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Post-project-analysis in Environmental Impact of the Ecological Construction Projects

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Abstract

Based on the necessity of post-project-analysis (PPA) in environmental impact of ecological impacted projects, applicable object, time fence, work procedure and fundamental content were discussed, and some suggestions for improving PPA policies, regulations and law, promoting PPA work and accumulating its work experience were put forward.

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1. Introduction

Post-project-analysis (PPA) in environmental impact refers to a method and system of tracing monitoring and confirmatory assessing the environmental impact of constructed projects and the efficiency of preventive measures, as well as proposing remedial plans or measures, aiming to achieve the coordination between project construction and environment [1]. At present, the post-project-analysis in environmental impact in China is basically in the stage of discussing in the concept, indicators, methods,
content and procedure of the assessment as well as developing case studies [2-4], while post-project analysis in construction projects is not yet widely conducted.

For the characteristics of complexity, long-term and time lag of ecological impacted construction projects, post-project analysis of environmental impact has received widespread concern [5-7]. The PPA has been regarded as one of the special topics in post-assessment of highway construction projects, and the Ministry of Environmental Protection has also developed PPA programs in Antaibao surface mine project of China National Coal Energy Group Pingshuo Branch Company, Dafoshi Mine phase I project of Shanxi Bingchang Colliery Area Development and Construction Limited Cooperation, Pansan Mine and Coal Preparation Plant of Anhui Huainan Mining Industry (group) Limited Cooperation, Dahua Hydroelectric Station in Hongshui River, cascade hydropower development in Longyang Gorge to Luijia Gorge and so on. This paper mainly discussed the applicable objects, conducting time, working contents and procedure of PPA in ecological impacted construction project, aiming to providing some references for the further work of PPA.

2. Necessity of ex post environmental impact evaluation in ecological impacted construction projects

Ecological impacted construction projects are those which mainly have ecological impacts, including highway, railway, colliery, hydroelectric projects and so on. Due to the characteristics of complexity, long-term and time-lag in ecological impacted construction projects, there is some limitation in the accuracy and effectiveness of the predicted conclusions and conservation measures in the EIA. In addition, in accordance with Construction Project Environmental Protection Management Regulations, environmental protection acceptance and check should be applied within two years after the completion of the projects. However, it is difficult to cover the operation phase since the EIA is conducted early.

Taking the mineral resources development project as an example, it is very hard to accurately predict its environmental impact in a single EIA for the mine lifespan was generally long, which could be even more than one hundred years. Moreover, the actual environmental impact is also difficult to be precisely predicted since the impacts of construction project on ecosystem, ground water resources and the secondary environmental issues caused by emigrant movement have not been fully exposed during the environmental supervision in construction or the environmental protection acceptance check. Thus, it is particularly imperative to implement ex-post evaluation of EIA for the ecological impacted construction project.

3. Key factors of conducting post-project-analysis in environmental impact in the ecological impacted construction projects

3.1. Applicable objects of post-project-analysis of EIA

To define the precondition of post-project-analysis in environmental impact is quite complex and it should be solved primarily. In 2003, China State Oceanic Administration required the relevant works of post-project-analysis in environmental impacts in the offshore petroleum exploiting projects must be conducted based on Notification on Printing Provisional Regulations for the Administration of Post-analysis in Environmental Impact Assessment for the Offshore Petroleum Exploiting Projects. The notification mainly regards the situations that were not correspond to its reply and the environmental impact statement as the applicable objects of environmental impact assessment reports. For the projects which were gone into production before April 1st, 2004, the post-analysis of EIA should be conducted before the end of 2004.
In accordance with the Article 27 of The Law on Environmental Impact Assessment of the people’s Republic of China, the applicable objects of post-project analysis of EIA are “under appearing situation not in consistent with the approved environmental impact assessment documents in the procedure of projects construction and operation”. However, the Article 24 of the law states that “the construction companies should resubmit the documents for approval if the quality, scale, location, production techniques of construction projects, or the measures of preventing pollution and ecological damage have been changed severely after the approving of EIA documents of construction projects”. The engineering design, construction project alteration and implementation of environmental protection measures are the two key points of the acceptance check investigation according to Technical Guidelines for Environmental Protection in Ecological Construction Projects for Check & Accept Ecological Completed Projects. So the two laws, i.e. The Law on Environmental Impact Assessment of the People’s Republic of China and Technical Guidelines for Environmental Protection in Ecological Construction Projects for Check & Accept Completed Projects all have considered the changing situations on projects and environmental protection measures which are not in conformity with the approved EIA documents. So it is suggested that the post-project analysis of EIA should consider the construction projects which have long-term, potential and complex ecological impact and its EIA (or check & accept completed projects) reply documents are required post-project analysis of EIA or the environmental impacts have aroused social concerns.

The post-project analysis of ecological impacted construction projects shall put priority on the medium- and large-sized construction projects in the sensitive regions of ecology such as natural reserves, drinking water sources, and scenic spots as well. Due to the characteristics of ecological impacted construction project itself and various limiting factors such as natural and project conditions, the ecological impacted construction project may traverse or locate in the sensitive regions, even stations may be set in the protected areas. In that case, post project analysis of EIA should be conducted in those programs to ensure the efficiency of the environmental impact and protection measures. Remedial measures must be taken if necessary.

Besides, post project analysis of EIA of the ecological impacted construction projects should also consider the medium to large construction projects which are disputable, of intense public concern and large construction projects with widely range of environmental impact and amount of influence factors such as oil, water conservancy, hydropower, highway or railway, etc.

3.2. Time of conducting PPA of EIA

It is crucially important to choose an appropriate time to conduct the PPA of EIA. The actual environmental impact would not be accurately and overall realized if it is too early, and the opportunity of improving and perfecting the predictable technical of environmental impact as well as measures of environmental protection would be missed if it too late.

According to the Article 27 of The Law on Environmental Impact Assessment of the People’s Republic of China, the appropriate time of PPA is “in the process of the construction and operation of the projects”. In the Interpretation of the law on environmental impact assessment of the people’s republic of China, it presents six principles for the time of PPA. First, PPA generally should be carried out during main project and environment protection facilities in their operation phase, production loading reaching the threshold, environment impact taking place and social dispute in environment impact occurring. The appropriate time is during 3 to 5 years after the project in operation. Second, PPA is determined under the characteristics of environmental elements variation and performance time for some construction projects, which may contain potential environmental impact or the environmental impact of which may appear for a long time. Third, PPA has to be organized in time according to the actual situation if the protection
facilities are long not in use or operated abnormally, and the environment has been influenced or damaged by the project. Fourth, for those construction projects which PPAs are conducted at different phases such as construction period, operation life cycle, retirement period and so on, PPA should be conducted timely in different phases according to the degree and range of environmental impact. Fifth, if some key programs have already produced harmful effects on environment, PPA must be conducted to the formal projects before its extension. And finally, PPA must be immediately conducted after the check & accept of completed projects for the foreign-invested item whose pollution factors have not been fully known yet. In terms of Administrative Regulations on Post-project Analysis of Highway Construction Projects, PPA of environmental impact assessment of highway construction project generally occurs when the intended targets are entirely completed and passed the acceptance check, and has been in operation practice for at least 2-3 years[8].

Based on existing studies, generally after the check & accept for completed project, and after the main project and environmental protection facilities having already been put into normal operation for 5-10 years, the PPA of environmental impact assessment will be conducted.

3.3. The contents of post-project analysis in environmental impact

The PPA is launched to make follow-up monitor of environmental impacts and verifying evaluation in order to test the effectiveness of environmental protection measures after the implementation of the construction projects and propose the remedial plans or measures. The contents of PPA are roughly similar to EIA.

The contents of PPA are mainly composed of the following aspects: First, the EIA reports and the final acceptance review of environmental protection facilities; Second, the PPA of engineering analysis; Third, the PPA of the state of the environment, regional pollution sources and environmental quality; Fourth, the post-evaluation of environmental factors of EIA reports; Fifth, the post-evaluation of environmental impact predictions, i.e. the post evaluation of environmental factors referring to those selected in the EIA report; Sixth, the effectiveness post-evaluation of environmental protection measures; Seventh, survey of public participation; Eighth, the post-evaluation of environmental management and monitoring; and finally, conclusions of the PPA.

It must be emphasized that the PPA needs to analyze the environmental factors selected in the EIA report, specify the completeness of selected environmental factors, and add corresponding assessment of the environmental factors impact if necessary. What’s more, the improvement measures need to be proposed which are on account of unqualified environmental protection measures and the rectification time should be cleared.

3.4. The Procedure of conducting the PPA

Under the Article 27 of the Law on Environmental Impact Assessment of the People’s Republic of China, when the situations during the construction or operation of the projects are incongruent to the approved EIA documents, construction units or the original examination and approval departments of the EIA documents need to instruct construction units to launch PPA. Consequently, the PPA of construction projects are required to be carried out lawfully by construction units.

The following procedures could be adopted. To begin with, construction units or EIA organizations authorized by them carry out post-assessment and produce documents. Secondly, the construction unit organizes experts to make technology review and the reviewed PPA documents need to be submitted to the original examination and approval departments of the EIA documents and that of the construction projects for the record. Finally, if the original examination and approval departments have no opposition,
construction units should take corresponding improvement measures timely according to the PPA documents and accomplish the improvement in time, then submit the revised report.

Given the complexity of environmental impact, an outline is suggested when construction units organize the PPA. The including contents should refer to the EIA framework of the construction project, and they should get the experts’ approval so as to conduct the work preferably.

As the PPAs are technically demanding and tough, when construction units choose an EIA organization, they need to select those EIA organizations with A grade qualification to carry out post-assessment. It must be noted that the EIA agency should not be the unit which worked out the original EIA documents to ensure the independence, scientific and fairness of the post-assessment.

4. Advice to carry out the PPA of ecological impacted construction projects

4.1. Improving the policies, laws and regulations system and regulate the PPA Work

At present, the PPA of ecological impacted construction projects have been developed generally according to the requirements of environmental administration departments. The contents and methods are in great difference. Therefore, the corresponding management measures and technical guidelines should be formulated immediately to define the applicable objects, work time, working procedures, contents and methods, in order to regulate the PPA work.

4.2. Continuing to boost the demonstration of the PPA: accumulating work experience of the PPA

The ecological impacted construction projects include the water conservancy, hydroelectricity, colliery, highway and railway. The industries are of various sorts and the environmental impacts are complex. So, the PPAs having been conducted mainly focus on hydroelectricity and colliery. It is suggested to continue to conduct case studies of the PPA and select typical construction projects of each industry to analyze the common problems. Meanwhile, the applicable objects, work time, work contents and working methods of post-assessments of each industry need to be discussed in order to provide references to formulating relevant policies, laws and regulations, and the technical guidelines.

References