

New System for Environmental Management Evaluation

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Abstract

In Japan, where ISO14001 certifications have passed the 10,000 mark, the need for environmental management has taken firm root among companies. However, in the small- and medium-enterprise sector, and among tiny businesses, there are firms not obtaining ISO certification due to their concern about human resources and increased work load. On the other hand, among businesses that have already succeeded in gaining ISO certification, one does not sense any growth with regard to the continual improvement. Voices from certain quarters indicate there is a lack of incentive to keep on improving. With this background, we herewith present a new system to evaluate the level of environmental management in a company by means of a 5-step system.

Key Words: environmental concern, ISO14001 certification, environmental management, Eco Stage, five-stage model, continual improvement

1. Introduction

Concern for the environment is growing around the world. Especially regarding corporate offenders, there is increased pressure from parties whose interests are affected to have companies run their business with the environment in mind. Among the enterprises managing their business operations with due care for the environment are many who are putting together an environmental management system with ISO14001 certification as the building block. As a result some of these firms have achieved outstanding environmental performance in the way of electrical energy savings, reduction of pollution, fewer injurious chemical substances and the like. Yet, because the ISO14001 requirements are seen as too stringent by some small and medium enterprises, the will to proceed beyond certification is minimal. Thus, environmental performance improvement and environmental activities are not on a par

with other corporate activities in such companies. For this reason, there is a need for some kind of overall framework other than ISO14001 to be used for environmental management.

Moreover, in recent days, given the various interests surrounding the business sector, the hope is that businesses will make public various information on environmental management, including the nature of their own environmental management system, actual environmental activities and results thereof, together with the economics of these environmental activities from an accounting perspective.

Based on the above-mentioned business climate, the UFJ Management System Institute, Ltd. proposes the "Eco Stage" scheme as new means for the overall evaluation of corporate environmental management. In this study, we stake out an overall environmental management concept and introduce the new "Eco Stage" as one system available for evaluation.

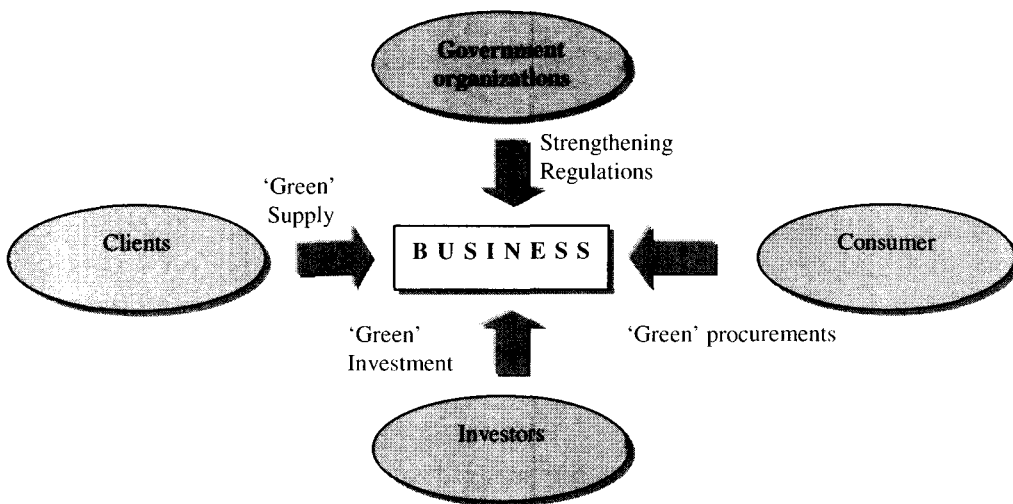


Fig. 1 Pressure on management to become environmentally responsible

2. Environmental management

2.1 Demand for environmental concern from interested parties

The current environmental management scenario was triggered by the 1992 "Earth Summit" held in Rio de Janeiro. The "key word" was 'Sustainable Development'. A world consensus was reached that "business," the leader of so-called Development in the past,

should be called on the carpet by everyone having a stake in the environment. As shown in Fig. 1, businesses espousing environmental management concerns must respond to the environmental expectations and needs of all kinds of people having a stake in the environment as such. This is the key factor at work in the present environmental management situation.

2.2 Three elements in environmental management

In the initial stages of this ongoing need for environmental management, many considered environmental management itself to mean merely the lessening of the load on the environment from building and operating an environmental management system. Given the need for businesses to deal constructively with environmental issues, Saito (2001) considered three factors to be essential: an environmental management vision, an environmental management system, and communication. Business must first of all stake out a clear direction by realizing various environmental activities. It must give an organized form to its objectives, and build a structure for management priorities. Finally, it must explain to the outside world its activities with regard to the 'Environment', the public trusts.

Suzuki (2001) defined true environmental management as a form of management that can make a profit by addressing squarely the issues of the earth's environment. When we think about the ongoing attempts made in the name of environmental management, one always runs up against the divisive issue of 'Environmental Concern and Economics'. Environmental management can not achieve truly sustainable development if it ignores its mission to make a profit. To both turn a profit and achieve environmental results as a company, each firm must understand that the 'environment' is both a business opportunity and a genuine risk, and it must move ahead accordingly. In this vein, we consider that three elements are needed for ongoing environmental management: a strategy, a management system, and communications (Fig. 2).

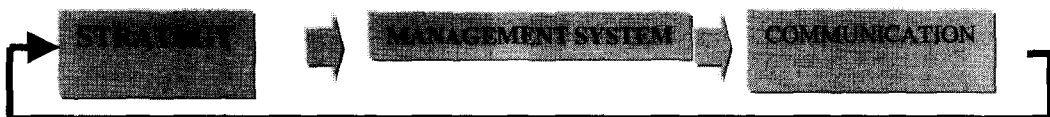


Fig. 2 The three functions for environmental management

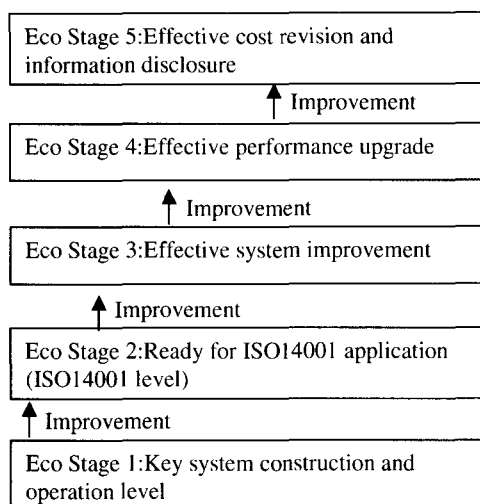
3. Environmental Management System Evaluation

Miki (2002) summed up the evaluation systems for environmental management reported to date from three points of view: economic, social and environmental. The main system among them, of course, is the evaluation system with its focus on the ISO14001 approach to environmental management, along with the environmental performance-based evaluation system of the ISO14031, etc. Each of these systems has its own evaluation scheme in terms of system effectiveness or results. In the overall evaluation of the environmental management, it is usually the rule to have a combined evaluation embracing several evaluation systems. Also, since one can only obtain information as to compliance or non-compliance of the evaluation results with the ISO14001 standards, it is difficult for a given company to know whether its actual environmental management is at a high or low level. Moreover, in recent years new evaluation systems have emerged which are based on environmental reports, questionnaire survey and other such information. The evaluation is done from the various evaluation perspectives of these systems. However, such systems tend to be superficial when made public since they attempt to evaluate many organizations at one and the same time. This poses a problem because information of this kind can not serve as an adequate basis for obtaining data through on-site surveys and practical evaluation.

4. Environmental management evaluation system 'Eco Stage'

4.1 'Eco Stage' features

As mentioned above, we of the UFJ Management System Institute consider it necessary to create an evaluation system to assess a firm's overall environmental management level using the three above-described elements (i.e., strategy, management system, communication) and the results in terms of environmental performance. Thus, we have proposed our "Eco Stage" system for environmental management evaluation. We have defined environmental management in terms of "A good balance between a practical concern for the environment as reflected in corporate activities and the economic activities that assure survival of the company, together with translating this into a continuing modus operandi." We have staked out five stages to achieve this. Figure 3 shows these stages from system construction up through implementation, improvement and the upgrading of environmental management.



- Eco Stage 1: At this initial level, when the environmental management system is introduced, the basic business priorities in place show a concern for the environment.
- Eco Stage 2: The environmental management system has reached the ISO14001 certification level, an international standard.
- Eco Stage 3: At this level, the system has been upgraded so that the business management approach incorporating the essential elements (sales, R&D, design, processing and distribution etc.) actually reflects an environmental concern. (However, these needed elements may differ with the business sector.)
- Eco Stage 4: At this level, the essential business management elements have been taken care of, and management is pursued in accordance with environmental performance indicators.
- Eco Stage 5: The overall management system is now in place, along with environmental performance improvements, thanks to environmental accounting, information disclosure, and active communication with society at large.

Fig. 3 Eco Stages: Five-stage model of environmental management

4.2 Eco Stage evaluation

The evaluation criteria for each of these Eco Stages are decided. Table 1 and 2 present these criteria for various items, including performance. At Eco Stages 1 and 2, the items are shown in relation to ISO14001 requirement standards, and the management system construction and operation levels are evaluated. Then, in Table 3, the basic system evaluation criteria are shown for various items to be scored. This new Eco Stage evaluation system will hopefully help businesses score each function in their environmental management program and provide markers for improvements made or under way. It should be recalled that on-the-spot investigation is necessary. At each level of management it is crucial that

those in positions of responsibility and employees in general be interviewed so that the actual on-site situation can be confirmed.

Table 1. Eco Stage evaluations items 1-2

ITEM	SYSTEM FEATURES	EVALUATION POINTS	CIRCLE APPROPRIATE LEVEL				
4.4.1	Organization management	CL Suitability of organization system	1	2	3	4	5
		IL Communication level, responsibility, authority	1	2	3	4	5
4.3.1	Environmental aspect	CL Suitability of environmental criteria	1	2	3	4	5
		IL Operation level, review level	1	2	3	4	5
4.2	Policy management	CL Suitability, harmonization with business objectives	1	2	3	4	5
4.3.3 4.3.4		IL Permeation and progress levels	1	2	3	4	5
4.3.2	Legal system management	CL Specific content suitability	1	2	3	4	5
		IL Handling speed, compliance	1	2	3	4	5
4.4.2	Education, internal communication	CL Suitability of education	1	2	3	4	5
4.4.3		IL Awareness, knowledge levels	1	2	3	4	5
4.4.4	Environmental management system documentation	CL Suitability of document system	1	2	3	4	5
		IL Awareness of document system in place	1	2	3	4	5
4.4.5 4.5.3	Document/records control	CL Suitability of control	1	2	3	4	5
		IL Thoroughness of control	1	2	3	4	5
4.4.3	External communication	CL Complaint-handling, disclosure suitability	1	2	3	4	5
		IL Complaint-handling and information disclosure level	1	2	3	4	5
4.4.6	Operational control	CL Suitability of operating criteria	1	2	3	4	5
		IL Compliance with operating criteria	1	2	3	4	5
4.5.1	Monitoring/measurement management	CL Monitoring management suitability	1	2	3	4	5
		IL Compliance with monitoring management	1	2	3	4	5
4.4.7	Emergency management	CL Special suitability for emergencies	1	2	3	4	5
		IL Drill implementation etc.	1	2	3	4	5
4.5.2	Corrective action	CL Suitability of corrective actions	1	2	3	4	5
		IL Level of corrective actions	1	2	3	4	5
4.5.2	Preventive action	CL Suitability of corrective actions	1	2	3	4	5
		IL Level of protective actions	1	2	3	4	5
4.5.4	Internal audit	CL Suitability of auditing method(s)	1	2	3	4	5
		IL Level of auditing (content)	1	2	3	4	5
4.6	Management review	CL Suitability of review	1	2	3	4	5
		IL Level of review results	1	2	3	4	5
Subtotal							

* Half-tone portions indicate Eco Stage 1 evaluation items. CL = Construction level, IL = Implementation level

Table 2. Eco Stage evaluation chart

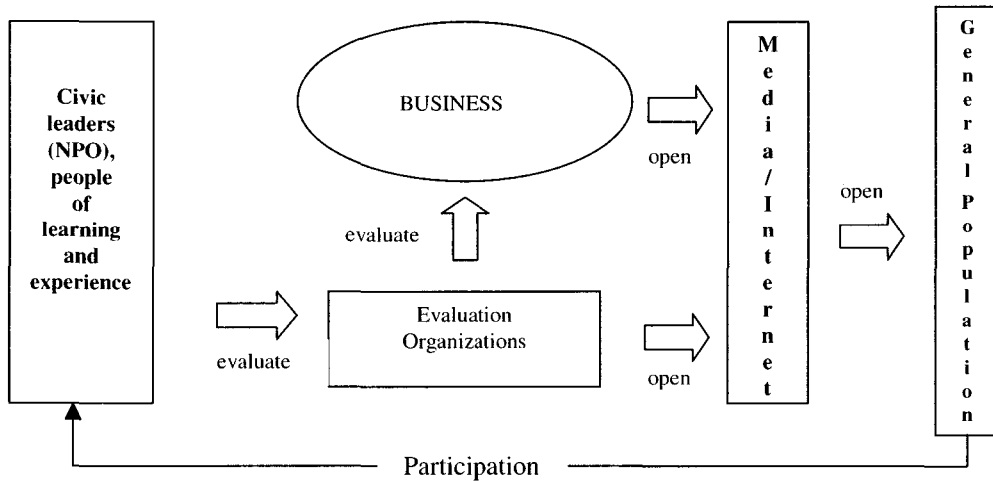
PERFORMANCE ITEMS	EVALUATION ACCURACY	CIRCLE APPROPRIATE LEVEL				
		1	2	3	4	5
Energy savings	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Reduced use of resources	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Waste recycling	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Chemical management	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Green procurement	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Ecological product	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Environmental education	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Reduced environmental load (pollution: air, water, earth)	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Environmental labels	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Links with affiliates (including overseas development)	Indicator suitability	1	2	3	4	5
Links with affiliates (including overseas development)	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Information disclosure	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Corporate contributions, etc.	Indicator suitability	1	2	3	4	5
	Target attainment	1	2	3	4	5
Subtotal						

4.3 Eco Stage evaluation scheme

As mentioned earlier, various concerned parties are calling for environmental awareness from firms presently undertaking environmental management programs. It is recommended that these companies disclose the results of their environmental management evaluation to as wide a spectrum of such interested parties as possible. To that end, we have developed a scheme to involve these parties as participants and to convey information to them. We call it a circulating-type evaluation system (Fig. 4).

Table 3. System evaluation criteria

Evaluation of System Construction Level		Evaluation of Implementation Level
5	Size type, business status make it a model	Effective from all three standpoints; top class ranking
4	Efficient and appropriate in terms of size, type and business status	Functions effectively and reliably from three standpoints at left
3	Virtually appropriate from standpoints of size, type and business status	Virtually effective function from standpoints of size, type and business status
2	Minor inappropriateness	Partial problem in terms of implementation; not functioning efficiently
1	Highly inappropriate or many minor problems	System not in place yet; needs improvement(s)

**Fig. 4** Eco Stage circulating-type environmental evaluation system

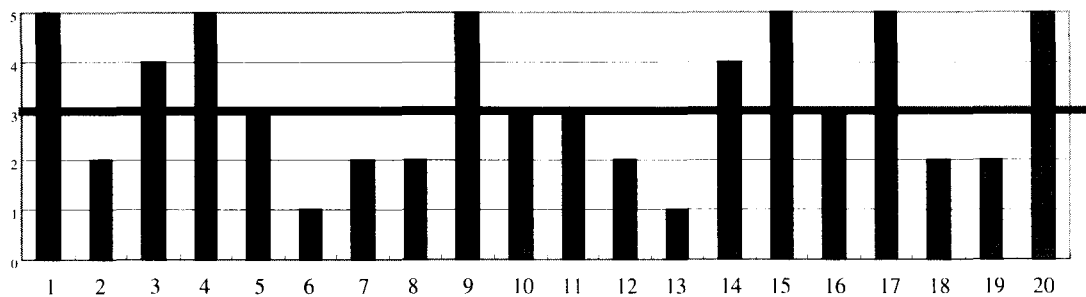
5. Eco Stage Results

5.1 Advantages of Eco Stage evaluation

The greatest feature of the Eco Stage approach is the evaluation of the environmental management organizational level in five stages. In particular, in Eco Stage 1, the organizational management system and environmental management system can be evaluated

at least in terms of their basic functions. This means a great shortcut compared to the environmental measurement outlay and documentation management associated with the ISO14001 certification process, making it considerably easier for small and medium enterprises to take the first step in the direction of environmental concern. Moreover, the improvement process is judged by "Which stage is the focus" and the "Overall evaluation score" with regard to the following target: striking a good balance between environmental concern translated into environmental activities and business-for-profit activities, while continuously targeting objectives and improving the organization engaged in consistently upgrading the environmental management status.

Also, the 5-point evaluation is used for the Eco Stage environmental management system and each of its subsystems. In this way, the strengths and the weaknesses of the elements in each company's various environmental management system can be exposed.(Fig.5)



1. Organizational control system construction level
2. Organizational control system implementation level
3. Policy control construction level
4. Policy control implementation level
5. Education and in-house communication level
6. Education and in-house communication implementation level
7. Management system documentation level
8. Management system documentation implementation level
9. Documents/records control construction level
10. Documents/records control implementation level
11. Monitoring/measurement control system construction level
12. Monitoring/measurement control system implementation level
13. Corrective measure system construction level
14. Corrective measure system implementation level
15. Preventive measure system construction level
16. Preventive measure system implementation level
17. Internal auditing system construction level
18. Internal auditing system implementation level
19. Renewal by management construction level
20. Renewal by management implementation level

Fig. 5 Eco Stage evaluation results

5.2 Eco Stage evaluation results

As of January 2003, eighteen organizations have been granted Eco Stage 1-3 approval. Yano (2002) validated the relationship between the level of environmental management and business results (turnover per person) for twenty companies' Eco Stage results including some evaluated by trial. (Fig. 6.) The correlation between two was 0.448. Data were few, scores were disparate and differences existed among the types of companies in terms of sales turnover, making satisfactory validation impossible. However, further follow-up analyses are under way.

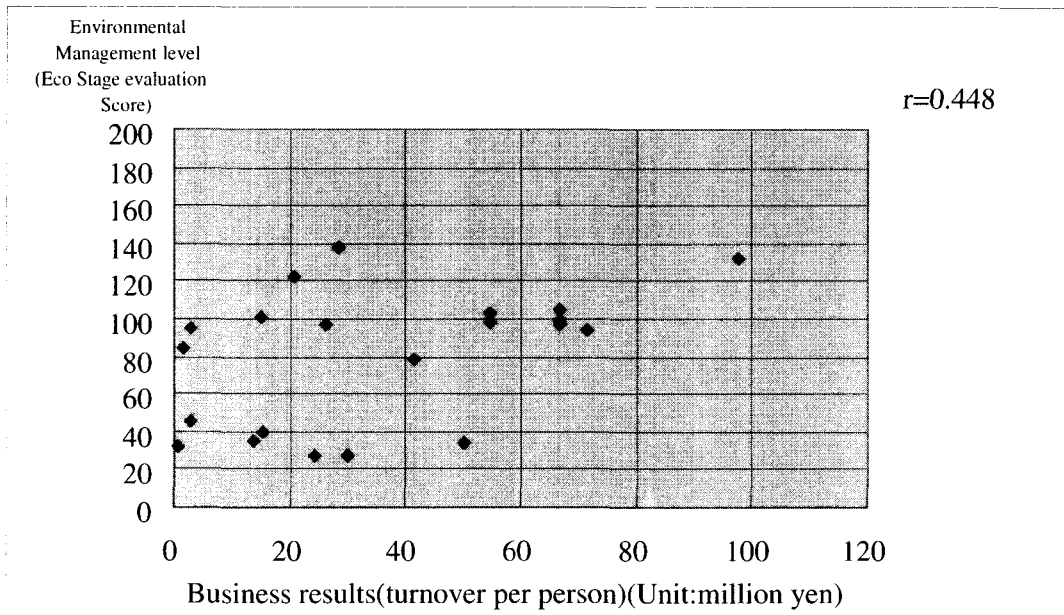


Fig. 6 Relationship between Eco Stage evaluation scores and company business results

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