



**Environmental and Social
Management System Manual**

April 2020

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1. INTRODUCTION

1.1 PURPOSE

In action to pursue the corporate vision of a major sustainability Thai energy company with full commitment towards environment protection and social development, this Environmental and Social Management System (ESMS) manual has been established. The manual sets out management requirements for environmental, occupational health, safety and social (ES) issues present throughout project's life cycle. In addition to adhering with international standards such as International Organization for Standardisation (ISO) 140001 Environmental Management System, ISO 45001 Occupational Health and Safety as well as the World Bank International Financial Corporation (IFC) Performance Standards as illustrated in Figure 1-1 below.

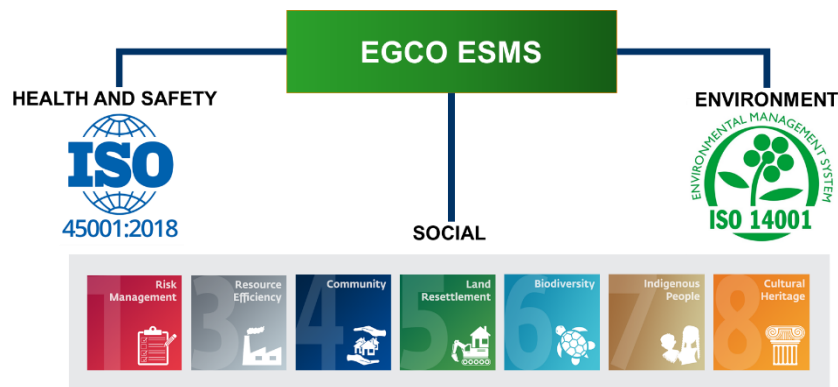


Figure 1-1 Scope of ESMS

Primarily, the manual defines a risk-based systematic approach in order to ensure that business risks are minimized while also creating opportunities. Controls, mitigation measures, monitoring of results, inspecting and reviewing are additional processes captured for excellent performance. Whereby ultimately, aiding the prevention of project delays, meeting requirements which EGCO is obliged to and earning the social license to operate.

The ESMS manual is structured chronologically according to the project stage- project development, construction, operation and asset retirement respectively. Through which each requirement details the intention and steps necessary.

1.2 SCOPE AND BOUNDARY

This Environmental and Social Management System takes into account the impact on the environment, occupation health and safety of workforce as well as the community and social issues of the public. Activities and services addressed under the scope are those provided at sites in which EGCO has controlling power. This includes activities and services conducted in the following project phases:

- Feasibility studies;
- Project design;
- Due-diligence, mergers and acquisitions;
- Project development and construction;

- Operations, business facilities and maintenance;
- Asset retirement;
- External providers (i.e. key business partner, suppliers, and contractors at EGCO site or under EGCO's management);
- Provision of products and services;
- Distribution and logistics (delivery and post-delivery)

The boundary of the ESMS covers all EGCO's assets utilized for all types of power business conducted by EGCO (i.e. natural gas, coal, biomass, hydroelectric, solar, wind and geothermal).

Newly acquired businesses or sites must conform to EGCO's ESMS by performing a gap analysis to identify any gaps and implement gap closure actions to ensure conformance within three (3) years or upon the reasonable timeline agreed with EGCO.

For facilities where EGCO does not have operational control e.g. joint venture, the framework will be disseminated to site for acknowledgement.

All EGCO's personnel shall adhere to ESMS requirements that are relevant to their work. All project phase activities must be undertaken in accordance with the requirements and demonstrating compliance and continuous improvement of ES performances.

Requirements regarding labour practices are not covered in this ESMS.

2. ENVIRONMENTAL AND SOCIAL POLICY

ES Policy is established, endorse, communicated and made available to all employees. The policy shall be reviewed annually and modified to incorporate changes as arising from change and progress of the Company business.

EGCO Environmental and Social Policy

EGCO Group is committed to operating the power business with the highest responsibility towards society, community and environment ensuring a sustainable business operation. Therefore, EGCO is committed to:

- *Comply with environmental and social regulatory requirements of the host country;*
- *Control, protect and mitigate environmental impacts imposed on the ecosystem and biodiversity. While continuously controlling emissions at power source to manage greenhouse gas in our operation which effects the community and stakeholders;*
- *Communicate environmental and social policy, strategy and direction to all employees and relevant stakeholders;*
- *Encourage participation among business partners, suppliers and contractors minimize environmental, health and safety and community issues from operation and transportation activities;*
- *Encourage and develop innovation for sustainable environment, whereby including programmes for community development.*
- *Ensure appropriate allocation of resources for managing site's environmental, social and occupational health and safety aspects;*
- *Support knowledge/ experience sharing between facilities and promote good environmental and social culture and behaviour throughout the organization; and*
- *Regularly review the environmental and social performance and publically report achievements to encourage continuous improvement.*

EGCO understands that an effective environmental and social management can directly impact the overall performance of business operation. Therefore, EGCO would like all employees, operators, contractors and other business partners to cooperate in a harmonious coexistence with local communities and the environment.

3. ESMS FRAMEWORK

EGCO's ESMS Frameworks overarching ES requirements integrated into each of the project phases from project development to asset retirement. This is to ensure that EGCO considers, reviews, assesses and mitigates potential ES impacts from all business activities. ESMS framework is illustrated in Figure 3-1 below.

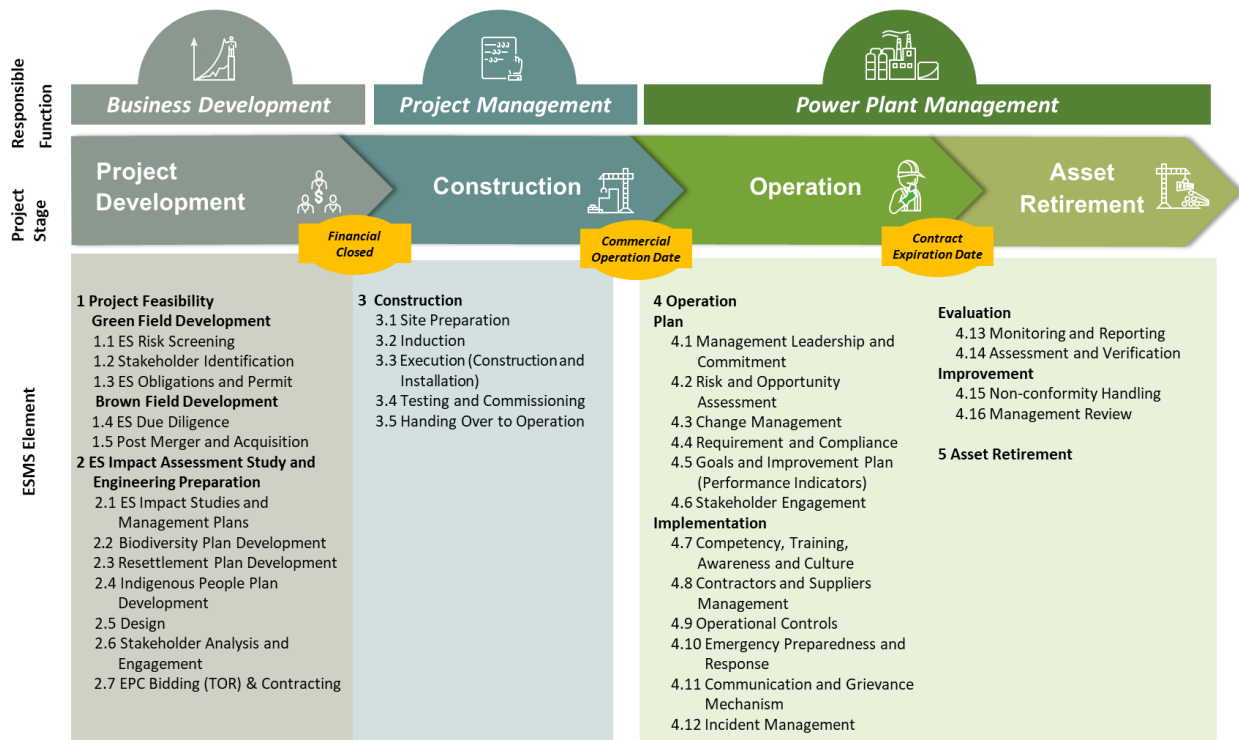


Figure 3-1 EGCO's ESMS Framework

ES indicators related to each phase are summarized below, but not limited to, as follows.

- ES Indicators for Business Development phase
 - Key ES risks and opportunities influence to business decision identified
 - Key stakeholders' views and interests considered in the scoping of ES impact assessment study
 - ES licenses/ permits and their timelines incorporated into an overall project master plan
 - Required ES Studies e.g. EIA/IEE/ESIA approved against the overall project master plan
- ES Indicators for the Construction phase
 - Number of formal/written complaints unaddressed
 - Number of complaints impacting the project schedule
 - Review of detailed design as per project ES specifications completed
 - ES Management Plans integrated into EPC contractor's Management Plan
 - ES performance of EPC contractors during construction activities

- Number of formal/written complaints unaddressed
- Percentage of corrective actions for ES issues closed
- Number of complaints impacting the project schedule
- ES Indicators for Operation phase
 - ES performance indicators set and achieved
 - Training needs for ES management provided as planned
 - Number of formal/written complaints unaddressed
 - Internal and external audit conducted as planned
 - Corrective and preventive actions addressing findings closed within timeframe
- ES Indicators for Asset Retirement phase
 - ES impact study for asset retirements as required by law identified
 - Decommissioning impact studies and plans approved by the authority as planned
 - ES performance indicators set and achieved

Requirements for each of the elements are prescribed in *Section 4* below. Structure of each elements includes intent, requirements and relevant document.

4. ESMS REQUIREMENTS

4.1 PROJECT FEASIBILITY

Project feasibility study is exercised for new opportunities including both new development project (i.e. green field development) and acquired plant or project (i.e. brown field development). High-level ES risks are identified at an early stage as part of feasibility study.

GREEN FIELD DEVELOPMENT

4.1.1 ES Risk Screening

Intent

Environmental and/or social impacts, risks and opportunities of the proposed project are determined to realize impacts and minimize EGCO's ES liabilities.

Relevant Document

- Tool ES Risk Screening

4.1.2 Stakeholder Identification

Intent

To identify all relevant stakeholders within the project scope in order to understand and reflect their interests as input for feasibility analysis.

Relevant Document

- Tool Stakeholder Analysis and Engagement

4.1.3 ES Obligations and Permit

Intent

To identify required environmental and social obligations and permit needed to be completed. This may include ESIA (environmental and social impact assessment), EIA (environmental impact assessment), IEE and operation commencing permits etc.

Requirements

1. Identify all relevant environmental and social permits required as per legal and other obligated requirements. This may include, but not limited to the following:
 - Local/ host country laws; and
 - Lenders' requirements and other international requirements the project is obliged to.
2. Assign appropriate resources to complete required permits and integrate timeline and schedule within the overall project master plan.

Relevant Documents

- N/A

BROWN FIELD DEVELOPMENT

4.1.4 ES Due Diligence

Intent

To identify and assess the environmental and social risks, non-compliances and opportunities associated with the brownfield site targeted for development, thus informing investment decisions.

Relevant Document

- Tool ES Risk Screening
- Tool ES Due Diligence

4.1.5 Post-Merger and Acquisition

Intent

To ensure that the acquired target complies with EGCO's environmental and social expectations and standards. To confirm that the environmental and social action plan established during the due diligence process has been implemented.

Relevant Document

- N/A

4.2 ES IMPACT ASSESSMENT STUDY AND ENGINEERING PREPARATION

4.2.1 ES Impact Studies and Management Plans

Intent

To identify and assess environmental and social impacts through impact assessment studies “ES study” (e.g. IEE, EIA, ESIA, SIA or HIA) as required by laws or EGCO’s protocol. Management plans to mitigate impacts during construction and operations should be developed from impact assessment results.

Relevant Documents

- ES Impact Assessment Study Procedure

4.2.2 Biodiversity Action Plan Development

Intent

To identify impacts toward biodiversity and developing a mitigation plans such that biodiversity is protected and conserved as best as possible.

Relevant Documents

- Biodiversity Statement of Commitments

4.2.3 Resettlement Plan Development

Intent

To avoid involuntary resettlement whenever possible and to ensure that in the case of resettlement, displaced persons obtain the appropriate compensation, resettlement and restoration of their livelihoods at equal level or better than their original status.

Relevant Documents

- N/A

4.2.4 Indigenous People Plan Development

Intent

To avoid negative impacts on indigenous people and develop mitigation measure to minimize any potential impacts which may arise.

Relevant Documents

- N/A

4.2.5 Design

Intent

To ensure that conceptual and detailed designs take into account the environmental, health and safety as well as social mitigation and control measures across the project life cycle.

Relevant Documents

- N/A

4.2.6 Stakeholder Analysis and Engagement

Intent

To establish a systematic process which allows EGCO to set the direction for efficient stakeholder management, risk and reputation management and transparent stakeholder engagement. Stakeholder Engagement activities associated with a project should continue as Community Engagement through project operation and asset retirement.

Relevant Documents

- Tool - Stakeholder Analysis and Engagement

4.2.7 EPC Bidding (TOR) and Contracting

Intent

To establish consistent and uniform environmental and social expectations and requirements for EPC contractor tender or Term of Reference (TOR).

Relevant Documents

- ES Management for Construction Procedure

4.3 CONSTRUCTION

4.3.1 Site Preparation

Intent

To ensure that all general activities required to prepare the site are completed with consideration to the potential impacts towards the environment and society.

Relevant Documents

- N/A

4.3.2 Induction

Intent

To communicate EGCO's expectation and requirements from selected EPC contractor when executing works for site development. This includes compliance with relevant regulations as well as EGCO Groups' environmental and social requirement.

Relevant Documents

- Site Induction Topics

4.3.3 Execution (Construction and Installation)

Intent

To ensure that during the construction and installation process, environmental and social management plans are implemented to control identified risks and liabilities.

Relevant Documents

- ES Management for Construction Procedure
- Inspection Checklists

4.3.4 Testing and Commissioning

Intent

To verify the proper functioning of equipment/ system after the installation whereby the performance meets specified design requirements.

Relevant Documents

- Pre-Startup Safety Review Checklist

4.3.5 Handing Over to Operation

Intent

To provide considerations regarding the preparation of the operation and maintenance manual to ensure potential ES risks are prevented and monitored.

Relevant Documents

- N/A

4.4 OPERATION

PLAN

4.4.1 Management Leadership and Commitment

Intent

To demonstrate visible leadership from top management in directing the Environmental and Social Management System and continually provide resources needed to establish, implement, maintain and improve the ESMS performance.

Relevant Documents

- Environmental and Social Policy

4.4.2 Risk and Opportunity Assessment

Intent

To identify key environmental and social aspects, risks and potential impacts required to monitor and control.

Relevant Documents

- Risk and Opportunity Assessment Procedure

4.4.3 Management of Change

Intent

To ensure that potential ES impacts arisen from changes are realized and mitigated to prevent any undesirable outcomes.

Relevant Documents

- Management of Change Procedure

4.4.4 Requirement and Compliance

Intent

To ensure that operation is in compliance with regulations, environmental and social requirements, lenders and customer's requirements and any other applicable mandatory obligations.

Relevant Documents

- Tool - Compliance Audit Scoping

4.4.5 Goals and Improvement Plan (Performance Indicators)

Intent

To drive ES performance improvement addressing key ES risks through structured improvement plans.

Relevant Documents

- Tool – ES Indicator

4.4.6 Stakeholder Engagement

Intent

To identify and prioritize all stakeholders or interest parties whom affects or are affected by EGCO's activities and operation based on the level of interest and ability to influence environmental and social matters.

Relevant Documents

- Tool - Stakeholder Analysis & Engagement

IMPLEMENTATION

4.4.7 Competency, Training, Awareness and Culture

Intent

To ensure that all employees have the required knowledge, competency and understanding in performing their jobs responsibly to the environment and society.

Relevant Documents

- Training Need Matrix

4.4.8 Contractors and Suppliers Management

Intent

To ensure that environmental and social performance, programs and risk management are taken into consideration when selecting contractors, supplier and vendors.

To manage and minimize any adverse ES consequences imposed from goods and services provided by contractors and suppliers.

Relevant Documents

- Supplier Risk Management Procedure

4.4.9 Operational Controls

Intent

To ensure that adverse consequences from significant aspects, hazards and issues are managed and mitigated through the development of operational controls and maintenance programs.

Relevant Documents

- N/A

4.4.10 Emergency Preparedness and Response

Intent

To identify potential emergency situations and responses to such situations in order to prevent and/ or mitigate environmental and social impacts (i.e. to EGCO employees, relevant personnel or local communities) associated.

Relevant Documents

- Emergency Preparedness and Response Procedure

4.4.11 Communication and Grievance Mechanism

Intent

To ensure an effective and transparent communication flow for both internal and external stakeholders. Hence, aiding employees and stakeholders to understand the Group's mission, values, objectives, performance and improvement plans while assuring that concerns and grievances are listened, valued and responded in a timely manner.

Relevant Documents

- Grievance Management Procedure

4.4.12 Incident Management

Intent

To establish a clear process for reporting ES incidents and respond to incidents in a timely manner. To share lesson learnt among sites to prevent and mitigate possible impacts and incidents from reoccurring. Hence, contributing to the improvement of the ES performance.

Relevant Documents

- Incident Reporting and Investigation Procedure
- Incident Investigation Form

EVALUATION

4.4.13 Monitoring and Reporting

Intent

To track that environmental and social performance against set goals and mitigation measures implemented are achieving the expected output and comply with regulation, thus, contributing to continual improvement.

Relevant Documents

- ES Performance Indicator Template

4.4.14 Assessment and Verification (Audit)

Intent

To provide measurement and sufficient evidence of environmental and social impacts occurred during the operation of the site.

Relevant Documents

- Non-Conformity Handling Procedure
- Compliance Audit Protocol

IMPROVEMENT

4.4.15 Handling of Non-Conformities

Intent

To effectively manage non-conformities through the process of identifying root-cause, determining, implementing and monitoring corrective/ preventive action plans. Avoiding reoccurrence of finding, non-conformity in the future.

Relevant Documents

- Non-Conformity Handling Procedure

4.4.16 Management Review

Intent

To review and examine the overall environmental and social performance by senior management on a periodic basis. Ensuring that the implemented ESMS is suitable, adequate and effective while promoting continuous improvements.

Relevant Documents

- Minutes of Meeting

4.5 ASSET RETIREMENT

Intent

To ensure that environmental and social impacts from demolition and decommissioning activities are managed and control to minimize impacts.

Relevant Documents

- Decommissioning and Demolition Procedure

5. APPENDIX

5.1 REFERENCES

- ISO 14001:2015- International Organization for Standardization for Environmental Management System
- ISO 45001:2018- International Organization for Standardization for Occupational Health and Safety
- World Bank International Financial Corporation (IFC) Performance Standards: 2012

5.2 ESMS DOCUMENT INDEX

ESMS Element	Procedure	Tool
4.1 Project Feasibility		
<i>Greren Field Development</i>		
4.1.1 ES Risk Screening	-	ES Risk Screening
4.1.2 Stakeholder Identification	Stakeholder Analysis and Engagement	Stakeholder Mapping Tool Engagement Plan Template
4.1.3 ES Obligations and Permit	-	-
<i>Brown Field Development</i>		
4.1.4 ES Due Diligence	ES Due Diligence	ES Due Diligence
4.1.5 Post Merger and Acquisition	-	-
4.2 ES Impact Assessment And Engineering Preparation		
4.2.1 ES Implace Studies and Management Plans	ES Impact Assessment Study	Outline of Impact Assessment
4.2.2 Bidodiversity Action Plan Development		-
4.2.3 Resettlement Plan Development		Outline of Resettlement Plan
4.2.4 Indigenous People Plan Development		Outline of Indigenous People Plan
4.2.5 Design	-	-
4.2.6 Stakeholder Analysis and Engagement	Stakeholder Analysis and Engagement	Stakeholder Mapping Tool Engagement Plan Template
4.2.7 EPC Bidding (TOR) & Contracting	-	Contract terms – EHS Management Section
4.3 CONSTRUCTION		
4.3.1 Site Preparation	-	-
4.3.2 Induction	-	-
4.3.3 Execution (Construction and Installation)	- Supplier Code of Conduct - ES Management for Construction	Inspection Checklists
4.3.4 Testing & Commissioing	-	-
4.3.5 Operation and Maintenance Manual Development and Training	-	-

ESMS Element	Procedure	Tools
4.4 OPERATION		
<i>Planning</i>		
4.4.1 Management Leadership and Commitment	-	-
4.4.2 Risk Assessment	ES Risk Assessment	ES Risk Assessment Template
4.4.3 Management of Change	Management of Change	Change Management Request Form
4.4.4 Requirement and Compliance	-	-
4.4.5 Goals and Improvement Plan	-	ES Goals and Action Plan Template
4.4.6 Stakeholder Engagement	Stakeholder Analysis and Engagement	Stakeholder Mapping Tool Engagement Plan Template
<i>Implementation</i>		
4.4.7 Competency, Training and Awareness	-	Training Needs Matrix
4.4.8 Contractors and Suppliers Management	Supplier Code of Conduct	-
4.4.9 Operational Controls	-	-
4.4.10 Emergency Preparedness and Response	Emergency Preparedness and Response	-
4.4.11 Communication and Grievance Mechanism	Grievance Management	Grievance Form
4.4.12 Incident Management	Incident Reporting and Investigation	Incident Investigation Form
<i>Evaluation</i>		
4.4.13 Monitoring and Reporting	-	ES Performance Indicators Template
4.4.14 Assessment and Verification	Internal and External Audit	Compliance Audit Protocol
<i>Improvement</i>		
4.4.15 Handling of Non-conformities	Handling of Non-conformities	Corrective Action Request Form
4.4.16 Management Review	-	-
4.5 ASSET RETIREMENT		



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