



A case study on an environmental impact assessment in Malaysia

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Abstract

The Environmental Impact Assessment (EIA) procedure in Malaysia has been developed primarily as an aid to the environmental planning of new or existing development projects. The pollution control which have been promoted for quite some time in Malaysia is essentially a curative process where else the implementation of the mandatory EIA procedures is more of a preventive measure to avoid costly mistakes in planning and development. All activities listed under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987 have to undergo an EIA before commencement of work.

This paper describes the EIA process in Malaysia with a particular reference to a proposed new road which has undergone an EIA study. The EIA procedure as outlined in the Environmental Quality Act, Malaysia (1974) is discussed and several aspects of the EIA process is highlighted.

1 Introduction

Malaysia today is a modern progressive country with high economic growth with industrialisation and urbanisation being the key development priority of the country. However, with the rapid development activities comes the environmental problems associated with it. In the recent years, the increasing awareness for the concept of sustainable development has come to fore. Basically sustainable development is a pattern of social and structural economic transformations, that is development which optimises the existing social benefits, without endangering the potential of such benefits in the future. The support for sustainable development especially in developing countries is due to the increasing concern over the often deleterious environmental, health, social and economic consequences of inappropriate large scale development projects.

Thus the manifestations of this concern is the Environmental Impact Assessment (EIA) legislation which became a mandatory requirement under section 34A of the Environmental Quality (amendment) Act, 1985. It empowers the Minister of Science, Technology and Environment to prescribe any



activities which is likely to have significant impacts on the environment. The subsequent EIA Order was gazzeted on Nov. 1987 and finally enforced since April 1,1988.

The Environmental Impact Assessment procedure in Malaysia was developed primarily as an aid to the environmental planning of new development projects or to the expansion of existing development projects. The procedure and guidelines have been tailored specifically to the assessment of development project proposals.

Pollution control which has been promoted for several years in Malaysia, has essentially been a curative process. The Act and the various regulations under it are directed mainly towards the control of industrial pollution but are by no means conclusive in themselves in tackling the broad environmental issues arising from the development of land and natural resources. Thus it is important to understand where the EIA fits into the overall scheme of environmental management. The EIA procedure seeks to avoid costly mistakes in project planning and development mistakes which can be costly either because of environmental losses that result or costly because of modification that might be required subsequently to make the project environmentally acceptable to the Government and the community. The EIA, pollution control and resource planning are together a total approach to environmental management in Malaysia.

2 The national environmental policy act

The Malaysian Government has stated its policy on EIA in the Third Malaysian Plan as follow:-

" In the evaluation of all relevent projects, an assessment of the overall impact of these projects on the environment will be undertaken. Ministries and Departments as well as the private sector will be required, before embarking on the implementation of such projects, to identify all likely environmental effects as well as the means to be taken to counter them. These assessments will be taken into account in the final design and implementation of the projects but bearing in mind that the adoption of environmental protection measures will need always to be in balance with development costs."

This was further reiterated in the Fifth Malaysia Plan as

1. " ...to maintain a clean healthy environment..."
2. ".....to maintain the quality of the environment relative to the needs of the growing population..."
- 3.to minimise " (the) impact of the growing population and human activities relating to mineral exploration, deforestation, agriculture, urbanisation, tourism, and the development of other resources on the environment"
- 4.to balance "...the goals for socio-economic development and the need to bring the benefits of development to a wide spectrum of the population...against (the) maintenance of sound environment conditions..."
5. "...to place more emphasis on prevention through conservation rather than



on curative measures..." inter alia by preserving the country's unique and diverse cultural and natural heritage.

6."...to incorporate an environmental dimension in project planning and implementation.... inter alia by determining the implications of the proposed projects... and the costs of the required environmental mitigation measures through the conduct of EIA" and

7. to promote "(greater) cooperation and increased coordination among relevant federal and state authorities..." as well as "... (among) the ASEAN Governments...."

3 Environmental impact assessment in Malaysia

3.1 Aim and objectives of EIA

The aim of environmental impact assessment in Malaysia is to assess the overall impact on the environment of development projects proposed by the public and private sectors.

The objectives of environmental impact assessments are :-

1. To examine and select the best from the project options available.
2. To identify and incorporate into the project plan appropriate abatement and mitigating measures.
3. To predict significant residual environmental impact.
4. To determine the significant residual environmental impacts predicted.
5. To identify the environmental costs and benefits of the project to the community.

3.2 The essential steps

To complete an environmental impact assessment in an efficient manner and to realise the objectives listed above, the assessor should take the following steps in sequence :

1. Describe the proposed project as well as the options.
2. Describe the existing environment.
3. Select the impact indicators to be used.
4. Predict the nature and the extent of the environmental effects.
5. Identify the relevant human concerns.
6. Assess the significance of the impact
7. Incorporate appropriate mitigating and abatement measures into the project plan.
8. Identify the environmental costs and benefits of the project to the community.
9. Report on the assessment.



4 The EIA procedure

4.1 Preliminary assessment

This should be initiated during the early stages of project planning. It might be conducted "in house" or by a consultant. It requires resources that are a small proportion of man-hours, money, skills and equipment committed to a prefeasibility study and the assessment should be completed within the time frame of that study. Some form of public participation is also mandatory. Environmental data collection may be necessary and close liaison between the assessor and relevant environment related agencies is encouraged.

The assessor and the EIA consultant will normally have informal meetings to obtain some verifications or certain important feedback pertaining to some aspect of the study before the result of that study are reported formally for examination and approval by the approving authority and the Director General of Environmental Quality. Project initiators may also opt to go straight into detailed assessment although preliminary assessment will still need to be carried out as part of an input to the detailed assessment.

4.2 Detailed assessment

This is carried out for those prescribed activities for which significant residual environmental impacts have been predicted in the preliminary assessment. It should continue during project planning until the project plan is finalised. It might be conducted "in house" or by a consultant. The assessment method is selected according to the nature of the project and the specific terms of reference issued by the Review Panel for each project. It requires resources that are small proportion of the man-hours, money, skills and equipment committed to a project feasibility study and the assessment should be completed within the time frame of that study. The results of the assessment are reported formally for examination and approval.

4.3 Review

The review of the detailed assessment is done by an independent Review Panel, established specifically for the project of concern and comprising of members from relevant disciplines and chaired by the Director General of Environmental Quality. The panel may ask suitable experts for their specialist advice on specific aspects of any project under review. Comments are also invited from concerned environmental-related agencies and from the public.

5 An EIA for a proposed new road project

As a case study of an EIA study conducted in Malaysia, reference is made to a study performed for a proposed road linking Cameron Highlands to Kuala Lipis in the state of Pahang in West Malaysia [1]. This road linkage would greatly reduce travel distance and time between the two areas. However, the proposed road need to traverse through forested areas and relatively hilly



terrain along certain stretches.

5.1 Existing environment

A thorough understanding and appreciation of the existing undisturbed environment is necessary for an EIA exercise as it will be the basis for the prediction of possible impacts. Information and data were gathered directly from field surveys or collected from secondary sources. The elements which have been addressed include the following:

Physical environment and land resources The proposed project area lies mostly in forested hilly terrain such that there would be a considerable conservation interest due to the need for forest clearance. The geology and soil characteristics of the proposed project area are typical of a hilly terrain in a tropical region. For this condition erosion is a problem during the construction stage and during the operational stage the safety of slopes requires attention. Appropriate preventive and protection measures should be provided during the construction period.

Climatic and hydrological conditions The climatic conditions along the proposed route were obtained from climatic and rainfall stations. The climatic components which are of relevance include rainfall, temperature, relative humidity, sunshine, evaporation and wind conditions. The river system and drainage pattern for the proposed project area was also studied. The extend of catchment areas were determined.

Noise levels and air and water quality These parameters were obtained through sampling techniques and direct measurement on-site. Water quality parameters for selected rivers flowing within the study area were determined for the existing conditions.

Flora and fauna As the proposed road traverse through forested areas, an in-depth study was made to determine the types of flora and fauna within the study area and in its vicinity. Both terrestrial and aquatic flora and fauna were identified. An inventory of the existing flora and fauna was established.

5.2 Principal project activities and possible environmental impacts

The principal project activities were grouped into different project phases and those activities which may have impacts on the existing environment were highlighted and discussed. The project phases is defined as the pre-construction, construction and operational phases.

The major activities within the pre-construction phase include the following; project planning, site surveys, land acquisition and construction of access road and tracks. Only the last activity has any significant impact on the environment as trees are cleared and bare lands are exposed.

As to the construction phase, the major activities are as follows; land



clearing operations, burning, labour recruitment and base camp construction, earthworks, slope stabilisation, stream crossings, piling, road construction, transportation of construction materials and waste disposal. Most of these activities have significant impacts on the environment.

For the operational or post-construction phase, the major activities addressed include the following; road traffic operations and maintenance of pavement and road shoulder, slopes, bridges and drainage systems.

5.3 Potential environmental impact and assessment

An evaluation and assessment of the environmental components likely to experience significant impacts either positively or negatively together with the magnitude and nature of the impacts were performed. The evaluation of impacts are based on accepted and established methodology and guidelines given in the Handbook of EIA Guidelines [2] were adhered to. The main points to be noted are:

Physico-chemical aspects Soil erosion and sedimentation will mainly be significant during the construction period and with proper management the impact can be minimised. The hydrological regime is not expected to be significantly affected by the project. The quality of air and water and noise pollution will be an environmental concern in the operational stage. This aspect and the solid waste can be tackled with proper management.

Biological In general, due to the fact that the affected land is restricted to a strip of land along the stretch of the proposed road, the impact on the flora and fauna is somehow limited. During the construction stage disturbance to the flora and fauna can be controlled. However, the fauna can be susceptible to danger in the long run as the area is more accessible.

Human Socio-economic aspects considered include landuse and employment issues. In general, the impacts on human are beneficial or positive. The project will enhance the economic potential of the whole area. Existing economic activities can be upgraded with the presence of the new road and new economic activities can be generated. Apart from this, with the new road greater accessibility and improved communication facilities are expected to be of benefit to the area.

5.4 Mitigation measures and environmental monitoring

After determining the types and nature of possible impacts due to the proposed road project, various mitigation measures were considered and evaluated and consequently proposed for implementation so as to reduce the adverse environmental impacts that may occur. Any negative impacts could be substantially mitigated by sound engineering practise and stringent control of the various activities.

Beneficial impacts due to the existence of the road were also discussed and highlighted so as to provide a wholesome and balanced view of the impact analysis. It is also recommended that an environmental surveillance programme be instituted to monitor the changes caused by the project. The surveillance programme should be carried out by the government through their relevant agencies. The monitoring objectives are to collect long-term data and regulate the changes caused by the project and shall include climatic, water quality, air quality, streamflow, fauna and floristic monitoring and traffic accidents.

6 Discussions

The effectiveness of the management of the relevant environmental issues for any project will depend on the production of high quality impact statements as well as proper reviewing and the subsequent policing to ensure that the prediction of impacts are fair and mitigation measures are effective.

6.1 Enforcement of EIA recommendations

Road construction is unique in a sense that the project proponent is normally either the state or the federal governments agencies. Theoretically, enforcement of EIA recommendations for these projects should be simple as it simply require coordination and cooperation of the relevant governmental bodies. However, in actuality it may turn out to be more complicated.

For road constructions, the disturbance to the physical environment mainly affect a strip of land along the corridor of the road. Issues like soil erosion will be critical during the construction period and monitoring by the Department of Environment could be facilitated by its inclusion in some of the site meetings. Recent reports suggest that the DOE is more willing to penalise offenders. However, the main obstacle to effective monitoring by them is lack of manpower.

The risk and impact of surface erosion, one of the main environmental concerns, have generally been adequately assessed by environmental impact assessors. They have also suggested a range of mitigation measures which can bring this problem within a manageable level. However, it is up to the developer or the project initiator to assess the effectiveness of any measure undertaken. The DOE should be furnished with evidence that appropriate measures are taken and they are effective. The DOE should be in a position to request a redo of any mitigating measures considered ineffective. Further, as indicated by Abdul Karim [3] there could be problem as vegetation cover on slopes may not be effectively established.

The other physical impact is the stability of cut and embankment slopes. Instrumentation and monitoring of these slopes should be given a higher consideration. Instrumentation of certain stretches which are considered of a higher risk should be made mandatory. This will require a new legislation but is necessary to help the enforcement of EIA recommendations as the developer



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should be required to furnish monitoring data indicating that the slopes are safe.

The risk of danger to the wildlife and habitat is a serious issue during the construction stage. During this stage the disturbance can be better controlled and enforcement of the EIA recommendations is easier provided cooperation from related agencies e.g. the Wildlife Department can be sought. Inspections to the project site can be made to ensure EIA recommendations are adhered to.

However, the protection of the wildlife is a more serious matter in the long term as the road will improve accessibility to the whole area. More people will and it will be more difficult for the DOE to manage the enforcement issue longterm protection is less straightforward. Certain issues may not come directly under the subject of environmental quality. Here the recommendation may have to be enforced under a different legislation and hence becomes the responsibility of other agencies.

6.2 Surveillance and monitoring

As a final point, for the EIA recommendations to be effective a detail surveillance and monitoring of the project implementation is necessary. This will include arrangements for the reporting of monitoring data. At present there are certain degree of uncertainty as to the details of the follow up programme.

7 Conclusions

The following conclusions can be drawn from the above discussions:

- (i). In the case of new roads traversing through forested hilly terrains, there are several physico-chemical and biological aspects that require appropriate attention to minimise possible impacts due to the development of the project. However, the considerations in implementing such a project should take into account the benefits as a whole.
- (ii). In order for the legislations relating to the environmental issues to be effective, the Department of Environment should have the capability to enforce the recommendations of the environmental consultants preparing the environmental impact assessment report. The issue of trained and adequate manpower for enforcement of EIA recommendation should be given due consideration.
- (iii). As the environment is a multi-aspects issue the enforcement of EIA recommendations require a multi-agencies approach.



References

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