

Environmental Audit of Quarry: Issues of Forest Resource¹

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Abstract

The study was carried out in Annapurna Quarry Private Limited in Dhading district in the Central Development Region of Nepal. The study focuses on carrying out comprehensive environmental audit with reference to forests resources. It was observed that the quarry has positive as well as negative impact on the forest resources. It is also realized that there is a lack of professionalism in the EIA practices.

Why Environmental Audit?

In Nepal, The National EIA Guidelines (1993) and Environment Protection regulation (1997) specify that an Environmental Audit (EA) is required after the project operation for two years, and that other types of environmental auditing are optional as to be decided by HMG/N. This paper is concerned with a partial exercise in EA of a private stone quarry company in Dhading District.

Objectives

The general objective of the study is to review and analyze the EIA report of Annapurna Quarry Private Limited (AQPL) in Dhading district. During the study period, AQPL was operational.

The objectives of the study were:

- to carry out environmental audit with respect to the major issues of forest resource;
- to assess effectiveness of mitigation measures prescribed by EIA reports in improving social, economic and environmental conditions of the communities with reference to the local forests resource; and
- to explore the difficulties while conducting environment auditing in the field.

Project Description

Annapurna Quarries Pvt. Ltd received a license from Department of Mines and Geology (DGM), HMG/N for the operation of the limestone quarry at Beldanda, Jogimara VDC within an area of one square mile. As per the Forest Act, 2049, Department of Forests also entered into an agreement with the lessee on 8 May 1986 for the duration of 15 years.

The Annapurna Quarry is in operation at Beldunga along the Jawang stream sub-watershed on an undulating and steep landscape. The quarry site falls in ward nos. 1 and 2 of the Jogimara VDC of Dhading District. It is about 1.5 Km away towards south from the confluence of the Bangdi stream and the Trishuli River along the Prithivi Highway.

Two separate studies were carried out to estimate the limestone deposit at Beldanda. The 1987 mining scheme indicated that the area had a deposit of 2.76 million tons of limestone, of

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which about 2.21 million tons could be extracted, based on 80% recovery and the quarry could be operated for about 33 years assuming an extraction rate of 200 tons per day. The integrated Mining plan and feasibility Study of Beldanda Limestone Deposit, 1996, on the other hand stated that the recoverable reserve was about 3.4 millions tons which could be mined for about 34 years at the rate of 350 mt per day on Running mine basis. The chemical analysis of the limestone found in the area shows that it contains 54.42% of CaO, 0.28% MgO and 1.6% of SiO₂ indicating its high grade. Limestone found in this site is best raw material for high quality cement production.

The mining schemes, 1987 recommended an open cast mining method maintaining bench configuration, drilling and blasting, as well as manual means of fragmentation of the hard rock. After the product is prepared for transportation, mini-dumpers bring them up to chute and they are disposed of from chute, as there is no road facility. Then the products are loaded in the truck and are sent to the concerned clients i.e. Himal Cement Factory.

The leased area of the quarry is a national forest, which comes under the jurisdiction of District Forest Office (DFO), Dhading. The major tree species found in the area are Sal (*Shorea robusta*), Simal (*Bombax ceiba*), Champ (*Michelia champaca*), Chilaune (*Madhuca Butyracea*), Harro (*Terminalia chebula*) and Barro (*Terminalia belerica*). And, likewise, the following shrub species are found in the area: Titepate (*Artemesia vulgaris*), Lazzabati (*Mimosa pudica*), Khar (*Saccharum spp.*), Babio (*Eulaliopsis binata*) and Aparjita (*Clitoria termatis*).

Methods of Data Collection

The methodology is based on review of the EIA reports of AQPL. The study also reviewed the EPA-1996, EPR-1997 (as amended 1999) and National Environmental Impact Assessment Guidelines-1993, EIA guidelines for the industrial sector-1995 and EIA guidelines for the Forestry sector-1995.

Desk Study

The Environmental Impact Assessment (EIA) Reports of the AQPL were thoroughly reviewed. Accordingly, EIA reports were collected, reviewed and prepared the checklist of environmental audit. This helped in assessing the triangulation of the primary and secondary information. The review was focused on the biophysical and socio-economic environment of the project.

Preparation of Environmental auditing checklists

Parameters and indicators of environmental auditing were carefully developed. The environmental audit checklists, thus developed and incorporated the followings:

- identification and development of environmental audit parameters;
- development of environmental audit Indicators to verify the predicted impacts and prescribed mitigation measures;
- sources of information at field level; and
- methodology for collecting information.

Field Study

Field study of the study area was carried out during May 2002. The following tools and techniques have been used to acquire the primary information for the study.

- Field investigation and observation;
- Informal discussion with concerned stakeholders including project officials/proponents, labor forces, local communities, government line agencies i.e. District Forest Office (DFO), District Soil Conservation Office (DSCO), District Irrigation Office (DIO), District Development Committee (DDC), Village Development Committee (VDC);
- Rapid Rural Appraisal (RRA);
- Interview with key informants;
- Focus group discussions; and
- Audio recording.

Results and Discussions

Environmental Audit of Biophysical Environment

Access road passes through the forest area along Jawing Khola. The proponent i.e. the quarry industry has managed to protect the existing four Champ trees (*Michelia champaca*) with the help of the local people. And, they labeled them as the protected trees. In this context, this tree species has legal provision for not allowing transport, export and no fell as per the Forest Regulation, 1995.

To discuss, this initiative could be a good example in conservation practice. This certainly helps to conserve the endangered tree species and enhance in-situ ecosystem conservation.

Around 1 km of access road from the Prithvi Highway (way to Kathmandu and Pokhara) to quarry site, about 800m road is accessible to light and heavy vehicles like jeeps and trucks for lime stone transportation. Remaining 200m is not accessible for any vehicle. These strategies have been carried out for minimizing the tree and other vegetation losses. Because of the access road being linked with the highway, there could be a chance of illegal felling of trees in the upper part and/or vicinity of the quarry site.

The proponent deposited Rs. 50,000 (Fifty Thousand Nepalese Rupees) at the DFO, Dhading as deposit amount for the compensation plantation to restore the lost vegetation/forest products on fiscal year 2056/2057 BS. But the DFO is not able to carry out this assignment due to the lack of proper plantation area in the quarry site and the present situation of the security problems. However, the proponent is ready to conduct compensation plantation if the DFO gives an alternative site for the plantation. Nevertheless, this type of deposit money for compensatory plantation must be used in the right time and should not remain unused.

On further discussion with the technical staffs of the DFO, the detail baseline information and/or survey was not carried out before operating the Quarry. So, the losses of vegetations are unknown. Therefore, there is a possibility of extinction of some plant species that inhabit in the rocky ecosystem. Further, the area of quarry site has not been demarcated clearly. This field demarcation should have been done as soon as possible as in order to monitor the loss of vegetational-diversity as well as to restore the indigenous plant species. Nevertheless,

there is no correspondence and/or communication between the proponent and the DFO in these regards.

To discuss, above-mentioned issues certainly accelerate biodiversity loss of the area.

After the enactment of the Local Self-Governance Act, 2055BS, the proponent has to pay royalty of quarry stone to three different institutions of HMG/N i.e. the District Forest Office, the Department of Mine and the District Development Committee. In this matter, the proponent has been facing the financial as well as administrative burden. This is not rationale and should be revised and/or reviewed.

Environmental Audit of Socio-economic Environment

The quarry has given priority in employing local indigenous people like *Praja* Community (*Chepang*), *Gurung* and *Ghale* from nearby villages. Around 50 to 60 laborers are employed on daily wage basis. They receive Rs 100 per day per person as their wages. The morning and evening shift workers get meals at free of cost besides their wages.

Praja community members who are traditional shifting cultivators, live inside the forest area. They changed their traditional occupation as they got alternative employment opportunity at the quarry site. This is a direct beneficial impact on the indigenous people. In addition, the proponent has given high priority to this community for the employment. This also shows that if alternative employment is given to the Praja community, they are ready to change their traditional occupation.

The proponent has also provided necessary gears for occupational health and safety e.g. helmet, boot, rope, alarm, whistle and others but the Praja community did not comply with these safety gears. Instead, they prefer to work with bare foot without helmet. According to Mr. Nara Bahadur Praja, Chairperson, Ward no 02, Jogimara VDC, Dhading District, they feel uneasy to work with these safety gears.

The proponent frequently conducts green campaign with other activities to conserve the forest resource through local *ama samuha* (mother group). This has helped in creating awareness in conservation of forest resource among the local people. They are also conscious against the illegal felling of forest resource and their illegal cultivation. They act as a sort of watchdog in forest protection.

Conclusions and Recommendations

The study found that the proponents prepared the EIA report merely to get the legal clearance from the Ministry of Population and Environment and other government line agencies. However, after getting the approval, the recommendations of EIA are not properly implemented. Neither, the concerning government line agencies are serious too.

The general conclusions and recommendations are outlined below.

Lack of proper coordination and communication

There is no coordination and communication between concerned government agencies, proponents and other stakeholders of the project during the project implementation phase.

So, the mitigation measures prescribed in the EIA reports do not get implemented. Further, there is a lack of regular monitoring system as well.

It is, therefore, recommended all stakeholders of the project meet at least once every three months to follow up the activities carried out by the project. This could address the real problem in implementing the mitigation measures prescribed in the EIA reports. Somebody should be made responsible for this purpose.

For this purpose, the project should have an Environmental Unit with multidisciplinary professional such as forester, engineer, socio-economist and so on. In addition, respective DDC/VDC should be the focal point as it represents the local people who are real owner of the local forest resources. They should be able to resolve any problems when the prescribed mitigation measures fail at field level.

Poor documentation

Development projects usually have some negative impact on the forest resource. These negative impacts on forest resource must be mitigated through in-situ conservation. There is also a lack of baseline information on forest resource at AQPL. Under such circumstance, it would be difficult to restore the local forest resource in the days to come. Valuable plant species may have been disappeared due to the implementation of the project.

Besides, the proponents do not follow periodic reporting of mitigation measures prescribed in the EIA reports to the concerned government authorities i.e. District Forest Office, District Soil Conservation Office and concerned National Parks and Wildlife Reserve. In addition, these government offices are also ignorant in these regards. Consequently, the restoration of the forest resource has remained in a state of confusion.

So, any activity concerning the restoration of forest resources must be documented properly during the project implementation phase at field level. This will make environmental auditing efficient and simple.

In addition, available documents are also scattered. Therefore, the available documents should be well maintained at the concerned offices.

Compensatory plantation

The deposit money for compensatory plantation was not utilized. This case indicated that compensatory plantation remain in dilemma. In addition, compensatory plantation should be carried out with suitable species according to the site conditions and the local people's demand and/or desire. In this respect the concerned DFO should consult with the proponent and the local people. In addition, the proponent should neither ignore the DFO.

Employment generation

The studied project has employed the local people. This has certainly enhanced the socio-economic condition of the local people. It has also helped in conserving the forest resources as they are well aware of their local environment including the forest resource. It is also easy to convince them for conserving the local forest resource.

Professionalism in EIA practices

I realized that there is a lack of professionalism in the EIA practices. Name of the team members and their academic background are not included in the EIA reports. I argue that professional foresters should do the EIA work related to forestry rather than other professionals as it happens in EIA practices. S/he must have professional ethics while conducting the field study. Likewise, sociologist should carry out the socio-economic survey. Although it may cost more, it will be beneficial to do so in the end. This will certainly enhance the professionalism in EIA practices as well.

EIA, as a baseline information for environmental audit, are being prepared only for the sake of legal requirement as prescribed in Environmental Protection Act, 1996 and Environmental Protection Rules, 1997. This will not be effective for conserving local environment in a long run. As I perceive, this could be a serious dilemma in days to come. So, the professional code of conduct in EIA practice should be enforced at an earliest occasion.

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