Environment Protection and Resources Saving of the Industrial Construction Projects: The Role of Audit

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Abstract. Construction projects are vital to the society and the industry. The implementation of any construction project will have different degrees of impact on the environment, resources and energy. With the rapid growth of China's economy, various types of industrial projects have started construction, the environmental protection and the sustainable use of natural resources pressure is increasing. The audit is an efficient weapon to help the industry save resources and energy in the new era. Using the new method of the monitoring and analysing, especially performance evaluation index system, the auditors can give their professional opinions and suggestions to the industries on better using of the resources and energy.

1. Introduction

China's natural resources and energy per capita are very limit, and the environmental situation and pressure are very serious. In recent years, with the acceleration of industrialization, urbanization and the construction of new countryside in China, the contradiction between industry’s development and environmental constraints will become more and more prominent. The ecological environment situation is worrying, and the long-term extensive industry growth model is not sustainable. Thus, the severe situation of resources, energy and environment has seriously restricted the sustainable development of China's related industries.

Given this situation, China has formulated the overall requirements of the policy of sustainable development, which includes the emphasis of the win-win situation of speeding up the development and environment protection. And industry also should consider the solution of existing problems and the resolution of new contradictions. Audit, as the immune system of operation mechanism, plays an important role in industry’s development. In the face of this influence and the vital problem that restricts the overall situation of China's modernization, the auditors should earnestly study and implement the strategic approach of strengthening the construction of ecological civilization, building a resource-saving and environment-friendly society, and actively and effectively strengthen the audit of resources, energy and environment from the overall situation and strategy. It is not only a concrete action and measure to practice the scientific concept of development, but also an unshrinkable historical responsibility and obligation.

As for the Industries, construction project is an important activity of their operations. The implementation of any industrial construction project will have different degrees of impact on the
environment, so the environmental audit is essential for the continuous booming for the construction project.

2. Previous Studies of Environmental Audit
This section reviews previous studies of environmental audit practices, with a focus on those studies that examine how to use audit as a tool to promote the environment protection. U.S. Government Accountability Office (1995) suggests that environmental auditing could reduce the cost while improving environmental performance [1]. While some studies applied the stakeholder theory to their research of environmental audit. For example, Dawkins (2004) finds that after auditing, the credibility of environmental information will be more powerful to influence information users or stakeholders to be willing (or not willing) to set up, maintain or improve the attitude of the relationship with the information providers and performance by extension to influence the financial performance of the cooperation [2]. Coyne (2006) explores the sustainability audit by using a broad perspective, as the inspection procedures include the three dimensions of sustainability: social, ecological and economic. And his work measures value and subsequent progress in the three dimensions. The values are measured through performance metrics against a set of performance indices (or criteria) or against a set of sustainability guidelines [3].

In line with auditing, eco- and sustainability benchmarking focus on the continuous comparison of environmental performance with other enterprises or corporate sectors to reveal a company's own strengths and weaknesses. Springett (2003) believes this tool provides a way in which corporations can be held to account in terms of their environmental and social responsibility, providing a measure that has become a driver for many companies [4]. Costantino et al. (2018) believes that environmental risk management requires specific methodologies to focus audit activities on the most critical elements of production systems [5]. Some studies showed that the relation of environment management and internal audit. Earnhart and Leonard (2016) examines the extent of environmental management practiced by U.S. chemical manufacturing facilities, as measured by the number of environmental internal audits conducted by facilities annually. They focus on the effects of firm-level organizational structure on facility-level environmental management practices [6].

3. Environmental Audit in Construction Projects
The environmental impact assessment of an industrial construction project refers to the analysis, prediction and evaluation of the environmental impact that may be caused by the implementation of the project, the countermeasures and measures to prevent or mitigate adverse effects, and the activities to follow up and monitor. Projects evaluation is the evaluation carried out by the third part. As a big impact on the energy, resources and environment, the industry should take the lead in doing a good job of coordinating relations with the environment and resources, and strengthen the environmental impact assessment of the construction projects.

Environmental performance evaluation in the audit has a wide range of content. The industrial construction projects may cause adverse environmental impacts and directly address the issue of infringement of public environmental rights and interests, as well as the prevention or mitigation of adverse environmental impacts. The environmental performance evaluation in the audit usually includes the evaluation of environmental impact of the project, the evaluation of environmental value, the analysis of energy, resources and environmental cost benefit, etc. It also includes the evaluation of the environmental impact of the project, that is, the impact of the construction project on the surrounding area and even the national environment, as well as evaluation activities related to environmental adaptability issues.

The objective of the evaluation is to prevent and evaluate the adverse environmental impact of project implementation and to evaluate the adaptability and compatibility with the surrounding environment. The specific evaluation includes: the implementation of the project to the surrounding atmosphere, water bodies and soil and other natural environment pollution, the destruction of animals and plants and other ecological damage, as well as natural relics and cultural relics damage, whether the project is
incongruous within the surrounding nature reserves, scenic spots, urban and rural environment. And the extent and magnitude of the adverse environmental effects that may be caused by the project.

The environmental value of construction project is an important part of project environmental performance. Therefore, environmental value evaluation has become the entry point of environmental performance evaluation. Environmental value is mainly embodied in the scarcity of environmental resources and its usefulness to human beings. Environmental performance evaluation mainly involves the content of its value evaluation, especially the measurement and analysis of environmental assets or natural assets; and value assessment of the use of natural resources and the environment, especially the impact value of animal groups, plant groups and other ecosystems; environmental pollution, resource depletion and ecological destruction and management caused by project implementation; also, the input value of protection and so on. The environmental cost benefit evaluation of construction project is to examine the environmental impact of the project into the cost benefit analysis, which means to investigate the project environmental performance, including: the profit and loss analysis of the project on the environmental impact, the prevention and control of environmental pollution, resource depletion and ecological damage measures.

4. Performance Evaluation Index System in the Audit

The establishment of the index system should not only clarify which indexes the system consists of, but also determine the correlation between the indexes, that is, the index structure. The establishment of index system is mainly the selection of indicators and the determination of structural relationship between indexes. In order to carry out the performance evaluation, the auditors should first select some indexes representing the attributes of some aspects of the object, establish the corresponding index system, and then analyze and evaluate the objects. The establishment of a scientific and objective evaluation index system can accurately and comprehensively reflect the overall attributes of the evaluation object and lay a solid foundation for the future implementation of evaluation activities. On the contrary, if the evaluation index system cannot fully reflect the overall characteristics of the evaluation object, the evaluation conclusions and the actual situation will be disconnected.

Environmental impact indicators are used to evaluate the consequences of project implementation on the environment, and comprehensively reflect the social benefits and impact of the project. This group of indicators promote the importance of investment construction projects in the management of environmental pollution. Environmental performance is manifested in natural environment performance, ecological environment performance and social environmental performance. The natural environment performance is the degree of geological impact of the project, new soil erosion, air pollution index, water pollution index and noise pollution index. The performance of ecological environment is the degree of impact on wildlife, vegetation cover change rate, changes in plant species. And the social environmental performance includes the degree of travel barrier of social environment performance, the degree of interference with other facilities, the floor area, and the degree of influence on landscape resources. (see Table 1).

| Numble | Evaluation indicators                  | Assessment Points                                                                 |
|--------|---------------------------------------|-----------------------------------------------------------------------------------|
| 1      | Natural Environment Performance       | geological impact index, added amount of soil erosion, air pollution index, water pollution index, noise pollution Index |
| 2      | Ecological Environment Performance   | impact on wildlife, rate of change in vegetation cover, changes in plant species |
| 3      | Social Environment Performance       | travel barrier degree, degree of interference with other facilities, floor area, the influence degree of landscape resources |

Table 1. Environment Performance Evaluation Index System of Construction Project.
When using the environment performance evaluation index system in the work, auditors should pay attention to the cost benefit analysis of the external effect of environmental impact and incorporate it into the framework of analysis of the whole project. For the quantitative analysis of the environmental impact of construction projects, the cost and benefit of the environmental impact of construction projects should be identified and calculated from the perspective of the whole industry.

5. Conclusion
Conserving resources and protecting the environment is the basic state policy of China and the government gives high priority to conserving resources, protecting the environment and promoting its natural restoration. Therefore, the environmental performance evaluation of construction projects by auditors is conducive to curbing the adverse phenomena of good construction and bad environmental protection, strengthening environmental protection work, helping to realize the harmonious coexistence of project construction with ecological environment and natural resources, and promoting the implementation of the strategy of sustainable economic and social development.

By applying the performance evaluation index system to the environment protection and energy saving in industrial construction projects, the related industries can also get better understanding of the bottleneck and drawback of their own.

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