

A Critical Review of the Adequacy of EIA Reports-Evidence From Pakistan

Obaidullah Nadeem and Rizwan Hameed

Abstract—The preparation of good-quality Environmental Impact Assessment (EIA) reports contribute to enhancing overall effectiveness of EIA. This component of the EIA process becomes more important in situation where public participation is weak and there is lack of expertise on the part of the competent authority. In Pakistan, EIA became mandatory for every project likely to cause adverse environmental impacts from July 1994. The competent authority also formulated guidelines for preparation and review of EIA reports in 1997. However, EIA is yet to prove as a successful decision support tool to help in environmental protection. One of the several reasons of this ineffectiveness is the generally poor quality of EIA reports. This paper critically reviews EIA reports of some randomly selected projects. Interviews of EIA consultants, project proponents and concerned government officials have also been conducted to underpin the root causes of poor quality of EIA reports. The analysis reveals several inadequacies particularly in areas relating to identification, evaluation and mitigation of key impacts and consideration of alternatives. The paper identifies some opportunities and suggests measures for improving the quality of EIA reports and hence making EIA an effective tool to help in environmental protection.

Keywords—Environmental Impact Assessment, EIA Guidelines, EIA Reports, Pakistan.

I. INTRODUCTION

THE preparation of high quality EIA reports or Environmental Impact Statements (EISs) is one component of an effective translation of EIA policy into practice [1]. However, just having EIA policy is not the only pre-requisite for producing good quality EIA reports. The literature on EIA suggests that many authors have been pondering upon the key issues related to achieving better quality of EIA reports. For instance [2] argues that various issues which need to be addressed to achieve quality in EIA include the following:

- ◆ Enhancing the quality of information provided to decision makers
- ◆ Opportunities for public involvement
- ◆ Cost effectiveness
- ◆ Methods of impact analysis

Obaidullah Nadeem is Assistant Professor/PhD Candidate at the Department of City & Regional Planning, University of Engineering & Technology, Lahore-54890, Pakistan. (Phone: 92-42-6829203, Fax: 92-42-6822566, Email: obaidnadeem@yahoo.com).

Dr. Rizwan Hameed is Associate Professor at the Department of City & Regional Planning, University of Engineering & Technology, Lahore,-54890, Pakistan. (Email: d_rizwan@hotmail.com)

On the other hand, according to [1] the determinants of EIA quality are:

- ◆ Commitment to EIA
- ◆ Availability of EIA guidelines and legislation
- ◆ Resources allocated to EIA
- ◆ Nature and experience of various participants in EIA process
- ◆ Interaction between parties involved in EIA
- ◆ Type and size of project

Though addressing these issues can be helpful in achieving quality of EIA. But, the experience of industrially advanced and particularly developing countries suggests that, even if the technical and financial issues are dealt with in an appropriate manner to produce desired results, the quality of EIA can not be achieved unless socio-political context in which the EIA system has to operate is favourable. In this context, reference [3] notes that political pressures have been the driving force behind EIA. He goes on to suggest that “in future EIA will be most effective where environmental values are integrated in to a nation’s culture and public law and policy.” This scenario indicates the significance of the quality of EIA reports in effectiveness of EIA. The adequacy and accuracy of EIS are thus matters of grave concern. Perhaps, that is why in some countries with well established EIA system like Netherlands and Canada and those with a progressing one like Malaysia and Indonesia, separate EIA Commissions have been established to act as independent EISs review body in addition to performing other functions relating to EIA. But on the other hand, in many developing countries and even in some of the industrially advanced countries neither there exist any independent EIA commission nor competent authorities possess full range of technical expertise to assess the adequacy and completeness of EIA reports [4].

Another important element which can also assist in assessing the adequacy of EIA reports is to have an appropriate EIA review criteria suitable to local socio-political situation and competence of the parties involved in the EIA process. In this perspective, several EIA review criteria have been developed to guide the assessment of the adequacy of EIA reports. Some of the criteria most widely used to this end in the UK, other parts of Europe and some developing countries include: Institute of Environmental Assessment Review Criteria [5], [6], the Netherlands Environmental Impact Assessment Commission Operational Criteria [2], the criteria developed by Impact Assessment Unit at Oxford Brookes University [1] and review criteria suggested by Modak and Biswas [7].

Albeit, these criteria are helpful in assessing the general adequacy of EIA reports but all of the aforementioned criteria are of generic nature and do not address development sector specific issues. For instance, some criteria rarely refer to potential social impact, but for some projects this can be an important issue [2]. Hence, there is a need to formulate development sector specific criteria. For instance, a separate criterion with more emphasis on potential environmental impacts may be applied for review of industrial sector EIA reports while a separate criterion with more emphasis on socio-economic impacts may be applied for reviewing EIA reports of large dams which usually involve extensive resettlement of people. This can make the EIA review and decision making an all-inclusive process.

This paper presents evidences of inadequacies in quality of EIA reports in case of Pakistan where neither an independent review body nor any effective and objective review criteria exist to ensure quality of EIA reports. Further, competent authorities have to face colossal amount of political pressure during the EIA clearance process which often means that refusal to grant EIA clearance on the basis of inadequacies in an EIA report is next to impossible. The methodology adopted for this purpose includes diagnostics of randomly selected EIA reports prepared for industrial development projects in Pakistan and interviews of those who prepare and review EIA reports.

The following section presents an overview of legislative provisions and EIA guidelines in Pakistan. A stocktaking of randomly selected EIA reports of projects has been made in the subsequent section to judge their adequacy and quality in the light of review criteria of [7]. The critical analysis leads to highlighting key issues related to the inadequacy of EIA reports in Pakistan. Finally, the overall conclusions have been drawn and recommendations made keeping in view the available opportunities to strengthen EIA practice.

II. LEGISLATION AND GUIDELINES FOR EIA IN PAKISTAN

A. Legislative Provisions

The basic ingredients of an EIA system are very much present in Pakistan. A well thought out environmental legislation and EIA guidelines have been formulated. A hierarchical institutional set up for environmental governance is also in place [8]. Year 1983 witnessed the dawn of EIA in this country when the Pakistan Environmental Protection Ordinance was promulgated [9]. But EIA couldn't win the favour of developers and industrialists till 1st July, 1994 when the Government of Pakistan made it mandatory for mega projects. To provide a stronger legal basis to the environmental protection, the said Ordinance was transformed into an Act in 1997 [10]. By the end of same year, another step taken in this direction was the formulation of a package for EIA guidelines [11]. However, the guidelines couldn't produce desired results and in another attempt, Pakistan Environmental Protection Agency's Review of IEE and EIA Regulations, 2000 [12] were promulgated (See Box I).

BOX I LEGISLATION AND GUIDELINES FOR EIA IN PAKISTAN

- ✓ Pakistan Environmental Protection Ordinance (PEPO), 1983
- ✓ Pakistan Environmental Protection Act (PEPA), 1997
- ✓ Policy and Procedures for the Filing, Review and Approval of Environmental Assessments
- ✓ Guidelines for the Preparation and Review of Environmental Reports
- ✓ Guidelines for Public Consultation
- ✓ Sectoral Guidelines for Preparation of Environmental Reports
- ✓ Pak-EPA (Review of IEE and EIA) Regulations, 2000

Having direct relevance to this paper, an overview of the guidelines for preparation and review of EIA reports is given in the following paragraphs.

B. Guidelines for Preparation and Review of EIA Reports

To facilitate all the concerned agencies and proponents, the Pakistan Environmental Protection Agency (Pak-EPA) formulated guidelines for preparation and review of environmental reports in 1997. These guidelines include various sections on commencing EIA, assessing impacts, mitigation and impact management, and other main features of environmental reports (IEE and EIA reports). Last three sections of the guidelines have been devoted to reviewing and decision making, monitoring and auditing, and project management. The guidelines also suggest qualities of successful inter-disciplinary EIA team members and need for inter-agency coordination. Not only that, guidelines suggest role of stakeholders in scoping process and advocate the significance of considering alternative development options. A comparative analysis with respect to advantages and disadvantages of popular impact identification methods viz. Checklists, Matrices, Networks and Overlays is the other commendable feature of guidelines. However, it would be interesting here to see what these guidelines expect from EIA reports and what criteria have been suggested for evaluating them. Boxes II and III show the proposed contents of EIA reports and criteria for evaluating EIA reports respectively.

BOX II CONTENTS OF EIA REPORTS AS SUGGESTED BY EIA GUIDELINES

- Executive or non-technical summary
- Description of the objectives of the proposal
- Description of the proposal and its alternatives including do-nothing alternative
- Discussion of the proposal and current land use and policies
- Description of the existing and expected conditions
- Evaluation of impacts for each alternative
- Comparative evaluation of alternatives and identification of the preferred options
- Environmental management plan, monitoring plan and proposed training
- Appendices containing:
 - a glossary
 - Management of study process including list of individuals and agencies consulted
 - Sources of data and information
 - List of EA study team members with qualifications
 - TOR of environmental reports and those given to individuals and specialists

Source: Derived from [13]

In addition to the above contents, Federal and Provincial Environmental Protection Agencies in Pakistan require reproduction of relevant sections of Pakistan Environmental Protection Act, 1997 and EIA guidelines etc. in every EIA report. However, the guidelines also provide with explanation of each section of proposed contents of EIA report. But these explanations seem to be suggestive in nature and go in to too much detail which in-turn may cause confusions among the proponents and consultants.

From the official criteria as given in Box III, it seems that this is of general nature and do not provide for any systematic method to measure the quality of EIA report. Interviews of the consultants suggest that in practice the review is always subjective in nature and depends primarily upon the personal judgement of the concerned officials and affiliations of the consultants.

BOX III
OFFICIAL CRITERIA FOR EVALUATING EIA REPORTS

- Whether the executive summary presents significant impacts, cumulative effects of impacts, mitigation measures, requirements for monitoring and supervision?
- Whether the project description is complete and at least includes aspects which can affect the environment?
- Whether project alternatives are described?
- Whether baseline conditions have been described adequately in an easily understandable manner with comments on quality of data?
- Whether significant impacts have been predicted and evaluated with indication of potential impacts that were expected at scoping stage but not found at this stage?
- Whether mitigation measures to control adverse impacts and enhance project benefits have been proposed?
- Whether institutional arrangements for implementing mitigation measures have been defined in the form of Environmental Management Plan (EMP)?
- Whether costs of implementing all recommendations have been adequately budgeted in the cost estimates?
- Whether monitoring program is described and commitment made with reasons for and detail of costs of carrying out monitoring activities?
- Whether local people have been involved in the study process and an overview of the issues raised and their treatment is given?
- Whether the EIA report is written with clarity, free of jargon and explains technical issues in terms that are intelligible to a non-technical reader?

Source: Derived from [13]

Moreover, discussions with concerned officials and examination of approved EIA reports reveal that even the official criteria are not followed in letter and spirit. This situation is leading to clearance of poor quality EIA reports and adverse environmental and socio-economic impacts of consequential development.

III. CRITICAL REVIEW OF EIA REPORTS

A sample of 4 EIA reports relating to industrial sector has been randomly selected for critical review, since majority of the development projects for which EIA is required relate to the industrial sector. All of these projects are variably located in the biggest province of the country i.e. Punjab and prepared by different but renowned consultants. The teams of these consultants primarily consist of chemists, environmental engineers, civil engineers, agricultural scientists and

biologists. Only one consultant has a social scientist and urban planner in its team. Majority of the consultants stated that EIA of such industrial projects takes 1.5 month time on the average and they charge 0.5 to 1 Million Rupees (1 US\$ = 61 Rupees). However, they also complained that quakes and black sheep type of consultants conduct an industrial project's EIA even in 0.05 million Rupees. Furthermore, proponents are always in hurry and do not give sufficient time required to conduct a good quality EIA whereas in case of large projects, up to one year time is normally required for carrying out EIA studies. A summary of various characteristics related to the components, quality and presentation of selected EIA reports has been presented in tabular form in Appendix. The summary and detailed description of EIA components below is based on EIA review criteria for developing countries suggested by [7].

A. Description of Development, Local Environment and Baseline Conditions

All the reviewed EIA reports gave a comprehensive description of the development and the production processes with a justification that "the process has been selected on the basis of highest production efficiency, experience and safe operation." The description of local environment has been made on the basis of secondary data about topography, land use, climate, and socio-economic aspects. Similarly the reliability of data is questionable since every consultant has compiled data on its own. However, the baseline conditions related to ambient air quality, ambient noise, ground water conditions, top soil and geology have been established by actually taking samples from project site and getting tested by certified environmental testing laboratories. Interviews with the consultants revealed that no data about baseline conditions is available with concerned agencies and it takes too much time and resources to collect data about baseline condition of an area for every EIA study.

B. Identification and Evaluation of Key Impacts

The impacts have been defined on the basis of nature and production process of the plants. In most of the cases international standards e.g. World Health Organization (WHO) Standards, and United States Environmental Standards have been reviewed while defining the environmental impacts. Only two EIA reports defined socio-economic impacts in detail while the other two described impacts on human health in more detail.

Although, it has been emphasized in the Guidelines that all stakeholders should be consulted during scoping stage but in practice the public involvement appears predominantly uni-polar and without using any technique. The involvement of possible affectees and the regulators in scoping is not sufficient as only few members of the concerned communities were consulted in all the cases. The chief reason for limited involvement of stakeholders during EIA studies appears to be that the public consultation is legally required only after the EIA report has been submitted to the responsible authority. In all the reviewed cases public consultations were made prior to

final approval under the supervision of EPA officials. But public participation remained extremely limited during the review, due mainly to the reasons that these industrial projects are located at the periphery of the cities where the population is distributed in scattered villages and lacking in awareness about environmental and indirect socio-economic impacts. It has also been observed in many cases that the genuine concerns of the public raised during hearing are not properly addressed in the approved EIA reports [14].

In all the four selected cases, no quantitative methods have been applied in prediction of impact magnitude and assessment of impact significance. However, in two EIA reports assessment of impact significance has been made on the basis of self developed criteria by considering severity of the risk on environment and human health, probability of occurrence, legal requirements, views of affected parties and data reliability. Impact significance rating is defined on a 5 point scale from no impact to sever impact.

C. Alternatives and Mitigation of Impacts

Ironically in all of the reviewed EIA reports, no alternatives either to development intervention or to the site of the project were discussed. Contrary to this fact, interviews of the proponents and consultants suggest that alternatives are always considered informally, both for the process and site but not included in the EIA reports. The scope of the effectiveness of mitigation measures embrace both the construction and operation stages but limited to environmental impacts and in 50% cases to human health. Commitment to mitigation revolves around qualitative statements indicating the need to provide education and health facilities as well as effluent treatment plant and arrangement for solid waste management. On the other hand, print and electronic media reports reveal that once the project starts operation, no mitigation measures or community facilities are provided by the proponents and they don't even bother to listen to the affected communities unless some NGO comes forward and files a complaint to the competent authorities against the proponents.

D. Communication of Results

The layout and presentation of the report depend upon the approach and taste of the consultants, since the guidelines about the contents do not indicate number of chapters and format of the report. The results have been communicated in a form which portrays a "sweetheart" image of the project. The baseline data about socio-economic aspects have been predominantly obtained from secondary and outdated sources. Besides, the impact identification and assessment has been made without using any quantitative technique/method.

E. Key Findings Related to Quality of Selected EIA Reports

In summary, following key issues can be gleaned from previous discussion on critical review of selected EIA reports:

- ✚ Insufficient allocation of funds and time for conducting EIA
- ✚ Non availability of baseline data
- ✚ Lack of experience of EIA consultants
- ✚ Insufficient involvement of affectees and regulators during scoping
- ✚ No use of quantitative impact assessment methods
- ✚ No formal consideration of project alternatives
- ✚ No sound basis of proposed mitigation measures
- ✚ No incorporation of public concerns raised during EIA review
- ✚ Subjective and quantitative nature of EIA review criteria
- ✚ No independent EIA review body

Resolving these issues is necessary to improve EIA practice but unless political will is there to ensure smooth implementation of EIA guidelines there is little hope for change in the way EIA is treated both by the proponents and the consultants.

V. CONCLUDING DISCUSSION

Although necessary legislation enabling enforcement of EIA for development projects likely to have severe environmental impacts is now in place in Pakistan, there are problems relating to the implementation side which make preparation of EIA report merely a formality. The following conclusions have been drawn from the critical review of selected EIA reports:

- Proponents hire consultants to conduct EIA of development projects within minimum time and cost. Their intention is to highlight the benefits and justify the proposal in order to obtain environmental clearance. Since there is no code of conduct for EIA consultants nor even any requirement of registration, consultants' job has become to satisfy the proponent's requirements rather than carrying out objective EIAs to ensure environmental and social soundness of the projects [15].
- EIA statements are generally of poor quality in many respects. For instance, the data about baseline conditions relating to socio-economic aspects is obtained from secondary sources. No methods are being used to identify and assess the magnitude of impacts. In most cases alternatives are not considered either for the process or the site of the proposed project.
- One of the causes of poor quality of EIA in Pakistan appears to be relatively little experience of consultants and approval authorities in EIA. In this context, [16] also observed a correlation between EIA quality and the experience of consultants and approval authorities, which signifies the need for training and capacity building of both the players.
- Public participation is generally weak. Since it is mandatory only during EIA review by the responsible authority hence, avoided by most of the proponents during the EIA preparation process. Even during the

review, public participation is insufficient and affectees' concerns are rarely addressed.

- EIA review criteria suggested in the Guidelines is 'content' oriented and does not explain any measures of quality of each component of EIA. Moreover, it is not mandatory for responsible authority to follow that criteria while reviewing an EIA report.
- Review is made by the concerned officials of responsible authority without any involvement of independent experts and NGOs. The problem is exacerbated in the wake of lack of skilled EIA professionals within the responsible authorities, which the proponents also know and try to exploit this in their favour [17].

VI. RECOMMENDATIONS

The critical analysis of selected EIA reports and the concluding discussion lead to the following recommendations:

- The proposed contents of the EIA reports should be made more self explanatory and concise but include indicators of the quality of each component. In order to ensure compliance, the proposed contents should also be made part of EIA regulations as a separate schedule.
- Sector wise EIA review criteria should be developed with some grading system like the one suggested by [6] to facilitate measuring the quality of EIA components.
- In order to ensure transparency and quality, the EIA review and decision making tasks should be assigned to independent review committees. The review committees/bodies may comprise of independent experts from all disciplines closely related to environment, EIA specialists, and representatives of the NGOs working on the cause of environmental protection in Pakistan.
- Although the level of community awareness about the environmental issues is increasing with the active involvement of media and NGOs in Pakistan. Yet, there is lot to be done to promote a culture of public consultation. Majority of the consultants agreed that public consultation during the scoping may also be made mandatory. In order to ensure that the actual public concerns are reported in the EIAs and addressed in the proposed mitigation measures, the consultation during the EIA review should be made under the supervision of a judge of the environmental tribunal already existing in Pakistan.
- The responsible authorities should develop some criteria to register EIA consultants. Reference [18] argues that for a good quality EIA system, EIA

consultants must possess substantial analytical capabilities for field work, laboratory testing, research, data processing and predictive modelling. To this end, training of EIA consultants may be made mandatory. A written code of conduct for the consultants has also become a necessity as proposed by many researchers [15]. And if some consultant do not observe the code of conduct then it should be black listed, suggested an EPA official.

- All the above cannot be achieved without capacity building of responsible authorities as [19] argues the successful implementation of EIA requires ongoing and sustained restructuring of its institutional framework. Therefore, the officials of EIA cells of EPAs should be provided with opportunities for training from countries with developed EIA systems like the Netherlands and Canada. The capacity of EPAs should also be further strengthened by inducting more relevantly qualified and trained staff.
- Finally, it is stated that the availability of legislation and guidelines or even institutional capacity of the regulators may not help achieve better quality of EIA unless key stakeholders including politician/decision makers do not have a high degree of commitment to environmental protection.

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APPENDIX-A

SUMMARY OF THE CRITICAL REVIEW OF SELECTED EIA REPORTS IN TERMS OF
COMPONENTS, QUALITY AND PRESENTATION

EIA Components and Characteristics	EIA of a Chrome Tannery	EIA of an Ethanol Manufacturing Unit
Description of the development, local environment and the baseline conditions		
Description of the development	Ch. 2 describes the project and process.	Ch.3 describes the project and process.
Site description	Ch. 2 also indicates project location, site, land uses & existing problems. But, no alternative site is discussed.	Ch.3 indicates project location and surroundings but not any problems. No alternative site is considered.
Wastes	Waste generation identified in Ch.4. Disposal of solid waste and liquid effluents discussed in EMP.	EMP indicates installation of effluent treatment plant and sludge to be used as organic manure.
Baseline conditions	Ch.3 describes local environment, topography, socio-economic aspects and existing infrastructure.	Ch. 5 provides information about biophysical and socio-economic environment.
Identification and evaluation of key impacts		
Definition of impacts	Ch.4 discusses possible impacts on environment, and human health.	Possible pollution impacts and socio-economic impacts are defined in Ch.6.
Identification of impacts	Possible impacts on environment and human health identified by reviewing international standards. Community was also consulted at limited scale during EIA.	Only the project site specific baseline environment data was collected. Community was not consulted.
Scoping	Scoping for SIA and EIA has been done.	Scoping for biophysical impacts has only been done.
Prediction of impact magnitude	Magnitude of negative and positive impacts have been predicted based on assessment significance.	Used laboratory test reports of baseline environment data and compared with NEQS for prediction of impact magnitude.
Assessment of impact significance	Made on the basis of self developed criteria by considering the severity of risk using 5 point scale from no impact to severe impact.	No use of any quantitative criteria. Just qualitative statements have been made.
Alternatives and mitigation of impacts		
Alternatives	No site and process alternatives are considered. Proposed process has been selected on the basis of highest production efficiency and experience.	No alternative intervention option considered.
Scope of effectiveness of mitigation measures	Mainly the scope of effectiveness of mitigation measures on environmental and human health is discussed in Ch. 5 which also includes mitigation measures & EMP.	Mitigation measures are discussed in Ch.6. Scope of effectiveness is only limited to mitigation of environmental impacts.
Commitment to mitigation	Community was consulted to know its concerns.. community development project is also proposed. EMP also identifies areas of responsibility for environmental health and safety department.	Self monitoring and reporting (SMART) system is proposed. Responsibilities assigned from GM to Plant Operator. Staff training need expressed.
Communication of results		
Layout	There are 6 chapters and 13 annexures.	There are 7 chapters and 13 annexures.
Presentation	Appropriate tables, charts, coloured photographs & maps are used. Certified lab reports have also been attached.	Poor quality maps and layout plan have been provided along with coloured photographs of site monitoring.
Emphasis	Emphasis is placed only on impact on human health.	No special emphasis is placed on any specific impacts.
Non-Technical summary	Executive summary is quite comprehensive.	Brief executive summary but easy to understand.

APPENDIX-A (Continued.....)

SUMMARY OF THE CRITICAL REVIEW OF SELECTED EIA REPORTS IN TERMS OF
COMPONENTS, QUALITY AND PRESENTATION

EIA Components and Characteristics	EIA of a Polyester Cotton Thread Manufacturing Unit	EIA of a Sugar Mill
Description of the development, local environment and the baseline conditions		
Description of the development	Ch.4 briefly describes project and process.	Ch.2 describes the project and process.
Site description	Area description and environmental setting given in Ch.5.	Ch.2 indicates location, land uses and other industrial activities near the project area. No alternative site is considered.
Wastes	In Ch.7 i.e. EMP, sewage treatment and hazardous chemical disposal systems are proposed.	Methods to be adopted for disposal of solid waste and liquid effluents are discussed in EMP.
Baseline conditions	Ch.5 provides information about environmental setting, physical and socio-economic conditions.	Baseline environmental conditions have been determined by collecting environment data and laboratory tests. Socio-economic survey has also been conducted and public perceptions noted.
Identification and evaluation of key impacts		
Definition of impacts	Ch.6 defines socio-economic impacts and impacts on biological resources.	Possible environmental and socio-economic impacts are defined in Ch.3
Identification of impacts	No method used but key environmental concerns related to effluents disposal, gaseous emissions & particulate matter have been identified.	Possible impacts on environment and human health identified by comparing with international standards. Few members of the concerned community have also been consulted for identification of impacts.
Scoping	Only four persons of the community were consulted during scoping.	Scoping for both environmental and socio-economic impacts have been done.
Prediction of impact magnitude	Ch.6 indicates magnitude of impacts but predictions are made in the form of qualitative statements.	Estimated quantities of effluents, air and noise pollution have been compared with international standards to predict the impacts.
Assessment of impact significance	Same as above	Made on the basis of self developed criteria by considering the severity of risk using 5 point scale from no impact to severe impact.
Alternatives and mitigation of impacts		
Alternatives	No alternative option considered.	No alternative intervention discussed but statement is made saying that this option is selected based on maximum production efficiency and safety criteria.
Scope of effectiveness of mitigation measures	Ch. 6 discusses mitigation through reverse osmosis plant, recycling of solid waste, and installation of particulate dust controller.	Mitigation measures are discussed in Ch.5 in EMP for both construction and operation phases. Scope of mitigation measures is very comprehensive.
Commitment to mitigation	Independent monitoring by certified laboratory is proposed. Community program will be undertaken and more trees will be planted.	Affected community has been consulted and access road, education facility and provision of jobs promised. Waste water treatment plant, solid waste management and monitoring systems have also been proposed in EMP.
Communication of results		
Layout	There are 7 chapters and 5 annexures.	There are 6 chapters and 11 annexures.
Presentation	Very brief description and simple site maps have been provided. No data tables are given.	Appropriate tables, flow diagram, location map, land use and detailed layout plans and laboratory reports provided.
Emphasis	No emphasis is placed on any specific impact except on monitoring of mitigation measures.	Emphasis is placed on environmental and human health impacts.