

## **Training Needs Assessment of Ecological Impact Assessment (EcIA) in Western China**

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**Abstract** Conducting ecological impact assessments (EcIA) within Environmental Impact Assessment (EIAs) is one way to build our understanding of the impact of development on biodiversity. Until recently, environmental protection in China largely focused on impacts of industrial pollution on water and air quality. Professional backgrounds for EIA practitioners focused narrowly on those issues, and did not include biodiversity and ecosystem services. Partly because of this history, EIAs in China do a poor job of considering likely ecological damage as a result of a given infrastructure or industrial project, and therefore provide few useful alternatives for how to avoid or mitigate such impacts. At the same time, a more conducive policy environment is also needed to strengthen EIAs in decision-making, especially when determining which projects are approved, rejected, or cited for violation. This paper represents both the current situation of EcIA in China as well as analyzes the constraints to combine biodiversity into EIA. It uses as a case study of Training Needs Assessment in western China to discuss training needs of different stakeholders and creating a more conducive policy environment to give EIAs more strength in the decision-making process.

**Keywords** EcIA, Training needs assessment, Current situation and gaps

### **1 Introduction:**

The Convention on Biological Diversity (CBD) was adopted to protect global biodiversity by the United Nations Conference on Environment and Development in Rio de Janeiro in 1992<sup>1</sup>. China has ratified CBD in 1992. EcIA is a key mechanism for nations to fulfill their obligations under the CBD. In China, EcIA has been perceived as a part of Environmental Impact Assessment (EIA). Environmental impact assessment in China began in 1970's<sup>2</sup>. In 1979, China's Environmental Protection Law identified EIA as a legal requirement, and in 2003 China enacted The Law of Environmental Impact Assessment<sup>3</sup>.

EIA in China began with industrial projects, focusing on pollution. Assessments primarily address water, soil and air concerns, but few focus on biodiversity and ecological systems. EcIA was just recently instituted in China. Big construction projects, ecological construction projects and project plans are expected to pay more attention to ecological systems under China's current requirements for achieving more sustainable development. According to Zhu Xingxiang, the director of EIA Management Department of SEPA in 2004, "EIA on ecological construction projects will be the main point of EIA development in the next 10 years."

From 2003 to 2006, Fauna & Flora International (FFI) China Programme carried out a Capacity Building for Biodiversity Considerations in EIA in China project<sup>4</sup>. A training needs assessment for EcIA was conducted in the three western provinces of Xinjiang, Qinghai and Guizhou. The project compiled laws and regulations relevant to EIA, conducted approximately 200 questionnaires and interviewed 150 EIA practitioners and managers.

### **2 Current situation and gaps in EcIA**

This survey confirmed the initial impression that EIAs in China currently do not sufficiently incorporate ecological issues, generally do a poor job of considering likely ecological damage as a result of a given infrastructure or industrial development project, and provide few useful suggestions for how to avoid such impacts. The concentration on industrial pollution projects in China's EIA process does not fit the needs of EcIA and can be considered the main constraint that restricts the development of EcIA (Wenyong, 2006)<sup>5</sup>. In fact, EIAs currently consist of just two steps: 1) forecast environmental impact during the project's feasibility study phase and 2) monitor and evaluate the real impacts during the project's

initial operation phase. Little attention is paid to the process of construction, because pollution has not yet been emitted. EcIA, however, requires a different approach involving the full project's assessment and management. There is still a very common misunderstanding that examination and approval are equivalent to fulfilling EIA. Therefore, EcIA guidelines have not been adequately integrated within EIA, which has focused on spot EIAs instead of the whole project process. It is impossible to clarify all of the impacts through just one EIA, because of the complexity of ecological systems and ecological problems.

The current system for carrying out EIA limits the likelihood that ecological issues are included: a) the rapid pace of economic and industrial development underway in China has strained the existing capacity for impact assessment. There are too many clients for the limited number of staff, firms and agencies now carrying out assessments; b) some of the institutions conducting EIAs are organized like private consulting firms, with directors aggressively soliciting as many projects as they can to bring in revenue. The expansion of an institute's EIA project portfolio is not always accompanied by an increase in qualified staff, however, and the ecological sciences have not been seen as priorities. As a result, there are an insufficient number of specialists in the ecological sciences involved in doing EIAs; c) EIA managers also lack background in these areas, and there is reluctance to bring in additional expertise due to extra cost; d) Results are also sometimes compromised by tight deadlines, a narrow scope of work, and guidelines that are often not suitable for local conditions since current guidelines were written according to the environment condition of eastern China, where the ecological system is big difference with western China; and e) Ecological impact assessment is not required within current EIA guidelines, so little effort has been made to incorporate biodiversity or ecology into final assessments and recommendations.

The environmental protection staffs responsible for reviewing EIAs do not have sufficient knowledge of ecological issues to catch gaps and errors. The close connection between project investors, proponents, and the assessment team challenges the possibility that objectivity can be obtained. Sometimes local government officers, who supervise local environmental protection offices, are also shareholders in the proposed development activity.

Nearly all EIA practitioners in China have attended organized training sessions as a requirement for obtaining a license to conduct EIA at the Assessment Centre of Environmental Engineer of State Environmental Protection Bureau (ACEE). Some have also joined EIA trainings on special construction projects such as road construction and hydro-power. Since training opportunities are infrequent, practitioners from various institutes receive training in an uncoordinated manner. Without exception, each specialist taking part in our study expressed the desire, in fact the strong need, for appropriate training programs. But some practitioners also expressed concerns that some training is geared towards product market development.

### **3 Key areas for capacity building**

#### **3.1 Training needs of EIA Practitioners**

Practitioners regularly mentioned that they would like to improve skills and fill capacity gaps in baseline studies, impact prediction skills, assessment, mitigation, post impact monitoring and public participation. They would also like opportunities for model sharing.

**Compiling baseline studies** In order to better predict impacts, more information is needed about the relative importance of impacts within the broader regional and ecological context. Researchers would benefit from both descriptive assessments of ecosystem and species diversity and more reliable quantitative data to ensure accurate impact prediction. More detailed and less ambiguous impact predictions are needed, backed up by quantitative data. Among the most important gaps in ecological impact assessment capacity is

that assessments of impacts are generally conducted under conditions of severe data shortage. Local assessors need better access to quality data and relevant scientific literature, but there is also a general lack of ecological and environmental baseline information in the literature that scientifically describes impacted environments and establishes baseline conditions. Moreover, most of the data are outdated. EIAs are often conducted with budgets and deadlines that are too tight so that there is no time to collect additional information from the field to update old information. Even if there is time for additional field study, most EIA specialists do not have specific training in collecting data about ecological systems.

Our study also revealed a lack of access to relevant data that has been collected in the past. Although many projects could benefit from research that has already been done in a given sector or geographical location, most practitioners do not have access to this data because it was supported by another institution or conducted by another assessment agency and never published in the public domain. Interviewees also expressed frustration that they cannot read English and therefore cannot learn from international experiences and about international best practice models.

**Impact analysis and prediction** Many interviewees were satisfied with their investigations technology and techniques for conducting EIA. Our study revealed, though, that some technology was not adaptive. Some international consultants found that local investigation technology didn't fit in international criteria when they cooperated with national institutes. More practitioners realized that they need better mechanisms and technology to collect information and the knowledge to more clearly identify the factors and analyze the impact. There is a widely recognized need for better methods to predict impacts based on systematic methods, especially to incorporate regional planning and local economic development master plans into EIA for projects and plans. Given that many of the development projects taking place in the three regions investigated are complex and have direct and indirect ecological impacts on water, land and air quality, there is a need to present new ideas on all phases of proposed projects (construction, operational and decommissioning phases). A combination of local expertise and international experience would be effective. For example, practitioners in Qinghai are seeking a local expert from the Qinghai Environment Science Research and Design Institute to address Qinghai-Tibetan plateau issues based on national and international case studies related to hydro-power development.

**Impact mitigation and monitoring** Insufficient information is available to EIA practitioners on recommended mitigation and monitoring measures. There has been little attention paid to practical, reliable and potentially effective mitigation measures and how to promote these among decision-makers within industry and government. Often, EIAs suggest measures that do not address specific identified impacts, such as water pollution in a particular river section. In the extractive resources industries, such as mining, petroleum, etc., practitioners would benefit greatly from clear principles, techniques and guidelines related to ecological recovery. Local specialists also recognize that they must strengthen their ability to restore ecosystems after damage, but their training to date has not covered this adequately.

**Public participation** The needs assessment found a striking lack of attention paid to the role of communities and public participation in all phases of project. Many projects didn't include any public participation. Local communities are not widely recognized as key stakeholders in the EIA process by some practitioners and managers, perhaps because they currently have little influence over land use decisions. In the words of one respondent, "government officials are decision-makers, EIA workers examine and execute laws and regulations, and communities are passive and must obey". Since the EIA law stipulates that special projects involve the public's participation, questionnaires were used as the main approach. Few projects conduct public hearings. Most practitioners realized the importance and effect of public participation, but they didn't know how to do so except through questionnaires and public hearings. They asked our project team to introduce more effective approaches and ideas on public participation.

**Model sharing** An introduction to domestic and international best practice models would assist in providing guidance and innovative ideas to practitioners. While success stories are desirable, examples of project failures are also of great value in showing justification for “doing it right” the first time. This is especially true in the regions examined in this study given their serious ecological vulnerability.

Models in the following areas would be particularly instructive:

- Guidelines to classify projects;
- Techniques to determine potential impacts and collect baseline information with limited resources;
- Basic EcIA investigation standards from abroad;
- Best practice procedures from abroad and domestic examples for projects for road construction, petrochemical industry, mining, hydropower, irrigation, tourism, and regional economic development planning;
- EcIA case studies from regions with similar environmental and ecological features;
- Restoration methods and models for ecosystems experiencing drought conditions or extremes of cold weather, for dry and arid regions, reservoirs, and fragile karst regions;
- Ecological monitoring;
- EIA for tourism development;
- Techniques to organize community participation and reach local citizens;
- Strengthening inter-regional communication, such as between and among different provinces;
- Construction monitoring and re-checking, and supervising and management of the construction phase;
- EIAs for nature reserves and scenic areas;
- EIA training related to road building, including consideration of destruction of vegetation and erosion during construction, and also the lasting-impacts of traffic on wildlife behavior and migration;
- Techniques to assess the ecological impacts of erosion;

### **3.2 Training needs in other sectors and for other professionals: Perceptions on the ground**

Our research revealed that impact assessments to date have not had the power to influence important decisions about natural resource use, land use, or regional planning. The importance and utility of EIA was not clearly recognized. Building a greater appreciation of the value to society of EIA and especially EcIA among the leadership, construction companies, scientific experts and the public at large is necessary to strengthen the role of assessments in decision-making.

There is a society-wide lack of understanding of the existence and nature of ecological services and the linkage between ecological costs and economic output. In order to do a good EcIA, many practitioners revealed a request to not only organize training courses to themselves but also a set of training courses to improve the awareness and knowledge of many stakeholders such as their supervisors, governors. Training to EIA practitioners' manager will help practitioners to conduct more scientific and effective EcIA. Training to include local and regional leaders will also be beneficial and was identified as the second priority choices. Particularly important stakeholders are mayors and Vice Governors. One EIA specialist encouraged us to consider holding a special program for Vice Governors that would show how development plans that do not consider ecological and environmental issues can go terribly wrong and lead to economic crisis. Leaders in relevant bureaucracies, such as for water, land administration, forestry and other bureaus must also be included in training programs in order to create a society-wide appreciation of the complexity and importance of biodiversity protection and the need for sustainable use of natural resources.

Representatives from the industries and companies launching construction projects are also in need of trainings to raise their knowledge and awareness. The surveys indicated that companies are often not willing to support an adequate EIA, especially if they are not required to. As a result, the funding and time allocated

for an EIA is generally inadequate and assessments are often done superficially, simply to meet the most basic requirements. Company and government development agency representatives that have sponsored impact assessments offered several useful observations. They indicated that EIA researchers do not give suggestions or options to improve profitability or efficiency in project management or in land and natural resource use. In these areas in particular, an outline of various development options with cost-benefit analysis would be very helpful to them. Similarly, environmental and social assessments that provide guidance on how to interact with the community and engage in a two-way information exchange could be very helpful in preventing potential future social conflicts and could make full use of indigenous knowledge. Environmental risk assessments could also provide valuable information that could guide decision-making and budget allocations to make projects more sustainable and community-friendly.

Public education on the importance of EIA in protecting public health, biodiversity, overall environmental conditions, and ensuring sustainable development should be promoted in coordination with training of leaders and professionals. It will also contribute to a better public participation in EcIA through improving the knowledge and awareness of public.

#### **4 Creating a better institutional context to improve EcIA**

There are several cross-sectoral issues that need to be addressed to boost the quality and usefulness of impact prediction and mitigation. In each of the three regions included in our study, poverty is a major challenge. Each has large populations of ethnic minorities. Provincial and local officials try to attract whatever investment funds they can find with short-term increases in Gross Domestic Product (GDP) as the primary goal, often with little regard for ecological or social impacts or long-term sustainability. Only when all stakeholders have the ability to participate in the EIA process will it lead to truly effective ecological impact assessment.

Natural resource challenges are made more difficult due to a lack of coordination among relevant bureaus and assessment institutions. Improved coordination of assessments and research, as well as in exploring mitigation techniques, would be helpful in the sectors of water and agriculture; water and grazing lands; tourism and recreational development; waste management; and hydro projects and downstream water use, to name just a few.

In addition to addressing specific gaps in approaches, skills, training opportunities and course curricula for impact assessments, there is a need to adjust the institutional factors that set the stage for ecological and environmental investigations and decision-making. Effective impact assessments require independent research, from the funding and scoping stages to data collection, report writing, and the review of results. The assessment process must operate with transparency and accountability, and the research institutes must be governed in such a way that quality of ecological and environmental impact assessment results are held to the highest standards. Public participation can be incorporated into the process so that social forces are leveraged, and industries and construction projects avoid and mitigate problems.

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