

Guidelines for the Application of Environmental Health Impact Assessment Process for Development Projects of Nepal

Yadav, C.S.^a & Aryal, S.^b

Abstract

Introduction	Nepal is a developing country and many development activities are carried to uplift the economic status of the country. Since the introduction of the Environmental Impact Assessment (EIA) in Nepal, policies and guidelines for assessing the impacts of development projects have always given greater emphasis on the effects to the environment. In this regard, it seems necessary to expand the current EIA to integrate a more definite and comprehensive procedure for assessing the impact of development projects on the health condition of the people in the community and in the workplace.
Objective	To review EIA process and reports, and to recommend Environmental Health Impact Assessment (EHIA) process for development projects of Nepal.
Methods	Primarily the secondary source materials were used for data collection. In the process of collecting secondary source materials, all available literature on the subject matter of the study was gathered from different sources including visits to libraries, NGOs, INGOs and UN Agencies as well as browsing the Internet. The EIA process established in our country as well as the EIA studies of development projects of different sectors were critically reviewed. Environmental Health Impact Assessment Process of other countries was also reviewed.
Results	A review of some EIA documents showed that the potential effect of the project on human health is inadequately tackled or in some cases completely not included. At most, the information usually available in this portion contained a description of general health status data obtained from District Health Offices or Department of Health Services.
Conclusion	Environmental Health Impact Assessment Process for development projects has been proposed which outlines how health can be integrated into the existing EIA process to fulfill the inadequacies in the health component of the current EIA process for the protection and promotion of human health.
Keywords	Environmental Impact Assessment, Environmental Health Impact Assessment, Development Projects

Introduction

Government and international agencies invest large sums in development projects. The projects fall into a wide range of sectors such as energy, agriculture and industry. Development projects have both positive and negative impacts. These range far beyond their immediate objectives. They can affect the environment, social structure and demography of local communities. They can also affect public health. Many of these can be avoided by careful planning¹.

In June 1992, the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro. The outputs of the conference included a Declaration of Principles on environment and development and an agenda for change during the 21st century, referred to as *Agenda 21*. *Agenda 21* acknowledges the dependence of human health on a healthy environment. *Agenda 21* has been used as a priority-setting tool for the policies of many international agencies and countries. In response to

^a Corresponding Author: Chandra S. Yadav, Research Officer, Nepal Health Research Council, Ramshah Path, Kathmandu

^b Sharad Aryal, Environmental Health Expert, Nepal Health Research Council, Ramshah Path, Kathmandu

Agenda 21, His Majesty's Government of Nepal has also prepared the Nepal Environmental Policy and Action Plan (NEPAP)-1993².

HMG/ Nepal introduced national Environmental Impact Assessment (EIA) guidelines long before Environment Protection Act came into existence. It has been nine years since the National Environmental Impact Assessment Guidelines, 1993 was introduced in Nepal. These guidelines were endorsed by His Majesty's Government of Nepal on 27 September 1992 and gazetted on 19 July 1993 in Volume 43, Number 5. These guidelines require all concerned authorities to prepare an EIA for any development project or activity that significantly affects the quality of the environment.

Environmental Health Impact Assessment (EHIA) is a procedure for identifying health hazards, interpreting the health hazards as health risks, and suggesting risk management strategies³. In summary, development, human health and the health of the environment are mutually interdependent. If the health of the people is safeguarded, then ultimately the ecosystem itself will be safe.

Objectives

The principal objectives of this study were:

- To review the EIA process established in the kingdom of Nepal in relation to health risk assessment.
- To review the EIA reports of development projects with respect to consideration of health.
- To recommend guidelines for application of EHIA process in development projects/activities.

Methodology

In order to achieve the objectives and obtain the major outcomes of the study, primarily the secondary source materials were used for data collection. In the process of collecting secondary source materials, all available literature on the subject matter of the study was gathered from different sources including visits to libraries, NGOs, INGOs and UN Agencies as well as browsing the Internet. The EIA process established in our country as well as the EIA studies of development projects of different sectors were critically reviewed. Additionally, EHIA Guidelines of some other countries were reviewed. Finally a guidelines on EHIA has been proposed within the context of our country set-up.

Results and Discussion

Review of Existing EIA Process

This study reviewed the EIA process that has been adopted in our country. The results are presented by giving some background information on the emergence of EIA and the critical review of the inclusion of health component on the current EIA process.

Realizing the increasing importance of environmental problems in the country, HMG/Nepal passed a law in 1993, requiring sponsors of all development projects affecting the quality of the environment to prepare an EIA in order to evaluate the potential impact of a project on the general environment. This provision was embodied in Environment Protection Act (EPA)-1996 and it's implementing Environment Protection Rules (EPR)-1997 and subsequent amendment in 1999.

Under EPR-1997, projects are categorized as 'Proposals requiring Initial Environmental Examination (IEE)' and 'Proposals requiring EIA'. No person or entity is allowed to undertake or operate such projects without first securing an approval from the Ministry of Population and Environment (MoPE) or the 'concerned ministry'. More than 200 types of developmental activities must follow the environmental assessment process. MoPE reserves the right to accept or reject the EIA report of the prescribed proposal whereas the concerned ministries could approve the IEE report. Following is a brief description of the EIA process. If the project is determined to come under Schedule-2 of EPR-1997, an EIA has to be carried out. After completing the work for project screening, scoping is undertaken with the aim of discovering the alternatives to the proposed activities of the project identified as having potentially significant impacts on the environment, selecting appropriate alternatives, and determining the issues to be considered during the environmental impact assessment. The scoping process is initiated and organized by the project proponent in coordination with the concerned agencies of HMG. The Terms of Reference (TOR) for EIA is prepared on the basis of scoping exercise and it needs to get an approval by MoPE. MoPE reserves the right to make minor changes or revision in such TOR as required citing the nature of the proposal.

After the scoping activity, the project proponent proceeds to prepare and submit an EIA report that conforms to the terms of references prepared on the basis of the scoping exercise. The EIA working team usually begins with the collection of secondary data from different sources and may supplement with primary data. The team then

synthesizes the data, evaluates them, identifies impacts and proposes mitigation measures for negative impacts. Based on the identified impacts and the proposed mitigation measures, an environmental management plan and monitoring plan is prepared. The EIA document prepared is placed for public review and the suggestions and opinions received from public are incorporated in the report.

The EIA review process is a critical activity upon which the decision to grant or deny the approval to a particular project is determined. In reviewing the EIA report, the MoPE conducts a series of meeting (usually three) involving members from the concerned ministry⁶, the MoPE and experts from different disciplines. If the nature of the report is of direct relevance to public health (e.g. establishment of medical waste treatment facility), experts from public health are also invited in the meeting whereas in other cases public health specialists are not invited in reviewing the report. If the reviewing committee deems necessary for some changes in the report, the proponent has to make necessary changes and submit the revised report in the next meeting of the reviewing committee. The MoPE reserves the right to reject or approve the EIA report.

If the project is determined to be in Schedule-I of EPR-1997, an IEE process is required. The proponent prepares a work schedule in the format as indicated in Schedule 3 of EPR-1997 for a report relating to such proposal and an approval is required from the 'concerned ministry'. Since the IEE is not a full-scale assessment, the data and information needed may come primarily from secondary sources like reports, studies and documentation of consultations with stakeholders. Based on the relevant information gathered, the identification of impacts and mitigation measures for adverse impacts are carried out. A simplified environmental management plan is prepared incorporating proposed mitigation measures and matters to be monitored while implementing the project.

Review of the IEE report is carried out by the 'concerned ministry' and an approval is given if the investigations by the reviewing committee finds no substantial negative impact on the environment on the implementation of the proposal. However, if the 'concerned ministry' finds it necessary to carry out an EIA, the IEE report is forwarded to MoPE. The proponent then has to fulfill all the formalities laid down by EPR-1997 for the preparation of the report of EIA.

Health Component of the Current EIA Process

A careful review of the present EIA process has revealed a marked absence of clear and definite human health indicators in the evaluation of the impact of projects on the community and workers. Furthermore, EIA review committee has not stressed the importance of acquiring the information on the general health status of the community. This only serves to highlight the need to establish a reliable set of baseline data describing the health condition of a community prior to the introduction of a project. It is worth noting that while the EIA review committee includes experts from diverse fields such as forestry, road, water, etc.; it hardly includes medical and public health practitioners or environmental health experts (unless the project is of direct relevance to health / health sector) who may be able to provide the necessary expertise in evaluating the possible impact of development projects on human health. Without giving high value to the human health, none of the development activity will become sustainable. For this, it is important that human health impact should be considered in each step of the EIA process.

Review of EIA Reports of Development Activities

This study critically reviewed a range of EIA studies of development activities carried out in the kingdom of Nepal. The main focus was to review the health considerations undertaken in the EIA studies. While reviewing the reports, it was assessed whether the reports presented a) current situation of health of the project affected area, b) positive and negative health impacts, c) health mitigation measures, and d) health monitoring. Finally, shortcomings in the health considerations in the EIA reports were analysed.

The following EIA reports were taken into consideration for review:

- Melanchi diversion scheme environmental impact assessment⁴
- Middle marsyangdi hydroelectric project environmental impact assessment⁵
- West Seti hydroelectric project environmental impact assessment⁶
- Kaligandaki A hydroelectric project environmental impact assessment⁷
- Fattepur irrigation sub-project environmental impact assessment⁸
- Environmental impact assessment for disposal of obsolete pesticides⁹
- Environmental impact assessment of copper sulphate and copper oxychloride plant¹⁰
- Environmental impact assessment of the feasibility study on the construction of

Kathmandu-Naubise alternate road in the kingdom of Nepal¹¹

- Environmental impact assessment of Syuchatar sanitary landfill site¹²

Overall Shortcomings in Health

Considerations in the EIA Reports

Except a couple of studies, most of the studies did not thoroughly consider about health impacts due to the project implementation. Some common deficiencies were noted in most of the reports. Baseline health status was not established in many studies. Direct and indirect environmental and occupational health hazards in construction, operation and decommissioning of the project were not identified. Risk groups identification was lacking in most of the studies. Predictions of health consequences were not carried out. Indirect health determinants were not assessed. Comprehensive control and mitigation measures for health were not proposed. Monitoring and auditing plan for health was not included. None of the studies carried out environmental health risk assessment. Provision for identification of environmental health hazards after the decommissioning of the projects was not included.

Environmental Health Impact Assessment Process

After reviewing the EIA process and EIA reports, EHIA guidelines for development projects has been proposed to overcome the shortcomings of considerations of health in EIA studies. These guidelines would guide the proponents, environmental assessors and others in this field to consider the health impact assessment component in the current EIA process.

General Guidelines for EHIA Preparation and Implementation

The following general guidelines are intended to facilitate the preparation and implementation of environmental health impact assessment. These guidelines are generic in nature and can be applied to any development projects. These guidelines may be used by project proponents, decision-makers and implementing agencies engaged in reviewing EIA documents. The following parameters need to be looked at while carrying out EHIA.

Establishment of Baseline Health Status

The EHIA shall include appropriate primary and secondary health data for purposes of establishing the baseline health status of the 'affected' community. Data of demographic profile, vital statistics and local health resources should be included.

Environmental Health and Sanitation Profile

The EHIA shall include data on water supply, human excreta management, waste management and disposal systems and food hygiene.

Environmental Health Impact and Risk Assessment

The EHIA shall include environmental health impact and risk assessment outcomes. Environmental health risk assessment is a tool to identify, evaluate and control environmental health hazards. The main objective of the environmental health risk assessment is the protection and promotion of the health of the workers and communities affected by the development projects. *Identification of Hazards and Evaluation of Potential Health Impact*

The EHIA shall be able to identify and evaluate the potential environmental health impact, whether adverse or beneficial to affected communities.

Identification and Assessment of Community Exposure

The EHIA shall be able to identify the possible routes of exposure of the project affected community.

Identification of Risk Groups

The EHIA shall be able to identify risk groups who have a higher probability either of exposure or developing the adverse health effect.

Prediction of Health Consequences and Outcomes

The EHIA shall be able to predict health consequences and outcomes, whether these are direct or indirect effects of the development project or whether they result with or without the project.

Assessment of Indirect Health Determinants

The EHIA shall include a discussion and assessment of the indirect health determinants of the community residents like water supply and sanitation, access roads, increased income, electricity and public health services.

Control Measures

The EHIA shall include a discussion on the control measures that must be undertaken to prevent or minimize environmental health impact to communities where projects are introduced.

Mitigation Measures

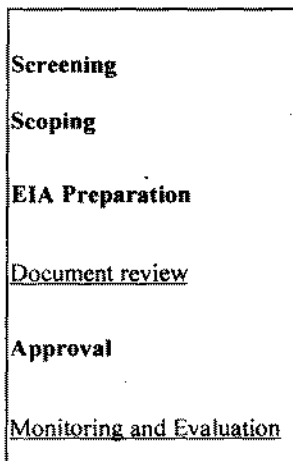
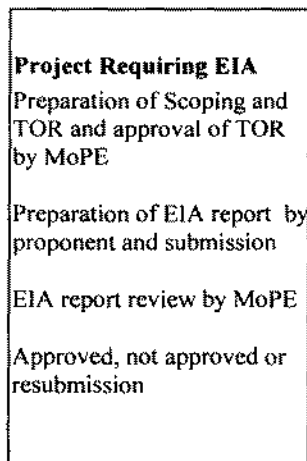
The EHIA shall have a thorough discussion on the mitigating measures that must be put in place to minimize the adverse health consequence should

the control measure fail and the environmental health hazard is released.

Monitoring and Auditing Plan The EHIA shall include a monitoring strategy and auditing design to

keep track of the changes in the health situation of the impact community throughout the construction, operation and decommissioning of the development project^{3,13,14,15,16}

EIA Flow Chart



EHIA Flow Chart

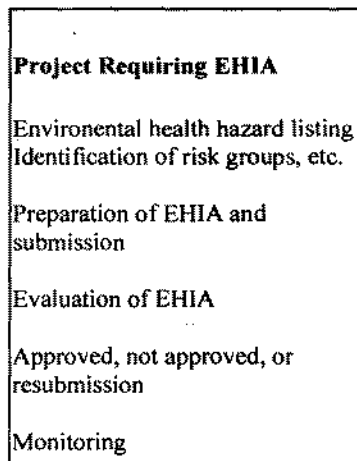


Fig 1: Flow of activities in EIA and EHIA processes

Method of Conducting EHIA

In parallel to the existing EIA guidelines and practice as implemented by MoPE, EHIA shall be conducted on all projects under Schedule-2 of EPR-1997. The existing EIA review committee in the MoPE shall review the EHIA component of the EIA report. However, a public health and/or environmental health expert must be included in the reviewing committee. Projects that fall outside Schedule-2 of EPR-1997 shall prepare a Health and Safety Management Plan instead of a full-blown EHIA. The 'concerned ministry' shall review the Health and Safety Management Plan.

The Fig. 1 shows the EHIA process in comparison to EIA process. The EHIA process and flow of activities are proposed in a way so that it is easy to integrate into the existing EIA process. The EHIA process data should be contained in *a separate chapter on health* in the EIA report submitted for review to MoPE.

Health and Safety Management Plan for Projects Not Required to Prepare an EHIA

The Health and Safety Management Plan should include the following components:

- Project description, including process flows, raw materials, finished products, by products and waste products.
- Listing of health and safety hazards present in the work site as well as those with potential impact to the health of the community.
- Identification of important environmental factors.
- Evaluation of capabilities of stakeholders.

- Identification of vulnerable communities and stakeholders.
- Statement of proposed strategies to prevent and control health and safety hazards identified, including emergency health and safety measures in case of accidents and injuries.

Preventive and control strategies may include the following:

- a. workplace health and safety policy
- b. use of personal protective equipment
- c. workplace medical emergency response plans
- d. community response plans

- Proposal for the proper management, evaluation, monitoring and audit of the Health and Safety Management Plan^{3,13}.

Conclusion

Development projects are instrumental to Nepal's economic growth. It is now becoming increasingly clear that development can have beneficial as well as adverse effects on health and well being. Development projects with obvious health benefits may also have unintentional adverse health impacts. As a results of this situation, many governments and international agencies recognize the need to further strengthen the role of environmental and health considerations in decision-making process.

EIA has evolved into an institutionalized process for identifying, assessing and mitigating the potential environmental effects of development projects in many countries. HMG/Nepal also passed a law in 1993 requiring to prepare an EIA for

development projects that affect the quality of the environment. The critical review of the current EIA process in Nepal showed an absence of clear and definite human health indicators in the evaluation of the impact of the development projects on the community and workers. Review of the EIA documents also supported the fact that the potential effect of the project on human health was inadequately tackled and in some cases completely not included.

EHIA guidelines for development projects has been proposed to overcome the shortcomings of considerations of health in EIA studies. These guidelines would guide the proponents, environmental assessors and others in this field to consider the health impact assessment component in the current EIA process. The EHIA process and flow of activities are proposed in a way so that it is easy to integrate into the existing EIA process.

References

1. ECHP, 1999, *Health Impact Assessment: Main Concepts and Suggested Approach-Gothenburg Consensus Paper*, European Center for Health Policy, Brussels.
2. EPC, 1993, *Nepal Environmental Policy and Action Plan: Integrating Environment and Development*, HMG-Environment Protection Council, Kathmandu.
3. *Environmental Health Service, 1997, Philippine National Framework and Guidelines for Environmental Health Impact Assessment*, Department of Health, Manila, Philippines.
4. IUCN, 1999, *Melamchi Diversion Scheme Environmental Impact Assessment*, IUCN/METCON.
5. NEA, 2001, *Environmental Impact Assessment Study of Middle Marsyangdi Hydroelectric Project*, Nepal Electricity Authority Middle Marsyangdi Hydroelectric Project.
6. SMEC, *West Seti Hydroelectric Project Environmental Impact Assessment: Social and Land Use Studies, Vol. 6*, SMEC West Seti Hydroelectric Corporation Limited.
7. NEA, *Environmental Impact Assessment of Kali Gandaki A Hydroelectric Project*, Nepal Electricity Authority Kali Gandaki A Hydroelectric Project.
8. Department of Irrigation, 2000, *Fattepur Irrigation Sub-Project Environmental Impact Assessment*, Irrigation Development Project-Mid Western Development Region.
9. Department of Agriculture, 1999, *Environmental Impact Assessment for Disposal of Obsolete Pesticides*, Institutional Reforms in Agriculture Sector ADB/ Ministry of Agriculture HMG/ ANZDEC-New Zealand.
10. Pasupati Agrochem Nepal, *Environmental Impact Assessment of Copper Sulphate and Copper Oxochloride*, Akchat consultants/Society for Environmental and Development.
11. Department of Roads, 2001, *The Feasibility Study on the Construction of Kathmandu-Naubise Alternate Road in Kingdom of Nepal: Environmental Impact Assessment*, Department of Roads Kathmandu-Naubise Alternate Road Feasibility Study Project.
12. Ministry of Local Development, 1999, *Environmental Impact Assessment Syuchatar Sanitary Landfill Site*.
13. Birley, M. H., 1995, *The Health Impact Assessment of Development Projects*, HMSO Publications, London.
14. Ministry of Health New Zealand, *A Guide to Health Impact Assessment*, Available Online [<http://www.moh.govt.nz/>] September 2001.
15. Health Canada, 2000, *The Canadian Handbook on Health Impact Assessment: Decision Making in Environmental Health Impact Assessment (Vol. 2)*, Available Online [<http://www.hc-sc.gc.ca/ehp/ehd/oeha/hia/vol2.htm>] (September 2001).
16. World Bank, 1997, *Health Aspects of Environmental Assessment, Environmental Assessment Sourcebook Update, No. 1*