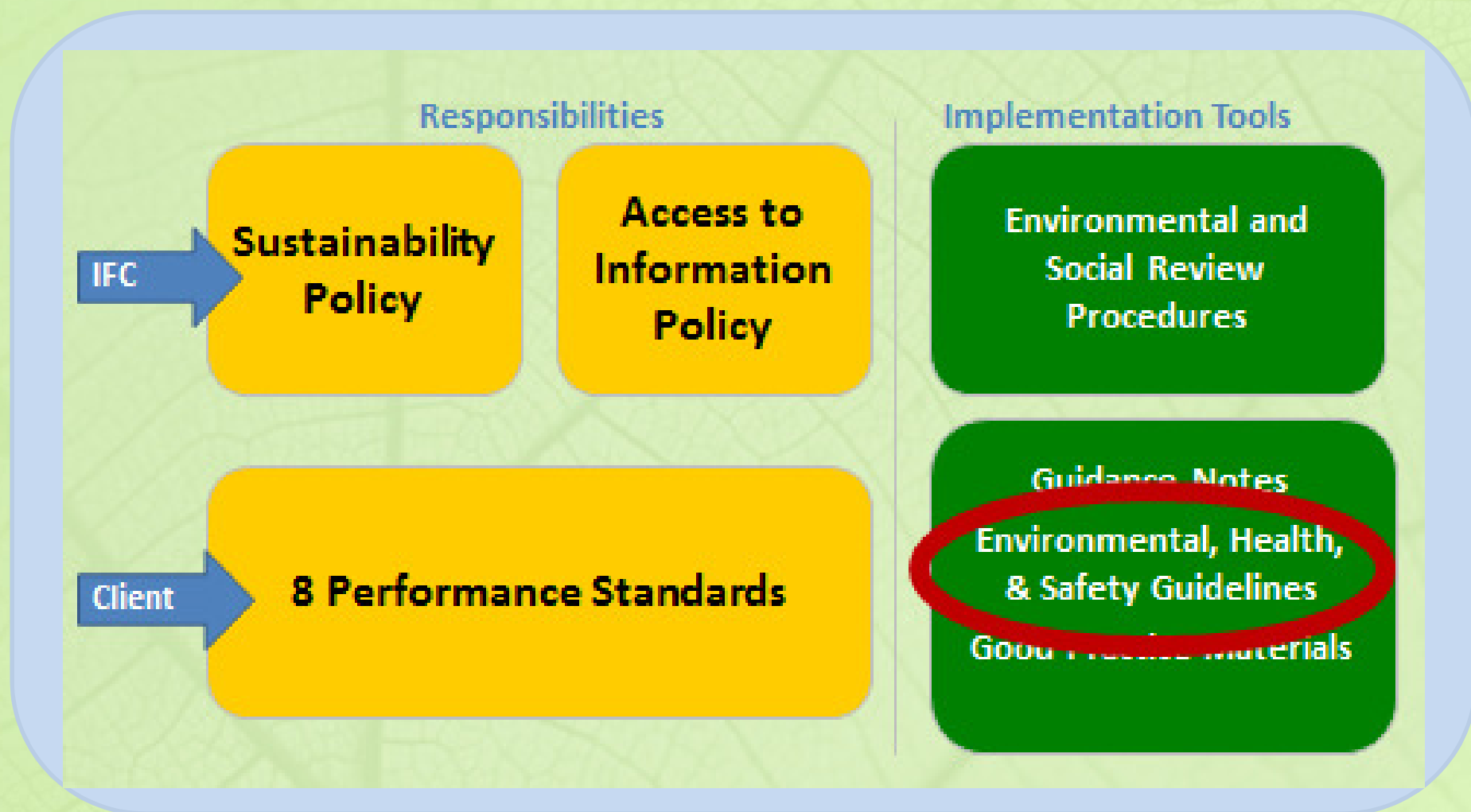


WORLD BANK GROUP ENVIRONMENTAL, HEALTH AND SAFETY GUIDELINES (EHS GUIDELINES)

MARCH 2014

IFC SUSTAINABILITY FRAMEWORK



EHS GUIDELINES

- A set of general and industry-specific examples of Good International Industry Practice (GIIP) as defined in IFC's Performance Standard 3
- First set of guidelines published in 2007
 - General EHS Guidelines
 - Industry Sector Guidelines - 62
- The Guidelines provide performance levels and measures acceptable to IFC
- Available in six languages: English, Arabic, Chinese, French, Russian and Spanish

EHS GUIDELINES

WWW.IFC.ORG/EHSGUIDELINES

IFC Sustainability

+ Risk Management

- IFC's Sustainability Framework

+ 2012 Edition

+ 2006 Edition

- Environmental, Health, and Safety Guidelines

▪ EHS Guidelines Technical Revision

▪ IFC Exclusion List

▪ Pre-2006 Safeguards

+ The 2009-2011 Review and Update

+ Sustainable Business Advisory Services

▪ Multimedia

▪ Publications

Environmental, Health, and Safety Guidelines



This page (www.ifc.org/ehsguidelines) contains the most updated versions of the World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines").

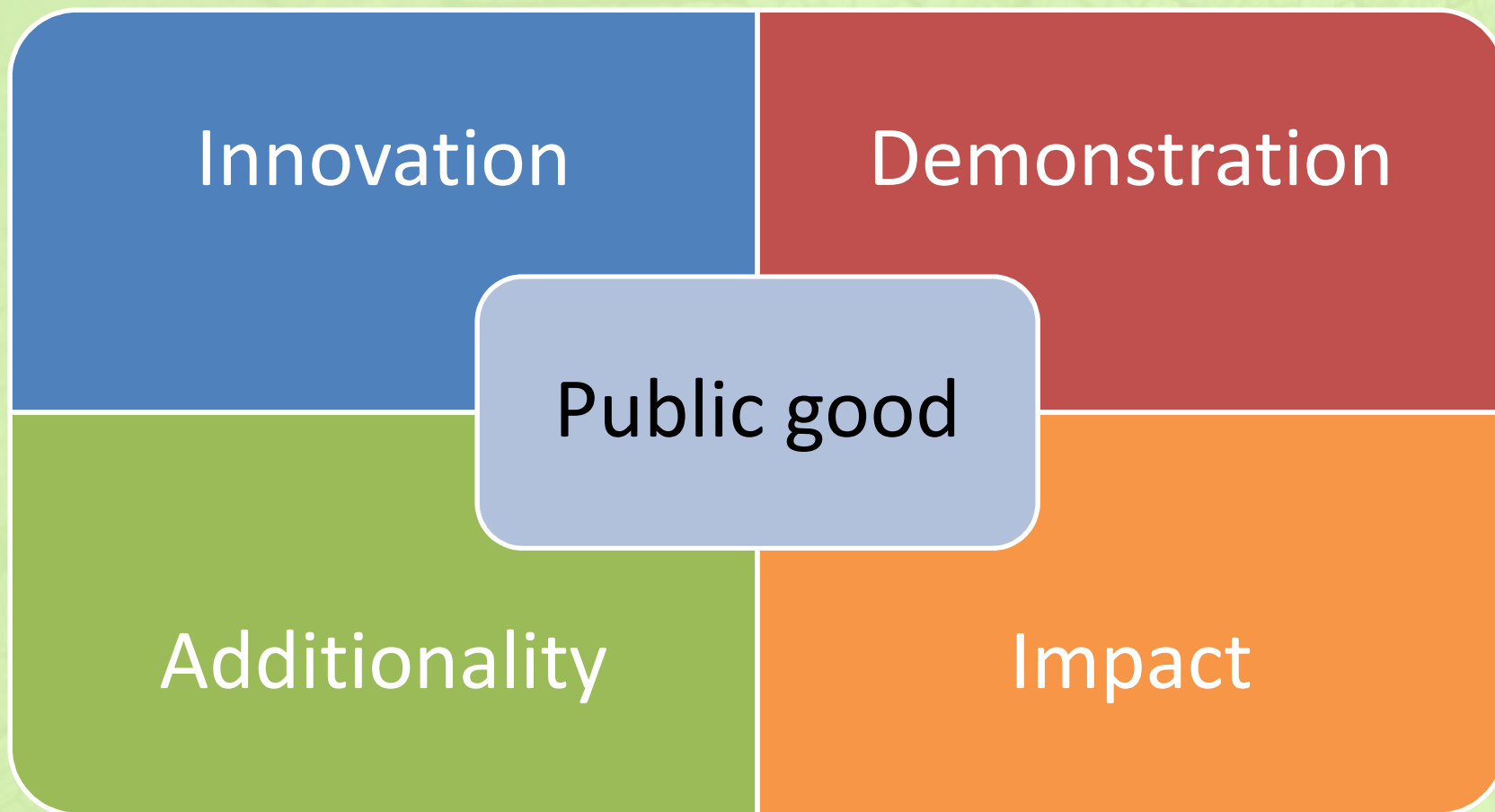
The EHS Guidelines were developed as part of a two and a half year review process that ended in 2007. They are intended to be living documents and are occasionally updated.

The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP), as defined in IFC's [Performance Standard 3: Resource Efficiency and Pollution Prevention](#). IFC uses the EHS Guidelines as a technical source of information during project appraisal activities, as described in IFC's [Environmental and Social Review Procedures Manual](#) [PDF].

Environmental, Health, and Safety Guidelines Technical Revision

IFC is launching a three-year consultative process to revise the World Bank Group Environmental, Health, and Safety (EHS) Guidelines. [More »](#)

BROAD UPTAKE OF THE EHS GUIDELINES

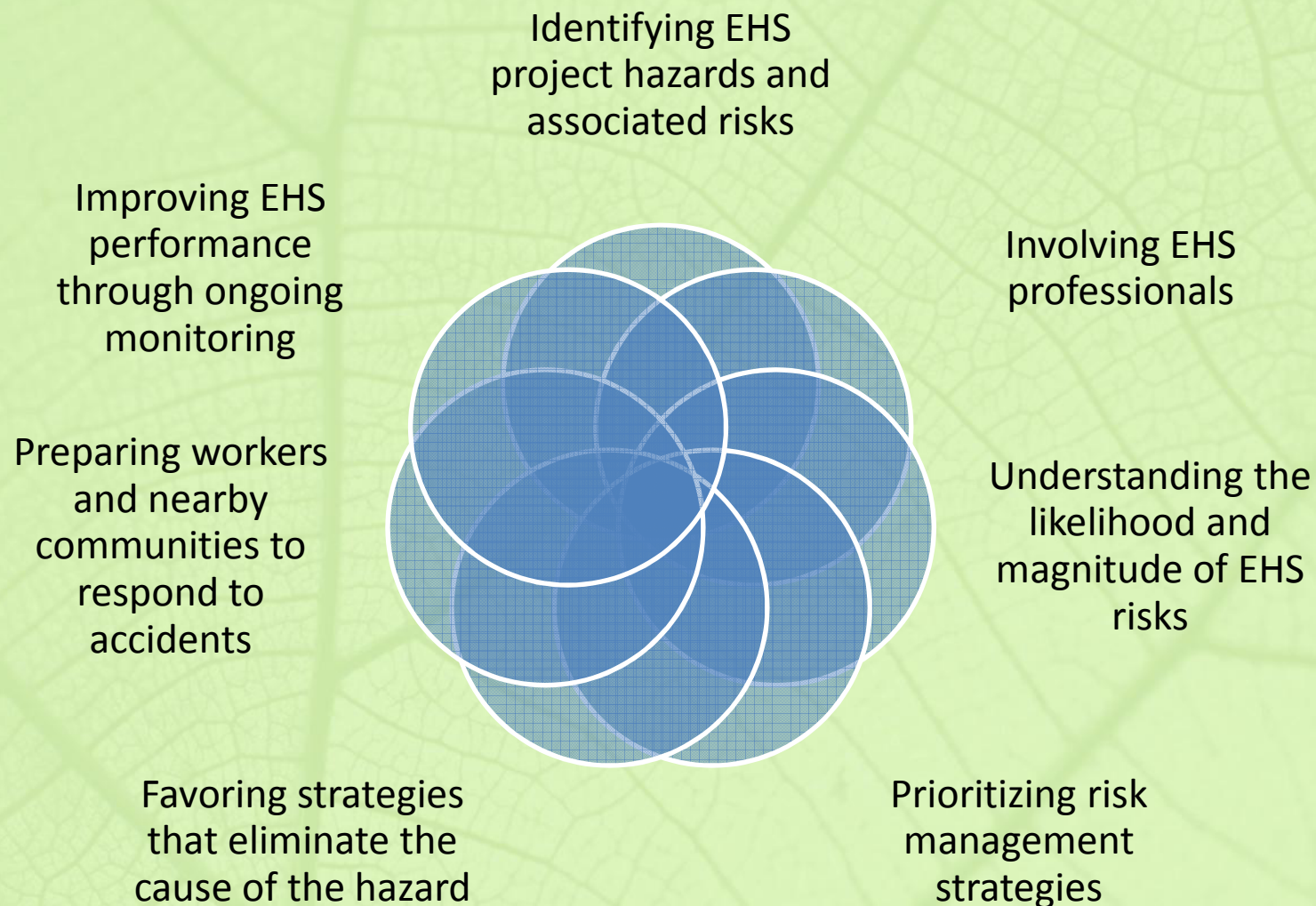


EHS GUIDELINES

INTERNATIONAL BEST PRACTICE

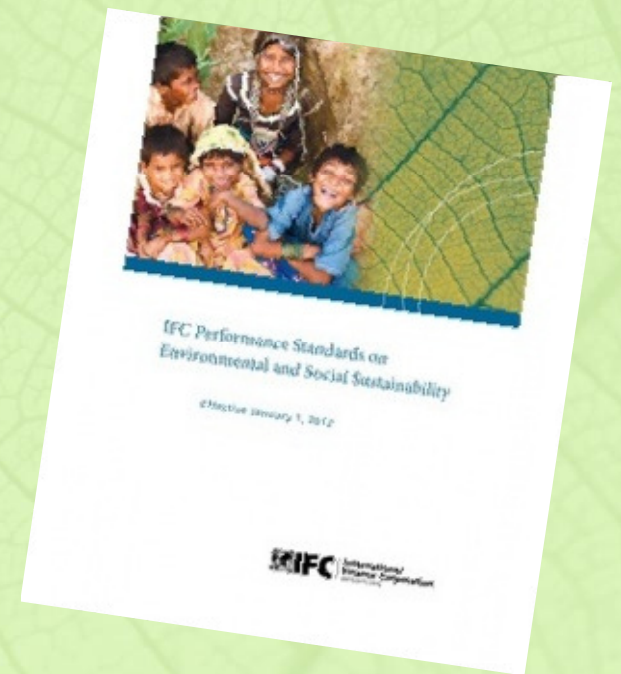
- World Bank, IFC, MIGA
- 76 Equator Principle Financial Institutions: Equator Principles are based on IFC's Performance Standards and (EHS) Guidelines
- China: China Green Credit Policy launched in 2007 by CBRC, MEP, PBOC. *International Experience in Promoting Green Credit* published in 2010 by IFC and Ministry of Environmental Protection (MEP), introducing EHS Guidelines to Chinese banks
- Vietnam: Roadmap for Environmental Technical Standards Development 2011-2015 – integration of the IFC PS and EHS guidelines into the national technical and industry standards for the period of 2011-2015
- Nigerian Sustainable Banking Principles Sector Guidelines

GENERAL APPROACH TO THE MANAGEMENT OF EHS ISSUES AT THE FACILITY OR PROJECT LEVEL



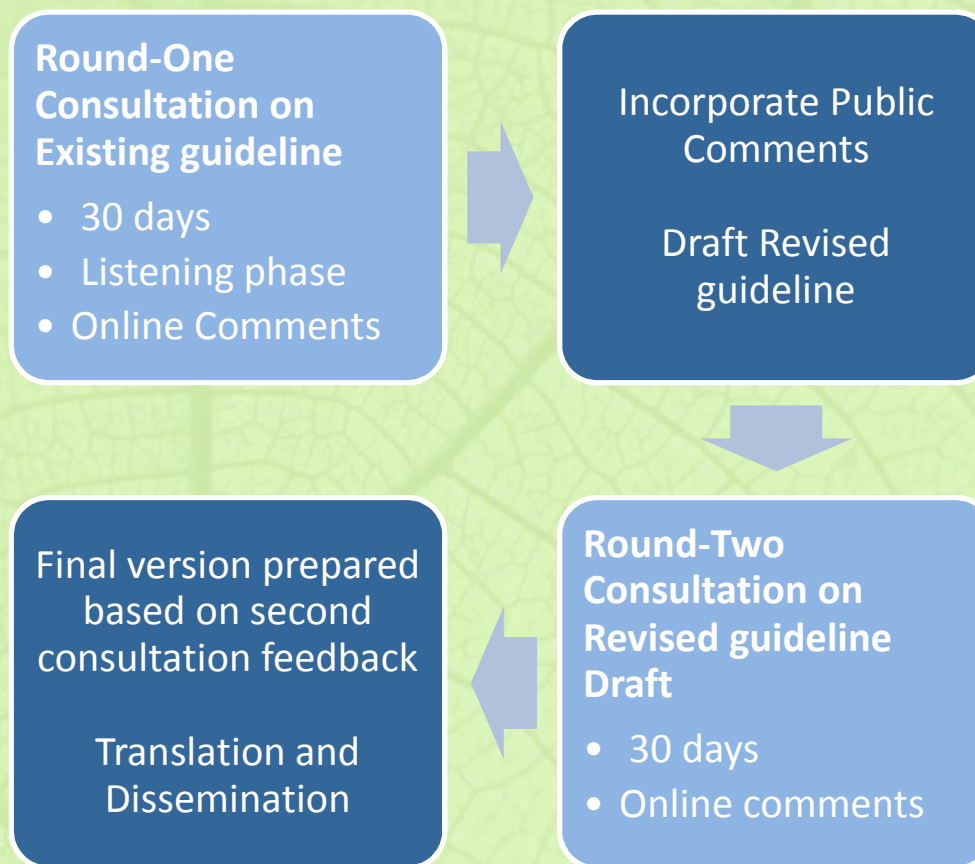
TECHNICAL REVISION PROCESS RATIONALE & OBJECTIVES

- Ensure consistency with updated 2012 IFC Sustainability Framework
- Reflect current Good International Industry Practice
- Improve consistency across EHS Guidelines where there are cross-cutting issues (i.e. energy efficiency, water use, GHG emissions)



TECHNICAL REVISION PROCESS

KEY STEPS 2013-2015



EHS GUIDELINES

GENERAL EHS GUIDELINES

- Cross-cutting environmental, health and safety issues potentially applicable to all sectors
 - Environmental
 - Air emissions and ambient air quality; wastewater and water quality; hazardous materials management; waste; noise
 - Occupational Health and Safety (OHS)
 - Facility design and operation; training; hazards – physical, chemical, biological, radiological; PPE
 - Community Health and Safety
 - Water quality and availability; life and fire safety; traffic safety; transportation of hazardous materials; emergency preparedness
 - Construction and Decommissioning
 - Environment; OHS, community health and safety

EHS GUIDELINES

GENERAL EHS GUIDELINES

1. Environmental

- 1.1 Air Emissions and Ambient Air Quality
- 1.2 Energy Conservation
- 1.3 Wastewater and Ambient Water Quality
- 1.4 Water Conservation
- 1.5 Hazardous Materials Management
- 1.6 Waste Management
- 1.7 Noise
- 1.8 Contaminated Land

2. Occupational Health and Safety

- 2.1 General Facility Design and Operation
- 2.2 Communication and Training
- 2.3 Physical Hazards
- 2.4 Chemical Hazards
- 2.5 Biological Hazards
- 2.6 Radiological Hazards
- 2.7 Personal Protective Equipment (PPE)
- 2.8 Special Hazard Environments
- 2.9 Monitoring

3. Community Health and Safety

- 3.1 Water Quality and Availability
- 3.2 Structural Safety of Project Infrastructure
- 3.3 Life and Fire Safety (L&FS)
- 3.4 Traffic Safety
- 3.5 Transport of Hazardous Materials
- 3.6 Disease Prevention
- 3.7 Emergency Preparedness and Response

4. Construction and Decommissioning

- 4.1 Environment
- 4.2 Occupational Health and Safety
- 4.3 Community Health and Safety

EHS GUIDELINES

INDUSTRY SECTOR GUIDELINES

Industry Sector Guidelines

Forestry

Board and Particle-based Products

Sawmilling and Wood-based Products

Forest Harvesting Operations

Pulp and Paper Mills

Infrastructure

Tourism and Hospitality Development

Railways

Ports, Harbors and Terminals

Airports

Airlines

Shipping

Agribusiness/Food Production

Mammalian Livestock Production

Poultry Production

Plantation Crop Production

Annual Crop Production

Aquaculture

Sugar Manufacturing

Vegetable Oil Processing

Gas Distribution Systems

Toll Roads

Telecommunications

Crude Oil and Petroleum Product Terminals

Retail Petroleum Networks

Health Care Facilities

Waste Management Facilities

EHS GUIDELINES

INDUSTRY SECTOR GUIDELINES

- Applicability
- Industry-Specific Impacts and Management
 - Environment
 - Occupational Health and Safety
 - Community Health and Safety
- Performance Indicators and Monitoring
 - Benchmarks – emissions, wastewater etc
 - OHS Statistics
- Cross-referencing of General Guidelines and other Sector Guidelines

Process Flow Diagram



EHS GUIDELINES

THERMAL POWER SECTOR GUIDELINES

- Applicability
 - Processes fueled by gaseous, liquid or solid fossil fuels and biomass
 - Heat input capacity above 50MWth
- Environment
 - Air Emissions
 - Sulphur oxides, nitrogen oxides, particulate matter
 - Energy Efficiency and GHG Emissions
 - Effluents
 - Liquid wastes; sanitary wastewater
 - Solid Wastes
 - Hazardous Materials & Oil
 - Noise

EHS GUIDELINES

THERMAL POWER SECTOR GUIDELINES

● Occupational Health and Safety

- Non-ionizing radiation
- Heat
- Noise
- Confined Spaces
- Electrical Hazards
- Fire and Explosion Hazards
- Chemical Hazards
- Dust

EHS GUIDELINES

THERMAL POWER SECTOR GUIDELINES

- Community Health and Safety
 - Water Consumption
 - Traffic Safety
- Performance Indicators
 - Emissions and Effluent Guidelines
 - OHS
 - Exposure limits to electric and magnetic fields
 - Accident and fatality rates

EHS GUIDELINES

THERMAL POWER SECTOR GUIDELINES

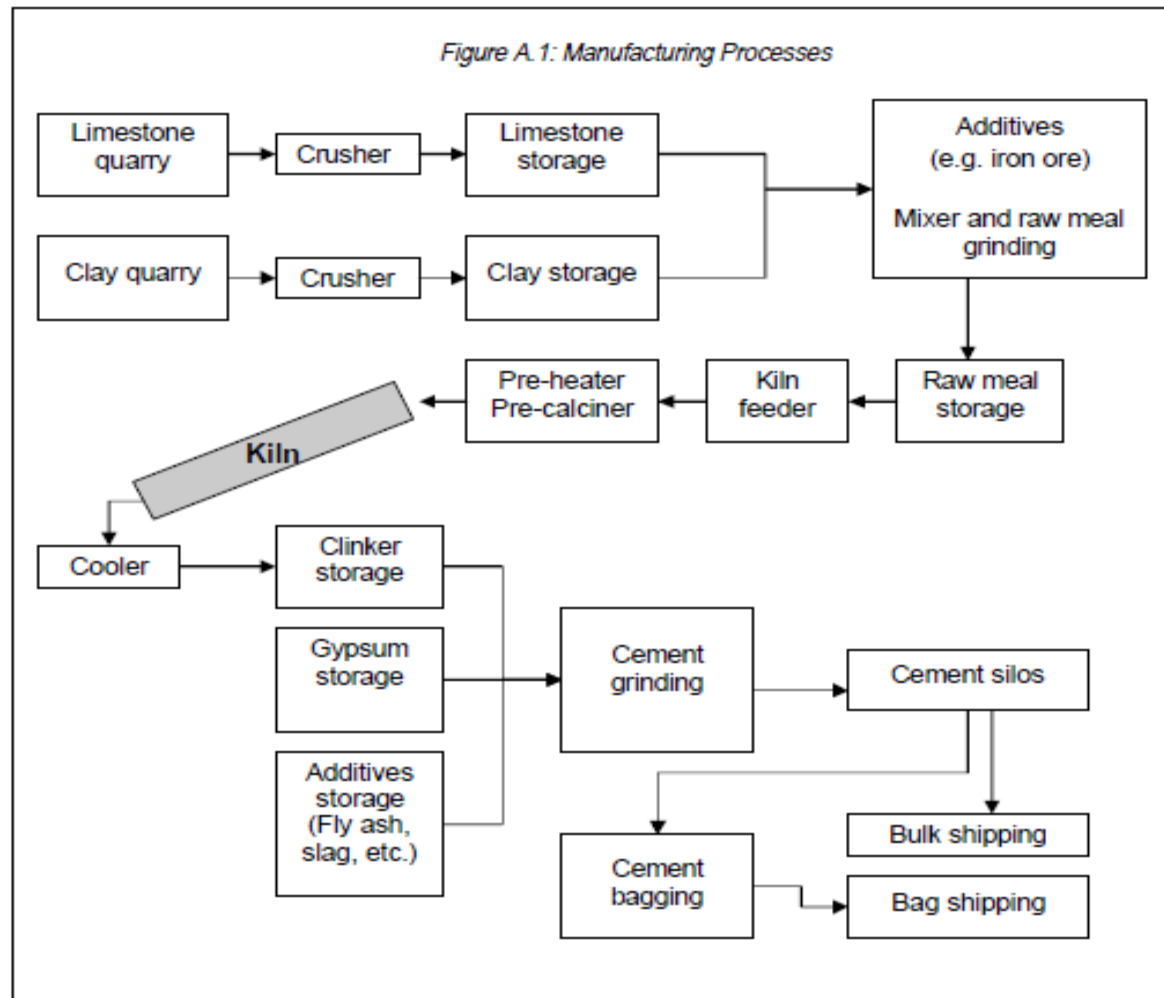
- Effluent Guidelines

Table 5 - Effluent Guidelines (To be applicable at relevant wastewater stream: e.g., from FGD system, wet ash transport, washing boiler / air preheater and precipitator, boiler acid washing, regeneration of demineralizers and condensate polishers, oil-separated water, site drainage, coal pile runoff, and cooling water)	
Parameter	mg/L, except pH and temp
pH	6 – 9
TSS	50
Oil and grease	10
Total residual chlorine	0.2
Chromium - Total (Cr)	0.5
Copper (Cu)	0.5
Iron (Fe)	1.0
Zinc (Zn)	1.0
Lead (Pb)	0.5
Cadmium (Cd)	0.1
Mercury (Hg)	0.005
Arsenic (As)	0.5

EHS GUIDELINES

CEMENT AND LIME MANUFACTURING

- Manufacturing Process



EHS GUIDELINES

CEMENT AND LIME MANUFACTURING

• Applicability

- Cement and lime manufacturing
- Extraction of materials is covered by EHS Guidelines for Construction Materials Extraction

• Environment

- Air Emissions –particulate matter; nitrogen oxides; sulphur dioxides
- Energy Consumption and Fuels – kilns; coolers; fuel source –coal, petroleum coke
- Effluent
- Solid Wastes
- Noise

EHS GUIDELINES

CEMENT AND LIME MANUFACTURING

- Occupational Health and Safety
 - Dust
 - Heat
 - Noise and Vibrations
 - Physical Hazards
 - Radiation
 - Chemical Hazards
- Community Health and Safety
 - Refer to General EHS Guidelines – traffic safety; emergency preparedness and response; life and fire safety

EHS GUIDELINES

CEMENT AND LIME MANUFACTURING

- Performance Indicators
 - Emissions and effluent guidelines
 - Resource use and waste
 - Accident and fatality rates

EHS GUIDELINES

CEMENT AND LIME MANUFACTURING

- Air Emission Levels

Table 1. Air emission levels for cement manufacturing*		
Pollutants	Units	Guideline Value
Particulate Matter (new kiln system)	mg/Nm ³	30 ^a
Particulate Matter (existing kilns)	mg/Nm ³	100
Dust (other point sources incl. clinker cooling, cement grinding)	mg/Nm ³	50
SO ₂	mg/Nm ³	400
NO _x	mg/Nm ³	600
HCl	mg/Nm ³	10 ^b
Hydrogen fluoride	mg/Nm ³	1 ^b
Total Organic Carbon	mg/Nm ³	10
Dioxins-furans	mg TEQ/Nm ³	0.1 ^b
Cadmium & Thallium (Cd+Tl)	mg/Nm ³	0.05 ^b

EHS GUIDELINES

CEMENT AND LIME MANUFACTURING

- Emissions and Waste Generation

Table 5. Emission and waste generation.

Outputs per unit of product	Unit	Industry benchmark
Waste	kg/t	0.25–0.6 ^a
Emissions		
Dust	g/t equivalent cement	20–50 ^a
NO _x	g/t equivalent cement	600–800 ^b
SO _x	kg/t	0.1–2.0 ^{a,h}
CO ₂		
From decarbonation ⁱ	kg/t	400–525 ^{a,e,f,h,k}
From fuel ^j	kg/t equivalent cement	150–350 ^{a,e,f,h}

^a Buzzi–Unicem (2004).

^b IPPC (2001).

^c Ernest Orlando Lawrence, Berkeley National Laboratory (2004).

^d NRCan (2001).

^e CIF (2003).

^f Italcementi Group (2005).

^g Environment Canada (2004).

^h Lafarge (2004).

ⁱ Influenced by the variable quantities of fly ash and other additives used.

^j CO₂ emissions from waste incineration (at least from the biodegradable fraction) are regarded as neutral in several countries.

EHS GUIDELINES

QUESTIONS?