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**Environmental management — Environ-
mental performance evaluation —
Guidelines**

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Descriptors : pollution control, performance, policy formation

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

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Environmental management — Environmental performance evaluation — Guidelines

0 Introduction

This Japanese Industrial Standard has been prepared based on the first edition of ISO 14031 *Environmental management—Environmental performance evaluation—Guidelines* published in 1999 without modifying the technical contents.

Many organizations are seeking ways to understand, demonstrate and improve their environmental performance. This can be achieved by effectively managing those elements of their activities, products and services that can significantly impact the environment.

Environmental performance evaluation (EPE), the subject of this Standard, is an internal management process and tool designed to provide management with reliable and verifiable information on an ongoing basis to determine whether an organization's environmental performance is meeting the criteria set by the management of the organization.

An organization with an environmental management system in place should assess its environmental performance against its environmental policy, objectives, targets and other environmental performance criteria. When an organization does not have an environmental management system, EPE can assist the organization in:

- identifying its environmental aspects;
- determining which aspects it will treat as significant;
- setting criteria for its environmental performance; and
- assessing its environmental performance against these criteria.

EPE and environmental audits help the management of an organization to assess the status of its environmental performance and to identify areas for improvement as needed. EPE is an ongoing process of collection and assessment of data and information to provide a current evaluation of performance, as well as performance trends over time. In contrast, environmental audits are conducted periodically to verify conformance to defined requirements. Further guidance on environmental auditing is provided in JIS Q 14010:1996 and JIS Q 14011:1996.

Examples of other tools that management can use to provide additional information for EPE include environmental reviews and life cycle assessment (LCA). While EPE focuses on describing the environmental performance of an organization, LCA is a technique for assessing the environmental aspects and potential impacts associated with product and service systems. Further guidance on LCA is provided in JIS Q 14040, JIS Q 14041, ISO 14042 and ISO 14043 (see Bibliography). Relevant information derived from these and other data sources can support the implementation of EPE, as well as the implementation of other management tools.

1 Scope

This Standard gives guidance on the design and use of environmental performance evaluation within an organization. It is applicable to all organizations, regardless of type, size, location and complexity.

This Standard does not establish environmental performance levels. It is not intended for use as a specification standard for certification or registration purposes or for the establishment of any other environmental management system conformance requirements.

NOTE The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

ISO 14031 *Environmental management—Environmental performance evaluation—Guidelines* (IDT)

2 Terms and definitions

For the purposes of this Standard, the following terms and definitions apply.

2.1

environment

surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation

NOTE Surroundings in this context extend from within an organization to the global system [JIS Q 14001:1996].

2.2

environmental aspect

element of an organization's activities, products or services that can interact with the environment

NOTE A significant environmental aspect is an environmental aspect that has or can have a significant environmental impact [JIS Q 14001:1996].

2.3

environmental condition indicator (ECI)

specific expression that provides information about the local, regional, national or global condition of the environment

NOTE "Regional" may refer to a state, a province, or a group of states within a country, or it may refer to a group of countries or a continent, depending on the scale of the condition of the environment that the organization chooses to consider.

2.4

environmental impact

any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services [JIS Q 14001:1996]

2.5

environmental management system (EMS)

the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy [JIS Q 14001:1996]

2.6

environmental objective

overall environmental goal, arising from the environmental policy, that an organization sets itself to achieve, and which is quantified where practicable [JIS Q 14001:1996]

2.7

environmental performance

results of an organization's management of its environmental aspects

NOTE 1 Environmental performance is defined differently in this Standard than in JIS Q 14001:1996 and JIS Q 14004:1996.

NOTE 2 In the context of environmental management systems, results may be measured against the organization's environmental policy, objectives and targets.

2.8

environmental performance criterion

environmental objective, target, or other intended level of environmental performance set by the management of the organization and used for the purpose of environmental performance evaluation

2.9

environmental performance evaluation (EPE)

process to facilitate management decisions regarding an organization's environmental performance by selecting indicators, collecting and analysing data, assessing information against environmental performance criteria, reporting and communicating, and periodically reviewing and improving this process

2.10

environmental performance indicator (EPI)

specific expression that provides information about an organization's environmental performance

2.10.1

management performance indicator (MPI)

environmental performance indicator that provides information about the management efforts to influence an organization's environmental performance

2.10.2

operational performance indicator (OPI)

environmental performance indicator that provides information about the environmental performance of an organization's operations

2.11

environmental policy

statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets [JIS Q 14001:1996]

2.12

environmental target

detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives [JIS Q 14001:1996]

2.13

interested party

individual or group concerned with or affected by the environmental performance of an organization

2.14

organization

company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration [JIS Q 14001:1996]

NOTE For organizations with more than one operating unit, a single operating unit may be defined as an organization.

3 Environmental performance evaluation

3.1 General overview

3.1.1 EPE process model

Environmental performance evaluation (EPE) is an internal management process that uses indicators to provide information comparing an organization's past and present environmental performance with its environmental performance criteria. EPE, as detailed in this Standard, follows a "Plan-Do-Check-Act" management model. The steps of this ongoing process are the following:

a) Plan

- 1) planning EPE;
- 2) selecting indicators for EPE (the process of selecting indicators may include both choosing from existing indicators and developing new indicators).

b) Do

Using data and information which includes:

- 1) collecting data relevant to the selected indicators;
- 2) analysing and converting data into information describing the organization's environmental performance;
- 3) assessing information describing the organization's environmental performance in comparison with the organization's environmental performance criteria;
- 4) reporting and communicating information describing the organization's environmental performance.

c) Check and Act

Reviewing and improving EPE.

Figure 1 provides an outline of EPE, with references to the numbers and titles of relevant clauses in this Standard. Annex A provides supplemental guidance to support EPE.

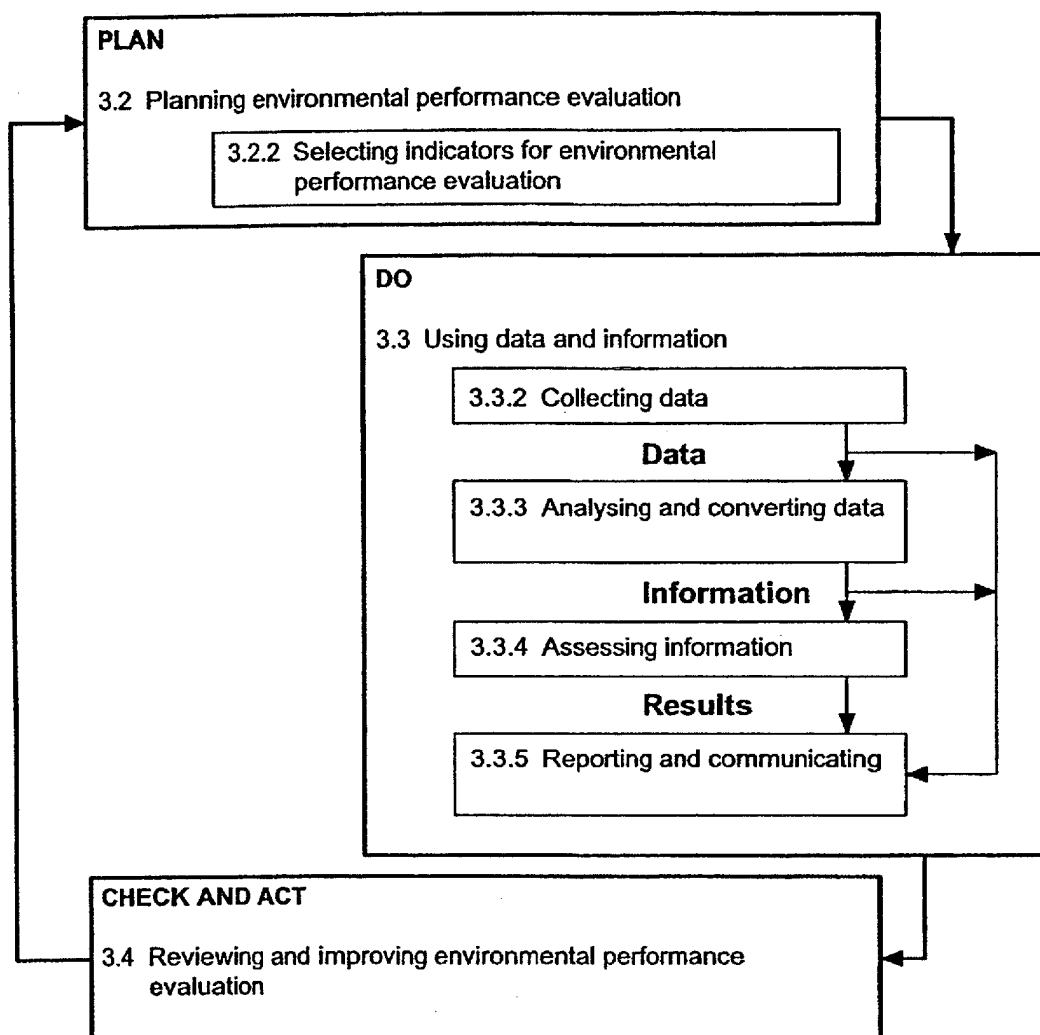


Figure 1 — Environmental performance evaluation

3.1.2 Indicators for EPE

This Standard describes two general categories of indicators for EPE:

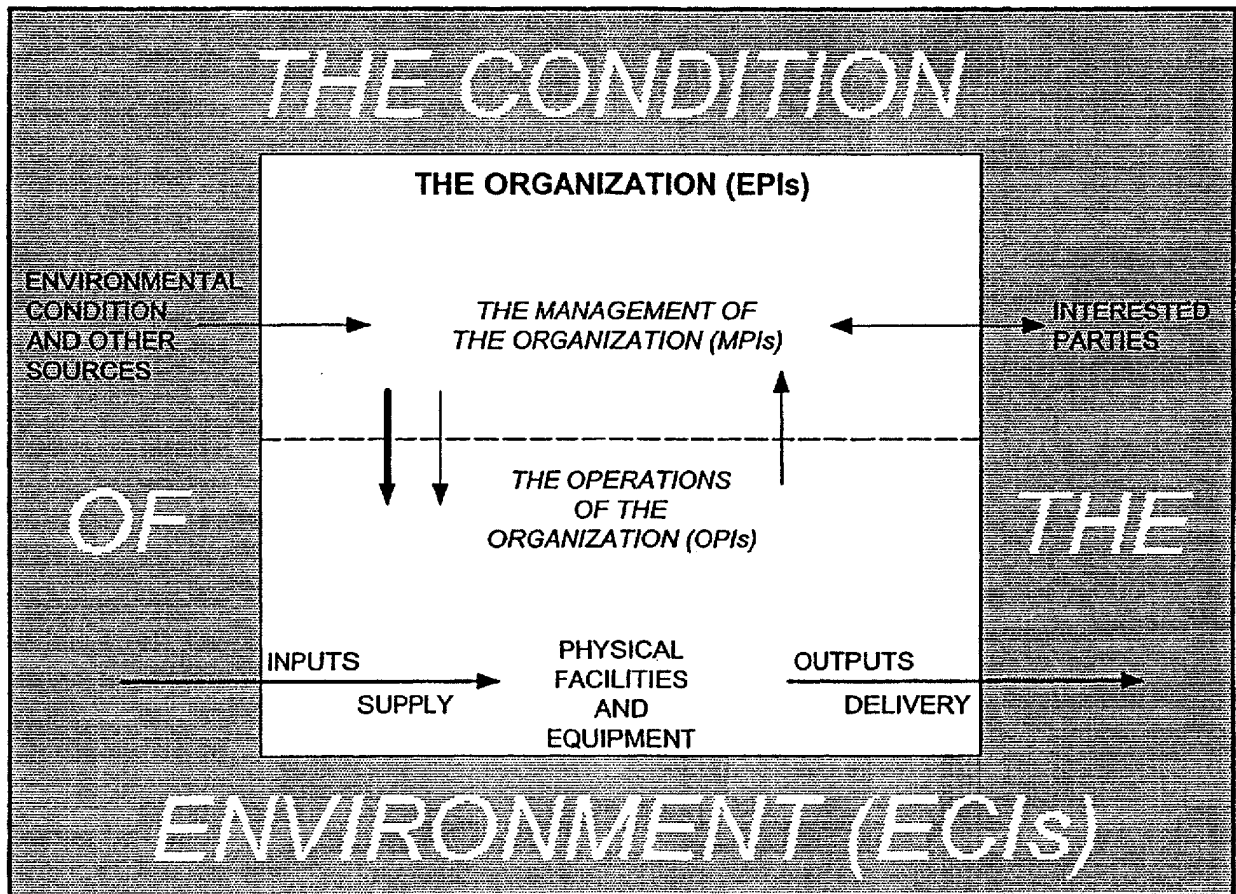
- environmental performance indicators (EPIs); and
- environmental condition indicators (ECIs).

There are two types of EPI:

- Management performance indicators (MPIs) are a type of EPI that provide information about management efforts to influence the environmental performance of the organization's operations.
- Operational performance indicators (OPIs) are a type of EPI that provide information about the environmental performance of the organization's operations.

ECIs provide information about the condition of the environment. This information can help an organization to better understand the actual impact or potential impact of its environmental aspects, and thus assist in the planning and implementation of EPE.

The decisions and actions of an organization's management are closely related to the performance of its operations. Figure 2 illustrates the interrelationships among an organization's management and operations, and the condition of the environment, noting the type of indicator for EPE related to each of these elements.



Key

Information flows:

Input and output flows related to the organization's operations:

Decision flows:

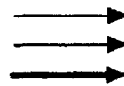


Figure 2 — Interrelationships of an organization's management and operations with the condition of the environment

3.1.3 Use of EPE

Management commitment to implement EPE is essential. EPE should be appropriate to the size, location, and type of the organization and its needs and priorities. EPE should be cost-effective and part of the regular business functions and activities of an organization. The information generated by EPE can assist an organization to:

- determine any necessary actions to achieve its environmental performance criteria;
- identify significant environmental aspects;

- identify opportunities for better management of its environmental aspects (e.g. prevention of pollution);
- identify trends in its environmental performance;
- increase the organization's efficiency and effectiveness;
- identify strategic opportunities.

Internal reporting and communication of information describing the organization's environmental performance is important to assist employees in fulfilling their responsibilities, thereby enabling the organization to achieve its environmental performance criteria. Management may also report or communicate such information to other interested parties.

An organization's EPE should be reviewed periodically to identify opportunities for improvement.

3.2 Planning EPE (Plan)

3.2.1 General guidance

An organization should base its planning of EPE (including the selection of indicators for EPE) on:

- the significant environmental aspects that it can control and over which it can be expected to have an influence;
- its environmental performance criteria;
- the views of interested parties.

NOTE Clause A.2 of this Standard provides guidance on identifying the views of interested parties in the context of EPE.

In planning EPE, the organization can also consider:

- the full range of its activities, products and services;
- its organizational structure;
- its overall business strategy;
- its environmental policy;
- information needed to meet its legal and other requirements;
- relevant international environmental agreements;
- environmental costs and benefits;
- information needed for analysis of financial effects related to environmental performance;
- the need for consistent information related to its environmental performance from year to year;
- information about the local, regional, national or global condition of the environment;
- cultural and social factors.

The financial, physical and human resources needed to conduct EPE should be identified and provided by management.

Depending on its capabilities and resources, the initial scope of an organization's EPE may be limited to those elements of its activities, products and services given highest priority by management. Over time, the initial scope of EPE can be widened to address elements of an organization's activities, products and services that have not been previously addressed.

The identification of an organization's environmental aspects is an important input in planning EPE. This information typically is developed in the context of an environmental management system. Guidance on identifying significant environmental aspects in the context of environmental management systems can be found in JIS Q 14001 and JIS Q 14004. An organization with an environmental management system in place should assess its environmental performance against its environmental policy, objectives, targets and other environmental performance criteria.

An organization without an environmental management system may use EPE to assist in identifying environmental aspects which it will treat as significant and setting criteria for its environmental performance. To determine significant environmental aspects, such an organization should consider:

- the scale and nature of material and energy usage;
- emissions;
- risks;
- the condition of the environment;
- the possibility of incidents;
- legal, regulatory and other requirements to which the organization subscribes.

For most organizations, the review of environmental aspects will focus on the organization's operations, as described in Figure A.1.

Practical Help Box No. 1

Examples of approaches to identify environmental aspects and their relative significance in the context of EPE, for organizations without environmental management systems

- Identify activities, products and services of the organization, the specific environmental aspects and the relative significance associated with them, and the potential impacts related to significant environmental aspects.
- Use information about the condition of the environment to identify activities, products and services of the organization that may have an impact on specific conditions.
- Analyse the organization's existing data on material and energy inputs, discharges, wastes and emissions and assess these data in terms of risk.
- Identify the views of interested parties and use this information to help establish the organization's significant environmental aspects.
- Identify activities of the organization that are subject to environmental regulation or other requirements, for which data may have been collected by the organization.
- Consider the design, development, manufacturing, distribution, servicing, use, re-use, recycling and disposal of the organization's products, and their related environmental impacts.
- Identify those activities of the organization having the most significant environmental costs or benefits.

Whether it has an environmental management system or not, an organization should plan EPE in conjunction with the setting of its environmental performance criteria, so that the selected indicators for EPE will be appropriate for describing the organization's environmental performance against these criteria.

Examples of sources from which environmental performance criteria can be derived include:

- current and past performance;
- legal requirements;
- recognized codes, standards and best practices;
- performance data and information developed by industry and other sector organizations;
- management reviews and audits;
- the views of interested parties;
- scientific research.

3.2.2 Selecting indicators for EPE

3.2.2.1 General guidance

Indicators for EPE are selected by organizations as a means of presenting quantitative or qualitative data or information in a more understandable and useful form. They help to convert relevant data into concise information about management's efforts to influence the organization's environmental performance, the environmental performance of the organization's operations, or the condition of the environment. An organization should select a sufficient number of relevant and understandable indicators to assess its environmental performance. The number of selected indicators for EPE should reflect the nature and scale of the organization's operations. The choice of indicators for EPE will determine what data should be used. To facilitate this effort, organizations may wish to use data already available and collected by the organization or by others.

The information conveyed through indicators for EPE can be expressed as direct or relative measures or as indexed information. Indicators for EPE may be aggregated or weighted as appropriate to the nature of the information and its intended use. Aggregation and weighting should be done with care to ensure verifiability, consistency, comparability and understandability. There should be a clear understanding of assumptions made in the handling of data and its transformation into information and indicators for EPE.

Practical Help Box No. 2

Examples of characteristics of data for indicators for EPE

- *Direct measures or calculations:* basic data or information, such as tonnes of contaminant emitted.
- *Relative measures or calculations:* data or information compared to or in relation to another parameter (e.g. production level, time, location or background condition), such as tonnes of contaminant emitted per tonne of product manufactured, or tonnes of contaminant emitted per unit of sales turnover.
- *Indexed:* describing data or information converted to units or to a form which relates the information to a chosen standard or baseline, such as contaminant emissions in the current year expressed as a percentage of those emissions in a baseline year.
- *Aggregated:* describing data or information of the same type, but from different sources, collected and expressed as a combined value, such as total tonnes of a given contaminant emitted from production of a product in a given year, determined by summing emissions from multiple facilities producing that product.
- *Weighted:* describing data or information modified by applying a factor related to its significance.

There are many considerations an organization may take into account when selecting indicators for EPE, and several approaches that an organization may use to select its EPIs (OPIs and MPIs) and ECIs. Some considerations for selecting indicators for EPE are provided in A.3.1. A.3.2 provides some examples of approaches for the selection of indicators for EPE.

Some environmental aspects may be complex, and it may be beneficial to select a combination of EPIs and ECIs to provide a comprehensive assessment of performance related to such aspects.

Indicators for EPE should be selected so that management has sufficient information to understand the effect that progress toward achieving any one environmental performance criterion has on other elements of environmental performance.

Organizations may find it useful to select several indicators for EPE derived from a common set of data depending on the intended audience for each indicator.

Practical Help Box No. 3

Example to illustrate an organization selecting several indicators for EPE derived from a common set of data, depending on the intended audiences

An organization discharging treated wastewater to a lake selects the following indicators for EPE:

- total amount of specific contaminant discharged per year
(possible intended audience: the local community);
- concentration of contaminant in wastewater
(possible intended audience: legal and regulatory authorities);
- amount of contaminant discharged per product produced
(possible intended audiences: management and consumers);
- change in amount of contaminant discharged per year relative to investments in cleaner technology or process upgrade
(possible intended audiences: management and investors).

Regional, national and global indicators related to environmental performance or sustainable development are being developed by government agencies, non-governmental organizations, and scientific and research institutions. When selecting indicators for EPE and collecting data, organizations may wish to consider indicators being developed by such entities and compatibility with information which is provided to them.

3.2.2.2 Selecting MPIs

In the context of EPE, the management of the organization includes the policies, people, planning activities, practices and procedures at all levels of the organization, as well as the decisions and actions associated with the organization's environmental aspects. Efforts and decisions undertaken by the management of the organization may affect the performance of the organization's operations, and therefore may contribute to the overall environmental performance of the organization (see Figure 2).

Management performance indicators (MPIs) should provide information on the organization's capability and efforts in managing matters such as training, legal requirements, resource allocation and efficient utilisation, environmental cost management, purchasing, product development, documentation, or corrective action which have or can have an influence on the organization's environmental performance. MPIs should assist evaluation of management efforts, decisions and actions to improve environmental performance.

For example, MPIs can be used to track:

- implementation and effectiveness of various environmental management programmes;
- management actions which influence the environmental performance of the organization's operations, and possibly the condition of the environment;
- efforts of particular importance to the successful environmental management of the organization;
- environmental management capabilities of the organization, including flexibility to cope with changing conditions, accomplishment of specific objectives, effective co-ordination, or problem-solving capacity;
- compliance with legal and regulatory requirements, and conformance with other requirements to which the organization subscribes;