Environmental Management System Maturity Framework

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Version 1

Version History

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1   Executive Summary

IAEG has developed an EMS Maturity Framework describing 4 different levels of maturity of Environmental Management Systems. It provides a means for companies to effect a step-by-step approach, or evolution, towards an EMS covering all ISO14001 requirements. Based on size and risk profile, companies can require and/or implement:

- A 'Foundational level EMS' focussing on commitment from the leadership, the management of compliance, key environmental risks, incidents, and the monitoring of a first set of environmental performance indicators and internal environmental communication / awareness.

- An 'Advanced level EMS' which, in addition to the above, requires a methodology to manage significant environmental aspects and risks, environmental performance objectives, and targets, to ensure competency for environmental duties, and to promote supplier EMS awareness. At this level, measurement and communication of environmental performance indicators is extended to include advanced level IAEG key performance indicators (KPIs). EMS compliance is regularly reviewed and management reviews performed.

- A 'Leading level EMS' which, in addition to the above, includes opportunity management, the lifecycle perspective, internal audit, external communication to interested parties, and the commitment to continual improvement. It meets all ISO14001 requirements.

- A 'World class level EMS' is an EMS certified to ISO14001 by a third party.

2   Introduction

ISO14001:2015 requires a greater focus on supply chain, outsourced processes, and procured goods and services than previous versions of the ISO14001 standard. Companies are therefore looking to work more closely with their suppliers to understand and manage environmental risk and to develop shared opportunities for improved environmental performance. Such engagement typically enhances business continuity and related business risk mitigation.

Many small and medium sized suppliers may not feel prepared, or have the level of resources necessary, to implement all requirements of ISO14001 for establishing an Environmental Management System (EMS) conforming to the Standard. By not taking steps towards implementation of an ISO14001-conforming EMS, these suppliers may have increased supply chain risks and not realised opportunities for improving environmental protection and cost reduction.

This EMS Maturity Framework aims at encouraging the wider uptake of environmental management systems as appropriate for each company, in a cost effective, consistent and supportive manner. With four maturity levels and associated EMS components, a company can take a phased approach to development and implementation of its EMS in accord with the company's maturation in environmental management.

A company should aim for a level of EMS maturity that considers its size and environmental risk profile.

The picture below summarises the benefits of an Environmental Management System.

Picture 1: Benefits of an Environmental Management System

Objectives of an EMS include fulfilment of compliance obligations, protection of the environment, enhancing environmental performance, and taking a life cycle perspective.

Requirements for each EMS maturity level are presented in this document. It also provides examples of performance indicators and guidance for determining the expected maturity level for a company.

Corresponding ISO14001 chapters are indicated, consistent with a phased implementation and progressing towards covering all requirements of the Standard while maturing the EMS. This could also support ultimate certification to ISO14001 for companies that wish to do so.

Companies already certified to ISO 9001 / EN9100 / AS9100 may be able to utilize parts of their existing Quality Management System in creating an EMS, and to consider integration opportunities between the two systems.

References to available ISO and IAEG guidance such as 'Transitioning to ISO14001:2015' as well as implementation examples will be described in a separate document: 'EMS Maturity Framework Implementation - Resources & Examples'.

3 Foundation Level EMS Requirements

3.1 Engage Leadership and Organise

3.1.1 Environmental Policy/Statement
A publicly available statement on environmental commitment signed/endorsed by top management and prominently communicated within the company. The statement includes describing the operations and activities to which the EMS applies.

3.1.2 Leadership Commitment
Top management ensures that resources are available to secure compliance to applicable legal requirements.

3.1.3 Roles and Responsibilities
Identification of roles and responsibilities to ensure compliance with applicable legal requirements.

3.2 Monitor Compliance Obligations, Manage Risk and Control Impact

3.2.1 Identify, Monitor, Manage Environmental Compliance Obligations
All applicable environmental legal compliance obligations are identified, documented and managed as compliance obligations (as per ISO14001 §6.1.3, §6.1.4 a) 2), §6.1.4 b)).

3.2.2 Risk & Opportunity Management for Environmental Aspects and Compliance Obligations
Key Environmental Risks are assessed and managed: The most significant (material) environmental risks to the company's business are identified, documented, and mitigated/controlled (Examples: risks associated with environmental aspects and impacts, including consideration of environmental legal compliance obligations, and regarding subjects such as chemical storage, use of hazardous substances, energy use, water use, and waste generation/disposal).

3.2.3   Operational Planning & Control

Controls are identified and implemented for environmental legal compliance risks (as per ISO14001 §8.1 lines 1-9[1]).

3.2.4   Emergency/Incident Management

Formal arrangements are in place to effectively respond to potential emergency situations, particularly those that pose significant risk of environmental impact.

3.3   Manage Performance, Communicate and Train

3.3.1   Establish Environmental Objectives, Targets & Programs

There are no specific requirements regarding environmental objectives in the foundational EMS, but increasing awareness about actual and potential environmental impacts can support maturing towards target setting and improvement actions.

3.3.2   Measure KPIs

Monitoring and measuring performance against the foundational IAEG KPIs are in place (see section 7), addressing at a minimum energy/electricity usage, total waste generated, number of incidents (*e.g.*, spills), notices of violations, fines and non-conformities to legal compliance obligations. See section 7 for details. Monitoring, measurement and analysis is undertaken in compliance with legal requirements, where applicable.

3.3.3   Environmental Communications/ Awareness

Information relevant to the environmental management system is internally communicated. Top management is aware of EMS commitment and responsibilities.

3.3.4   Training/Competency

Employees responsible for activities affected by environmental legal requirements have the training and competence necessary to account for those requirements in performance of such responsibilities.

3.3.5   Documentation of EMS

Documentation/recordkeeping is in compliance with legal requirements. EMS-relevant documentation should be kept, such as records of performance measurement against foundational KPIs, copies of internal communications on EMS information, and training records of employees performing activities affected by environmental legal requirements.

3.4   Manage Compliance and Improve

3.4.1   Management review

Environmental legal compliance status and basic KPI performance are regularly included in top management meeting agendas.

3.4.2   Supplier EMS Engagement

There are no specific requirements for supplier EMS engagement in the foundational EMS, but dialogue with suppliers around EMS can be initiated as the EMS matures.

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[1] ISO14001 English Version

3.4.3 Non-Conformance and Corrective Action

A process is in place to correct non-conformities with legal requirements, mitigate associated environmental impacts, and prevent future similar incidents. Documentation of the process and its application is retained. Requirements as per ISO14001 §10.2 a) are fulfilled.

3.4.4 Compliance Evaluation and Internal Audit

Fulfilment of environmental legal requirements is regularly evaluated (as per ISO14001 §9.1.2).

3.4.5 Improvement

The maturity of the EMS progressively increases.

4 Advanced Level EMS Requirements

An Advanced Level EMS includes all of the foundational requirements of section 3 and adds the requirements of section 4.

4.1 Engage Leadership and Organise

4.1.1 Environmental Policy/Statement

An environmental policy is established reflecting the company's significant environmental risks and aspects. This should be updated as the company's context (e.g., business, products, facilities) changes. Requirements as per ISO14001 §5.2 are fulfilled with the exception that §5.2 e) is not required at this EMS maturity level. The scope of the EMS should be established as per ISO14001 §4.3, §4.4.

4.1.2 Leadership Commitment

Leaders ensure resources are available and communicate the importance of an effective EMS. Requirements as per ISO14001 §5.1 a) through g) are fulfilled.

4.1.3 Roles and Responsibilities

Top management ensures relevant roles and responsibilities for EMS elements are assigned and communicated (as per ISO14001 §5.3).

4.2 Monitor Compliance Obligations, Manage Risk and Control Impact

4.2.1 Identify, Monitor, Manage Environmental Compliance Obligations

Identification of compliance obligations is expanded beyond legal requirements to include voluntary commitments made by the company (as per ISO14001 §4.2).

4.2.2 Risk & Opportunity Management for Environmental Aspects & Compliance Obligations

A methodology is developed and used to fully identify, assess and document the company's activities, products and services, and their associated environmental aspects and impacts, to determine those that are significant. Risk management considers internal and external issues and interested parties (e.g. customers). Requirements as per ISO14001 §4.1 and §6.1.1 through §6.1.4 are fulfilled with the exception that consideration of opportunities and lifecycle perspective are not required at this EMS maturity level.

4.2.3   Operational Planning & Control

Processes are in place to address significant environmental aspects, so as to control and minimise related impacts. Measures for such control or influence of outsourced processes are in place. Requirements as per ISO14001 §8.1 (lines 10-12[2]) are fulfilled.

4.2.4   Emergency/Incident Management

Processes are in place to prepare for and respond to all likely emergency situations and to evaluate the effectiveness of emergency response. A schedule of test drills is established taking into account the likelihood and potential severity of impact, the drills are exercised, and the responses are improved upon as appropriate. Requirements as per ISO14001 §8.2 are fulfilled.

4.3   Manage Performance, Communicate and Train

4.3.1   Establish Environmental Objectives, Targets & Programs

Environmental objectives, performance targets, and actions to achieve them are developed for the environmental impacts identified as significant through the risk and environmental aspect assessment (as per ISO14001 §6.2).

4.3.2   Measure KPIs

Performance against established environmental objectives and IAEG advanced level KPIs (see section 7) are measured, monitored and analysed. This includes GHG emissions (Scope 1 & 2). Requirements as per ISO14001 §9.1.1 are fulfilled.

4.3.3   Environmental Communications/ Awareness

Internal communication is expanded to include significant environmental aspects, performance and trends, and communication is extended to contractors. A communication process is established. Requirements as per ISO14001 § 6.1.2 lines 10-11[3], §7.3, §7.4.1, §7.4.2 are fulfilled.

4.3.4   Training/Competency

Employees with duties related to the EMS and significant environmental aspects are competent through education, training, and experience (as per ISO14001 §7.2).

4.3.5   Documentation of EMS

Processes and controls are in place to document an effective EMS (as per ISO14001§7.5).

4.4   Manage Compliance and Improve

4.4.1   Management review

Leaders regularly undertake a review of their EMS compliance and environmental performance. Requirements as per ISO14001 §9.3 are fulfilled, with the exception that consideration of opportunities and continual improvement are not required at this EMS maturity level.

4.4.2   Supplier EMS Engagement

Awareness/communication materials are used to educate suppliers on the value of Environmental Management Systems.

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[2] ISO 14001 English Version
[3] ISO14001 English Version

4.4.3　Non-Conformance and Corrective Action

A process is developed and implemented to conduct root cause analysis and to ensure a proactive approach to incident investigation and analysis. Any necessary corrective actions are taken and the EMS is revised as necessary. The effectiveness of corrective actions is reviewed. Requirements as per ISO14001 §10.2 are fulfilled.

4.4.4　Compliance Evaluation and Internal Audit

In addition to legal requirements, EMS elements and other environmental compliance obligations are regularly evaluated.

4.4.5　Improvement

The EMS and environmental performance are improved through establishing, and performance towards achieving, objectives and targets (as per ISO14001 §10.1).

5　Leading Level EMS Requirements

5.1　Engage Leadership and Organise

5.1.1　Environmental Policy/Statement

The Environmental Policy includes a commitment to continual improvement. Requirements as per ISO14001 §5.2 e) are fulfilled.

5.1.2　Leadership Commitment

Leaders promote continual improvement and support other management roles (as per ISO14001§ 5.1 h) and i)).

5.1.3　Roles and Responsibilities

There are no additional requirements compared to Advanced EMS Maturity level.

5.2　Monitor Compliance Obligations, Manage Risk and Control Impact

5.2.1　Identify, Monitor, Manage Environmental Compliance Obligations

Actions are integrated into processes and evaluated for effectiveness (as per ISO14001 §6.1.4 b)).

5.2.2　Risk & Opportunity Management for Environmental Aspects & Compliance Obligations

The assessment is expanded to include both risks and opportunities, and a lifecycle perspective of activities, products and services (as per ISO14001 §6.1.1 and §6.1.2).

5.2.3　Operational Planning & Control

Environmental aspects and impacts are managed and controlled with a lifecycle perspective (as per ISO14001 §8.1).

5.2.4　Emergency/Incident Management

There are no additional requirements compared to Advanced EMS Maturity level.

5.3   Manage Performance, Communicate and Train

5.3.1   Establish Environmental Objectives, Targets & Programs
Environmental objectives, performance targets and actions to achieve them are developed from a lifecycle perspective.

5.3.2   Measure KPIs
IAEG leading level KPIs (see section 7) are measured and monitored as relevant to the company's business activities.

5.3.3   Environmental Communications/ Awareness
External communication relative to the EMS, including significant environmental aspects and performance, is conducted considering the needs and expectations of interested parties. Requirements as per ISO14001 §7.4.3 are fulfilled.

5.3.4   Training/Competency
There are no additional requirements compared to Advanced EMS Maturity level.

5.3.5   Documentation of EMS
There are no additional requirements compared to Advanced EMS Maturity level.

5.4   Manage Compliance and Improve

5.4.1   Management review
Management reviews address both risks and opportunities, including opportunities for continual improvement. Requirements as per ISO14001 §9.3 are fulfilled.

5.4.2   Supplier EMS Engagement
Awareness/communication materials are used to encourage suppliers to implement an EMS.

5.4.3   Non-Conformance and Corrective Action
There are no additional requirements compared to Advanced EMS Maturity level.

5.4.4   Compliance Evaluation and Internal Audit
An internal audit program is established that reviews all elements of the EMS as well as focusing on material environmental impacts and areas of non-conformance (as per ISO14001 §9.2).

5.4.5   Improvement
The organization continually improves the effectiveness of its EMS to enhance environmental performance from a lifecycle perspective (as per ISO14001 §10.3).

6   World Class Level EMS Requirements
An EMS certified to ISO14001 is considered to have reached 'World Class' maturity level. Continual improvement as an integral part of a certified ISO14001 system aims at ensuring future progress and improvement in environmental management.

7   Environmental Performance Indicators

Environmental performance indicators will support evaluation of the effectiveness of the Environmental Management System and can be used as a basis for setting environmental objectives and targets, and for performance review.

The table below shows examples of indicators for each EMS Maturity Level. IAEG Key Performance Indicators are shown in bold (*).

The implementation of the indicators should consider deliverables from IAEG Working Groups (e.g., AD-DSL, GHG). KPIs should be evaluated for each relevant life cycle stage. Companies will choose applicable indicators considering business context and environmental aspects and impacts. However, the EMS Maturity Framework requires as a minimum the use of IAEG Key Performance Indicators (*).

Maturity	Air	Water	Waste & Materials	EMS Implementation
Founda-tion	- **Energy/ electricity usage*** - Legally-driven compliance with emissions limits (NOx, VOC, permit requirements, etc.) and associated reporting	- Total water usage - Legally-driven wastewater discharge limits (volume, quality indicators) and associated reporting	- **Total waste generated*** - Legally-driven reporting of waste generated (volume/weight) (e.g., hazardous waste, packaging)	- **Number of environmental incidents (e.g., spills), notices of violations, fines, non-conformities (to legal obligations,)*** - Legally driven reporting of incidents - Number of go-look-see/inspections - Ratio of employees to environmental training hours/awareness sessions
Advanced	- **Scope 1 & 2 GHG emissions*** - Selected scope 3 categories (e.g., business travel) - Renewable energy purchases (e.g., green tariffs)	- Water sources, uses, and discharges (groundwater, surface water, discharge locations, reuse, treatment, etc.)	Waste Mapping - Total waste by type (solid, liquid, industrial, packaging, etc.) - Total waste by category (municipal, metals, plastic, electronics, cardboard, etc.) - Disposal methods by waste type (e.g., landfill, waste-to-energy, recycling, etc.)	- % of suppliers with EMS - Ratio of employees to training hours/awareness sessions for environmentally sensitive job tasks

| Leading / World class | - Scope 3 GHG emissions (based on materiality assessment results)
- Renewable energy (production and/or direct procurement)
- Non-GHG emissions (voluntary) | -Water-stressed assessment(s)
- Water reuse/conserva-tion (e.g., rainwater harvesting) | - Revert or recycled material in product design (remanufacturing/re-engineering) or end-of-life recovery rate
- Buy to Make ratio (e.g., Buy to Fly, resource efficiency)
- % of packaging material per product
- Number of hazardous/restricted material substitution projects | - Sustainable water/resource management plans; science-based targets; zero landfill; circular economy
- Protection of the environment (e.g., initiatives, projects)
- Number of non-conformances/findings and corrective actions from audits (internal metric)
- Leadership – evaluation of achievement of environmental objectives
- Number of environmental requirements that are implemented across functions/business processes
- % of high and medium environmental risk suppliers (work towards reduced number/mitigated risks) |

Table 1: Maturity Scale of Environmental Performance Indicators

8   Guidance on required maturity level

Environmental Risk Level of a supplier will be defined by the purchasing company and may include potential impacts on compliance, reputation, business continuity, policy. The recommended minimum EMS maturity level per risk level and company size is shown in Picture 2 'Minimum recommended EMS maturity levels'. Each purchasing company can determine the required level of EMS Maturity of companies in its supply chain according to the defined risk. To determine whether a company is small, medium or large, the criteria from the European Union can be used, based on headcount and revenues. EU Recommendation 2003/361:

Small company: <50 staff headcount; <10M €

Medium company: <250 staff headcount; 10-50M €

Large company: >250 staff headcount; >50M €

Whichever staff headcount or € revenue is higher defines the company size.

Picture 2: Minimum recommended EMS maturity levels

9 Glossary

EMS	Environmental Management System
GHG	Greenhouse Gas
IAEG	International Aerospace Environmental Group
ISO	International Organization for Standardization
KPI	Key Performance Indicator