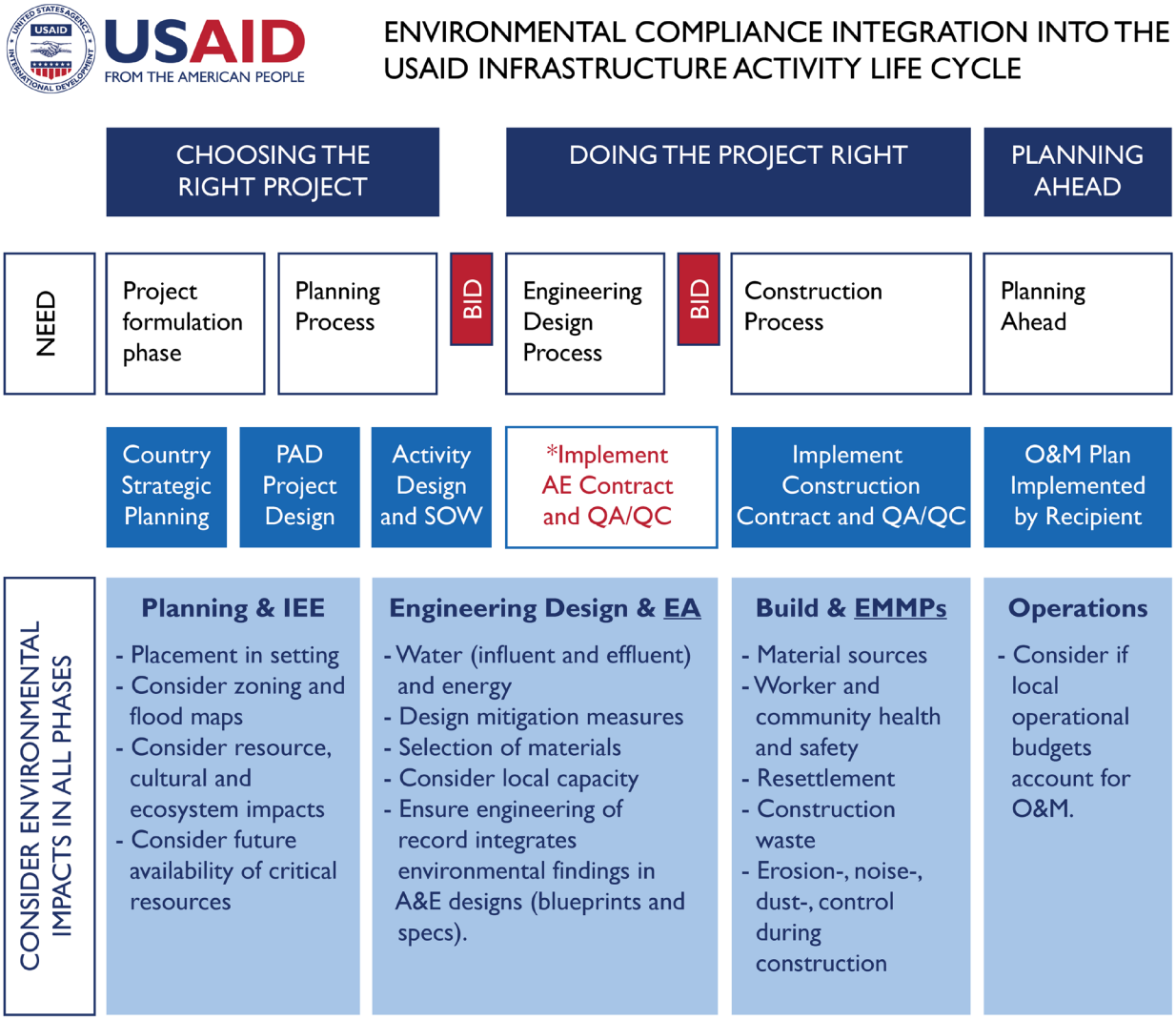
- Section I: Overview of construction industry and impacts for consideration
- Section 2: Overview of program and engineering design practices and guiding principles for environmental and social management
- Section 3: Project screening checklist and management and mitigation tables that can be applied at the various project phases, along with supporting technical annexes

The reference section of the SEG includes cited documents; additional resources on topics discussed in the SEG are provided in the following annexes:

- Annex 1: Project Screening Checklist
- Annex 2: Determining impact significance
- Annex 3: Minimum recommended occupational health and safety practices for construction
- Annex 4: Social safeguards
- Annex 5: Hazardous materials

Figure 1 illustrates the integration of environmental compliance into the USAID infrastructure project life cycle (based on ADS Chapter 201), showing how environmental impacts should be considered during different phases. It is important to emphasize that underpinning all successful projects should be a properly justified and reasonable development need that considers country strategic planning, incorporates public participation in decision-making, and considers environmental and social impacts of the development concept at the strategic level.

FIGURE 1. ENVIRONMENTAL COMPLIANCE INTEGRATION



The SEG introduces tools that can be used to address management of environmental and social impacts during planning, design, and operation. In addition to consideration of environmental and social impacts that could occur during the planning stage and construction process, this document promotes integrated consideration of the intended use of the project. Specifically, readers should consider how the project may be designed to eliminate or reduce operational impacts such as waste generation, energy use (lighting, air conditioning), water use (including hot water needs), and end-of-life decommissioning from the outset.

This SEG acts as a useful reference guide for non-environmental professionals and/or for Mission Environmental Officers to carry out the requirements of the Agency's regulations (22 CFR 216) and Automated Directives System (ADS) Chapter 204 – Environmental Procedures.[2]

[2] USAID. 2013a. ADS Chapter 204. Available at https://www.usaid.gov/ads/policy/200/204

Note that although the SEG addresses design for the operational phase, it does not cover actual site-specific environmental management during the operational phase in detail. However, such management should be considered in the EIA.

Adoption of good practices described in this SEG is intended to have a significant positive effect on construction activities and the ability of missions to meet their legislative, contractual, and regulatory requirements and the requirements of any parallel funding agencies.

This SEG should be used alongside the following mandatory references:

- ADS Chapter 201: Program Cycle Operational Policy
- ADS Chapter 201: Construction Risk Management Mandatory Reference
- ADS Chapter 201: Climate Risk Management for USAID Projects and Activities/Climate Change in USAID Country/Regional Strategies
- ADS Chapter 204: Environmental Procedures
- ADS Chapter 303: Construction Implementation
- 22 CFR 216
- Other SEGs,[3] e.g., guidelines for healthcare facilities, schools, and water and sanitation

This SEG is not a replacement for:

- Involvement of the Engineering Division in the applicable mission and/or engineering staff in USAID/Washington (engineering@usaid.gov) at the earliest possible opportunity, even for small size activities that fall below positive determination thresholds
- Contact with regulators
- Compliance with host-country environmental and social laws
- Consultation with experts
- Consultation with the project-affected people
- Compliance with international good practice on social impacts (e.g., USAID Guidelines on Compulsory Displacement and Resettlement, World Bank operational policy, and IFC performance standards)

The advice in this SEG is applicable to all types of financing mechanisms and conditions, and further advice on contracting language is provided. This SEG is primarily focused on the terrestrial environment, though aquatic impacts are possible and should be examined.

[3] USAID. Sector Environmental Guidelines. Available at http://www.usaidgems.org/sectorGuidelines.htm

1. OVERVIEW OF THE CONSTRUCTION SECTOR AND CHALLENGES

1.1 RANGE OF USAID CONSTRUCTION PROJECTS

USAID's global construction and rehabilitation portfolio includes a range of projects and activities throughout the world:

- Small projects (e.g., individual water wells, clinics, latrines)
- Large projects (e.g., roads, hospitals)
- Predominately construction projects (e.g., buildings, water infrastructure, transportation, energy, solid waste management, communication, recreation)
- Projects that involve minor infrastructure, with objectives other than construction (e.g., health and education)
- Rehabilitation, upgrade, and expansion projects
- Projects currently exempted from ADS Chapter 303[4] because of humanitarian or emergency mandates

Projects are distributed worldwide including conflict and post-conflict areas, such as Afghanistan and Pakistan. Regional variations highlight the need to consider different priorities in different areas based on the political, environmental, cultural, and social context as described in the case studies below.

[4] USAID. 2017a. ADS Chapter 303. https://www.usaid.gov/sites/default/files/documents/1868/303.pdf

Case study 1: The Land and Rural Development Program (LRDP) in Colombia is a robust project to support Colombia's government in regularization of land tenures and titles, implementation of land policies, and land use planning. As is the case with many large-scale development programs, construction activities are a program component. LRDP includes the construction and rehabilitation of small-scale irrigation systems. The land use issues that are addressed in the LRDP are important at the local level as well, where conflicts over land tenure and land use had to be evaluated and addressed to develop the most appropriate mitigation and management measures.	**Case study 2:** An important challenge for the post-transition economy of Afghanistan is creating a stable energy infrastructure that can support other productive sectors such as mining, commerce, and industry. The Power Expansion, Transmission, and Connectivity Project was designed to install almost 1000 km of new power lines as well as upgrade existing power lines and substation capacity. The environmental and social analysis for this project considered not only the social context of a post-conflict area but also the environmental and land use context of large distances affected by the construction of the transmission lines. Impacts identified ranged from those on biodiversity, such as damage to vegetation and wildlife displacement, to contamination of ground and surface water, to those on livelihoods resulting from physical or economic displacement.
Case study 3: The Municipal Services Program covers a range of improvements to public service provision in several regions in Pakistan, including construction and renovation of water treatment plants, sewage infrastructure, and waste disposal facilities. The program was designed to improve management through capacity building and information systems and implementation of new and improved physical infrastructure. The wide range of construction activities across the country meant that some components needed more in-depth environmental assessments, especially where land tenure or land use is an issue. The fact that the program already contained a citizen engagement component means that there was active civil participation in all aspects of program development and implementation, which contributed to a successful outcome.	**Case study 4:** The Improvement of Community Access to Medical Care project in Azerbaijan planned for the construction of five medical points to expand medical services for the country's residents. Although the construction was small in scale, during the early stages the project considered all stages of construction when identifying mitigation measures, including the site selection phase and operation phase. Due to the specifics of the project, site selection had to consider the proximity and accessibility of the site to the community that would use it while also taking care to not choose a site that would be too near residences and create disturbances. Striking the right balance between all stakeholders across all impacts required a thorough understanding of the baseline and community needs.

Assessment of impact and risk depends on project context: siting, size, location, sector, and experience of the implementers. These factors should underpin the selection and identification of mitigation measures and the level of monitoring and oversight. For example, the construction of a central warehouse for the Liberia national drug service had the goal of reducing losses in the supply chain. The site chosen for the construction was formerly controlled and operated by a petroleum company and showed signs of contamination. In this case, the EIA process can carefully identify the risks related to the contamination, including health and safety risks, as well as potential to further spread the contamination, and identify appropriate mitigation measures. Also, an EA may identify potential increases in social tensions resulting from the lack of stakeholder input on development of the site. For both risks, with the implementation of appropriate mitigation measures, these risks will be minimized.

Construction impacts often arise on projects that are not specifically categorized as infrastructure development projects. For example, community development programs work on many levels to attain their goals, yet they still include construction elements that must be foreseen from the outset to be properly managed. In the case of a human rights project in Sri Lanka, the focus was on legal aid, civic activism, and promoting accountable governance. The direct beneficiaries of this project are survivors of human rights violations. As part of the work to strengthen communities and civic activism, small-scale construction activities were performed. In this case, construction was a small part of the whole project but was significant enough to warrant its own initial environmental examination (IEE) and resulting mitigation and monitoring plans. It is important that the overall social benefits of the larger project do not overshadow the need to implement all steps following the correct procedures for EAs.

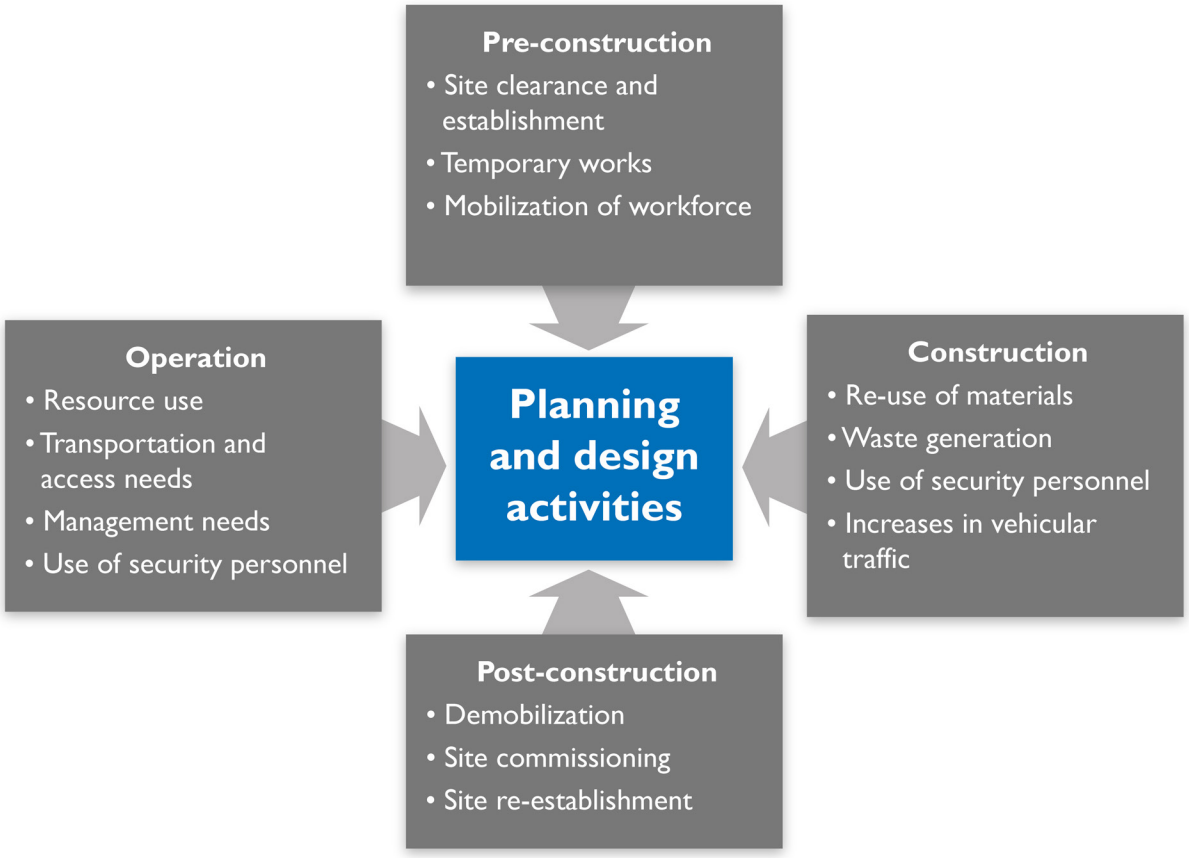
1.2 PLANNING, DESIGN, AND CONSTRUCTION ACTIVITIES

Construction projects may generate many types of impacts. Considering environmental and social issues across the life cycle is essential, including during planning, engineering design, the use or operational phase, and the decommissioning phase. Addressing these phases during engineering design and in the environmental impact assessment is the most effective approach to managing potential impacts.

For example, determining the impact of energy consumption at each stage of a product's life cycle is as important as considering impact during the actual construction of the project. Tools for assisting with life cycle analysis are discussed later in this guidance.

Examples of key activities that occur at different phases of a project and that should be considered during the planning and design phase are summarized in Figure 1 below.

FIGURE 2. KEY ACTIVITIES TO BE CONSIDERED DURING THE DESIGN AND PLANNING PHASE



1.3 POTENTIAL IMPACTS

Impacts are changes that may have environmental, social, health and safety, political, or economic significance to society, as elaborated below in Table 1.

TABLE 1: ENVIRONMENTAL AND SOCIAL IMPACTS	
Environmental impacts	Development can have an impact on the natural and built environment. The natural environment includes the air, water, soil, ecosystems, flora and fauna, and other natural occurring phenomena. In other words, a project may affect physical and biological receptors, including species habitats in the natural or built environment.
Social impacts	Impacts on health and well-being determinants such as lifestyle, personal safety, cultural and religious preferences, genetics, social influences, economic conditions, and availability of and access to services and facilities.

In some cases, taking an ecosystems services approach, which provides a framework for understanding, assessing, and valuing a broad range of environmental and social impacts, including the loss of natural productivity following land use change, is appropriate.

Types of impact can be categorized into one of more of the following and are described in more detail below:

- Negative / Positive
- Direct / Indirect / Induced
- Cumulative
- Transboundary
- Permanent / Temporary
- Reversible / Irreversible
- Associated facility or related facility impacts

Negative / Positive impacts: It is necessary to understand the negative impacts and identify where it is possible to minimize the loss. This may include developing benefit sharing and social agreements with the local community, or working with existing partners on improved agricultural techniques or water resource techniques to provide sustainable economic solutions rather than one-time compensation. In Kenya, an energy infrastructure project recognized that loss of land for grazing could impact long-term economic potential for a family. After working with local non-governmental organizations in the region, the project staff arranged for technical assistance to the family on alternative feeding techniques, thereby freeing up time for family members to undertake other income-generating activities, e.g., bee keeping.

Direct / Indirect impacts / Induced: Projects may cause both direct and indirect potential adverse impacts. Direct impacts are those whose effects are caused directly by a project action, at the same time and same place as that action is taking place. Direct impacts are those that stem from the construction of the infrastructure and the direct outputs of the infrastructure, such as flood control, hydropower generation, irrigation, water supply, fishing, recreation, and tourism, among others.

An example of a direct impact is the filling of a wetland to use as a project site, resulting in loss of wetland habitat, or discharge of an effluent, leading to a decline in water quality.

Indirect impacts may occur at different times and at some distance from the project. They are less predictable and therefore more difficult to mitigate or manage. Indirect impacts are also known as secondary or even third-level impacts. They are derived from linkages, both backward and forward, between the sectors of production directly affected by the infrastructure and the rest of the economy. Examples of indirect impacts include 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; or the spread of disease from insect vectors breeding in flooded and abandoned quarries and borrow pits.

Induced impacts may be positive or negative and are secondary impacts that do not bear a direct relationship with the project itself. For example, new roads may lead to increased opportunities for tourism or recreational activities. Examples of positive induced impacts are improved quality of life resulting from increased household expenditures made possible by additional income generated by being hired to work on the project.

Cumulative impacts: The US Council on Environmental Quality defines cumulative effects assessment as the process of understanding the impacts that "result from the incremental impact of a project action when added to impacts of past, present, and reasonably near future actions."[5] The International Finance Corporation (IFC) notes that "cumulative impacts are contextual and encompass a broad spectrum of impacts at different spatial and temporal scales."[6] Examples are several projects being constructed or operated in proximity, leading to incremental contribution of pollutant emissions in an air shed; increases in pollutant concentrations in a water body or in the soil or sediments; reduction of water flow in a watershed due to multiple withdrawals; increased pressure on the carrying capacity or the survival of indicator species in an ecosystem; depletion of a forest as a result of multiple logging concessions; or more traffic congestion and accidents along community roadways.

Transboundary impacts: Transboundary impacts cross national boundaries. For instance, the reduction or interruption of flows by a project located on a waterway in one country can result in water resource impacts for a country located downstream, particularly if flow impediments occur at times of the year when water demand is at its highest. Other transboundary impacts for consideration include air emissions, effects on species migration pathways and habitats, and project-induced in-migration. In extreme cases, transboundary impacts can become a source of international political conflict.

Impacts of connected, associated, or ancillary activities: These must be considered to adequately define the assessment and consultation process as well as to confirm whether any political issues may result from a proposed action. For example, construction of a small-size irrigation system may require construction of a new road or improvement of an existing road so that materials and equipment can reach the project site. The road is a connected, associated or ancillary action, with its own set of environmental impacts. For example, a project in Malawi was initially presented as the construction of 10, four-room secondary schools. The communities had shown interest in the schools being built and had stated that they had land and labor to contribute to the process. Through the

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[5] US Council on Environmental Quality. 1997. Considering Cumulative Impacts Under the National Environmental Policy Act. Available at https://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf

[6] International Finance Corporation (IFC). 2013. Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets. Available at https://www.ifc.org/wps/wcm/connect/3aebf50041c11f8383ba8700caa2aa08/IFC_GoodPracticeHandbook_CumulativeImpactAssessment.pdf?MOD=AJPERES

planning phase it became apparent the project was more complex than it had originally seemed as there were connected actions not discussed in the IEE, such as a dormitory, teacher housing, provisioning of water points, and access roads to be considered. The additional facilities introduced challenges relating to site selection, additional need for consideration of land tenure and displacement, more complex construction and engineering plans, and identification of unknown sources of construction materials, among others. This resulted in more in-depth site visits and stakeholder consultations than originally envisaged, which were used to develop a robust impact mitigation and management plan that will ensure successful implementation of the project.

The size and scope of both indirect and ancillary effects may be magnified over time or through the cumulative effects of building many small facilities. An understanding of associated impacts, obtained through the assessment process, can help missions design and implement better policies, plans, programs, and projects.

1.4 ENVIRONMENTAL AND SOCIAL IMPACTS

Significant impacts usually result in substantial changes to the natural and socioeconomic environment, its assimilative capacity (capability of a receptor to absorb impacts or to recover), and the functionality of the built environment (both existing and proposed).

The significance of impacts determines the level of effort needed to manage and mitigate the impact. Annex 2 provides further guidance on how to determine the significance of impacts transparently, based on magnitude of the impact and sensitivity of the receptor (human or other), as well as mitigation measures identified to reduce impacts to acceptable levels. For any project, the best way to reduce impacts is by careful planning and incorporation of mitigation measures into project design. The resultant significance after the application of mitigation measures is called the residual impact. Common environmental and social impacts that may arise during construction works are presented in Table 2.

TABLE 2: POTENTIAL CONSTRUCTION ENVIRONMENTAL AND SOCIAL IMPACTS AND EFFECTS

ENVIRONMENT	SOCIAL
Emissions to air and degradation of air quality	Stakeholder expectations
Noise emissions and vibration emissions resulting in nuisance or other effects	Damage to or loss of tangible and intangible cultural heritage
Compaction of the soil and grading of the site, resulting in increased soil erosion	Poor management of labor and working conditions
Habitat removal resulting in loss and damage to sensitive or valuable ecosystems and use of natural resources	Influences on the local economy, employment, and livelihoods
Effluent discharges or runoff leading to degradation of water quality and impact on the aquatic environment	Risks to security of property, equipment, and personnel
Contamination of land or surface waters, risks to workers or communities due to inappropriate hazardous material use; waste production and disposal; or use of biocides and insecticides	Land acquisition and resettlement (economic and physical displacement) leading to impacts on community, such as loss of livelihoods, cultural resources, customary uses of land
Impacts on people, oceans, freshwater, and ecosystems due to greenhouse gas emissions that	Lack of inclusion of indigenous peoples, minorities, and ethnicities, leading to impacts to cultural characteristics

TABLE 2: POTENTIAL CONSTRUCTION ENVIRONMENTAL AND SOCIAL IMPACTS AND EFFECTS	
ENVIRONMENT	SOCIAL
contribute to global climate change	that make a social or ethnic group distinct
Reduction in water availability through overuse, leading to conflict between end users	Risks to occupational health and safety of workers, particularly unskilled or temporary workers
Degradation of landscape character and visual impacts	Increased risks to community health, safety, and security
Inefficient use of energy leading to more volatile organic compound emissions and use of more natural resources	Influences on vulnerable and marginalized groups
Poor integration into the built environment, exacerbating effects (e.g., poor construction siting, choice of building materials, and building orientation)	Land tenure and land use changes
Risk from working with contaminated land and causing land contamination	Influences on access to ecosystem services
Traffic, travel, and vehicle use leading to road wear and tear or increased traffic volumes	Poverty and inequality generation
	Project-induced in-migration, leading to impact on local community (infrastructure, services, activity networks, and cohesion)

1.4.1 EXAMPLES OF SIGNIFICANT ENVIRONMENTAL IMPACTS

Damage to sensitive or valuable habitats: Avoiding or minimizing impacts on biodiversity is a primary consideration for any project. Biodiversity is the diversity of genes, populations, species, communities, and ecosystems that underpins all forms of life (Millennium Ecosystem Assessment Board, 2005 and US Environmental Protection Agency (EPA), September 2016). Biodiversity supports human livelihoods by providing people with essential services.[7]

Biodiversity, including terrestrial, aquatic, and marine plants; animals; and microorganisms, is often protected under international, national, or local regulations. Certain species may not be protected by law but may be valued by the community for aesthetic or cultural reasons. A project may directly or indirectly affect biodiversity through the following key activities:

- Removal of habitat
- Fragmentation of habitat (i.e., division of continuous habitats into smaller or isolated remnants)
- Displacement of species
- Pollution of marine or aquatic environments
- Pollution of the environment

[7] International Association for Impact Assessment (IAIA). 2005. Biodiversity in Impact Assessment. Available at http://www.iaia.org/uploads/pdf/SP3.pdf

Construction in wetlands, estuaries, or other sensitive ecosystems may destroy or significantly damage exceptional natural resources and the benefits they provide (ecosystem services). This damage may reduce economic productivity, impair essential ecosystem services (such as flood risk reduction, which may become increasingly important in some areas as climate change alters precipitation patterns), or degrade the recreational or cultural value of these resources. Often the identification of areas as reserves or special designation is an indication of such ecosystems, and local consultation to understand the value that may be contained in the impact area is essential.

No net loss is a principle that aims to balance losses of biodiversity in one area with gains in biodiversity conservation in other areas.[8] No net loss can be achieved through restoration and enhancement on or near the project site and offsetting of any residual losses in other areas.[9] No net loss should be achieved through the following hierarchy:

- Avoidance of biodiversity losses
- Seeking alternatives to the design or location of a project
- Restoration of losses
- Compensation for losses

Unsustainable use of biological resources: Sustainable use of biological resources seeks to maintain the ecosystem services provided by biodiversity over the longer term.[10] Sustainable use of biological resources can be achieved through many methods, including the legal protection of certain areas and species, conservation measures for threatened species, restoration of ecosystems, and establishment of markets for ecosystem services.[11] Whatever methods are chosen, the following approaches should be integrated into planning, decision-making, and implementation:

- Equitable sharing: This approach recognizes that the benefits, including the economic benefits, of biodiversity and ecosystem services should be shared equitably among stakeholders, including future generations.[12]
- Precautionary approach: The precautionary approach provides that, in the event of scientific uncertainty, the worst reasonable case assumptions should be adopted to predict an impact of an action, to ensure that the impact is not underestimated. The precautionary approach seeks to avoid waiting for environmental harm to be realized before action is taken to ameliorate this harm.[13]
- Participatory approach: The participatory approach recognizes that affected communities should be involved in the determination and identification of ecosystems and the management measures that should be implemented to manage predicted impacts. The participatory approach can help to build trust in the measures being taken to avoid or

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[8] European Commission. 2016. No Net Loss. Available at http://ec.europa.eu/environment/nature/biodiversity/nnl/index_en.htm
[9] International Finance Corporation (IFC). 2012. Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. Available at http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES
[10] IAIA, 2005. Op. cit.
[11] World Resources Institute (WRI). 2005. Millennium Ecosystem Assessment: Ecosystems and Human Well-being: Biodiversity Synthesis. Available at https://www.millenniumassessment.org/documents/document.356.aspx.pdf
[12] IAIA, 2005. Op. cit.
[13] Cooney, R. 2004. The Precautionary Principle in Biodiversity Conservation and Natural Resource Management. IUCN Policy and Global Change Group. Available at https://portals.iucn.org/library/sites/library/files/documents/PGC-002.pdf

minimize impacts and recognizes that biodiversity and ecosystem services cannot be adequately valued or assessed without involvement of affected communities.[14]

Depletion or loss of access to ecosystem services: Ecosystem services can underpin livelihoods and economic development as well as provide recreational, cultural, and educational services that are critical to supporting human life. Livelihoods are the full range of means that individuals, families, and communities utilize to make a living, such as working for wages; participating in agriculture, fishing, foraging, and other natural resource-based livelihoods; petty trade; and bartering.[15] The Millennium Ecosystem Assessment *Ecosystems and Human Well-Being: A Framework for Assessment* identifies the full range of ecosystem services:[16]

- Provisioning services – benefits that people derive from ecosystems, including products such as food, timber, fiber, and freshwater
- Regulating services – the ecosystem's control of natural processes, for example, climate regulation and erosion prevention
- Cultural services – non-material contributions of ecosystems to human well-being, for example, spiritual values and aesthetic enjoyment
- Supporting services – natural processes, such as nutrient cycling, that maintain the other services

An ecosystems framework approach requires assessing an ecosystem to understand all the interactions between organisms and systems in the natural environment, as well as the associated ecosystem services the ecosystem provides. This method requires the assessor to consider the spatial nature of a project's impact.[17]

Recognizing the value of ecosystem services to communities and people's livelihoods, project developers should avoid or minimize impacts on these services and put in place appropriate mitigation measures. The presence of ecosystem services and a project's impacts on any such services should be explored during the screening process, the consultation process, and the baseline data collection process. Community involvement can be useful in identifying and delineating ecosystems, land use, and ecosystem services, as the presence of such services may not be immediately obvious.

For example, without community involvement, certain subtle impacts may not be immediately obvious, e.g., a project may require the removal of non-native vegetation that is determined to be of limited ecological value; however, this vegetation may be used as a building material or as fuel for heating or cooking at certain times of the year and therefore has a socioeconomic value. Similarly, a project may temporarily block access to a seemingly unused waterway that is used by the community sporadically for cultural or recreational purposes.

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[14] IAIA, 2005. Op. cit.
[15] International Finance Corporation (IFC). 2012. Performance Standard 4: Community Health, Safety and Security. Available at https://www.ifc.org/wps/wcm/connect/6a8055004885565eb9ccfb6a6515bb18/PS_4_CommHealthSafetySecurity.pdf?MOD=AJPERES
[16] Millennium Ecosystem Assessment (MEA). 2003. Chapter 2 Ecosystems and Their Services in *Ecosystems and Human Well-Being: A Framework for Assessment.* Available at https://millenniumassessment.org/documents/document.300.aspx.pdf
[17] United Kingdom Department for Environment, Food & Rural Affairs. 2014. Guidance: Ecosystem Services. Available at https://www.gov.uk/guidance/ecosystems-services

Changes to air quality or noise levels: a wide range of decisions are likely to affect air quality and noise, including transportation options, electricity generation, building standards (heating), energy efficiency, and construction practices.

Changes to soil or water quality: Alteration of the site may change hydrology, for instance, drainage patterns and water tables, which, in turn, may alter access to water or result in increased flooding or higher runoff. Changing access to water by people, animals, and vegetation may degrade water resources. Improper extraction of construction materials such as wood, stone, gravel, or clay may damage terrestrial ecosystems. Where sanitary facilities for construction crews are inadequate, waste may contaminate soil and subsoil resources.

Sedimentation of surface water: Removal of natural land cover, excavation, extraction of construction materials, and other construction-related activities may result in soil erosion and in many cases unwanted soil deposition. Erosion can, in turn, lead to sedimentation in receiving waters. Sedimentation may reduce the capacity of ponds and reservoirs, increase flood potential, change water chemistry by introducing new nutrients, or substantially alter aquatic ecosystems by changing streambed, lakebed, and estuary conditions.

Contamination of ground and water supplies: Hazardous materials may be used in construction (refer to Annex 5 for further examples of hazardous material and globally banned or restricted materials). Examples include solvents, paints, vehicle maintenance fluids (oil, coolant), and diesel fuel. If these are dumped on the ground or washed into streams, they may contaminate ground or surface water supplies. This may harm the health of the local community, as well as populations living downhill and downstream. Aquatic and terrestrial ecosystems may also be damaged. Where sanitary facilities for construction crews are inadequate, human waste may contaminate water resources. In addition, even if materials are not used in a construction, excavation activities can uncover previously contained hazardous materials and hazardous waste may be released from the site.

Material change to the appearance of the landscape or townscape: The built environment consists of buildings and other structures designed and built by humans. Impacts to the human environment from the building itself and impacts to the surrounding social and bio-physical environment can arise from newly constructed infrastructure affecting physical environment, sense of place, aesthetics and heritage, security, and livability. Planning and design should explore these options to minimize these impacts and enable buildings to blend into their environment, for example:

- Housing, public buildings, transportation, and places of work need to be designed so that people can live and work comfortably. Building design needs to address security, temperature, light, air quality, and well-being arrangements as well as places for rest and relaxation. The size, shape, and color of structures; materials used in them; and their equipment and facilities all affect the users' interaction and experience with the building. The source of energy and carbon footprint should also be considered.
- Interaction of the built environment with the bio-physical environment requires attention, particularly to the size, shape, and layout of buildings and the spaces between them. Impacts to the bio-physical environment may include impacts on biodiversity, cultural heritage, water quality, air quality.
- Introducing benefits through sustainable landscape planning is also important. Planners should look for opportunities to enhance air quality, improve water quality, increase energy efficiency, restore habitats, and reduce local flood risk impacts caused by construction. In addition, the built environment should be visually pleasing and functional.

Degradation of the landscape character (urban or rural): Open spaces in built environments, provide opportunities to increase residents' quality of life. Properly planned open spaces can provide services such as efficient transport options, space for recreation and relaxation, local climate regulation, small-scale food production, and habitat for biodiversity, and they can contribute to the identity and character of a community. Communities function efficiently only when private and public spaces work together to enhance one another.[18] Rapid and unplanned urbanization often results in a lack of open spaces and poor health outcomes for residents, poorer environmental outcomes (e.g., loss of biodiversity, loss of natural drainage and flood regulation). Thus, the importance of including open spaces in construction plans and urban plans is growing.

The following considerations are important for ensuring the quality of open spaces, including street spaces:

- Provision of an interconnected network of paths and streets that allow for multiple uses
- Efficient design to allow adequate provision of essential services, including sewerage and water supply networks and waste disposal
- Adequate supply of green spaces that provide a space for relaxation and recreation
- Reservation of areas that allow for the preservation of biodiversity and can provide natural drainage and flood regulation
- Green spaces that mitigate the heat produced by urban heat islands

Depletion of natural resources: Natural resource management is an interdisciplinary field of study that considers the physical, biological, economic, and social aspects of managing natural resources (water, energy, minerals, and biological resources), with a focus on how this management affects the quality of life for present and future generations.[19] When considering natural resource management for construction projects, the aim should be to define sustainable use of natural resources to allow current and future generations to benefit from natural resources during all phases of the project.

Examples of resource management approaches include water harvesting, where a building is designed to collect runoff for utilization rather than to cause erosion; conforming to land use strategies and zoning that may be relevant in a country; ensuring control of invasive species; and implementing environmental education programs and partnerships with local community groups. In many cases, natural resource management is also addressed through legislative instruments and international agreements to which a country may be signatory. Procurement also plays an important role in minimizing the use of natural resources through the specification of lower grade material that is equally fit for the job, or reuse of material on site in other parts of the construction works.

1.4.2 EXAMPLES OF SIGNIFICANT SOCIAL IMPACTS

Social impacts are much broader than the issues that are typically considered in a national environmental impact assessment and result from activities that affect people directly or indirectly. Key impacts with the potential to be significant are discussed below. Annex 4 presents further guidance on recently developed social safeguards concepts.

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[18] UN Habitat. 2015. Global Public Space Toolkit: From Global Principles to Local Policies and Practice. Available at https://unhabitat.org/wp-content/uploads/2015/10/Global%20Public%20Space%20Toolkit.pdf

Lack of broad community support: When not enough attention is paid to disclosure and public consultation, stakeholders' expectations of a project can be inaccurate. Affected stakeholders may consider themselves uninformed or excluded from the engagement process. All of this can lead to a lack of broad community support, which in turn can result in a lack of social license to operate, delays in permitting and to construction schedules, and conflicts that are costlier to treat than prevent. Project implementers need to have plans and procedures for stakeholder engagement and should implement them throughout the project life cycle. The section on Stakeholder Engagement and Community Relations in Section 2 provides further discussion.

Project-induced in-migration: Project-induced in-migration can substantially change the community in which the project operates. Factors that contribute to a higher rate of in-migration are: (1) large projects; (2) proximity of the project to large settlements; (3) lack of capacity to meet project needs for workforce and materials locally; and (4) speculation regarding the benefits and opportunities on the part of the community, among others. In-migration can cause changes in local community dynamics, as well as pressure on local infrastructure. Focus on local hiring and sourcing, investment in local training and infrastructure, and clear communications regarding real opportunities should be considered.

Displacement and involuntary resettlement: Land acquisition and restrictions on land use can cause economic or physical displacement of communities, leading to delays or interruption, difficulties in community relationships, and even legal battles. If land use rights and property ownership are not understood correctly or good-faith negotiations are not carried out or honored, the affected community can halt the progress of the project. It is important that local land use and access to resources and services are considered during resettlement planning to avoid breakdown of social safeguards and encourage sustainable solutions. USAID Guidelines on Compulsory Displacement and Resettlement should be followed when displacement occurs due to a project, although design and planning should avoid displacement whenever possible. Including the status of land use, settlements, and property ownership in the social baseline section of the EIA is essential to this process.[20]

Impacts on indigenous peoples and their traditional activities: Indigenous peoples have a unique relationship to the land and resources and are therefore potentially more vulnerable to the impacts a construction project might have. If indigenous peoples are not identified and are affected by a project, they could lose traditional lands and resources, resulting in breakdown of cultural and spiritual identities. Once indigenous peoples are identified, they should be an integral part of project and management planning, including stakeholder engagement, to ensure respect for and protection of their ways of life. This consent is defined in Annex 4 in the section on indigenous peoples.

Poor worker management: The workforce is an essential part of a project's success. If working conditions are not good, labor rights are not protected, or workers are exposed to unnecessary health and safety risks, the workers' health and well-being will be jeopardized. This can cause wider social effects within the families of workers and local community, as well as problems for the employer due to reduced productivity.

Increased community disease or accidents: A construction project presents inherent risks to communities' health and safety, through use of hazardous materials, heavy machinery, and demolition. In-migration of workers could result in harm to the local community, most notably through propagation of diseases (through vectors or contact with workers). Management through trainings on correct

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[20] USAID. 2016. Guidelines on Compulsory Displacement and Resettlement in USAID Programming. Washington, DC: USAID. Available at: http://pdf.usaid.gov/pdf_docs/PBAAE440.pdf

procedures, communications, signage, maintenance, and monitoring is essential to ensure protection of the community from these risks.

Removal of or damage to tangible and intangible cultural heritage: Cultural heritage is a multifaceted resource that includes material features that reflect the values, customs, and practices of a people as they adapt and relate to their natural environment. Most countries have national laws regarding protection of cultural heritage. International conventions such as the Convention Concerning the Protection of the World Cultural and Natural Heritage identify the need to ensure "identification, protection, conservation, presentation, and transmission to future generations of the cultural and natural heritage."[21] Cultural heritage that might be impacted by a project should be identified prior to beginning construction, during the planning and engineering design phase, and planners should consider alternatives to avoid impacts on cultural heritage. If risks are still probable, the project developer should bring in an appropriate specialist, such as an archeologist, paleontologist, or anthropologist, to oversee the rest of the project to ensure correct protection procedures. Often, there can be synergies between indigenous people and cultural impacts, and this requires specialist involvement.

All cultural heritage should be treated with care, with avoidance of impacts a priority, followed by restoration in situ, and removal and replication as a last resort.[22] If a project restricts normal use and access to a cultural heritage site or resource, the project should aim to provide safe alternative access for the community, defined through consultation.[23] Each project should have procedures in place to manage chance finds to minimize disturbance of unforeseen cultural heritage finds.

Disproportionate impacts to persons in poverty and vulnerable groups: A new project is often perceived by a community as a vehicle for opportunity, through the jobs it will generate and the service it will provide. These positive effects, however, need to be aligned with local realities to truly be realized. Construction, management, and opportunities to optimize benefits should be planned accordingly, considering the unique realities of each location, including the presence of vulnerable groups, the extent of poverty, and equity. These are also required to be presented in Reg. 216 documents. Children, the poor, the disabled, and indigenous peoples, are often affected by a project in different ways. This means that specific engagement with these groups is essential to understanding those effects and implementing adequate measures to respond to them.

The impact assessment required under 22 CFR 216 should include identification potential social impacts, especially of those who may be considered marginalized or vulnerable. Vulnerable or marginalized people may have reduced capacity to cope with project impacts. For instance, if a project affects available essential resources, their access to alternative resources is likely to be limited. They have fewer means to absorb adverse changes or shocks and may be less able to build on beneficial changes to their resource bases. Within larger societal groups, pockets of vulnerability may exist. For instance, women are not inherently more vulnerable to project impacts than men. However, depending on the impacts, some groups of women, such as women-headed households, pregnant women, and widows may be vulnerable.

If not managed correctly, a project may cause poverty in a community. Examples of poverty risks are those posed by incomplete or poorly managed resettlement or livelihood restoration processes; lack of local investment that results in over-dependence of the community on the project; and overcrowding

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[21] UNESCO. 1972. Convention Concerning the Protection of the World Cultural and Natural Heritage. Available at http://whc.unesco.org/archive/convention-en.pdf
[22] Ibid
[23] Ibid.

and draining of resources due to in-migration. These risks should be considered in all the actions taken by the project.

It is essential when considering investments and measures to enhance benefits that equity be central to defining these measures. Long-term livelihood benefits should be prioritized, and the project manager should understand the local realities to understand where investments are most needed.

From the perspective of equity and human rights protections, it is important that information and communication activities are carried out in such a way that all people have equal access to information. This does not mean that the same instruments and formats should be used for all groups but that access to information should be available across social groups. In the same way, grievance mechanisms should be accessible by all social groups, where specific attention should be given to vulnerable groups whose voices might not be respected or represented by a majority group.[24]

Gender: It is important to consider, when identifying risks and impacts of projects, that men and women may experience project effects differently due to their different priorities and different roles in society. Traditionally, women have less access to resources and decision-making processes than men and, therefore, less control over these.[25] The following goals from USAID's policy on Gender Equality and Female Empowerment should be considered when designing mitigation measures: "Reduce gender disparities in access to, control over, and benefit from resources, wealth, opportunities, and services economic, social, political, and cultural" and "Increase capability of women and girls to realize their rights, determine their life outcomes, and influence decision-making in households, communities, and societies." [26] Gender analysis may be required for USAID projects and should be considered in project design and management, even when not required. [27] Gender analysis examines and identifies the varied roles played by men and women in the community, at work, within political processes, and in the home. USAID's requirements and procedures on gender are addressed in ADS 205 – Integrating Gender Equality and Female Empowerment in USAID's Program Cycle.[28]

Ethics and corruption: Private companies serve as an example to the communities within which they are working and, often, to the governments and state-run enterprises in the surrounding areas. Ethical conduct is essential to protecting human rights and ensuring anti-corruption. Furthermore, according to USAID's Democracy, Human Rights and Governance Strategy, ethics are essential to ensuring good

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[24] United Nations – UN. 2012. The Corporate Responsibility to Respect Human Rights: An Interpretive Guide. Geneva: UN. Available at: http://www.ohchr.org/Documents/Issues/Business/RtRInterpretativeGuide.pdf

[25] International Finance Corporation – IFC. 2007a. Stakeholder engagement: A good practice handbook for companies doing business in emerging markets. Washington, DC: IFC. Available at https://www.ifc.org/wps/wcm/connect/938f1a0048855805beacfe6a6515bb18/IFC_StakeholderEngagement.pdf?MOD=AJPERES and Canadian International Development Agency - CIDA. 1999. Policy on Gender Equality. Quebec: CIDA. Available at: http://www.sice.oas.org/Genderandtrade/CIDA_GENDER-E_Policies.pdf

[26] USAID. 2012. Gender Equality and Female Empowerment Policy. Washington, DC: USAID. Available at: https://www.usaid.gov/sites/default/files/documents/1865/GenderEqualityPolicy_0.pdf

[27] USAID. 2013. ADS Chapters 204 and 205. Available at: https://www.usaid.gov/sites/default/files/documents/1865/204.pdf and https://www.usaid.gov/sites/default/files/documents/1870/205.pdf

[28] CIDA, 1999. Op. cit.

governance on the part of governments and private entities and vice-versa.[29] When there is good governance and corruption is absent, sustainable development is more easily achieved.[30]

All levels of management involved in the project should uphold ethical principles in their everyday work. Contracts should acknowledge and hold workers accountable to codes of ethics/conduct. Ethics trainings are encouraged.[31] "The best way to protect the ethical culture of an organization is to actively promote it, practice it, train in it, update it, and make it real and visible to external and internal stakeholders."[32]

Specifically, those involved in impact assessment should uphold ethical standards in their treatment of people and data, especially when profiling and engaging households and communities. All interactions should be carried out with respect, and participation in activities should be voluntary with the goal of never causing any harm. The need for data protection, confidentiality, and anonymity should be understood and implemented when needed.[33]

1.5 PLANNING FOR A CHANGING CLIMATE

Construction projects should take climate change into account by including elements designed for adaptation. Adaptation can be defined as adjustments in natural or human systems, in response to actual or expected climate change stresses, that moderate harm or take advantage of beneficial opportunities. USAID references (ADS 201 series) on climate change should be read as mandatory guidance on this topic.

BOX 2 MITIGATION DEFINITION

In the context of EIA, mitigation is the implementation of measures designed to eliminate, reduce, or offset the undesirable effects of a proposed action.

In the context of climate change, mitigation is an intervention to reduce the sources or enhance the sinks of greenhouse gases in order to limit the magnitude and/or rate of climate change.

Climate change affects the construction sector through sea level rise; seasonal temperature and precipitation shifts and variability; and increased frequency, intensity, and duration of extreme events (including droughts, floods, high winds, and tropical storms). Therefore, built structures intended to last for decades need to be designed to withstand exposure to extreme climate events. Specifically, project components sensitive to weather (e.g., materials, location) need to be examined to ensure that they are appropriate and, for instance, that the data used to influence design considers the 100-year storm criteria.

By focusing on climate adaptation, project managers can improve the likelihood of long-term success of their projects. Project managers can also do their part to minimize the project's contribution to climate

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[29] USAID. 2013b. Strategy on Democracy, Human Rights and Governance. Washington, DC: USAID. Available at: http://pdf.usaid.gov/pdf_docs/pdacx557.pdf

[30] USAID. 2011. Guidance on the Implementation of Agency-Wide Counter Trafficking in Persons Code of Conduct. Washington, DC: USAID. Available at: http://pdf.usaid.gov/pdf_docs/Pdact175.pdf and United Nations - UN. No date. UN Global Compact webpage. Available at: https://www.unglobalcompact.org/what-is-gc/mission/principles

[31] IFC, 2012. Op. cit.

[32] Sullivan, J. 2009. The Moral Compass of Companies: Business Ethics and Corporate Governance as Anti-Corruption Tools. Washington, DC: IFC. Available at: https://www.ifc.org/wps/wcm/connect/3a387c8048a7e613a4bfe76060ad5911/Focus7_AntiCorruption.pdf?MOD=AJPERES

[33] International Association for Impact Assessment – IAIA. 2015. Social Impact Assessment: Guidance for assessing and managing the social impacts of projects. Fargo, ND : IAIA. Available at: https://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf

change by identifying cost-effective ways to minimize greenhouse gas emissions. USAID provides guidance for climate risk management in ADS Reference 201MAL: Climate Risk Management for USAID Projects and Activities.[34]

In planning for these changes, construction projects must ensure that mitigation measures to eliminate on-site risks do not negatively affect buildings or populations in a neighboring area. For example, drainage systems on site could increase the flow of water through nearby properties, increasing the chance of flooding.

Furthermore, greenhouse gas emissions from the construction sector can contribute to the causes of climate change and should be reduced where possible.

1.5.1 CLIMATE RESILIENCE IN DESIGN

Embedding climate resilience in design will enable projects to minimize future loss and damage (and associated costs) and rebound swiftly following extreme climate events, resulting in a sounder investment.

Recent thinking on climate focuses on making communities and their assets more resilient to changes in climate and weather extremes, regardless of causative factors, in effect combining traditional aspects of climate change mitigation and adaptation. Climate resilience is the capacity of a system to absorb the stresses imposed by climate change, respond to them, and evolve into more sustainable and robust systems. A community will be more adaptive to climate change in the short term, e.g., by building sea berms to protect it from sea level rise; that same community will be able to mitigate the longer-term risks of high-carbon activities, e.g., by investing in carbon-free solar and wind energy. By combining these approaches, communities can become climate-resilient.

Determining future risks: Adapting construction planning, design, operation, and maintenance to climate change involves ensuring that structures and the systems that sustain them can withstand increased variability and duration of extreme temperature, wind, and precipitation, to protect occupants and allow the infrastructure to continue serving its intended purpose unabated. This requires research on the likely extent of variability and extreme weather events, as described below.

Architects and engineers should focus on incorporating climate information from historical records, recent trends, and future projections into their construction designs. The timeframe of each project should reflect the type of investment being made. For example, housing construction projects may have shorter lifespans than construction of a health facility. Future projections should also take into consideration environmental thresholds that, if surpassed, could cause rapid ecosystem change. Note that near-term projections are more reliable than long-term emissions and climate predictions. In many cases managing for greater uncertainty rather than specific trends may be most appropriate.

Tools are increasingly available to help decision-makers and project designers pragmatically assess potential climate risks in the face of uncertainty by first screening for climate vulnerabilities through use of a "decision tree." Further or deeper analysis is performed only as needed, allowing decision-makers

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[34] USAID. 2017b. ADS Reference 201MAL: Climate Risk Management for USAID Projects and Activities. Available at https://www.usaid.gov/ads/policy/200/201mal

to allocate scarce project resources proportional to project needs.[35] This aligns with the risk management approach in USAID guidance on climate change. [36]

Principles for adaptation and mitigation: From a risk management perspective, it is less costly to design for the potential direct and indirect impacts of climate change on construction, maintenance, and operation activities and people than to continue practicing "business as usual" and have the users, businesses, and governments risk paying the full cost of damages or risking the loss of service.

For example, design and siting for structures near the sea should account for potential changes in daily sea levels, sea level rise, and storm surges, and appropriate locations should be selected based on these considerations. The same principle applies to construction near floodplains, rivers, and wetlands. In locations where annual average temperatures are rising, design of buildings, water conveyance structures, and other works will need to consider the need for additional cooling capacity. Climate change adaptation for construction also includes integrating, where economically feasible, renewable and/or back-up energy systems to provide power in the event of sudden or intermittent electrical outages due to weather events.

Examples of climate change impacts and possible adaptation measures are shown in the table below. Following the table, examples of site-specific adaptation measures are provided. These measures are general suggestions. Therefore, specific characteristics of each project should be considered before its implementation.

TABLE 3. EXAMPLES OF CLIMATE CHANGE IMPACTS AND ADAPTATION MEASURES

EXAMPLES OF DIRECT IMPACTS	EXAMPLES OF INDIRECT IMPACTS	POSSIBLE ADAPTATION RESPONSES
Damages to energy, transportation, water resources, communications, housing, and other infrastructure from extreme weather events Inundation and loss of infrastructure due to sea level rise Damage to paved roads, rail, and other infrastructure from excess heat Adverse impacts on worker health due to increased temperature stress, and increased costs to mitigate it Increase in pollutants entering streams from impervious surfaces due to increased stormwater runoff resulting from increased precipitation	Adverse impacts on individual health and communal care systems and resources Lost productivity due to disruptions in piped water, sewerage, and other public services if infrastructure is damaged Higher operating and maintenance costs Shorter lifetime of services (for instance) for water systems, and potential for rising prices related to service provision Loss of transportation system efficiency Electricity blackouts/brownouts Changes in hydropower, solar, and wind potential Interrupted trade and industry	Design back-up transportation services Construct storm surge barriers Elevate driveways Relocate infrastructure to less exposed locations Use permeable pavement Increase financial and technical resources for more frequent maintenance and repairs Establish natural buffer zones on coasts Plan for redundancy to accommodate disruptions in service (e.g., water supply); install backup systems for critical hospital, home needs Update design standards Use building materials that reflect heat and facilitate cooling efficiency

[35] Ray, Patrick A., and Casey M. Brown. 2015. Confronting Climate Uncertainty in Water Resources Planning and Project Design: The Decision Tree Framework. Washington, DC: World Bank. doi:10.1596/978-1-4648-0477-9. License: Creative Commons Attribution CC BY 3.0 IGO

[36] Climate Risk Management for USAID Projects and Activities: A Mandatory Reference for ADS Chapter 201. https://www.usaid.gov/sites/default/files/documents/1868/201mal_042817.pdf

TABLE 3. EXAMPLES OF CLIMATE CHANGE IMPACTS AND ADAPTATION MEASURES		
EXAMPLES OF DIRECT IMPACTS	EXAMPLES OF INDIRECT IMPACTS	POSSIBLE ADAPTATION RESPONSES
		Elevate electrical equipment and structures above flood and sea levels Purchase insurance Prepare for disruptions by developing contingency plans Reconsider zoning and planning regulations to locate housing structures in "safe" or less vulnerable zones Construct buildings with resilient designs and materials Prioritize solar and wind energy generation Implement water harvesting Identify indigenous peoples and low-impact landscapes Implement sustainable drainage systems Recycle and reuse temporary facilities

BOX 3 EXAMPLES OF CLIMATE ADAPTATION IN PROJECT DESIGN

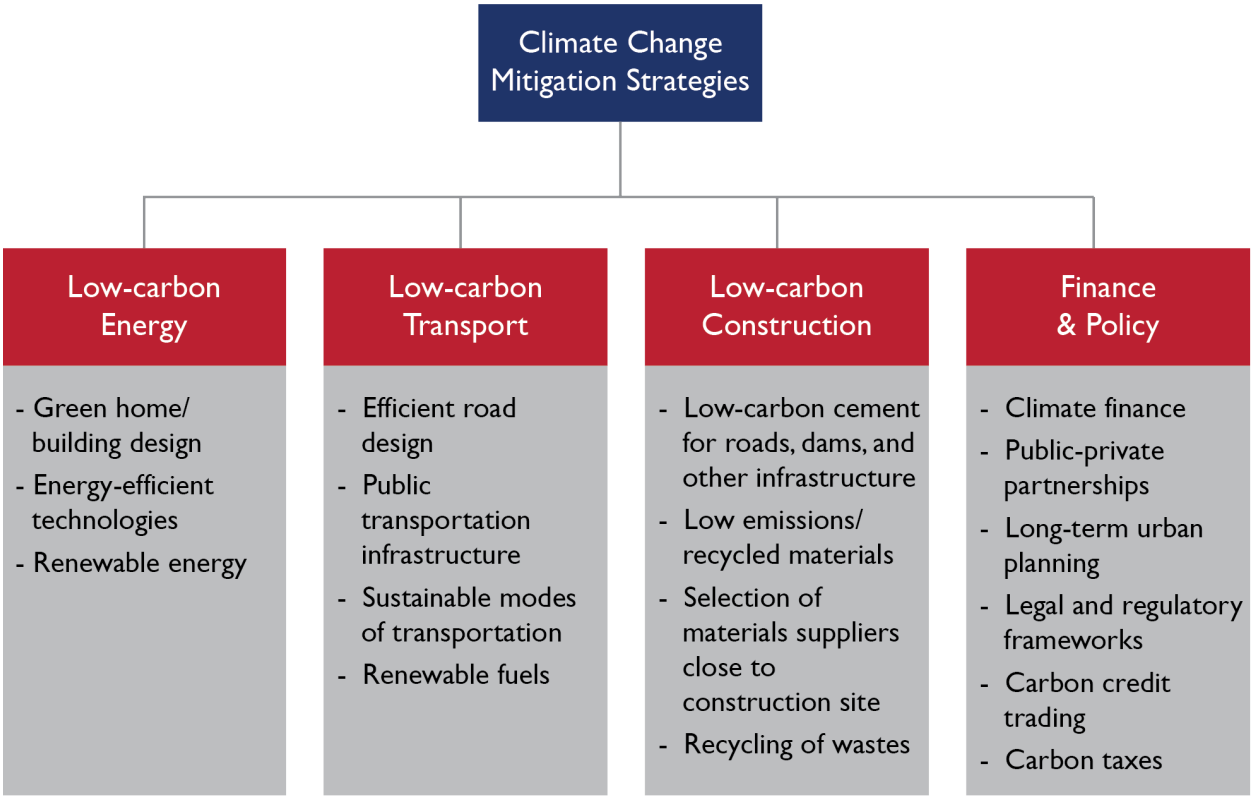
One groundbreaking infrastructure project in the transportation sector is the Stormwater Management and Road Tunnel (SMART) in Kuala Lumpur. This inventive solution to the Malaysian capital's long-term traffic and stormwater management problems was the first such dual-purpose tunnel in the world. The privately financed 11.5-km tunnel diverts floodwaters away from the confluence of the two major rivers running through the city center, while its central 3-km section doubles as a two-deck motorway. In extreme floods, the road decks are shut to traffic, increasing the tunnel's stormwater storage and conveyance capacity. SMART, which received the UN-Habitat Scroll of Honor Award, has saved central Kuala Lumpur from serious flooding and disruption on several occasions.

Another smart infrastructure system, H2knOw-how, helped Christchurch, New Zealand, recover from natural disaster while saving valuable time, money, and resources. In 2011, Christchurch was devastated by an earthquake that destroyed a quarter of all city center buildings and irreparably damaged up to 10,000 homes. The wastewater network suffered numerous ruptures. Five years earlier, the city's wastewater network was equipped with H2knOw-how, a sensor system installed at critical points of the water or wastewater network, collecting real-time information on flow rates, water levels, and pressures. Post-quake, H2knOw-how helped to identify breakages by comparing before and after data, immediately highlighting anomalies and allowing faster repair.

1.5.2 CARBON DIOXIDE / GREENHOUSE GAS (GHG) MANAGEMENT

In Figure 3, traditional climate change mitigation strategies and approaches are described.

FIGURE 3. CLIMATE CHANGE MITIGATION STRATEGIES



Source: Hinrichs, D. 2017.

Questions that engineers should ask related to their project include:

- Where does my current project fit on a path to zero emissions?
- Have I designed out impacts that may in the future be costly to offset or eliminate?
- Do the assets I'm designing consider a net zero emissions future?

Emissions reductions can be achieved through green building design and practices that conserve electricity and fuel; use of renewable energy sources; installation of efficient office equipment, electric-powered equipment, and water systems; and reuse and recycling of solid and human wastes. Such practices may include consideration of solar orientation, building orientation, and wind orientation. Construction managers and building operators can specifically reduce fuel and electricity use by decreasing fuel use, reducing idling times, regular equipment maintenance, driver training, utilizing properly sized equipment, replacing or repowering equipment, and using alternatives to diesel generators. Recycling unused construction materials and demolition debris can also avert greenhouse gas emissions that would otherwise be generated from the harvesting and processing of new materials.

Decisions made by infrastructure professionals and engineers now will fundamentally affect the ability of countries to meet their national and global emissions targets.

2. PROGRAM AND ENGINEERING DESIGN PRACTICES AND GUIDING PRINCIPLES

2.1 CONSTRUCTION MANAGEMENT PLANNING OVERVIEW

This section provides an introduction to key assessment practices and principles that should be followed during project planning, recognizing that there may be a lack of qualified design oversight of E&S matters on projects that do not trigger positive determination, small-scale construction projects, projects where the primary project is construction, or where host country guidelines for E&S assessments and management are not triggered or are not required to be implemented to a high standard. The Construction Risk Management reference for ADS 201 should be utilized when planning a construction project.

2.1.1 NEEDS CASE AND ANALYSIS OF ALTERNATIVES

All projects must consider robust and transparent alternatives to ensure that the lowest-risk environmental and social solutions have been identified, and alternatives analyses must be undertaken for any project subject to a positive determination under Reg. 216.

The starting point is the build nothing option (i.e., the "no action" alternative). It is increasingly important, at the strategic level, to challenge the assumed project need and to consider an alternative approach. For example, can assets be rehabilitated to achieve the same outcome? Discussions regarding alternatives must be held at the project planning stage and include the following:

- Consider alternative options from different suppliers (international or at the local level).
- Are there technologies available that could eliminate the need to build an asset?
- Can a gravity solution be selected instead of a pumped one?
- Can any of the old asset/infrastructure be utilized?
- Has the asset been assessed for optimal operation during use phase, e.g., solutions that further reduce power use, chemicals consumption, or resource recovery?
- Can the project design integrate cost-effective small-scale renewable energy systems?
- Has off-site manufacture been considered to minimize waste?
- Has packaging been optimized with the supply chain, i.e., will packaging be reusable or returnable?
- Are there adequate plans for reuse and/or recycling of on-site aggregates and spoil?

To be effective these discussions should be iterative, and engagement of the engineering team during these discussions is essential.

Screening and scoping When considering a new or rehabilitation project, the reader should review the project against the **Project Screening Checklist in Annex I** at the earliest possible opportunity to highlight potential impacts that may arise and, in turn, potential impacts on schedule, scope, and budget.

The aim of the checklist is to prompt consideration of a full range of E&S impacts that may occur during implementation of a construction project and that require further mitigation, specialist input, or support. Upon identifying potential impacts, the reader should refer to the relevant mitigation tables set out in the section 4 for suggestions on appropriate mitigation and next steps. This may be particularly useful during planning stages or during options analysis. The screening checklist addresses the following project phases:

- Site selection
- Project planning and site design
- Pre-construction phase
- Construction

The project screening checklist can also act as a prompt for identifying potential triggers for compliance with host country legislative requirements.

Environmental (and social) impact assessment: An impact assessment can be applied to varying degrees of detail, depending on the size of the impact, to help engineers, developers, decision-makers, and implementers proactively consider what might happen if a proposed action is implemented.

The level of assessment undertaken as part of an EIA process should be commensurate with the nature and size of potential impacts, as put forth in Reg. 216.[37] Regardless of the formal impact assessment obligations in a country or those required by USAID, the following steps can be applied to projects of all sizes to determine the potential impacts and to inform the design, engineering, and construction phases of work:

- Screening and scoping to determine if a proposed project should proceed and the type of assessment required to appropriately assess a project's impacts. Annex 1 presents screening checklists that may be used to help understand a project's impacts.
- Compile a baseline that is relevant to understanding the local social and environmental context, both to predict impacts and to monitor and evaluate project performance.
- Engage with local stakeholders at all phases of the project, starting as early as possible during the project or program development phases, through targeted consultation and disclosure during the IEE and EA stages. Even where formal assessment is not required, consultation is recommended.
- Establish communication mechanisms, including a grievance mechanism, for the local community, workers, and other stakeholders.
- Identify and predict impacts and analyze these impacts.
- Determine management measures and mitigation measures to ameliorate predicted impacts.
- Establish enhancement measures that create new positive impacts or benefits, increase the reach or amount of positive impacts or benefits, or distribute positive impacts or benefits more equitably.
- Determine the significance of predicted impacts and evaluate any residual impacts, i.e., impacts that remain after the mitigation measures are implemented.

[37] 22 CFR 216, 1976. Op. cit.

- Prepare the EA report that documents the assessment process and findings.

2.1.2 LAND USE AND TENURE

Land use decisions directly and indirectly impact the land and everything on it, including the soil, forests, and wildlife. Therefore, proper understanding of the relationship of a community with the land should feed into the analysis of alternatives and concept planning. National policies and customs on tenure vary widely from country to country, even between countries in the same region. Some general principles that should be considered include the need to:[38]

- Recognize and respect all legitimate tenure right holders and their rights
- Safeguard legitimate land tenure rights against rights and infringements
- Avoid infringing on the human rights and legitimate tenure rights of others (in particular vulnerable populations, such as women)
- Identify if and when there are indigenous peoples and other communities with customary tenure systems
- Consider informal tenure to be equivalent to formal tenure

All transactions involving land tenure rights should be completed transparently, in line with relevant national sectoral policies, and be consistent with the objectives of sustainable social and economic growth focusing on smallholders.

2.1.3 ENVIRONMENTAL AND SOCIAL BASELINE ASSESSMENT

Baseline data collection involves the gathering of environmental and social data relevant to a project and allows an accurate description of current environmental and social conditions at a site. Baseline characterization contributes to the accurate identification of likely impacts of a project and the mitigation and management measures required to ameliorate these impacts. Baseline data provide a benchmark against which to monitor the environmental and social performance of the project during implementation.

The types of baseline data collected need to be commensurate with the size and nature of the project and the receiving environment. The types of data required and the methods required to collect the data should be determined during the screening and scoping phase of an EIA.

Primary baseline data should be collected where possible to enable accurate determination of the existing environmental and social conditions at a site. Baseline data used in an assessment needs to be up to date to allow accurate prediction of impacts and identification of the required management measures for environmental and social risks.

Secondary data sources are often considered appropriate for use, especially when there is limited budget to collect primary data. The reliability of all data sources should be assessed during the EIA process, and unreliable data should be excluded from use.

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[38] Food and Agriculture Organization of the United Nations (FAO). 2012. Responsible Governance of Tenure of Land, Fisheries, and Forests in the Context of National Food Security (VGGT). Available at http://www.fao.org/docrep/016/i2801e/i2801e.pdf

Baseline data should be collected for all environmental and social conditions that may be affected by a project. Examples of baseline data that may be collected include but are not limited to:

- Biophysical data (e.g., terrestrial, aquatic and marine ecosystem services; associated flora and fauna; surface and groundwater resources; soils and geology; and land cover and land use)
- Socioeconomic and cultural data (e.g., demographics, land tenure, zoning, protected area boundaries and status, economic contexts, social services, infrastructure, and cultural and recreational sites)

Baseline data should be collected for a project's area of influence, which may be greater than the project's immediate footprint. The area of influence should be determined during the screening and scoping phase of an environmental and social assessment process. For example, for non-linear projects (e.g., roads), an area of influence of 500 m on either side is often used. For area projects, the project area of influence must use radiuses determined by the distance environmental impacts can extend from the project site. For socioeconomic impacts, the area of influence may be a geographical radius or it may be based on existing administrative boundaries or other types of boundaries (such as a road network).

Seasonality and timing are important considerations in the design of any baseline data collection program. Biological, physical, socioeconomic, and cultural conditions may change during different seasons and times of the year. Baseline data collection may need to occur multiple times to ensure accurate capture of data. For example, biodiversity surveys may need to occur in multiple seasons to account for seasonality of habitat use, water regimes, etc. Similarly, the availability and quality of groundwater resources can vary between dry and wet seasons, and the population of a community can also vary depending on the time of the year. Baseline data collection surveys should be designed to capture these changes. Additionally, baseline surveys should be designed to capture changes that may occur over time, such as changes in habitat use or precipitation levels.

Defining the presence of local communities: The households and settlements that are present within the project's area of influence should be identified during the screening and scoping phase of an EA. The data collected for these communities should be commensurate with the level of impact that they are predicted to experience. For example, more detailed baseline data will be needed for those who will be displaced (either physically or economically) than for those who will not.

Understanding the presence of sensitive receptors: The baseline data collected should enable detailed identification of the receptors (whether biological, physical, socioeconomic, or cultural) and their sensitivity to impacts that may arise from a project.

Baseline data collected should be quantitative, where possible, to enable an appropriate impact assessment to be completed.[39] Receptors in the environmental context include natural habitats, surface water bodies, groundwater, and soils, for example. In the socioeconomic context, receptors are individuals, households, businesses, social groups, economic networks, and communities.

[39] Asian Development Bank (ADB). December 2012. Environment Safeguards: A Good Practice Sourcebook Draft Working Document. Available at https://www.adb.org/sites/default/files/institutional-document/33739/files/environment-safeguards-good-practices-sourcebook-draft.pdf

Further reading and links to credible sources of baseline data for early screening (e.g., government data sets, official statistics, and independent data research bodies such as the World Resources institute (WRI)).[40] Additional useful sites are listed in Section 5 in the Further Reading section.

2.1.4 STAKEHOLDER ENGAGEMENT AND COMMUNITY RELATIONS

Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and the ability to influence its outcome, either positively or negatively. They may include community members, formal and informal representatives, national or local government representatives, civil society organizations, academic institutions, or business associations, among others. Stakeholder engagement is a term used to describe a broad, inclusive, and continuous process between the project proponent and community that could include a wide range of activities and approaches. Early and good stakeholder relations lead to good risk management and, in turn, to long-term project success, and should always be aligned with project size, scope, activities, impact area, and affected communities.

A broad range of activities and interactions fit under the umbrella of stakeholder engagement, such as consultation, information disclosure and grievance filing mechanisms. Each project should define the mechanisms that are most appropriate for the time, audience, and project scope. USAID provides further guidance in its "Engaging Stakeholders" webpage.[41]

2.1.5 SUSTAINABLE PROCUREMENT

Sustainable procurement incorporates economic, social and environmental considerations into the procurement process.[42] It generates benefits not only for the project implementer, but also for society and the economy, while minimizing impacts to the environment. Sustainable procurement helps to achieve sustainable development through implementation of processes that:

- Result in the purchase of sustainable products or services
- Reduce waste and unnecessary purchase of products or services through planning to match demand
- Assess and manage environmental, social, health, and safety impacts within the supply chain

Sustainable procurement can not only present good value for a company or organization but can reduce reputational risk by reducing the risk of community and environmental exploitation occurring in the supply chain.[43]

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[40] World Resources Institute (WRI) http://www.wri.org/about/library-information-center
[41] USAID. Engaging Stakeholders Webpage. Available at https://usaidlearninglab.org/qrg/engaging-stakeholders
[42] USAID. 2017c. ADS Chapter 300: Agency Acquisition and Assistance (A&A) Planning. Available at https://www.usaid.gov/sites/default/files/documents/1868/300.pdf
[43] UN. Sustainable Procurement. No date. Available at https://www.ungm.org/Public/KnowledgeCentre/SustainableProcurement

BOX 4. RESPONSIBLE CONTRACTING LANGUAGE

When construction is undertaken by subcontractors within a larger project, responsible contracting needs to start at the top. That is, it needs to be mandated in the contract or agreement governing the overall project.

The lead implementing organization then "pushes" responsible contracting down to the subcontracts it executes with construction firms.

Basic responsible construction contracting language in the contract or agreement governing the overall project could take the following form:

1. Construction subcontractors must comply with applicable host country environmental, health, and safety requirements.

2. In no case, however, shall health and safety requirements be less stringent than the minimum recommended practices for general construction health and safety and hazardous material management in Annexes 3 and 5 of this guideline.

3. To be awarded construction work under this project, prospective subcontractors must demonstrate a record of environment, health, and safety (EHS) compliance and evidence of commitment and capability to implement good EHS practice. Compensation must be tied in part to EHS performance.

4. The lead implementing organization must actively monitor and provide feedback on subcontractor EHS performance.

2.1.6 MANDATING ENVIRONMENTAL COMPLIANCE

The solicitation and the contract for construction should mandate compliance with (1) relevant local/host country environmental requirements and (2) USAID environmental management requirements, including the Construction Risk Management Mandatory Reference for ADS 201.

For USAID projects, where host country laws are not in place or are not as strong as the requirements set out in USAID regulations or supporting Sector Environmental Guidelines (SEGs), USAID requirements must be implemented, at a minimum, to demonstrate good international industry practice.

This includes compliance with the conditions specified by the project's IEE or EA and supporting management plan.[44] USAID requirements and any host country environmental review already in hand should be provided to respondents at the time of a solicitation.

2.1.7 OCCUPATIONAL HEALTH AND SAFETY COMPLIANCE

The contract should mandate compliance with relevant host country occupational health and safety requirements for construction. If these do not exist or are unclear, mandating the minimum practices in Annex 3 to this SEG is strongly recommended.

[44] 22 CFR 216, 1976. Op. cit.

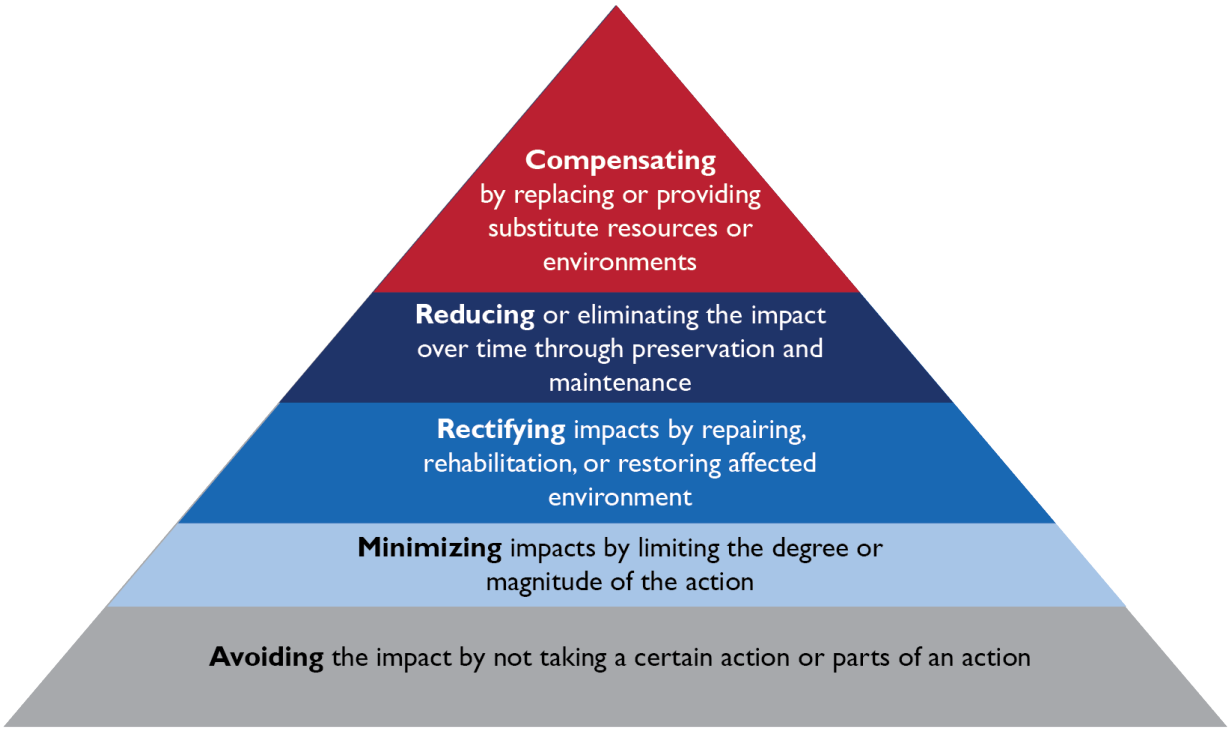
2.1.8 ENVIRONMENTAL AND SOCIAL IMPACT MITIGATION AND ENHANCEMENT OF POSITIVE IMPACTS

Where impacts are identified, it is necessary to work though possible mitigation and enhancement measures to manage impacts. Mitigation is defined (under 40 CFR 1508.20, related to the US National Environmental Policy Act) as any activity that includes the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

Mitigation options should be applied by adopting the "mitigation hierarchy" concept (Figure 4). This concept requires project designers and implementers to consider the application of prioritized mitigation measures as set out: anticipate, avoid, minimize, compensate, or offset risks to environment, community, and workers to acceptable levels. This mitigation hierarchy approach is based on implementing sequential steps through the project life cycle, as highlighted in the following case studies.

FIGURE 4. MITIGATION HIERARCHY



2.1.9 LABOR RIGHTS

The respect for and protection of labor rights are an essential part of a project's management and the implementer's responsibilities. Human rights of workers should be recognized through policies, procedures, contracts, codes of ethics, or other documents.[45] USAID and every implementing partner has responsibility for protecting the human rights of its direct workforce and third-party workers involved in core project activities, as well as of supply chain workers, as much as possible.[46] Documentation should commit contractors and service providers to protecting workers' rights; honoring fair contracting terms; providing safe and healthy working conditions; and using non-discrimination in employment-related decisions, including contracting, promoting, training, and wage setting.

Project implementers should have a human resource policy consistent with the size of the project. Project labor commitments that can be used in all tenders and contracts are also a useful mechanism for ensuring a standardized approach to labor rights among all project employers. Such documents need to reference national labor laws and expectations on labor rights; working conditions and terms of employment; appropriate worker lodging, transportation, food, and welfare facilities; interactions with workers' organizations; avoidance of child labor; and occupational health and safety risks.

Each project implementer should be aware of the International Labor Organization (ILO) conventions the host country has signed. Adherence to ILO's core labor standards is essential. The ILO core labor standards address freedom of association, collective bargaining, abolition of forced labor and worst forms of child labor, minimum age, equal remuneration, discrimination, and protection of children and young persons.[47] Even for countries that do not adopt one or more standards, they are fundamental to protection of the work force. USAID's Agency-Wide Counter-Trafficking in Persons Code of Conduct has the goal of prohibiting USAID contractors, subcontractors, grantees, and sub-grantees from engaging in trafficking in persons, procuring commercial sex acts, or using forced labor.[48]

2.1.10 CONSTRUCTION E&S MANAGEMENT TOOLS

An environmental and social management system (ESMS): An ESMS provides an overarching system through which the environmental and social risks and impacts of a project are implemented and managed. There are many voluntary international standards that set out the criteria for an effective environmental and social management system. This should be considered a necessary requirement for most construction projects mandated through the procurement process. Examples of these standards include ISO 9001 on quality management, ISO 14001 for environmental management, and OHSAS 18001 for health and safety management.

An ESMS should be continually updated in response to environmental and social monitoring results to improve the environmental and social performance of a construction project. The scale of the ESMS should be commensurate with the nature and size of impacts predicted for a project. Regardless of size, an ESMS should consist of the following key components for managing environmental and social risks:

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[45] IFC, 2012. Op. cit. and UN, 2012. Op. cit.
[46] UN, 2012. Op. cit.
[47] International Labor Organization – ILO. 2013. Fundamental Rights at Work and International Labor Standards. Geneva: ILO. Available at: http://www.ilo.org/wcmsp5/groups/public/@ed_norm/@normes/documents/publication/wcms_087424.pdf
[48] USAID, 2011. Op. cit.

- Identification of the risks and impacts that could occur because of the project
- The environmental and social policy of the developer
- The commitments, mitigation measures, and management measures that are required to be implemented as part of the project, as well as management plans that ensure these commitments and measures are implemented
- Monitoring programs that need to be followed to assess the environmental and social performance of the project
- Procedures that need to be followed in the event of an emergency
- A process through which communication with stakeholders will occur
- A process (grievance mechanism) through which stakeholders and affected communities can log grievances with the project

Detailed management plans (such as an environmental mitigation and monitoring plan (EMMP)) are required for all USAID projects per Reg. 216.

Social management plans (SMPs), hazardous waste management plans, or cultural heritage management plans also must stipulate specific requirements to be implemented during project implementation through an ESMS where necessary.

For some projects, only an EMMP or SMP may be required to address the key negative impacts that are likely to arise. In certain circumstances, it may not be practical to require a fully developed ESMS, for instance, when most of risks are well understood. USAID guidance on the content and requirements for an EMMP are provided in its factsheet *Environmental Mitigation and Monitoring Plans (EMMPs)*.[49] The requirements for an SMP would follow the same outline as an EMMP, addressing social rather than environmental impacts. In some cases, it may be prudent to combine these into one document, an environmental and social mitigation and monitoring plan.

Management tools for construction industry: Increasingly, design management tools may be used during the planning and design stages to assist in implementing environmentally sound design and management (ESDM) practices. Examples of these include building information modeling, life cycle analysis, and PAS 2080 for carbon management in infrastructure. In addition, project assessment schemes for sustainability include CEEQUAL, BREEAM, LEED, DREAM, BES 6001, ETI, GRI, and CHAS.

Building information modeling (BIM) is an increasingly common practice in the construction design industry and involves creating a "digital representation of physical and functional characteristics of a facility…forming a reliable basis for decision-making during its life cycle…"[50]

Life cycle analysis involves calculating the environmental/carbon impact of a project over its entire lifetime, from project inception to decommissioning. Life cycle analysis should be an iterative process

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[49] USAID ENCAP. July 2011. Factsheet – Environmental Mitigation and Monitoring plans (EMMPs). Available at http://www.usaidgems.org/Documents/lopDocs/ENCAP_EMMP_Factsheet_22Jul2011.pdf

[50] National Institute of Building Sciences. May 2015. Factsheet – National BIM Standard – United States. Available at https://www.nationalbimstandard.org/files/NBIMS-US_FactSheet_2015.pdf

that feeds back into the planning and design process of a project to enable design alterations that avoid or reduce the lifetime environmental impact of a project.

PAS 2080 is a framework for managing whole life carbon for infrastructure projects throughout the value chain. PAS 2080 helps reduce carbon and infrastructure delivery costs while promoting collaboration and innovation in the infrastructure value chain.[51]

Project assessment schemes (CEEQUAL, BREEAM, LEED, DREAM, BES 6001, ETI, GRI, CHAS) are rating systems that evaluate the sustainability of a project or building. These ratings are generated using evidence-based quantifiable sustainability metrics. Project assessment schemes provide third-party validation of a project or building's sustainability and provide guidance and tools for quantifying and minimizing impacts.

[51] British Standards Institution (BSI). May 2016. PAS 2080:2016 Carbon management in infrastructure. Available at https://shop.bsigroup.com/ProductDetail?pid=000000000030323493

3. MANAGEMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS

3.1 MITIGATION AND IMPACT MANAGEMENT

USAID-funded projects and related interventions or activities should be designed to maintain or improve environmental, health, or sociopolitical systems, as well as minimize negative impacts. Projects should be designed to meet good international industry practices goals and should follow the steps outlined in Reg. 216 and in the Construction Risk Management Mandatory Reference for ADS 201.[52] Mitigation is the identification and application of measures to avoid, minimize, or remedy impacts. These may be defined as part of a formal EIA process and can be implemented at all stages of the project cycle. However, the earlier impacts are considered, the more likely they can be avoided.

It is essential that project managers engage environmental and social specialists to assist in identifying opportunities to avoid and minimize impacts. In countries where project infrastructure for supporting good environmental and social management is lacking, it is important that mission leaders take a proactive role in determining local solutions that achieve the best practices set out in the SEGs and other internationally accepted standards. For example, even in a country where the waste management infrastructure is minimal, simple measures such as separating out organic waste or installing a mobile small-scale incinerator provide value. Identifying options to recycle or reuse on the project or other projects nearby is another approach to reducing waste.

The mitigation tables below serve as a quick reference on possible construction impacts and associated good international industry practices, mitigation measures, and indicators or outcomes that can be planned for and implemented throughout the project life cycle. These tables should also be used to develop EMMPs. They are general references and specific characteristics of each project context should be considered before applying them.

These mitigation and monitoring tables are organized by environmental or social component (e.g., air quality, social, resettlement). For implementation, a column identifying the person responsible for implementation within an organization should be included in the EMMP.

[52] 22 CFR 216. Op. cit.

TABLE 4. AIR QUALITY MANAGEMENT			
OBJECTIVE	ACTIVITY/PHASE	MITIGATION STRATEGIES	INDICATORS OR OUTCOMES[53]
Minimize dust emissions Minimize fugitive gas emissions	Planning	Identify any sensitive receptors from the outset Obtain baseline air quality information	Screening documentation Historic air quality records Potential project impacts, where relevant
	Engineering and design	Minimize extent of material handling, and avoid double handling Design, install, and apply a simple, linear layout for materials-handling operations to reduce the need for multiple transfer points Use mobile and fixed-belt transport and conveyors to haul materials by trucks through internal roads (enclosed rubber-belt conveyors for dusty materials are recommended in conjunction with cleaning devices) where practicable Site emission-generating equipment (e.g., generators) and vehicle stationary points away from sensitive receptors	Design drawings/plans Documentation of nearby receptors Documentation of material handling assessment Background information on emission-generating equipment
	Pre-construction	Consider the prevailing wind direction when siting stockpiles to reduce the likelihood of affecting sensitive receptors Plan site layout – machinery and dust-causing components (e.g., access roads, stockpiles) should be located away from the site boundary and sensitive receptors where practicable	Design drawings/plans Assessment of winds and site layout Relevant management plans

[53] For each outcome or indicator, frequency and responsible parties should be assigned depending on the project and IP.

TABLE 4. AIR QUALITY MANAGEMENT			
	Construction (earthworks, material handling)	Provide personal protective equipment (PPE) such as dust masks to workers on-site, where dust levels are likely to be excessive Locate activities and rock/earth stockpiles away from sensitive receptors Cover, seed, or fence stockpiles to prevent wind whipping Bund and seal topsoil and subsoils stockpiles Keep stockpiles for the shortest possible time No bonfires or burning of waste material Seal or re-vegetate completed earthworks as soon as reasonably practicable after completion Ensure all vehicles carrying loose or potentially dusty material to or from the site are fully sheeted Use well-maintained vehicle/construction fleet to minimize emissions Minimize dust-generating activities Schedule dust creation activities during humid and low-wind times of day and when likelihood of children or bystanders near the site is low Use water as a dust suppressant where applicable (e.g., use towed water bowsers with spreader bars) and ensure an adequate water supply Avoid leaving vehicles or equipment idling or running when not in use Minimize movement of construction traffic around site Compact and periodically grade and maintain haul roads and internal roads Visually monitor dust episodes and dust clouds. Record any exceptional incidents that cause dust, either on- or off-site, and the action taken to resolve the situation in the log book Notify line managers if dust suppression systems are ineffective or if project activities are creating air quality problems Implement community grievance mechanism to enable reporting of air quality issues	Grievance mechanism complaints Daily visual site observations of materials handling for the duration of the construction period Vehicle maintenance records Exceptional dust-generating incident log Documentation of dust-minimizing material handling

TABLE 5: SURFACE WATER AND GROUNDWATER MANAGEMENT			
OBJECTIVE	ACTIVITY/PHASE	MITIGATION STRATEGY	INDICATORS/MONITORING
Minimize impact on natural water resource use and contamination	Planning	Undertake preliminary hydrogeological studies, or at least define the natural drainage characteristics of the area and hydrologically link to the site (e.g., natural flow paths for surface water runoff should be identified on a plan). Identify sensitive receptors (e.g., potential receiving water bodies for the runoff, groundwater protection zones, archaeological features, receiving water body environmental designations) Conduct or refer to a local water (surface/groundwater) resources assessment (i.e., consider the quantity and quality available, including current uses) Collect baseline data e.g., analysis on water sources Understand what discharges are likely to be generated	Preliminary hydrological studies and water resources assessment Hydrological/water quality baseline (against which construction monitoring outcomes can be compared) Screening documentation for sensitive receptors
	Engineering and design	Design stormwater drainage systems in line with country technical norms and to take account of future climate variability, floods, risk of pollution and ecological linkages Provide adequate cross-drainage structures where building new roads to avoid altering drainage paths or damming waters and causing flooding. Try to replicate as closely as possible the natural drainage from a site before development Control surface water runoff by constructing temporary drainage channels terminating in sediment traps, sediment ponds, or soak-away ponds as appropriate (infiltration or evaporation) Consider climate-resilient designs Implement cross-drainage structures where building new roads or digging borrow pits Minimize hard surfaces, which can lead to flooding or increased runoff rates to areas. Consider opportunities to harvest and use rainwater close to where it falls Consider the need to put measures in place to filter out pollutants (sediment or chemical) Understand the details of any required off-site works and consents	Design drawings/plans Stormwater drainage designs Runoff management plans Percentage hard surface cover
	Pre-construction	Develop a construction method statement that considers to varying degrees: A) Effluent management (e.g., treatment methods, dilution, containment and removal)	Documentation of effluent management plan, spill management plan, borrow pit extraction plan, and

TABLE 5: SURFACE WATER AND GROUNDWATER MANAGEMENT			
		B) Spill management (e.g., stop spread of spill, stop spill seepage, absorb spill, remove contaminated materials/soil) C) Sedimentation and erosion control (e.g., use of straw/agricultural waste bales, silt traps, drainage ditches) No groundwater extractions without prior approval/permits from authorized regulatory body Prepare a borrow pit extraction plan (e.g., location, quantity to be extracted, method of extraction, nearby vegetation to protect, method for preventing disease vectors if pit is flooded, decommissioning of pit) Implement community grievance mechanism	sedimentation and erosion control plan Relevant water extraction permits Documentation of community grievance mechanism
	Construction	Adopt some basic management features to protect water courses: A) No borrow pits within 50 m of a watercourse B) No direct discharges to surface watercourses C) No discharge of contaminated substances to surface watercourses Manage silt-laden run-off from sites, especially during rainy season Site compounds away from sensitive water features Undertake equipment and vehicle maintenance off site, where feasible, to prevent potential for releases and spills of oils/solvents/hydrocarbons, or at least 50 m from watercourses Undertake water quality monitoring at key discharge points Notify a line manager if permitted discharges produce pollution or flooding Address any damaged or leaking pipework or connections immediately Regularly check site drainage, settlement, and water treatment systems to ensure they are working properly Monitor weather forecasts to identify potential weather events impacting discharges Undertake spill response drills regularly Maintain appropriate spill clean-up equipment on site (e.g. straw/agricultural waste bales, sand, shovels/earth movers)	Water quality and discharge monitoring records Documentation of implementation of relevant management plans Documentation of spill response drills Documentation of periodic review of pipework, drainage, and water treatment equipment Water quality data and daily visual observations (at all discharge points) Incident log

TABLE 6: NOISE			
OBJECTIVE	ACTIVITY/PHASE	MITIGATION STRATEGIES	INDICATOR/ MONITORING
Avoid nuisance generated by construction or operation noise related to a development Avoid noise nuisance from day and night affecting closest sensitive receptors	Planning	Identify sensitive receptors Consult with local communities to identify specific events that may be sensitive to noise (e.g., religious or cultural events)	Screening documentation with all receptors within 1 km noted (rural) Documentation of local consultation
	Engineering and design	Prioritize selection of quiet equipment in the selection process Concentrate noisiest types of work into as short a period as possible, and during least disruptive times of the day (e.g., before or after school or market hours, not during nearby events or meetings) Specify allowable times for construction activities (e.g. weekends, non-market days) Inform nearby dwellings on the timing and duration of works and when the noisiest stages are likely to occur (ongoing through process) Prepare a site-specific noise control plan Design noise barriers or other noise attenuation into the design if necessary	Documentation of public notices Baseline noise data (for future comparison) Assessment of need for noise barriers or noise attenuation Documentation of activity schedule preparation
	Pre-construction	Select low-noise equipment with lower comparative sound power levels where possible Examine equipment on a daily basis for defects prior to the start of works; under no circumstances should defective equipment be used Position equipment as far as possible from sensitive areas Locate static equipment (e.g., generators) behind screening vegetation or infrastructure to break the line of sight from receptors Brief site operatives on keeping noise to a minimum Identify and implement appropriate PPE requirements (e.g., ear plugs)	Project activity schedules Relevant management plans including noise control plans Documentation of community grievance mechanism

TABLE 6: NOISE			
		Screen facility with trees or fencing to control noise Conduct spot monitoring at commencement of activities using sound level meter at the nearest residential properties/sensitive receptor; compare against standards Place barriers or shrouds close to the main sources of noise to limit the spread of noise Where possible, plan for one-way traffic systems to minimize vehicle and equipment reversing	
	Construction	Display warning signs about high noise levels around site boundary Record and investigate complaints using sound level meter via the community grievance mechanism Avoid unnecessary revving of engines Require equipment to be switched off when not in use Limit noisy activities to daytime working hours where possible	Daily site audit reports (including confirmation that noise reduction measures are in place, e.g., signs, silencers) Number of community noise grievances Noise monitoring data that indicate noise is within range Site operation log (recording start and stop time of work) Record of notification to community of noisy work activities.
	Construction traffic	Limit vehicle speeds on site and on access roads, particularly close to the households (e.g., install speed bumps, traffic signs) Manage traffic to avoid the need for traffic to queue up Schedule timing of deliveries to avoid disturbance to local receptors Maintain access roads to minimize discontinuities in the road surfaces that may give rise to vehicle body noise and rattle (e.g., grading, road crowning, appropriate drainage ditches) Where possible, organize delivery routes to minimize potential nuisance to local receptors	Delivery logs Documentation of adherence to project activity schedule Number of transport-related grievances

TABLE 7: OPEN SPACES, LANDSCAPE, AND VISUAL MANAGEMENT			
OBJECTIVE	ACTIVITY/PHASE	MITIGATION STRATEGIES	INDICATORS/ MONITORING
Minimize adverse impacts on viewshed (area visible from a given location) and landscape character	Planning	Identify sensitive receptors Collect baseline data (e.g., vegetation, landscape features, sensitive nearby ecosystems)	Screening documentation with all receptors within 1 km noted (rural) Documentation of baseline features (photographs)
	Engineering and design (including procurement)	Design into the landscaping plan the protection of existing trees on site serving as a source of shade, windbreak, or providing other benefits Minimize vegetation removal and excavation Plan for revegetation and replanting of removed trees and shrubs Minimize the size of stockpiles and the duration for which they are kept Design structures, including colors of materials used, to be sensitive to the surrounding visual environment Screen areas that are sensitive to visual impacts	Vegetation map (including trees/areas to be retained). Vegetation reinstatement plan Target for reforestation (1:10) Documentation of efforts to minimize size and duration of stockpiles and vegetation removal Documentation of analysis of visual impact
	Pre-construction	Carefully locate construction compounds and other facilities Construct installations with sustainable materials, materials to reduce the visual impact, and materials that enhance the aesthetics of the project area Plan any tree removal around ecologically sensitive periods such as bird nesting seasons	Design drawings/plans Assessment of facility location

TABLE 7: OPEN SPACES, LANDSCAPE, AND VISUAL MANAGEMENT			
			Tree and vegetation removal plans, where necessary
	Construction works	Implement good housekeeping practices to maintain the appearance of the site Implement good housekeeping practices in stockpile areas and take dust suppression measures Store topsoil properly (e.g., designated area with plastic sheeting covering topsoil piles) Restrict extent of all disturbed areas as far as practicable (e.g., use visible site boundary) Revegetate disturbed areas (e.g., plant two tree saplings for every tree removed, use native species) Store all potential pollutants away from root systems (e.g., in a designated locked shed, above impermeable surface) Implement a community grievance mechanism	Slope protection mechanisms in place No evidence of soil erosion (daily visual observations) Record of daily checks for implementing dust suppression and good housekeeping measures Record of vegetation removal Documentation of community grievance mechanism complaints Borrow pits restored and vegetative cover established

TABLE 8: TRAFFIC AND TRANSPORT MANAGEMENT			
OBJECTIVE	ACTIVITY/PHASE	MITIGATION STRATEGIES	INDICATOR / MONITORING
Minimize road hazards, congestion, and damage to road infrastructure	Planning	Identify sensitive receptors Collect baseline data Route-alignment assessment	Screening documentation Documentation of baseline data collection Route-alignment assessment
	Engineering and design	Design layout of site to minimize the number of vehicle movements required Schedule construction and select appropriate vehicles (e.g., based on loads) to minimize traffic movements Take traffic and transport issues into consideration during the procurement process Where the project may contribute to significant increase in traffic along existing roads, or where road transport is a significant component of a project, the following measures should be implemented: A) Minimize pedestrian interaction with construction vehicles B) Coordinate with emergency responders to ensure that appropriate first aid is provided in the event of accidents C) Use locally sourced materials, whenever possible, to minimize transport distances D) Locate secondary project components such as worker accommodation close to project sites and arranging worker bus transport to minimize external traffic E) Employ safe traffic control measures, including road signs and flag persons to warn of dangerous conditions	Design drawings/plans Documentation of coordination with relevant authorities Schedule of project activities Transport management plan (TMP) Assessment of local sources for project materials
	Pre-construction	Contractors to develop a detailed transport management plan (TMP) Upgrade sections of local roads in accordance with host nation laws as practicable and necessary Implement community grievance mechanism	TMP Records of awareness-raising

TABLE 8: TRAFFIC AND TRANSPORT MANAGEMENT			
		Raise awareness of upcoming traffic impacts and risks (e.g., signage, communications with local authorities, community groups, and local media)	activities and grievance mechanism
	Construction	Adopt best transport safety practices across all aspects of project operations with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public. Measures should include: A) Emphasizing safety aspects among drivers (e.g., wearing seatbelt, not passing vehicles on bends in the highway, slowing at least 300 m in advance of villages or where children are) B) Improving driving skills and requiring licensing of drivers (e.g., driver training, driving tests) C) Adopting limits for trip duration and arranging driver rosters to avoid overtiredness D) Avoiding dangerous routes and times of day to reduce risk of accidents (e.g., no driving after dusk) E) Implement speed restrictions for all project-related traffic F) Regularly maintain vehicles and use manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure G) Report accidents and statistics by contractor H) In the case of a traffic accident, contact the police I) Regularly inspect and maintain roads used by construction traffic J) Repair damage to road surfaces and other road infrastructure (e.g., fill in potholes)	Audit against TMP Speed bumps erected (once). Road signage erected (once) Driver training records (once) Monitoring and inspection records Number of accidents and nature (pedestrians being hit, vehicles colliding or rolling) Records of safety training Documentation of adherence to TMP

TABLE 9: LAND CONTAMINATION, SOILS, MATERIALS, AND WASTE MANAGEMENT			
OBJECTIVE	ACTIVITY OR PHASE	MITIGATION STRATEGIES	INDICATOR / MONITORING
Reduce the use of raw materials and potentially finite or scarce resources Appropriate spoil handling and disposal	Planning	Collect baseline data (soil quality) Identify sensitive receptors	Screening documentation
Safe handling, storage, and disposal of waste Prevention of leaks, spills, and environmental incidents	Engineering and, design	Identify waste handling facilities close to the project to accept/treat waste (e.g., approved by local government) Review the locally available reuse/recycling facilities to ensure they can accept the waste streams Implement procurement measures such as ordering the correct amount of materials to be delivered when needed, reducing the amount of packaging used by suppliers, and establishing a take-back system with suppliers Seek ways to reduce raw material consumption including A) Reuse material on site B) Use recycled product in material (fly ash in cement; recycled tire rubber for accessibility ramps; flooring, roofing; crushed industrial waste as aggregate (e.g., in road construction)) C) Use recycled glass or debris in place of sand D) Design water harvesting for future irrigation use E) Use renewable energy solutions Substitute raw materials or inputs with less hazardous or toxic materials wherever economically and technically feasible Waste prevention: identify opportunities to prevent waste production in the first place (packaging)	List of nearby waste handling and disposal facilities and the types of wastes each can accept Documentation of raw material consumption and waste generation reduction analyses Procurement and delivery policies

TABLE 9: LAND CONTAMINATION, SOILS, MATERIALS, AND WASTE MANAGEMENT			
		Waste management planning: identify and characterize the source of all waste streams from the project with the proposed final disposal option Designate temporary on-site waste storage facilities, where necessary Ensure appropriate on-site waste sorting and storage	
	Pre-construction	Reuse materials on site wherever possible, particularly with respect to excavated materials Implement good housekeeping and operating practices, including inventory control to reduce the amount of waste resulting from materials that are out of date, off-specification, contaminated, damaged, or surplus Construct fueling bays and workshops/garages, including storage facilities floors, of impervious materials. and wastes from such facilities to be captured with oil interceptors Designate an equipment wash-down area on site (e.g., on top of absorptive material that can be easily removed, surrounded by straw/agricultural bales to absorb runoff) or avoid washing equipment on site Remove carefully any topsoil and overburden (rock or soil) from each of the proposed spoil disposal sites, stockpile nearby, and preserve for eventual use as rehabilitation material once the spoil disposal sites are no longer required Develop and implement a detailed waste management plan as appropriate Develop emergency response plan/pollution incident control plan (contingency plan)	Monitoring records Site waste management plan Site plans with designated wash-down and waste storage areas Designated waste handling facilities for each waste category Contingency plan
	Construction	Establish procedure for reporting any environmental incidents related to spills/leakages and how to deal with any spills/leakages Identify and implement appropriate PPE requirements Provide specialist training in appropriate procedures to persons with hazardous materials or waste management responsibilities Maintain an inventory of hazardous materials and specific procedures/controls Maintain available copies on site of material safety data sheets (MSDS) for all hazardous substances used during the project License (as necessary), cover, bund, and maintain waste and hazardous materials storage areas Store all fuels and oils in appropriate tanks away from watercourses, and inspect storage tanks regularly	Waste management area set up including clearly demarcated signs (once) Check storage practices follow MSDS requirements Waste monitoring/ tracking records (weekly)

TABLE 9: LAND CONTAMINATION, SOILS, MATERIALS, AND WASTE MANAGEMENT			
			No accumulated waste materials on site (daily inspections) Documentation of waste management trainings Hazardous material inventory and control procedures Necessary licenses for waste and hazardous material storage Number of incidents (spills)

TABLE 10: SOCIAL MANAGEMENT			
OBJECTIVE	PHASE	MITIGATION STRATEGIES	INDICATOR / MONITORING
Engage, consult, and inform stakeholders	Planning	Consult with relevant stakeholders to understand local context and key risk areas Inform stakeholders of project plans Provide forums and opportunities for stakeholders to raise concerns, perceptions, and considerations in response to the plans	% of stakeholders identified during scoping that were consulted on local context and key risk areas Number of concerns, perceptions, and considerations from stakeholders received Number of inputs from stakeholders incorporated into project plans

TABLE 10: SOCIAL MANAGEMENT			
	Engineering and design	Engage with stakeholders in defining, discussing, or deciding on design alternatives/mitigation measures/site selection Identify and engage with vulnerable groups, consider them in project design (e.g., elderly or infirm populations, non-household heads, those without land title), speak with them separately and together with community leaders)	% of stakeholders identified during scoping that were consulted on engineering and design Number of concerns, perceptions, and considerations from stakeholders received Number of inputs from stakeholders incorporated into project plans Number of inputs from vulnerable groups considered in project design Documentation of vulnerable groups' considerations in project design
	Pre-construction	Provide clear, understandable, up-to-date, relatable information throughout all phases. Use materials, language, and approaches appropriate to each group to share project design, foreseen impacts, timeline for key activities, mitigation and compensation measures, roles and responsibilities, and other relevant information Address key concerns, questions, interests of stakeholders	Number of communications activities carried out Number and types of stakeholders reached Amount of feedback received and response to feedback
	Construction	Monitor impacts and management strategies through stakeholder engagement; develop and apply improvement mechanisms as necessary Periodically inform stakeholders of progress of key activities, results	Number of improvements suggested by stakeholders incorporated into the construction process Number of communications activities carried out

TABLE 10: SOCIAL MANAGEMENT			
		of mitigation implementation, and updates on concerns raised	
Direct communication between project implementer/developer and community through grievance mechanism	Planning and IEE through construction	Provide open, free, accessible, anonymous communication lines between stakeholders and project Ensure that all communications are responded to in a timely manner, that records are kept, and resolutions/suggestions incorporated Resolve grievances formally, efficiently, respectfully	Number and types of grievances received and response time Number of improvements or modifications incorporated into management practices because of grievances and communications
LAND ACQUISITION AND RESETTLEMENT			
Safeguard the well-being and improve livelihood of those whose land is acquired involuntarily	Planning and IEE	Avoid the need for displacement by developing an understanding of local land use and property ownership	Documentation of local context
	Engineering and design	Consider land use and property ownership in designs and site selection (e.g., community, private, church/religious, or government land) Produce baseline information about population that will experience physical or economic displacement (collect information through multiple site visits, as concerned groups may not be available on the first visit)	Number of meetings with communities/families that are anticipated to experience displacement to discuss land use and property ownership in designs Documentation of baseline information Documentation of engagement process Documentation of grievance mechanism system Number and types of grievances received and response Number of communications activities carried out

TABLE 10: SOCIAL MANAGEMENT			
		Engage with project-affected people and affected communities, including any host community members, to design the resettlement/compensation plan Establish resettlement/compensation grievance mechanism Ensure clear, direct communication and information throughout the resettlement/compensation impact identification and planning processes	
	Pre-construction	Implement resettlement/compensation (preferably in-kind) plan as designed Continue ensuring clear communication and implementation of resettlement grievance mechanism	Number of internal and external monitoring and evaluations of the resettlement process Number of affected properties, displacement impacts, according to resettlement plan Documentation of communication process Documentation of grievance mechanism system Number and types of grievances received and response
	Construction	Monitor implementation of resettlement plan Continue ensuring clear communication and implementation of grievance mechanisms	Documentation of resettlement/livelihood restoration activities through internal monitoring, external monitoring, and evaluation as appropriate Number of communications activities carried out Number and types of grievances received and response

TABLE 10: SOCIAL MANAGEMENT

INDIGENOUS PEOPLES

Safeguard the well-being of indigenous peoples	Planning	Avoid impacts on indigenous peoples by understanding where they live, their livelihoods, and use of land and resources through consultation If impacts on indigenous peoples are unavoidable, identify and consult with representatives to design consultation process, considering culturally appropriate tools, language, and processes Define and agree on the free, prior, and informed consent (FPIC) process with indigenous peoples Produce an indigenous peoples plan to manage impacts that affect these groups	Number of indigenous groups present in the project area and % of groups impacted by the project Number of meetings with indigenous groups and documentation of agreed-upon stakeholder engagement process Documentation of agreed FPIC process and agreements
	Engineering and design	Collaborate with indigenous peoples in all aspects of project design, and consider design alternatives that minimize adverse impacts Obtain FPIC for decisions that affect indigenous peoples' land, livelihoods, lives, resources, or territories Define mitigation and compensation measures with indigenous peoples to respond to negative impacts. Ensure that	Documentation of collaboration process and number of considerations from indigenous peoples incorporated in project design Documentation of FPIC Indigenous peoples plan Documentation of analysis of alternatives to relocation

TABLE 10: SOCIAL MANAGEMENT			
		compensation is fair and culturally appropriate. Consolidate these measures into an indigenous peoples plan Avoid relocation, and if necessary, ensure correct process	
	Pre-construction	Implement indigenous peoples plan in accordance with FPIC	Documentation of plan implementation Number of activities or occurrences not in accordance with FPIC Number and types of grievances received from indigenous peoples and response
	Construction	Monitor implementation of indigenous peoples plan in accordance with FPIC	Documentation of plan implementation Number of activities or occurrences not in accordance with FPIC Number and types of grievances received from indigenous peoples and response
COMMUNITY HEALTH AND SAFETY			
Protect community public health	Planning	Avoid disturbing communities or creating health and safety risks to community by understanding local community dynamics and any community resources related to subsistence or public use that may be impacted	Documentation of understanding of local community dynamics and affected resources
	Engineering and design	Identify risks and hazards to community health and safety and define procedures to avoid or manage them	Health and safety procedures in place Emergency response plan Security plan

TABLE 10: SOCIAL MANAGEMENT			
		Identify potential emergency situations and develop emergency response procedures in a plan If security personnel will be hired, develop a security plan based on a risk assessment, ensure correct screening and training processes as well as use-of-force procedures, and produce memorandum of understanding with national police forces as required	Security personnel procedures in place
	Pre-construction	Identify potential short-term disturbances to community (such as noise, dust, traffic, circulation of workers) and define measures to minimize them (scheduling, trainings, maintenance, or use of alternatives and communications) Communicate necessary information regarding community health and safety to community and to workers Train workers regarding community interactions and health and safety procedures Train relevant staff and service providers in emergency response Train and monitor security personnel	Measures to minimize disturbances in place Number and types of communications activities and participants Number and type of trainings, content, and participants Documentation of security plan implementation results Security personnel monitoring Number of grievance issues involving security personnel that are raised and resolved

TABLE 10: SOCIAL MANAGEMENT			
	Construction	Implement community health and safety procedures Implement disturbance minimization procedures Continue trainings and communications Carry out emergency drills with relevant parties Monitor health and safety concerns and occurrences and respond when necessary Monitor security personnel	Documentation of implementation of procedures Number and types of complaints received from community regarding avoidable disturbances Resolution of complaints Number and types of trainings, content, and participants Number and types of communications activities and participants Number of emergency drills Number of monitoring activities to verify disturbance in the communities Number and types of health and safety occurrences documented and resolved Number of security personnel monitoring activities Number and types of issues involving security personnel raised and resolved
INFRASTRUCTURE AND SERVICES			
Protect infrastructure and essential services	Planning	None applicable	
	Engineering and design	Identify workforce needs and availability of labor in the local market Communicate real workforce needs of the project to help minimize influx and pressure on infrastructure Plan for accommodations and services for workers and their families (e.g., request information on	Documentation of workforce needs and local availability Communications materials Number and type of communications, area of reach Documentation of accommodations and services plans Number, location, and characteristics of infrastructure that might be interrupted

TABLE 10: SOCIAL MANAGEMENT			
		available housing for rent as opposed to constructing temporary facilities) Identify infrastructure that might be interrupted during construction due to construction activities (roads, waterlines, gas lines, powerlines, etc.)	
	Pre-construction	Continue communications about labor needs Prioritize hiring from local job market Engage with local authorities to ensure scheduling, planning, communication, and provision of alternatives to community members dependent on services that will be interrupted Communicate with community about planned interruptions Clearly post signage and/or create a barrier around communal infrastructure that is in the path of construction vehicles or other construction activities that could damage such infrastructure	Number and types of communications, area of reach Regular worker profile documentation Number of engagement activities with local authorities Timeline of planned activities Communications materials utilized
	Construction	Continue communications about labor needs Provide accommodations and services to workers and their families	Documentation of time activities were carried out Number and types of communications activities and participants Number and types of complaints from community regarding interruption of services and response

TABLE 10: SOCIAL MANAGEMENT			
		Follow timeline of infrastructure interruptions Continue communications and update if timeline changes	Documentation of improvements in response to complaints
LABOR PROTECTION			
Protect the workforce	Planning	Prohibit forced labor and child labor at all project stages	Documentation showing commitment to and enforcement of this prohibition
	Engineering and design	Ensure main project proponent has a human resource policy Include a project labor commitment in tenders and contracts	Human resource policy Project labor commitment
	Pre-construction	Ensure non-discrimination, equal opportunity, and equal pay in hiring and employment processes Ensure workers' rights through fair terms and conditions of employment evidenced in contracts Verify third-party and supply chain companies to ensure avoidance of forced and child labor and adequate management of occupational health and safety risks	Hiring and contract documentation Number of third-party monitoring assessments of supply chain and workers
	Construction	Implement and monitor upholding of labor rights, use of contracts outlining working terms, appropriate management of overtime to avoid its excessive	Human resources procedures documentation Regular workforce profiles Documentation of monitoring activities and results Number of labor protection issues raised and resolved

TABLE 10: SOCIAL MANAGEMENT			
		use,[54] timely and relevant pay, and provision of fair, safe, and healthy working conditions Identify and respond to any issues. Incorporate any improvements into management system.	Number of improvements incorporated into management system
Direct communication between company and workers through grievance mechanism	Engineering and design through construction	Provide open, free, accessible, and anonymous communication line between workers and project employer Ensure that all communications are responded to in a timely manner, that records are kept, and that resolutions or suggestions are incorporated. Resolve grievances formally, efficiently, respectfully. Monitor to ensure that retaliation or differential treatment does not occur because of labor grievances.	Documentation of grievance mechanism system Number and types of grievances received and response Number of improvements/modifications incorporated into management practices because of grievances/communications Documentation of monitoring activities and results

Further guidance regarding social safeguards and mitigation requirements is provided in Annex 4.

[54] Excessive overtime refers to workers' hours exceeding national regulations on working time and potentially having negative consequences for workers, particularly in relation to safety and health risks. Typically, under good international industry practice, it is recommended that no more than two hours a day or 12 hours a week of overtime is worked.

TABLE 11: BIODIVERSITY MANAGEMENT			
OBJECTIVE	ACTIVITY	ACTION	INDICATOR / MONITORING
Minimize disturbance to sensitive habitats Ensure invasive species are not introduced to the area	Planning	Collect baseline data (e.g., flora and fauna, year-round and seasonal habitats, wildlife corridors) Identify sensitive receptors including legally protected area or other sensitive locations of international or regional importance such as wetland, forests with high biodiversity values, areas of critical archaeological or cultural significance, or areas of importance for indigenous peoples or vulnerable groups	Screening documentation Ecological baseline description including photographs and species lists
Address vegetation reinstatement	Engineering and design	Survey of the site prior to the commencement of site establishment to identify biodiversity and sensitive areas and to inform the implementation of targeted mitigation measures, carried out by an ecologist Minimize clearance of trees and other vegetation to the extent possible and schedule to avoid the peak period for breeding birds and fauna species Avoid fragmentation of areas of vegetation Keep working corridors as narrow as practical and marked with protective fencing where construction corridors run through dense vegetation Minimize the size of laydown areas Require appropriate procedures (licensing) for felling of trees, appropriate removal of material to avoid risks of fire Artificial lighting used on construction sites and other project facilities at night should be shaded and directed downwards to avoid light spillage and disturbance to nocturnal birds, bats, and other wildlife Prohibit excavation of sand and gravel from watercourses and lakes or other sensitive ecosystems Wherever possible use existing quarries rather than opening new ones New quarries and deposits must be supervised by the appropriate authority	Site inspection records Documentation of sensitive habitats, invasive species, and watercourses on site Identification of quarries/procurement locations for sand, gravel, etc. Evaluation of site plan and laydown areas to minimize vegetation removal, habitat fragmentation, and ecological impact Tree inventory (tree removal) Identification of approved borrow pits Borrow pit extraction and closure plan

TABLE 11: BIODIVERSITY MANAGEMENT			
	Pre-construction	Conduct pre-construction clearance surveys, to be undertaken by an ecologist Implement noise and light disturbance mitigation measures Develop habitat restoration and removal plan including invasive species procedure as appropriate Ensure imported soils and aggregates are from known sources Develop and implement soils and vegetation rehabilitation plan	Monitoring records Noise and light management plans Habitat restoration and removal plans Soil and aggregate source records Site soil and vegetation reinstatement plan
	Construction	Monitor for invasive species Use wheel wash for construction vehicles as necessary Introduce a ban on the removal of flora and hunting of wild animals and birds Educate workers about existing legislation and penalize workers involved in poaching Restrict public access to site (e.g., fencing, signs, on-site guard) Restrict noisy activities and lighting Revegetate disturbed areas with native species Use permit for borrow pit extraction sites	Monitoring records Documentation of noise and light disturbance limitation activities Documentation of control of and education about removal of flora and hunting of wild animals and birds Revegetation and reclamation/restoration efforts Community grievances Evidence of borrow pit restoration and close-out. Post closure monitoring (first after restoration is complete and again after establishment of vegetative cover)

TABLE 12: CULTURAL HERITAGE MANAGEMENT			
OBJECTIVE	PHASE	MITIGATION STRATEGIES	INDICATOR / MONITORING
Protect cultural heritage	Planning	Identify cultural heritage in the project area as well as potential for finds including abandoned buildings or cultural buildings in poor condition. Consult with relevant stakeholders to identify cultural heritage and uses. Examples include medicinal plants, shrines, graves, homes of community leaders, and sacrificial or worship sites. If critical cultural heritage exists in the proposed project area, consider alternate locations. Seek to understand more than one perspective, as perspectives may change as political interests change. Identify partners associated with nearby heritage sites that may assist in protecting the cultural value of a site.	Documentation of consultation activities Cultural heritage identified
	Engineering and design	Avoid impacts on cultural heritage through design and location alternatives Consider whether a building can be modernized/upgraded rather than replaced Engage with local community to design best management and protection measures; if impact is unavoidable, use removal as a last priority If there are cultural heritage sites used by indigenous peoples in the project area, avoid any project-related impacts to them. If unavoidable, follow agreed-upon FPIC process	Documentation of alternatives studied Documentation of engagement process Documentation of FPIC process, if applicable
	Pre-construction	Discuss management plans with local communities and negotiate approaches to management, especially if future co-management is envisioned Establish protection and management procedures and train workers Define procedures for chance finds (unexpected cultural heritage finds discovered on site, e.g., archaeological remains) during construction (chance-find procedure), and train workers on chance-find procedure When safe, provide for alternative access to cultural heritage sites or resources if construction will restrict access	Protection, management, and chance-find procedures established Number of trainings, number of participants, content Identification of alternative access routes Communications materials Numbers of communications, participants, stakeholder groups

TABLE 12: CULTURAL HERITAGE MANAGEMENT			
	Construction	Implement agreed-upon procedures and measures, monitor implementation Continue communications In the case of chance finds, consult with a qualified archaeologist or specialist before continuing work	Documentation of monitoring activities, including chance finds Numbers of non-compliance cases and resolutions Communications materials Numbers of communications, participants, stakeholder groups

TABLE 13: OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT			
OBJECTIVE	PHASE	MITIGATION STRATEGIES	INDICATOR / MONITORING
Manage health and safety	Planning	Review risks and try to control hazard at source (e.g., is working from heights or confined spaces necessary?) Review potential for site-specific risks that may pose health and safety issues (e.g., flood risk requires location of critical equipment in room other than basement, existing contamination risk) For rehabilitation projects, make all reasonable efforts to establish whether there is any asbestos or lead present in an existing structure Review construction schedule to minimize need for overtime or other worker welfare pressures Use tools to design health and safety risks (e.g., BIM) Do not utilize fragile roofing material through which workers can fall. Specify light fittings that can be lowered or maneuvered to floor or landing level for lamp or tube changing, avoid/minimize low-level pipe runs in equipment rooms Reduce maintenance requirements for project, consider removing project needs that require moving parts, and use low maintenance materials Ensure sufficient budget for good health and safety practices during construction	Hazards risk assessment record Laboratory analysis Avoid disturbance of asbestos or lead without proper testing (refer to Annex 5)

TABLE 13: OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT			
	Engineering and design	Identify risks and hazards to worker health and safety and define procedures to avoid or manage these risks Assign responsibility to design risk out to a member of the engineering team Avoid/minimize features at height on roofs, e.g., generator rooms, which require frequent access for maintenance Incorporate permanent walkways, platforms, travelling gantries across fragile roofs Review design with construction worker/team who has knowledge of the construction methods Hold design review meetings at key stages Identify potential emergency situations and develop emergency response plans Set out basic health and safety obligations in contracts Communicate residual risks to the implementation team/contractors on site (e.g., potential for hazardous materials, below-ground risks) Where excavations for basements, deep drains, etc., are necessary, particularly if close to the site boundary, designers should highlight on the contract drawings that temporary supports to all excavations must be provided by the contractor as necessary Consider designs that include measures for safe operation and maintenance, e.g., low maintenance painting specification, harness hook points for cleaning	Health and safety procedures in place Emergency response plans
	Pre-construction	Undertake simple site risk assessment on site before commencing task or activity and then organize site set-up Design the site layout (i.e., the location of structures) to avoid work, and mobile generator or other equipment movement, near overhead electric cables Communicate necessary information regarding health and safety to workers Train workers regarding health and safety procedures	Site risk assessment (s) Site health and safety plan/map showing how site is organized and where emergency provisions are located Communications materials utilized Number of communications activities, number of participants, number of different stakeholder groups Number of trainings, number of participants, content

TABLE 13: OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT			
		Review capability of the workers (is additional training required to perform the activity or use planned materials?) Has the area been demarcated to minimize risks to bystanders? Train relevant participants in emergency response Coordinate with relevant local authorities and emergency services providers Request the local utilities (electricity, telecom, etc.) to move overhead cables in advance of the main contractor arriving on site The relevant designer(s) should write to local utilities (electricity, gas, water, etc.) to request drawings/information regarding the nature and extent of the underground services in the area	Documentation of coordination with relevant local authorities and emergency services providers Maintain incident log (near misses, accidents, incidents including reportable incidents and fatalities)
	Construction	Implement health and safety procedures, including provision of PPE, correct signage, and barricades where necessary Continue trainings and communications Carry out emergency drills with relevant parties Monitor health and safety concerns and record all occurrences and non-compliance Implement basic site housekeeping measures to improve site safety (e.g., cordon off hazardous areas, set up waste management area, demarcate driving and pedestrian traffic areas, check electricity connections, keep site clear to remove slip, trips and fall hazards, lock hazardous liquids in storage room/container). Structural frames: minimize connections at height by facilitating off-site and/or ground level assembly; facilitate ground slab construction before frame erection for use by mobile work platforms for bolting up	Documentation of implementation of procedures Number of trainings, number of participants, content Communications materials utilized Number of communications activities, number of participants, number of stakeholder groups addressed Documentation of emergency drills Documentation of monitoring Number of health and safety occurrences documented and resolved

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ANNEX 1. PROJECT SCREENING CHECKLIST

QUESTION	RESPONSE (CONTEXT FOR QUESTIONS)
Project Planning	
What are the local zoning, building, and permit requirements?	
Does the project have any environmental permits? If so, which ones? And if not, what permits are required to demonstrate national compliance?	
Is the project located within a legally protected area, specifically national park or other protected areas identified by national or international law, or other sensitive locations of international or regional important such as wetland, forests (especially forests with high biodiversity values), areas of critical archaeological or cultural significance, or area of importance for indigenous peoples or vulnerable groups)?	
Has there been consideration of cultural heritage as part of the EIA process? Is the site situated within a national or internationally designated site, e.g., World Heritage Site? Has the project identified any local rights or traditions for access/use of land, e.g., land owned by government with common land rights or use of cultural heritage/resources for traditions/rituals/cultural expressions?	
Is it necessary to contract specialists to undertake any survey work (ecological, cultural heritage, land contamination, or asbestos (remediation works)?	
Is the site located in or near wetlands, designated wildlife refuges, river valleys, ridges, areas of mature woodland, or forests of known high biodiversity value?	
Are there any buildings or structures with potential cultural or archaeological significance near the site activities which may be affected adversely?	
Are agriculture or forestry resources present adjacent to site?	
Do the works require the potential use/acquisition of agricultural land (e.g., for storage/compound areas, access road construction)?	
Do the works affect forestry or woodland (e.g., do they involve removal of trees)? If so, describe the quality of the resource.	
How close are the nearest residences or communities, and what distance are they from the nearest project infrastructure (including supporting requirements such as roads or transmission line)?	
Are there any receptors close by (e.g., residential housing, offices, schools, hospitals, wildlife, protected areas, recreational areas)?	
Are there any airfields, airports, or military bases near the site?	
What is the main socioeconomic profile of the neighboring communities in terms of demographics, main sources of income, poverty levels, culture, religion, skills and education levels, social service provision, and business environment?	
Are there any livelihoods (agriculture, fishing, pastoral) likely to be impacted by project, i.e., are the activities within, adjacent to, or upstream of land occupied by indigenous peoples or vulnerable groups, including lands and watercourses used for subsistence activities such as livestock grazing, hunting, or fishing?	
Are there any surface water features near the site, e.g., wetlands, rivers, lakes? Is the site at risk of flooding?	
Are new transmission lines? Will they impact neighboring communities?	

QUESTION	RESPONSE (CONTEXT FOR QUESTIONS)
Are new access roads required?	
Who owns the land for the project?	
How is it currently being used?	
Is there a tourism industry in the region that may be impacted by the project?	
Is the area and/or site prone to landslides, flooding, heavy rainfall, earthquakes and other disasters? Are extreme weather events expected to become more frequent or severe due to climate change?	
Is the site steeply sloped? Is the soil sufficiently stable? What is its thickness, texture, drainage and topographical features?	
Are water and sanitary facilities readily available or would they need to be provided?	
Are historical and projected data available on precipitation, surface water flows, and climatic conditions?	
Can the extent and quality of groundwater supplies be determined? Are historical and seasonal data available? How are groundwater quality and quantity expected to change according to demand scenarios and climate change projections?	
What supporting/enabling activities, assets, and facilities are owned or under the control of parties contracted for the for the completion of the project (such as contractors)? If none, are the other parties aware of their responsibilities for EIA?	
Are there any associated facilities or businesses that are not part of the project and that may be separate legal entities yet whose viability and existence depend exclusively on the project and whose goods and services are essential for the successful operation of the project?	
Are there any areas and communities potentially impacted by cumulative impacts from further planned development of the project or other sources of similar impacts in the geographical area, any existing project or condition, and other project-related developments that can realistically be expected at the time due diligence is undertaken?	
What indirect effects are possible? For example, if a new facility is to be built in a forest, will the road servicing the facility encourage illegal logging and poaching?	
Land Acquisition and Involuntary Resettlement	
What is the situation regarding land ownership? Is it privately owned? If so, by whom? Government-owned? Tribal/indigenous land? Will this change because of the development?	
Does the project require resettlement in the form of physical displacement of people, economic displacement in terms of loss of assets or loss of access to assets that leads to loss of income sources or means of livelihood?	
If yes, what is the magnitude of the resettlement? Have efforts been made to avoid this, i.e., was a comprehensive assessment of alternative sites undertaken that included consideration of resettlement and other environmental considerations?	
Who is taking responsibility for resettlement, the developer or the government? If it is government-managed, is the developer collaborating with the government? Are there any rights to expropriate land?	
Where economic displacement is required, have the following been considered: the replacement property, compensation, targeted assistance, or transitional support?	

QUESTION	RESPONSE (CONTEXT FOR QUESTIONS)
Has compensation been calculated at full replacement costs for loss of assets?	
Are methods of valuation and of calculating compensation transparent and consistent?	
In the case of large resettlement requirements, has a resettlement action plan been developed?	
Has the EIA process identified any indigenous peoples, i.e., social groups with identities that are distinct from dominant groups in national societies, that may be affected by the project, and what has been done to support these groups (has the nature and degree of impact been identified, is there an action plan in place?)	
Public Consultation and Disclosure	
Have stakeholder groups (e.g., government departments, local authorities, non-governmental organizations, public) been identified?	
Is there relevant project information in the public domain that helps the community understand the risk, impacts, and benefits of the project, and has it been publicly disclosed?	
Has the necessary or any consultation with local communities taken place? Is there a need for a formal public consultation and disclosure plan? If so, is the plan in place?	
Has the EIA with a non-technical summary been disclosed to the public and project-affected groups?	
If there are any risks to the local community, have they been informed/engaged, and is the process ongoing?	
How welcome (and why?) is the project in the neighboring communities? Is further engagement required?	
Is there any intent for neighboring communities to benefit from any infrastructure improvements?	
Has a grievance mechanism been established to receive and address specific concerns raised by displaced persons and or members of host communities?	
Design Engineering	
Are the national legislative standards or international standards defined and have they been reviewed for their applicability to the project?	
Have different project alternatives been defined and considered?	
Have options for reusing spoil on site been maximized?	
Is the proposed design constructed of materials appropriate to the climate and site?	
Are erosion and flood protection measures incorporated and have they accounted for climate variability margins?	
What are the types, quantities, and source of construction materials? Where does the material come from, e.g., quarries, borrow pits, relatively undegraded forest?	
Are there any contractors working on the project? Are there any contractual environmental or social responsibilities included? Do contractors have the knowledge and skills to perform the work? What credentials do they have?	
Are there opportunities to substitute materials for lower-carbon, recycled, or local materials to reduce environmental impact?	

QUESTION	RESPONSE (CONTEXT FOR QUESTIONS)
Where will construction crew come from?	
Where will workers sleep? What types of water supply, sanitation, and solid waste disposal will be provided for workers? Have steps been taken to ensure that there is adequate safe drinking water, sanitation facilities that will not impact water supplies, and that solid waste is handled appropriately during the construction phase?	
If water supply and sanitation facilities are to be constructed, will they be designed according to the recognized best practices as outlined in the Sector Environmental Guidelines?	
If healthcare facilities are to be constructed, will their waste streams be handled as described in the Healthcare Waste Sector Environmental Guideline?	
What options are there for managing waste or reuse of materials?	
If facility use is likely to generate solid waste, does the design include space and features for source separation of recyclables and organic waste, as described in the Solid Waste Sector Environmental Guideline?	
If hazardous chemicals, radioactive waste, or other types of hazardous materials will be produced in operation, does the design include appropriate storage, handling, and disposal facilities, as described for some sectors in the Activities with Micro and Small Enterprises (MSEs) Guidelines? (These materials could include heavy metals, oil, lubricants, batteries, dyes, glue, solvents, acids, etc.)	
If cooling waters, soaking waters, or water containing suspended matter, mercury, lead, soaps, or other previously mentioned products are likely to be generated, does the design include provision for appropriate treatment, storage, and discharge, as described for some sectors in the MSEs Guidelines?	
What site preparation and construction activities will be carried out? Will there be demolition, excavation, levelling, clearing, filling, backfilling, or wetland reclamation?	
What are the local occupational health and safety requirements that pertain to construction workers and sites? If none, has a provision been made to implement the minimum practices set out in this SEG?	
How will any construction and demolition debris be disposed of?	
How will the materials be conveyed to the site and stored until they are ready for use? Is storage adequate if there are project delays? What options are there for material reuse on or off-site?	
Will toxic material be used during construction?	
For rehabilitation, does the existing facility contain hazardous materials including asbestos, lead, or PCBs (see Annex 5 and further reading on these topics)?	
Pre-construction	
Have the site layout and temporary work areas been set up to consider the most appropriate location for placement of site offices, equipment storage, hazardous waste and material facilities, concrete wash-out areas, vehicle wash-off, refueling sites, and noisy work areas relevant to nearby sensitive receptors (surface watercourses, or humans)?	
Have surface watercourses been protected along with any other sensitive receptors that may need protecting from encroachment?	
Have all the required permanent and temporary permissions been obtained?	
Are all relevant on-site specialists in place to oversee ground works (archaeology, contaminated land) as identified in project plans?	

QUESTION	RESPONSE (CONTEXT FOR QUESTIONS)
Has a landscaping plan been prepared, and does it consider sustainable landscapes, open spaces, native plants?	
Construction	
What measures are in place for monitoring environmental impacts and ensuring adherence to environmental guidelines as per the management plans, legislation, or other?	
What measures are in place for monitoring site health and safety practices and ensuring adherence to occupational health and safety requirements?	
Is there an emergency response plan (tailored to the size of the construction works and the location of first aid, emergency, and primary care facilities)?	
Have all efforts been made to minimize visual, noise, and dust disturbance to neighbors (e.g., from concrete areas, earthworks, generators)?	
Have the waste disposal areas been set up adequately, including with adequate segregation? Have all potential waste streams been identified and disposal options defined for hazardous waste where in-country facilities may be restricted?	
Has the concrete wash-out area been adequately set up and lined to prevent discharges to nearby land?	
Before any demolition work commences, have all underground services, hazardous materials, pipelines, been identified and dealt with? If demolition involves explosives, has the local community been informed?	
Have any settlement ponds or dewatering ponds been set up in area away from sensitive areas and sized appropriately to account for the weather?	
Has everyone been briefed on the environmental and social sensitivities of the work site (through site induction or other) and what to do in the event of unexpected finds (archaeological, graves, nesting birds)?	
Have vehicle movements around the site been defined to minimize impacts from emissions, mud, and noise? Have appropriate haul roads been constructed?	
Are stockpiles being adequately managed (away from surface watercourses, not too high, short-term storage)?	
Are excavations correctly managed for water ingress, and have spoil arisings been adequately defined?	
Have neighbors been informed of piling activities that may generate noise? Have specialist precautions been taken when piling near watercourses, and high groundwater?	
Have measures been put in place to minimize risk from spillage of oils, chemicals, and bitumen?	
Have traffic management techniques to manage dust, noise, and community health and safety been implemented?	
Have site-specific needs for use of oil and chemicals, working near water, appropriate use of plant and equipment, use of hand tools, working at heights, working in confined spaces, etc. been reviewed and mitigation measures defined?	
Post-construction	
Have all boreholes been decommissioned?	

QUESTION	RESPONSE (CONTEXT FOR QUESTIONS)
Have all demobilization risks from wastewater disposal of hazardous materials been addressed?	
Have all permits been closed out?	
Has all ongoing monitoring been defined and scheduled?	

ANNEX 2. DETERMINING IMPACT SIGNIFICANCE

Significance is a function of magnitude of the impact and the sensitivity of the receptors.

Magnitude can be defined by the following:

- Duration of the impact – ranging from "beyond decommissioning" to "temporary with no detectable impact"
- Spatial extent of the impact – for instance, within the site boundary to district, regional, national, and international
- Reversibility – ranging from "permanent, requiring significant intervention to return to baseline" to "no change"
- Likelihood – ranging from "occurring regularly under typical conditions" to "unlikely to occur"
- Compliance with legal standards and established professional criteria – ranging from "substantially exceeds a national standard or international guidance" to "meets the standards"

Sensitivity can be defined as follows:

- The ability of a vulnerable receptor (e.g., human, ecological) to absorb proposed changes or respond to mitigation

Significance should be attributed by considering the interaction between magnitude criteria and sensitivity criteria to determine impact, as illustrated in the significance matrix in Figure 5. The intention of mitigation should be to reduce significant impacts (substantial, major, or moderate) to acceptable ones (minor or negligible).

Where mitigation is not able to do this, the viability of the project should be considered. It is often necessary to undertake specialist studies, e.g., critical habitat assessments or hydrological studies, to understand the impacts sufficiently to make an informed determination.

FIGURE 5. EXAMPLE OF SIGNIFICANCE ASSESSMENT MATRIX

Magnitude of Impact	**Sensitivity of Receptors**			
	Negligible	**Low**	**Medium**	**High**
Negligible	Insignificant	Insignificant	Insignificant	Insignificant
Minor	Insignificant	Minor	Minor	Moderate
Moderate	Insignificant	Minor	Moderate	Major
Major	Insignificant	Moderate	Major	Critical

Source: Mott MacDonald, 2017

ANNEX 3. MINIMUM RECOMMENDED OCCUPATIONAL SAFETY AND HEALTH PRACTICES FOR CONSTRUCTION

Many developing countries have occupational health and safety (OHS) 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.

Compliance with international good practice health or safety standards should be a requirement of any construction contract. (See Box 4.) To achieve appropriate levels of health and safety management it is strongly recommended that contractors (in particular, lead contractors) be evaluated for the role based on (among other criteria) their health and safety management system or program, which may form the basis for site OHS implementation.

For smaller construction practices, implementing a fully evolved OHS management system may not be practicable; however, under no circumstances should USAID expectations for OHS management be interpreted to result in construction OHS practices less protective than the minimum practices specified in this annex, even where local requirements do not exist or are unclear.

These minimum practices also can be used as the basis for field inspection of construction activities by individuals with oversight authority who are not construction health and safety specialists. (The USAID Environmental Compliance and Management Support Program (ENCAP) *Visual Field Guide: Construction* is a simple field monitoring tool based on these minimum practices. Available online at: http://www.usaidgems.org/fieldGuides.htm (version 22 December 2011: currently under review).

It should be assumed that failure to implement these minimum practices indicates serious and significant non-compliance with any host country requirements.

The following is a list of required health and safety obligations for contractors or project implementers; it is applicable regardless of the size of the project. It is not exhaustive and should be implemented by a competent person. These obligations are key components of an accredited health and safety management system, which is often a mandatory requirement for large projects, but these obligations may also be set out in contracts for smaller size works where an accredited health and safety management system is not practicable, yet high standards of health and safety management are required.

Contractors should undertake the following actions under these topics:

1. Hazard identification and assessment
    - Collect existing information about job site hazards
    - Inspect the job site for hazards
    - Identify health hazards
    - Identify hazards associated with emergency and non-routine situations
    - Characterize the hazards, identify control measures, and implement

2. Policies and training

- Implement a project-specific written policy regarding worker health, safety, and labor that includes a commitment to comply with host country requirements and USAID requirements as a minimum and identifies responsibilities for OHS oversight
- Implement safety and health induction that explains safe work practices, the proper use of personal protective equipment (PPE), worker safety and health protections under law, and worker obligations
- Hold on-the-job health and safety briefings and train workers on their specific roles and health and safety precautions
- For positions that require specialist knowledge, provide the required training at no cost to the worker, ideally within working hours, and document it
- Set out protocols for clear communication and coordination; ensure protocols are implemented across the site and between lead contractors and sub-contractors, including, where appropriate, permit to work systems
- Implement on-site procedures that at a minimum identify the current national laws, voluntary programs, and other requirements
- Implement a defined internal system (key performance indicators) for monitoring performance including: (1) regular self-inspection of site against these standards and (2) tracking for health and safety violations, accidents, incidents, injuries, and near misses
- Define emergency preparedness and response arrangements based on the potential for accidents and emergency situations relevant to the size and nature of the action
- Develop a procedure for investigating the underlying causes of work-related injuries, ill health, diseases, and incidents, and document
- For longer-term projects, implement feedback loops for continuous improvement

3. Site management

- Ensure site boundary is well-marked and access actively controlled
- Implement good housekeeping practices and require the site to be maintained in a generally orderly condition
- Post safety signs and posters including, at a minimum, signs to mark site boundary, hardhat areas, explosion risks, and toxic hazards
- Ban smoking altogether on the site, or restrict to a designated smoking area well away from flammable materials

4. Hygiene and first aid

- Require that first aid kit(s) are on site, as is someone familiar with their use and trained in basic first aid
- Provide drinking water and sanitary facilities, including a hand-wash station
- Require all workers to have an up-to-date tetanus vaccination

5. Personal protective equipment

Require the following equipment to be supplied as specified and its use enforced:

EQUIPMENT	WHEN USE IS REQUIRED
Hardhats	Required whenever flying debris may be generated (as in demolition) or there is a risk of tools, materials, or objects falling from head height or higher
Footwear providing reasonable protection against sole puncture*	All workers at all times (For example, foam flip-flops are NOT acceptable. Sandals made from scrap tire are.)
Hard-toed boots	All workers engaged in excavation, demolition, or working around heavy equipment
Respiratory protection	2-strap N95* dust mask or better when mixing Portland cement or polishing or cutting concrete or stone. 2-strap N95 dust masks or better to ANY WORKER desiring to use them Activated-carbon half-mask respirator when using highly volatile solvents (e.g., contact cements) See respiratory protection recommendations for work involving leaded paint or asbestos, in the asbestos and lead-paint annexes to this guideline.
Hearing protection	Mandatory for all workers using powered tools or working near these operations
Safety glasses	All workers engaged in demolition, grinding, cutting, or using power tools, or working near these operations
Reflective vests	Mandatory for all individuals working in proximity to heavy equipment and during demolition

*US National Institute for Occupational Safety and Health Standard "N95" designates a respiratory protection device rated to capture at least 95% of airborne particles.

Note: toxic materials not referenced on this chart will require additional protection.

The following sections provide some guidance on good health and safety practices for common construction activities. Further references are provided at the end of this annex.

6. Working at heights (scaffolds and ladders)

- Scaffolding must be able to carry *at least* four times its maximum intended load without settling or displacement.
- Scaffolding must be on solid footing – footing may not use boxes, loose bricks, stones, etc.
- Scaffolding must have guardrails, midrails, and toeboards.
- Scaffolding is at least 3 m from any electric power line.
- Scaffolding must be inspected *each day* by a competent manager.
- Guardrails, or at least, ropes, are in place near the edge of floors and roofs where a drop is greater than 2 m. If not possible, workers in these areas are to wear a body harness and rope.
- Scaffolds should be provided with safe means of access, such as stairs, ladders, or ramps.

- Ladders should be secured against inadvertent movement.
- Timber used in the construction of scaffolds should be straight-grained, sound, and free from large knots, dry rot, worm holes, and other defects likely to affect its strength.
- Where necessary, boards and planks used for scaffolds should be protected against splitting.
- All scaffolds and appliances used as supports for working platforms should be of sound construction, have a firm footing, and be adequately strutted and braced to maintain their stability.

7. Working in excavations / trenches

- Keep spoils at least 1 m back from edge of trench
- Shore or slope back the trench wall for ANY trench 1.75 m or deeper
- Provide a means of exit (ladder, stair, ramp) at least every 10 m

8. Hazardous materials

- Prohibit use of leaded paint and asbestos in any form in new construction
- For rehabilitation or demolition, check *prior to commencing work* whether lead-based paint, asbestos (including roofing sheets), or other hazardous materials are present (refer to Annex 5 for further discussion on this point)

If present, contractors should prepare a management plan exists that specifies safe practices to be followed and determines disposal of any waste. Appropriate worker training and PPE must be provided.

A.3.1 FURTHER READING

Additional resources may be accessed via the US Occupational Safety and Health Administration (OSHA): https://www.osha.gov/shpguidelines/additional-resources.html includes further reading related to management leadership, worker participation, hazard identification and assessment, hazards prevention and control, education and training, program evaluation and improvement, and communication and coordination for contractors.

US OSHA. Recommended Practices for Safety & Health Programs in Construction (www.osha.gov/ SHP Guidelines - https://www.osha.gov/shpguidelines/docs/8524_OSHA_Construction_Guidelines_R4.pdf

International Labor Organization's Guidelines on Occupational Safety and Health Management (PDF) (2001). Free download.

International Labor Organization. Safety and health in construction: An ILO code of practice Geneva, International Labor Office, 1992
http://www.jo.undp.org/content/dam/jordan/docs/Procurement/proc-ILOsafety.pdf

OHSAS 18001 (2007). An international standard published by the British Standards Institute. Copies of the standard are available for purchase through the British Standards Institute

ANSI/AIHA Z-10 (2012). An American national standard published by the American National Standards Institute and the American Industrial Hygiene Association. Copies of the standard can be purchased through ANSI webstore.

National Safety Council's Journey to Safety Excellence (JSE). Requires registration to access some of the tools and guidance materials.

ANNEX 4. SOCIAL SAFEGUARDS

This annex provides further guidance to ensure implementation of social safeguards identified in the social impact assessment. The topics covered here are:

- Displacement and resettlement
- Sustainable livelihoods
- Community health and safety
- Indigenous peoples
- Cultural heritage

A.4.1 DISPLACEMENT AND RESETTLEMENT

If displacement does occur, a resettlement plan developed through direct consultation with affected and host communities should be implemented. A resettlement grievance mechanism directed to the communities affected by displacement should be made available. This mechanism should allow for affordable and independent customary, administrative, judicial, or alternative options to resolve disputes.[55]

A.4.1.1 RESETTLEMENT PLANNING

All projects that cause physical or economic displacement should include a plan for resettlement specifying the process to be followed and the actions to be taken to resettle and restore livelihoods of affected people and communities. This plan should at least ensure restoration of socioeconomic conditions to the standards existent before the project, considering not only direct, but also induced effects of the project (for instance, competition, inflation, changes in support and service networks). Negotiated settlements are always preferred.

All affected people should be consulted and involved in the planning to guarantee that the proposed actions are appropriate and sustainable.[56]

The resettlement plan should address at least the following: (1) how public consultation will be carried out and incorporated; (2) who is eligible (identification, analysis, mapping, and prioritization); (3) identification of vulnerable groups and specific considerations for them; (4) what process negotiations will follow and how affected populations will be able to choose best alternatives among options; (5) how valuations of assets will be calculated; (6) how compensation will be carried out and/or relocation will occur; (7) what livelihood restoration activities will be carried out; (8) what grievance mechanism will

[55] USAID. 2016. Guidelines on Compulsory Displacement and Resettlement in USAID Programming. Washington, DC: USAID. Available at: http://pdf.usaid.gov/pdf_docs/PBAAE440.pdf
[56] Ibid

exist and framework for it to function; (9) how resettlement will be monitored and evaluated; (10) and staffing needs, timeline, and financial resources.[57]

A.4.1.2 LIVELIHOOD RESTORATION

In cases where there is economic displacement, it is important to understand the nature of the livelihoods that have been affected. The project implementers will need to fully compensate persons affected and restore these livelihoods to their prior standards, considering long-term viability, or provide access to an alternative livelihood. Issues can arise if there is failure to calculate the actual impact of livelihood losses, including loss of ecosystem services.[58] The sustainable livelihoods framework suggests analyzing human capital, natural capital, financial capital, physical capital, and social capital to better ensure true sustainable livelihoods.[59]

This restoration process is an opportunity to not only restore livelihoods to their previous states but improve them as well. Trainings, capacity building, investment in local enterprises, enhancement of local production: these are options that will create long-lasting improvements in the livelihoods of the affected community members, as aligned with USAID's general mission. Consultation is essential for defining what actions will be taken and ensuring they are appropriate.[60]

A.4.1.3 RELOCATION

When relocation is necessary, the location and/or structures chosen for relocation should be based on social networks, access to services, access to resources, quality, safety, size, number of rooms, affordability, habitability, cultural appropriateness, accessibility, security of tenure, and location. Public consultation is essential to ensure appropriate choice of location and structures. Financial assistance should be given to cover any costs incurred during the relocation process. Receiving communities should be consulted and engaged with throughout the process so as to avoid, minimize, and mitigate conflicts.[61]

A.4.2 SUSTAINABLE LIVELIHOODS

This section covers community well-being and livelihoods, ranging from protection from project interference in the short and long term to enhancement opportunities that might improve the communities' livelihoods in the long-term.

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[57] Adapted from International Finance Corporation - IFC. 2002. Handbook for Preparing a Resettlement Action Plan. Washington, DC: IFC. Available at: http://www.ifc.org/wps/wcm/connect/22ad720048855b25880cda6a6515bb18/ResettlementHandbook.PDF?MOD=AJPERES and USAID, 2016. Op. cit.

[58] Rowan, M. 2017. Aligning resettlement planning and livelihood restoration with social impact assessment: a practitioner perspective. In: Impact Assessment and Project Appraisal. Volume 35, 2017 - Issue 1: Displacement, resettlement and livelihoods.

[59] Department for International Development - DFID. 2001. Sustainable Livelihoods Guidance Sheets. London, UK: DFID. Available at: http://www.efls.ca/webresources/DFID_Sustainable_livelihoods_guidance_sheet.pdf

[60] USAID, 2016. Op. cit. and Rowan, 2017. Op. cit.

[61] USAID, 2016. Op. cit.

Project interference relates to construction activities that might bother the surrounding community from direct construction of project infrastructure or use of project equipment and interference as a result of pressure on essential services and interruption in these services.

Where possible, project implementers should implement livelihood enhancement measures, as part of the goal of encouraging sustainable development of the communities where the project is located, and as part of USAID's mission, core values, and resettlement policy.[62]

USAID's Democracy, Human Rights, and Governance Strategy presents human rights as a stand-alone development objective and supports "asserting access to basic services for everyone and countering discrimination that may prohibit access to those services." This objective should be considered during all interactions with the community.

A.4.1.1 PROTECTION FROM PROJECT DISTURBANCE

Temporary disturbance from project activities such as dust, presence of workers on private land, noise, and restricted access to resources should be identified prior to construction and avoided, minimized, and mitigated as much as possible. Maintenance, alternative technologies, training, scheduling, and communication are important aspects of protection from temporary project interference.[63]

Long-term interference resulting from project activities, such as contamination of water, land, or air and exclusion from resource areas, should be avoided, minimized, mitigated, controlled, and compensated for. Alternative solutions should be studied, impacts should be understood, and monitoring and protection measures should be put in place.

Presence of workers in the community may cause perceived or adverse effects, such as increased perception of or occurrence of violence, or exposure to communicable diseases. To diminish these, training of the workforce and communication with the communities is essential.

A.4.1.2 INFRASTRUCTURE USE AND INTERFERENCE

Care must be taken by the project to protect local infrastructure and services from impacts of the project. Infrastructure can be affected in two main ways: (1) pressure from new residents (workers, their families, people interested in new opportunities) and (2) interruption of services due to construction activities (water, gas, transmission lines, roads).

For the first instance, the project implementer should ensure direct and appropriate communication to inform surrounding communities of the real opportunities in the area and discourage people from moving to the area. It should also ensure services and accommodations for workers and their families

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[62] Ibid.
[63] International Finance Corporation – IFC. 2007b. Environmental Health and Safety Guidelines: Community Health and Safety. Washington, DC: IFC. Available at: http://www.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2BCommunity%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES

either at the worksite or through partnerships with local services, without causing unplanned pressure on these services.

For the second instance, the company should interact directly with local authorities to ensure scheduling, planning, communication, and alternatives to community members dependent on the services being disrupted. The timeline should be strictly followed and communication should be consistently updated.

A.4.2.3 ENHANCEMENT OPPORTUNITIES

"A livelihood comprises capabilities, assets, and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base."[64] The livelihood framework is a people-centered framework by which livelihoods are understood and the impacts on them are identified. It emphasizes participation and support of people in achieving their livelihood goals. Enhancement opportunities encompass human capital, natural capital, financial capital, physical capital, and social capital.[65]

For a construction project, depending on the size and scope, analysis through this framework is not necessarily required; however, the possibility of implementing livelihood enhancement measures that reflect this understanding of livelihood and these capitals is important to consider.

Positive impacts may result from the construction project, from employing the workforce and purchase of goods and supplies, for example. These influence the local economies and job market in a positive way. However, direct investment and planning on the part of the project implementer and contractors can influence long-term and sustainable benefits. A commitment to sourcing services and materials locally and hiring local workers is a first step toward ensuring benefits to the community.

Further possible enhancement opportunities include development actions that incorporate communities' needs and provide benefits such as training, capacity building, investments in local services and equipment, education, and health services. As for all activities engaged in by the project implementer or contractor, the public's perceptions should be considered, including cultural differences and gender considerations.[66]

A.4.3 COMMUNITY HEALTH AND SAFETY

A.4.3.1 RISKS AND HAZARDS

Special attention to disease exposure should be given. Exposure may be related to water, vectors, contaminants, or interactions between people. Health and safety risks stemming from effects on ecosystem services must also be addressed by the project implementer. Risks might result from changes

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[64] DFID, 2001. Op. cit.
[65] Ibid.
[66] Rowan, 2017. Op. cit. and USAID, 2016. Op. cit.

in land use or natural buffer areas that cause increased vulnerability to floods or landslides, for example. These are also related to access to clean and healthy resources such as water and air. The project implementer should ensure that steps are taken not to contaminate those resources utilized by the communities).[67]

A.4.3.2 TRAININGS

Trainings regarding community health and safety should be implemented for both workers and communities, including representatives and local authorities, with topics depending on the risks identified. These trainings work to prevent unnecessary risk to communities. Workers should be trained regarding contact and interaction with communities as well as their activities to ensure they do not cause unnecessary impacts to surrounding communities. Communities should be trained about the existing risks and the actions they can take to prevent contact, as well as signs to be aware of. Disease awareness, hygiene and self-protection, maintenance, handling procedures, and more should be a part of the training process.

A.4.3.3 EMERGENCY PREPAREDNESS

An important component of safeguarding communities is emergency preparedness. Emergency plans should be developed that identify communication flows, responsibilities, and materials/resources. When necessary, local authorities should be involved in the planning and implementation. Those involved should be trained, and drills should be carried out when necessary. Community members should be aware of emergency plans, actions that they are responsible for, and emergency warning signs.

A.4.3.4 SECURITY PERSONNEL

It is important for the project implementer to understand the connection between security personnel and community relations, to ensure that the use of security (when necessary) does not create tension with the surrounding community. Important steps in ensuring safe use of security forces include verification of risk to local community, including vulnerable groups that might be more susceptible, management and mitigation of this risk, management of third-party workers and companies, direct engagement with security workers, use of proportional responses (use of force only to defend or prevent escalation), and prompt investigation of and response to any allegations.[68] Specific training regarding human rights norms and practices is recommended as part of USAID's Strategy on Democracy, Human Rights, and Governance.[69] Direct consultation and engagement with the community is one way to assess the risks that might be involved in hiring security personnel as well as providing the community with a grievance mechanism through which complaints can be filed.

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[67] IFC, 2007b. Op. cit. and IFC, 2012. Op. cit.
[68] International Finance Corporation. 2017. Good Practice Handbook. Use of Security Forces: Assessing and Managing Risks and Impacts. Guidance for the Private Sector in Emerging Markets. Washington, DC: IFC. Available at: https://www.ifc.org/wps/wcm/connect/ab19adc0-290e-4930-966f-22c119d95cda/p_handbook_SecurityForces_2017.pdf?MOD=AJPERES
[69] USAID. 2013b. Strategy on Democracy, Human Rights and Governance. Washington, DC: USAID. Available at: http://pdf.usaid.gov/pdf_docs/pdacx557.pdf

A.4.3.5 MONITORING

Healthy communities are more likely to benefit from other community-based development projects, such as education and jobs. Any health and safety incidents in the community should be recorded and monitored. There are effects from large-size projects (disease, for example) that are indirect and appear over time; therefore, it is important to set up a monitoring system so these might be identified and the project implementer act to resolve them if possible. Individual incidents should also be recorded so the project implementer can identify internal non-conformance with healthy and safety procedures.

A.4.4 INDIGENOUS PEOPLES

Due to their specific connection to their lands and resources, indigenous peoples are often more vulnerable to changes to land and resources that affect their language, culture, religion, spiritual beliefs and institutions. They are therefore often more vulnerable to the risks and severity of impacts of construction projects than non-indigenous communities. These may mean loss of identity, culture, traditional lands, and natural, resource-based livelihoods.

Impacts on indigenous peoples should be avoided as much as possible. In the event of unavoidable adverse impacts, the company should minimize, restore, and/or compensate those impacts through culturally appropriate measures.

Culturally appropriate and sustainable development benefits should be considered as well. These opportunities should aim to address goals and issues identified by the indigenous peoples and include actions to improve standard of living and increase long-term sustainability of natural resources they use.

The entire process, from identifying impacts to defining measures, should be done in collaboration with the indigenous peoples through direct consultation. Indigenous peoples have the right to free, prior, and informed consent (FPIC) to the decisions that affect their land, livelihoods, lives, resources, or territories.

According to the UN Permanent Forum on Indigenous Issues, due to the diversity of the term, there is no official definition of indigenous peoples.[70] The following make up modern understandings of this term:

- Self-identification as indigenous at the individual level and accepted by the community as a member
- Historical continuity with pre-colonial and/or pre-settler societies
- Strong link to territories and surrounding natural resources
- Distinct social, economic, or political systems
- Distinct language, culture, and beliefs
- Non-dominant groups in society
- Resolve to maintain and reproduce their ancestral environments and systems as distinctive peoples and communities.

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[70] United Nations – UN. No date. Factsheet: Permanent Forum on Indigenous Issues. Available at http://www.un.org/esa/socdev/unpfii/documents/5session_factsheet1.pdf

Countries may have official definitions of indigenous peoples for the implementation of national legislation.

A.4.4.1 GUIDING PRINCIPLES

Most countries have national laws pertaining to indigenous peoples and how project developers should interact with these peoples. Aside from these, different international conventions ensure specific rights to indigenous peoples. These principles may include protection of human and equal rights of indigenous peoples, including rights to self-identify, to participate, and to develop their own political, social, and economic systems; requirement for prior consultation and FPIC; respect of land rights and use of natural and cultural resources; responsibility to ensure equal access to services, employment, and training opportunities; and promotion of cultural issues and rituals.[71]

The UN identifies guiding principles that should be followed when working with indigenous peoples. The applications of these to construction projects are as follows:

Self-determination, self-government, autonomy, self-management: Control over or input into services and mitigation measures; recognition and maintenance of traditional decision-making bodies/representation

Lands and territories: Where lands are lost for the development of projects, restitution or redress is recognized; indigenous peoples should determine the activities that take place on their lands; environmental impacts and impacts on cultural sites should be avoided

Natural resources: Indigenous peoples should be ensured rights to the resources on their lands; in the event of extraction activities or use of resources, indigenous peoples should have the right to benefit-sharing.

Traditional knowledge, intellectual property, intangible heritage, and cultural expressions: Indigenous peoples have the rights to control, own, and manage traditional knowledge, creativity, and cultural expressions.

Health, social security, education, capacity development, and vocational training: Indigenous peoples have the right to equal access to services, measures, and programs. These should be culturally appropriate and relevant.[72]

A.4.4.2 CONSULTATION

Consultation, especially early consultation, is necessary to build the relationships needed to engage with indigenous peoples throughout the development of a project. Consultation should begin prior to initial construction, with community or representatives' involvement in the project design, choice of materials,

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[71] International Labor Organization. 1989. C169 - Indigenous and Tribal Peoples Convention. Geneva: ILO. Available at http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169 and United Nations – UN. 2007. The United Nations Declaration on the Rights of Indigenous Peoples. Geneva: UN. Available at http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

[72] Adapted from United Nations Development Group - UNDG. 2009. Guidelines on Indigenous Peoples Issues. Geneva: UN. Available at https://undg.org/wp-content/uploads/2016/10/UNDG_guidelines_EN.pdf

communication tools and methodologies, where and when consultations should take place, language to be used, and format of the process. It is important to understand and incorporate traditions into and address hierarchy (such as who should be consulted first, for example) in the consultation process. Culturally appropriate tools, language, and approaches are essential.[73] The information obtained through consultation should be used to ensure appropriately designed and implemented project design, mitigation, and monitoring actions. The company should have cultural awareness and develop programs with workers to ensure appropriate interaction with indigenous peoples.[74]

A.4.4.3 FREE, PRIOR, AND INFORMED CONSENT (FPIC)

There is no official procedure that FPIC must follow; however, the company and indigenous peoples should agree on a process at the beginning stages and it should be undertaken as an ongoing process that accompanies all stages of the construction process.[75]

Oxfam provides the following definitions for FPIC:

- Free "from force, intimidation, manipulation, coercion, or pressure by any government or company"
- Prior "to government allocating land for particular land uses and prior to approval of specific projects"
- Informed with "all the relevant information to make [a] decision about…the project" in a language that is easily understood and that is independent and unbiased
- Consent "to give or deny…agreement for a project to proceed."[76]

A.4.4.4 RESETTLEMENT AND RELOCATION OF INDIGENOUS PEOPLES

In addition to the recommendations on resettlement and relocation above, when indigenous peoples are unavoidably impacted, the project implementer should ensure identification of land rights and resource use by indigenous people. Appropriate compensation should be given with focus on culturally appropriate sustainable development when possible, such as land-based compensation, continued access to resources, and/or shared benefits provided by the project.[77]

Relocation should be avoided as much as possible, due to the specific links of indigenous peoples' livelihoods to land and natural resources. If relocation is unavoidable, FPIC should be given. Fair and acceptable compensation should be provided.[78]

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[73] IFC, 2007a. Op. cit.
[74] UNDG, 2009. Op. cit.
[75] Oxfam Australia. 2010. Guide to Free, Prior and Informed Consent. Australia: Oxfam. Available at: https://www.culturalsurvival.org/sites/default/files/guidetofreepriorinformedconsent_0.pdf
[76] Ibid.
[77] UNDG, 2009. Op. cit.
[78] Ibid.

A.4.5 CULTURAL HERITAGE

When critical cultural heritage (internationally recognized heritage or legally protected cultural heritage areas) is present, the project must identify measures that avoid or minimize removal, alteration, or damage to this cultural heritage. Where impact on critical cultural heritage is unavoidable, the project implementer should conduct good faith negotiations with the communities to agree on and implement processes and procedures for mitigation, removal, replication. and/or compensation.[79] If the project would cause unavoidable impact on cultural heritage essential to identity, culture, or spiritual or ceremonial practices of indigenous peoples, USAID should follow the guidelines regarding obtaining FPIC from the affected indigenous peoples.[80]

Consultation with the local community, as well as with authorities involved in cultural heritage protection, is necessary to understand where cultural heritage might exist, how the community uses and accesses the heritage, and how the project could affect it. This is especially important in regions or countries where there is little documentation of cultural heritage. In these situations, consultation constitutes a way of identifying, documenting, and understanding the significance of cultural heritage and evaluating impacts the project may have on a community. Consultation should help ensure incorporation of the community's views on cultural heritage into project management procedures.

Consistent communication and information disclosure regarding the cultural heritage protection process should be provided to the local communities.

[79] IFC, 2012. Op. cit.

ANNEX 5. HAZARDOUS MATERIALS

A.5.1 LEAD

General. Lead is a soft, dense, naturally occurring metal historically used for lead-based paint, piping, and miscellaneous products from jewelry to fishing tools. Exposure to lead and lead products was discovered to be hazardous, causing lead poisoning. This led to the US ban of lead paint in 1978.

Lead and Health. Exposure to lead can affect anyone; however, it is considered highly hazardous to pregnant women and children. For children, lead poisoning causes behavioral and learning problems, slowed growth, anemia, lowered IQ, hyperactivity, and hearing problems. These problems can begin in the womb if a woman is exposed to lead while pregnant. Lead poisoning for adults can result in cardiovascular effects, increased blood pressure, decreased kidney function, and reproductive problems (male and female), among other impacts. Lead poisoning can occur by ingestion of food or water containing lead, using dishes/glasses that contain lead, or inhaling lead dust. Historically, lead paint was commonly used for the interior and exterior of buildings. As the paint deteriorates, anyone who contacts the surface is at risk of being poisoned.

The Risks of Renovation/Rehabilitation Activities. Renovation or rehabilitation can disturb surfaces covered with leaded paint, generating hazardous lead-containing paint flakes and dust, and may require handling of lead piping. These activities put those around the area at risk of lead poisoning via inhalation or ingestion.

Protecting workers and non-workers from lead poisoning during rehabilitation or renovation is important. Keeping the work area secure and tools and equipment separate minimizes the risk of spreading lead dust beyond the work area. Consideration should also be given to disposal practices given the characteristics of each potential disposal site and the waste disposal facilities available in the country.

A.5.2 ASBESTOS

General. Asbestos refers to a group of related silicate minerals characterized by long, thin, fibrous crystals that are resistant to heat and corrosion. Its fibers add strength to other materials and act as good thermal and electrical insulators. For these reasons, asbestos was widely used between the late 1940s and early 1970s in pipe and structural insulation, floor tiles, building materials, heat-resistant materials, and friction products. Material that contains 1% or more of asbestos is referred to as asbestos-containing material (ACM). Friable, indicates that when dry and under slight pressure, the material can crumble, pulverize, or become a powder. Friable ACM poses the highest potential for health risks. Due to health risks, starting in the 1970s through the late 1980s, the US banned a few of the uses of asbestos, mostly in construction (pipe and block insulations, spray-applied surfacing, insulation, and fireproofing materials). In the early 1990s, a court appeal overturned the banning of all asbestos-containing products and allowed for its use in materials such as cement pipe, cement board, disc brakes, roofing materials, and other select non-friable types of ACM.

Asbestos and Health. Inhalation of asbestos fibers can cause many serious health effects, including lung cancer, mesothelioma, and asbestosis, a debilitating and sometimes fatal build-up of fibrous scar tissue in the lungs. Higher concentrations and prolonged exposure make these effects more likely, and often disease symptoms take many years to develop after exposure.

The Risks of Renovation/Rehabilitation Activities. Asbestos is only dangerous when free-floating fibers are released into the air. Asbestos that is "locked in" to a material like roofing sheets or linoleum is not dangerous, except when these materials are cut, scraped, or broken up. When this happens, as in renovation activities, asbestos fibers can be released to the air, presenting a hazard to anyone in the vicinity. Asbestos pipe or boiler insulation can be dangerous even when in place, if it can be easily damaged or disturbed. Asbestos can also exist behind walls and in materials such as mastic and adhesives. Air currents are sufficient to dislodge asbestos fibers from loose or damaged insulation.

A.5.3 LEAD AND ASBESTOS REHABILITATION PRACTICES

Managing Hazards in Rehabilitation: First Steps. Managing lead and asbestos hazards in rehabilitation begins with three steps: checking for presence of leaded paint, leaded pipe, or ACM; determining the need to disturb the paint/material; and determining the standards to apply.

Minimum Recommended Practices for Rehabilitation Works Involving Lead Paint or Asbestos. Workers must be educated on lead paint and asbestos hazards including the proper procedures for identification, removal, handling, managing, and disposal. Proper personal protective equipment (PPE) is required and should be provided for workers based on conditions and task assignments. PPE for working with either lead paint or asbestos includes an approved half or full facepiece respirator, protective clothing consisting of effective coveralls, a head coverage, and, specifically when working with asbestos, foot covers. Workers should also follow good work behavior and safe work practices such as not eating, smoking, or drinking while working in a hazard area; washing hands and face every time after stopping work; cleaning clothing with wet cleaning; vacuuming clothing with a high-efficiency particulate air (HEPA) filter before removing when leaving the work area; changing clothes; and ideally, showering before going home.

If undamaged ACMs are present but not a planned part of the renovation, efforts should be undertaken to prevent them from being damaged or disturbed. If the materials are of a nature or in a condition that can easily release asbestos fibers, these should be addressed during the rehabilitation.

The work area should be isolated and contained, so that no dust or debris can escape. In addition, work practices should include posting of hazard signs around the work area and turning off all heating and air conditioning systems. Windows should be kept closed and the work area screened off with plastic or other impermeable material and tape.

For Work Involving Lead Paint: Minimize dust and hazard. Wherever possible, workers should avoid scraping or sanding lead paint surfaces, but if surfaces must be disturbed, they should wet the surface before beginning and wipe with a damp cloth immediately after. When separating components, scoring the paint before, and prying or pulling the components apart rather than breaking them also minimizes dust. Methods that are too hazardous and are prohibited include open flame burning or torching; using a heat gun at temperatures greater than 1100°F; and sanding, grinding, planing, needle gunning, or blasting with power tools and equipment not equipped with a shroud and HEPA vacuum attachment.

If Drilling, Cutting, or Removing Asbestos Roofing Sheets or Siding: Minimize breakage, drilling, and cutting to the degree possible. Close windows and doors leading into the structure and nearby structures. If doors or windows do not close, seal with plastic sheeting. Clear the worksite of all workers except those involved in the roofing sheet or siding work and stop other activities. Wet the

affected area thoroughly with a detergent solution. If the operation may result in heavy vibration or cracking of the whole sheet, wet the whole sheet. Lower pieces gently to the ground; do not drop.

Removing or Otherwise Disturbing Old Linoleum, Pipe/Boiler Insulation, or Ceiling Tiles: If it is feasible to cover over old linoleum or similar materials rather than to remove it, do so. Similarly, damaged asbestos pipe insulation can be wrapped or patched with a non-asbestos material. Permanently label any covered asbestos. Work wet, and by hand. Wet the material thoroughly with a detergent solution. Do not use a powered sander, sand-blaster, or powered wire brush to remove materials.

Cleaning Up: Collect and store all debris and waste in a strong sealable container until disposal. Clean up thoroughly at the end of each work day. Do not dry-sweep the area. Instead, wet thoroughly and then sweep. Dispose of solid waste as safely as possible in the local context, ideally to a qualified solid waste landfill. Finish by wiping all surfaces with a damp cloth, rinsing frequently. Damp-mop around the containment area. If local rules allow, dispose of rinse and waste water by filtering and dumping down a toilet. If not, store the water in a drum. When finished, remove plastic sheets, and dispose as lead/asbestos waste.

A.5.4 POLYCHLORINATED BIPHENYLS (PCBS)

General. PCBs are a group of tasteless, scentless, man-made organic chemicals consisting of carbon, hydrogen, and chlorine atoms. PCBs range in consistency from an oil to a waxy solid and in color from light-colored liquids to yellow or black waxy solids, and they can vary in toxicity. The most common industrial trade name for PCBs is Aroclor.

PCBs and Health. It is known that PCBs demonstrate adverse health effects; they have been shown to cause cancer, as well as other serious non-cancer health effects in animals. The non-cancer health effects include effects to the immune system, nervous system, reproductive system, endocrine system, and many others. Studies show evidence for potential carcinogenic and non-carcinogenic effects of PCBs in humans. PCBs are taken up by small organisms and fish, as well as aboveground portions of plants and food crops. Therefore, humans that ingest fish may potentially be exposed to PCBs via biomagnification.

Industry and PCBs. PCBs were manufactured in the United States from 1929 until 1979, when manufacturing of PCBs was banned in the US. PCB production was banned by the Stockholm Convention in 2001. PCBs were used in hundreds of industrial and commercial applications, because of their non-flammability, high boiling point, chemical stability, and electrical insulating properties. Industrial and commercial applications include electrical, heat transfer and hydraulic equipment; plasticizers in paints, plastics, and rubber products; pigments, dyes, and carbonless copy paper; and other industrial applications.

PCBs do not easily break down in the environment, and may be present in the following materials produced before the manufacturing bans: transformers and capacitors; electrical equipment including voltage regulators, switches, re-closers, bushings, and electromagnets; oil used in motors and hydraulic systems; old electrical devices or appliances containing PCB capacitors; fluorescent light ballasts; cable insulation; thermal insulation material including fiberglass, felt, foam, and cork; adhesives and tapes; oil-based paint; caulking; plastics; carbonless copy paper; floor finish.

PCBs in the Environment. PCBs can still be released into the environment from illegal dumping of PCB waste, leaking electrical transformers, poorly maintained hazardous waste sites, disposal of PCB-containing products into landfills not designed to receive hazardous waste, or burning of PCB-containing

wastes in incinerators not designed to handle PCB waste. PCBs can remain in air, soil, and water for long cycling periods; in general, the lighter the PCB form, the further the PCB-containing material can be transported by water or through ground.

Managing Hazards in Rehabilitation: First Steps. Managing PCB hazards in rehabilitation begins with three steps: sample materials for presence of PCBs in building materials and equipment; determine the need to disturb the material/equipment, and determine the standards and any disposal requirements that may apply.

Minimum Recommended Practices for Rehabilitation Works Involving PCBs. First, workers must determine if it is necessary to disturb the PCB-containing or PCB-contaminated material (whether materials are PCB-containing versus contaminated materials is based on the measurable concentration of PCBs). If disturbance is necessary, at a minimum, workers must wear PPE that is appropriate for handling the encountered type of PCB-containing or PCB-contaminated material. Methods of disturbance and PPE will differ depending on the material encountered. All PCB-containing or PCB-contaminated material is considered a PCB hazardous waste, and must be disposed of as such.

A.5.5 INSECTICIDES AND PESTICIDES

General. Pesticides are used to prevent, destroy, repel, or mitigate any pest and may be found in construction materials, applied on-site to prevent infestations, or used for other applications during construction. Insecticides are pesticides that prevent, destroy, repel, or mitigate one or more species of insect. Pesticides are considered hazardous materials, in cases where a pesticide is recalled or an unused stock of pesticide products is being collected and managed as part of a waste pesticide collection program.

Pesticides/Insecticides and Health. Humans can be poisoned by pesticides, and the risk of negative health effects increases with the toxicity of the pesticide and the exposure time. In general, sensitive populations, such as children and pregnant women, are more likely to be affected by pesticide exposure. Pesticide poisoning can be minimized by following a pesticide's specific usage instructions, wearing proper protective equipment, and following a pesticide's specific label cautions. Symptoms of pesticide poisoning can be categorized as either topical or systemic, and can range from mild skin irritation to a coma, even death. In the US, insecticides cause the greatest number of poisonings, because of acute exposure to the two most frequently used insecticides, organophosphates and carbamates. Organophosphates and carbamates disrupt the nervous system of insects, birds, fish, humans, and other mammals. Insecticides can be toxic when ingested or inhaled, or if they come into contact with the dermis or eyes.

Pesticide/Insecticide Use. Pesticides are commonly used in agricultural, commercial, industrial, household, and public health applications. Pesticides are applied with various delivery systems, for example, sprays, slow-release diffusion, baits, aerosols, or liquid application. Pesticide mobilization can occur via runoff, subsurface flow, or atmospheric deposition. Pesticides can be highly toxic to aquatic and bird species and can even affect predators that prey on those species.

Managing Hazards in Rehabilitation of Infrastructure: First Steps. Management of pesticide hazards in rehabilitation of infrastructure begins with three steps: check for presence of pesticide application in work area, check for pesticide containers, take precautions with unlabeled containers,

determine the need to disturb the material or area suspected to contain pesticides, and determine the standards and any disposal requirements that may apply.

Minimum Recommended Practices for Rehabilitation Works Involving Pesticides. Pesticides can be mislabeled as non-hazardous, misleading the user. Pesticide labels can also be removed from the original container. Therefore, workers should always handle containers of unidentified material using a precautionary approach. Workers must determine if it is necessary to disturb the area suspected of containing pesticides. If disturbance is necessary, at a minimum, workers must wear PPE that is appropriate for handling the encountered type of pesticide. The most common points of entry for pesticide poisoning are inhalation through nose and mouth and absorption through the skin and other mucous membranes (eyes, nose). General worker hygiene is required (washing hands before eating/smoking) to ensure that accidental ingestion is not likely. All pesticide material is considered a hazardous waste, and must be disposed of properly.

A.5.6 UNIVERSAL HAZARDOUS MATERIALS

In the US, universal hazardous materials include pesticides, batteries, mercury-containing equipment (MCE), and mercury lamps.[81] Pesticides are discussed in the previous section; therefore, this section will discuss batteries, MCE, and mercury lamps. The handling and disposal of these materials is dependent upon condition and use, but they may not be disposed by general waste disposal routes. Further detail on each type of material is provided below.

Batteries. Batteries are devices containing one or more electrically connected electrochemical cells (anode, cathode, and an electrolyte). They are designed to deliver, store, and receive electric energy. Used or unused batteries are considered hazardous material as soon as they are no longer being used for the purpose for which they were designed.

MCE. MCE is a device or piece of a device that contains mercury that is integral to the device's function. MCE includes thermostats but excludes batteries and lamps. If the mercury component has been removed from an MCE, the device is no longer considered a hazardous material. An MCE that has not yet been discarded is not considered a hazardous material. Not all MCEs are considered hazardous material. A used or unused MCE is considered a hazardous material as soon as it is disposed of.

Mercury Lamps. A mercury lamp is defined as the bulb or tube portion of a light. High-intensity discharge, fluorescent, mercury vapor, neon, metal halide, and high-pressure sodium lamps are examples of common mercury lamps. A used or unused mercury lamp becomes a universal hazardous material as soon as it is disposed of.

A.5.7 REFERENCES

US EPA websites for hazardous materials information:

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- US EPA. "Hazardous Waste." Available at https://www.epa.gov/hw

[81] Department of Toxic Substances Control. January 2010. Universal Waste Fact Sheet. Available at https://www.dtsc.ca.gov/HazardousWaste/UniversalWaste/upload/UW_Factsheet1.pdf

- US EPA. "Lead." Available at https://www.epa.gov/lead
- US EPA. "Polychlorinated Biphenyls (PCBs)." Available at https://www.epa.gov/pcbs
- US EPA. "Pesticides." Available at https://www.epa.gov/pesticides

LEAD REFERENCES:

Lead Paint Test Kits:

- US EPA. "Lead Test Kits." Available at https://www.epa.gov/lead/lead-test-kits

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- US Department of Housing and Urban Development, 2001. Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work. HUD-1779-LHC. March. Available at www.hud.gov/offices/lead/training/LBPguide.pdf
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- US EPA, 2011. Steps to Lead Safe Renovation, Repair and Painting. EPA-740-K-11-001. October. Available at https://www.epa.gov/sites/production/files/2013-11/documents/steps_0.pdf

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- US EPA. "Safe Work Practices." Available at https://www.epa.gov/asbestos/safe-work-practices
- US EPA. "US Federal Bans on Asbestos." Available at https://www.epa.gov/asbestos/us-federal-bans-asbestos

- US OSHA. "Asbestos Hazards." Available at https://www.osha.gov/SLTC/asbestos/hazards.html
- US OSHA. "Work practices and engineering controls for Class I Asbestos Operations." Available at www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10868

POLYCHLORINATED BIPHENYLS (PCBs) REFERENCES:

Further information on topics in this annex:

- US EPA. "Health Effects of PCBs." Available at https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs#healtheffects
- US EPA. "Laws and Regulations." Available at https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs#laws
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Guidance on safe abatement of PCBs:

- US EPA. "Steps to Safe PCB Abatement Activities." Available at https://www.epa.gov/pcbs/steps-safe-pcb-abatement-activities

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ANNEX 6. GLOSSARY OF TERMS

TERM	DEFINITION
AREA OF INFLUENCE	The area over which the impacts of a project are likely to be felt, including all its related or associated (where applicable) facilities, such as transmission line corridors, access roads, accommodation facilities (where required), as well as any reasonably foreseen unplanned developments induced by a project or cumulative impacts.
ASSOCIATED FACILITIES	Facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
ASSIMILATIVE CAPACITY	The capability of a receptor to absorb impacts or to recover from impacts.
BASELINE DATA	Data that describes existing physical, biological, socioeconomic, health, labor, and cultural heritage conditions, or any other variable considered relevant before project development.
BIODIVERSITY	Variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.
CHANCE FINDS	Archaeological or cultural sites and artifacts, including such items as ceramics, tools, buildings, and burials, previously unrecognized in baseline studies that are discovered during the course of exploration activities.
CLIMATE CHANGE ADAPTATION	Refers to a system or a community's ability to adapt to climate change effects that are already occurring or can be expected to occur soon. The goal of climate change adaptation is to reduce communities' vulnerability to the harmful effects of climate change. To do this, a community must become more resilient, able to rapidly recover after a catastrophe.[82] Climate change adaptation could also refer to finding ways to take advantage of any potential benefits associated with climate change, such as longer growing seasons and increased crop yields in some regions and reduced heating bills in others.
CLIMATE CHANGE MITIGATION	Refers to preventing or reducing emissions of carbon and other greenhouse gases (GHGs), thereby reducing negative impacts of climate change in the future. Even if emissions of all GHGs end today, global warming and climate change will continue to affect future generations.
CONSTRUCTION	Construction, alteration, or repair of buildings, structures, or other real property.
CONSULTATION	Consultation is a two-way process of dialogue between the project implementer and its stakeholders. Stakeholder consultation is about initiating and sustaining constructive external relationships over time.
CRITICAL HABITAT	Either modified or natural habitats supporting high biodiversity value, such as habitat required for the survival of critically endangered or endangered species.
CULTURAL HERITAGE	Defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge, and traditions.
CUMULATIVE IMPACTS	Incremental impact of a project action when added to impacts of past, present, and reasonable near-future impacts. Cumulative impacts are contextual and encompass a broad spectrum of impacts at different spatial and temporal scales.
DIRECT AREA OF IMPACT	Considers the physical footprint of the projects such as the right of way, construction sites, work staging area, and area affected during operational works (e.g., traffic patterns).

[82] Cambridge Centre for Risk Studies. 2015. WORLD CITIES RISK 2015-2025. Available at http://cambridgeriskframework.com/wcr

TERM	DEFINITION
DIRECT IMPACT	Impacts caused directly by a project action, at the same time and in the same place that the action is occurring
ECOSYSTEM	The interacting system of a biological community and its non-living environmental surroundings.
EMISSION	Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.
ENVIRONMENTAL IMPACT STATEMENT (EIS)	A detailed study of the reasonably foreseeable positive and negative environmental impacts of a proposed USAID action and its reasonable alternatives on the United States, the global environment, or areas outside the jurisdiction of any nation. (Chapter 204)
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)	A forward-looking instrument that proactively advises decision-makers on what might happen if a proposed action is implemented. Impacts are changes that have environmental, political, economic, or social significance to society. Impacts may be positive or negative and may affect the environment, communities, human health and well-being, desired sustainability objectives, or a combination of these.
ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)	Part of a project's overall management system that includes the organizational structure, responsibilities, practices, and resources necessary for implementing the project-specific management program developed through the environmental and social assessment of the project.
ENVIRONMENTAL IMPACTS	Impacts on the natural environment including air, water, ecosystems, flora and fauna, and other naturally occurring phenomena.
EQUITABLE SHARING	An approach that recognizes that the benefits, including economic benefits, of biodiversity and ecosystem services should be shared equitably among stakeholders.
GOOD INTERNATIONAL INDUSTRY PRACTICE	Exercise of professional skill, diligence, prudence, and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the project employs the most appropriate technologies in the project-specific circumstances.
GREENHOUSE GASES	The following six gases or class of gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).
GRIEVANCE MECHANISM	Procedure developed by project implementer to receive and facilitate resolution of affected communities' concerns and grievances about the project's environmental and social performance.
HABITAT	Terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment.
HAZARDOUS WASTE	Byproducts of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Substances classified as hazardous wastes possess at least one of four characteristics – ignitability, corrosivity, reactivity, or toxicity – or appear on special lists.
INDIGENOUS PEOPLES	Defined by the World Bank E&S Framework as a distinct social and cultural group possessing the following characteristics in varying degrees: (1) Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others; (2) collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas; (3) customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture; and (4) a distinct language or dialect, often different from the official language or languages of the country or region in which they reside.

TERM	DEFINITION
INDIRECT AREA OF INFLUENCE	Includes area which may experience project-related changes resulting from activities not under the direct control of the project.
INDIRECT IMPACT	Impacts from project activities that may occur at different times or at some distance from the project. Also known as secondary or even third-level impacts.
INDUCED IMPACT	Secondary impacts that do not bear a direct relationship with the project itself.
INFORMATION DISCLOSURE	Disclosure means making information accessible to interested and affected parties (stakeholders). Communicating information in a manner that is understandable to stakeholders is an important first and ongoing step in the process of stakeholder engagement. Information should be disclosed in advance of all other engagement activities, from consultation and informed participation to negotiation and resolution of grievances. This will make engagement more constructive.
INITIAL ENVIRONMENTAL EXAMINATION (IEE)	The first review of the reasonably foreseeable effects of a proposed action on the environment. Its function is to provide a brief statement of the factual basis for a Threshold Decision as to whether an Environmental Assessment or an Environmental Impact Statement will be required. (22 CFR 216.1(c)
INTANGIBLE CULTURAL HERITAGE	According to the 2003 UNESCO convention for the safeguarding of intangible cultural heritage, manifestations of intangible cultural heritage include: oral traditions and expressions, including language; performing arts; social practices, rituals, and festive events; knowledge and practices concerning nature and the universe.
INVASIVE ALIEN SPECIES	Non-native species of flora and fauna that are a significant threat to biodiversity due to their ability to spread rapidly and out-compete native species.
LAND ACQUISITION	All methods of obtaining land for project purposes, which may include outright purchase, expropriation of property, and acquisition of access rights such as easements or rights of way.
LIVELIHOOD	Full range of means that individuals, families, and communities utilize to make a living, such as working for wages; participating in agriculture, fishing, foraging, or other natural resource-based livelihoods; petty trade; and bartering.
MAGNITUDE	The assessment of magnitude is undertaken in two steps. First, the potential impacts associated with a project are categorized as beneficial or adverse. Second, the beneficial or adverse impacts are categorized as major, moderate, minor, or negligible based on consideration of a number of parameters.
MODIFIED HABITAT	Land and water areas where there has been apparent alteration of the natural habitat, often with the introduction of alien species of plants and animals, for instance, agricultural areas.
NATURAL HABITAT	Land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions.
NO NET LOSS	No net loss is a principal that aims to balance losses of biodiversity in one area with gains in biodiversity conservation in other areas.
OCCUPATIONAL HEALTH AND SAFETY	The range of endeavors aimed at protecting workers from injury or illness associated with exposure to hazards in the workplace or while working.
PARTICIPATORY APPROACH	An approach that recognizes that affected communities should be involved in the determination and identification of ecosystems that may be affected by a project and the management measures that should be implemented to manage predicted impacts.
PRECAUTIONARY APPROACH	The precautionary approach argues that in the event of scientific uncertainty, the worst reasonable case assumptions should be adopted to predict an impact of an action, to ensure that the impact is not underestimated.

TERM	DEFINITION
PROJECT-AFFECTED PEOPLE OR COMMUNITIES	Individuals, workers, groups, or local communities which are or could be affected by the project, directly or indirectly, including through cumulative impacts.
RENEWABLE ENERGY	Energy sources derived from solar power, hydro, wind, certain types of geothermal resources, and biomass.
RESETTLEMENT FRAMEWORK	Establishes the principles, procedures, entitlements, eligibility criteria, organizational arrangements, arrangements for monitoring and evaluation, the framework for participation, and mechanisms for redressing grievances by which the company will abide during the project implementation.
SENSITIVITY	The sensitivity of a receptor is determined based on the review of the population (including proximity/numbers/vulnerability), biological features of the site and the surrounding area, soil, agricultural suitability, geology and geomorphology, proximity of aquifers and watercourses, existing air quality, presence of any archaeological features, etc.
SIGNIFICANCE	Significance of impact accounts for the interaction between the magnitude and sensitivity criteria.
SOCIAL IMPACTS	Impacts on health and well-being determinants such as lifestyle, personal circumstances, genetics, biophysical environment, social influences, economic conditions, and availability and access to services and facilities.
SOLID WASTE	Material with low liquid content, sometimes hazardous. Includes municipal garbage, industrial and commercial waste, sewage sludge, wastes resulting from agricultural and animal husbandry operations and other connected activities, demolition wastes, and mining residues.
STAKEHOLDERS	Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project or the ability to influence its outcome, either positively or negatively.
TANGIBLE CULTURAL HERITAGE	Physical structures or items, such as buildings and historic places, monuments, and artifacts, that are considered worthy of preservation for the future. These include objects significant to the archaeology, architecture, science, or technology of a specific culture.
TRANSBOUNDRY IMPACT	Impact that transcends national boundaries.
VULNERABLE PEOPLE	Individuals and groups that may be directly and differentially or disproportionately affected by project activities because of their disadvantaged or vulnerable status (based on race, color, sex, language, religion, political or other opinion, national or social origin, property, birth, or other status).