Environmental Impact Assessment (EIA)

Mohd Ismid Mohd Said (Ph.D)
Dept. of Environmental Engineering
Faculty of Civil Engineering

Introduction

- The Malaysian federal EIA requirements have been in operation now for ten years within the framework of the **Environment Quality Act 1974 (EQA).**

- It was not until **1987** that environmental impact assessment (EIA) procedures were introduced under the EQA to emphasize the importance of preventative controls.

- This action was a response to the increasing magnitude of environmental problems in Malaysia.

What is EIA?

A study to identify, predict, evaluate, and communicate information about the impacts on the environment from a proposed project and to detail out the mitigating measures prior to project approval and implementation

What is EIA?

- An aid to environmental planning and preventive process in environmental management
- To avoid costly mistakes in project planning and development
- Required under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015

Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015

- Provided in 2 schedules **First Schedule** and **Second Schedule**.

- Prescribed activities which fall under **First Schedule** require NO PUBLIC DISPLAY and PUBLIC COMMENT while activities that fall under **Second Schedule** require both PUBLIC DISPLAY and PUBLIC COMMENT.

Prescribed Activities under First Schedule

1. AGRICULTURE:

(a) Land development schemes covering an area of 20 hectares or more but less than 500 hectares to bring forest into agricultural production.

(b) Development of agricultural estates covering an area of 500 hectares or more involving changes in types of agricultural use.

2. AERODROME:

Expansion of an aerodrome involving a runway of 1,000 metres or longer.

Prescribed Activities under First Schedule (Continue)

3. DRAINAGE AND IRRIGATION:

(a) Construction of man-made lakes and enlargement of artificial lakes with surface areas of 100 hectares or more.

(b) Irrigation schemes covering an area of 500 hectares or more.

4. FISHERIES:

Land based aquaculture projects accompanied by clearing of mangrove forest, peat swamp forest or fresh water swamp forest covering an area of 20 hectares or more but less than 50 hectares.

Prescribed Activities under First Schedule (Continue)

5. FORESTRY:

(a) Conversion of forest at 300 meters or more above mean sea level to other land use covering an area of 20 hectares or more but less than 100 hectares.

(b) Logging for the purpose of conversion from forest to other land use covering an area of 100 hectares or more but less than 500 hectares.

(c) Logging, or cutting or taking of timber from forest at less than 300 meters above mean sea level covering an area of 100 hectares or more, outside permanent reserved forest.

Prescribed Activities under First Schedule (Continue)

5. FORESTRY (Cont'):

(d) Conversion of an area of-

(i) mangrove forest;

(ii) peat swamp forest; or

(iii) fresh water swamp forest,

for industrial, housing or agricultural use covering an area of 20 hectares or more but less than 50 hectares.

(e) Development of planted forest covering an area of 100 hectares or more but less than 500 hectares.

Prescribed Activities under First Schedule (Continue)

6. INDUSTRY:

(a) Chemical: Production capacity of each product or combined products of 100 tonnes or more per day.

(b) Cement: Production capacity of 200 tonnes or more per day.

(c) Lime: Production of 100 tonnes or more per day of burnt lime using rotary kiln or 50 tonnes or more per day of burnt lime using vertical kiln.

(d) Petrochemicals: Production capacity of each product or combined product of less than 50 tonnes per day.

(e) Shipyards: Dead weight tonnage of 5,000 tonnes or more.

Prescribed Activities under First Schedule (Continue)

7. LAND RECLAMATION:

Coastal reclamation or land reclamation along river banks involving an area of less than 50 hectares.

8. MINING:

(a) Ore processing outside mineral tenement area include concentrating of aluminium, copper, gold, iron, tantalum or rare earth element.

(b) Sand mining on land/river/coastal area/territorial waters not exceeding 3 nautical miles measured from low-water line, involving area of 20 hectares or more.

(c) Sand mining in continental shelf area.

Prescribed Activities under First Schedule (Continue)

9. PETROLEUM:

(a) Development of- oil field; gas field; or oil and gas field.

(b) Construction of 30 kilometres or more in length of- off-shore pipelines; on-shore pipelines; or off-shore pipelines and on-shore pipelines.

(c) Construction of- oil separation, processing, handling and storage facilities; gas separation, processing handling and storage facilities; or oil and gas separation, processing handling and storage facilities.

Prescribed Activities under First Schedule (Continue)

9. PETROLEUM (Cont'):

(d) Construction of product depot for the storage of petrol, gas or diesel which has the combined storage capacity of 60,000 barrels or more (excluding service station) within 3 kilometres from any commercial, industrial or residential area.

10. PORTS:

(a) Expansion of port involving an increase of 50 percent or more in handling capacity per annum.

(b) Expansion of fishing port involving an increase of 50 percent or more in fish landing capacity per annum.

Prescribed Activities under First Schedule (Continue)

11. POWER GENERATION AND TRANSMISSION:

(a) Construction of steam generated power station using fossil fuels (other than coal) and having the capacity of 10 megawatts or more, with or without transmission line.

(b) Construction of combined cycle power station, with or without transmission line.

(c) Construction of transmission line in environmentally sensitive area.

Prescribed Activities under First Schedule (Continue)

12. DEVELOPMENT IN COASTAL AND HILL AREA:

(a) Construction of building or facilities with 80 rooms or more in coastal area.

(b) Construction of hill-station resort or hotel at 300 meters or more above mean sea level covering an area of 20 hectares or more.

13. DEVELOPMENT IN SLOPE AREA:

Development or land clearing less than 50 per cent of an area with slope greater than or equal to 25°but less than 35°.

Prescribed Activities under First Schedule (Continue)

14. WASTE TREATMENT AND DISPOSAL:

(a) Scheduled waste:

(i) Construction of recovery plant (off-site).

(ii) Construction of wastewater treatment plant (off-site).

(iii) Construction of storage facility (off-site).

(b) Solid waste:

(i) Construction of composting plant.

(ii) Construction of recovery plant or recycling plant.

Prescribed Activities under First Schedule (Continue)

14. WASTE TREATMENT AND DISPOSAL (Cont'):

(c) Sewage:

(i) Construction of sewage treatment plant with 20,000 population equivalent or more.

(ii) Sludge treatment facilities.

15. DREDGING:

(a) Capital dredging.

(b) Disposal of waste dredged materials.

Prescribed Activities under First Schedule (Continue)

16. HOUSING:

Housing development covering an area of 50 hectares or more.

17. INDUSTRIAL ESTATE DEVELOPMENT:

Development of industrial estate covering an area of 20 hectares or more.

18. NEWTOWNSHIP:

Construction of new township consisting of 2,000 housing accommodation units or more or covering an area of 100 hectares or more.

Prescribed Activities under First Schedule (Continue)

19. QUARRY:

Quarrying of rock material.

20. ROAD:

Construction of expressways; Construction of highways; Construction of road, tunnel or bridge traversing or adjacent or near to environmentally sensitive areas.

21. WATER SUPPLY:

Groundwater development for industrial, agricultural or urban water supply of 4,500 cubic metres or more per day.

Prescribed Activities under Second Schedule

1. AGRICULTURE:

(a) Land development schemes covering an area of 500 hectares or more to bring forest into agricultural production.

(b) New pig farming area of 2,000 or more standing pig population.

2. AERODROME:

(a) Construction of a new aerodrome involving a runway of 1,000 metres or longer.

Prescribed Activities under Second Schedule (Cont')

2. AERODROME (Cont'):

(b) Construction of aerodrome in or adjacent or near to any state park, national park, national marine park, island surrounding marine park or environmentally sensitive area.

3. DRAINAGE AND IRRIGATION:

(a) Construction of man-made lakes and artificial enlargement of lakes with areas of 50 hectares or more in/adjacent/near to environmental sensitive area.

(b) Any drainage of wetland, wild-life habitat or of dry inland forest covering an area of 20 hectares or more.

Prescribed Activities under Second Schedule (Cont')

4. FISHERIES:

Land based aquaculture projects accompanied by clearing of mangrove forest, peat swamp forest or fresh water swamp forest covering an area of 50 hectares or more.

5. FORESTRY:

(a) Conversion of forest at 300 meters or more above mean sea level to other land use covering an area of 100 hectares or more.

Prescribed Activities under Second Schedule (Cont')

5. FORESTRY (Cont'):

(b) Logging or conversion of forest to other land use within-

(i) a catchment area of reservoirs used for municipal water supply, irrigation or hydro-power;

(ii) an area adjacent or near to any state park, national park or national marine park;

(iii) any state park, national park or national marine park; or

(iv) an area gazetted as water catchment forest under the National Forestry Act 1984[*Act313*].

Prescribed Activities under Second Schedule (Cont')

5. FORESTRY (Cont'):

(c) Logging, or cutting or taking of timber from forest at 300 meters or more above mean sea level covering an area of 100 hectares or more, outside permanent reserved forest.

(d) Logging, or taking of timber covering an area of 500 hectares or more.

(e) Development of planted forest covering an area of 500 hectares or more.

(f) Conversion of an area of- mangrove forest; peat swamp forest; or fresh water swamp forest, for industrial, housing or agricultural use covering an area of 50 hectares or more.

Prescribed Activities under Second Schedule (Cont')

5. FORESTRY (Cont'):

(g) Clearing of mangrove forest, peat swamp forest or fresh water swamp forest on islands adjacent to any national marine park.

6. INDUSTRY:

(a) Non-ferrous: Primary smelting aluminium (all sizes); Primary smelting copper (all sizes); Primary smelting other non-ferrous (producing 50 tonnes product or more per day).

(b) Cement: With clinker production capacity of 30 tonnes or more per hour.

Prescribed Activities under Second Schedule (Cont')

6. INDUSTRY (Cont'):

(c) Iron and steel:

(i) Using iron ore as raw materials for production of 100 tonnes or more per day.

(ii) Using scrap iron as raw materials for production of 200 tonnes or more per day.

(d) Petrochemicals: Production capacity of each product or combined product of 50 tonnes or more per day.

(e) Pulp, or pulp and paper: Production capacity of 50 tonnes or more per day.

(f) Recycle paper industry: Production capacity of 50 tonnes or more per day.

Prescribed Activities under Second Schedule (Cont')

7. LAND RECLAMATION:

(a) Coastal/land reclamation along river banks involving an area of 50 hectares or more.

(b) Coastal/land reclamation along river banks within or adjacent or near to environmentally sensitive areas.

(c) Reclamation for man-made island.

8. MINING:

(a) Mining of minerals in new areas involving large scale operation.

(b) Mining of minerals within/adjacent/near to environmental sensitive area.

Prescribed Activities under Second Schedule (Cont')

9. PETROLEUM:

(a) Construction of oil refineries.

(b) Construction of gas refineries.

(c) Construction of oil and gas refineries.

10. PORTS:

(a) Construction of a new port.

(b) Construction of a new fishing port.

Prescribed Activities under Second Schedule (Cont')

11. POWER GENERATION AND TRANSMISSION:

(a) Construction of coal fired power station and having the capacity of 10 megawatts or more with or without transmission line.

(b) Construction of nuclear-fuel power station with or without transmission line.

12. DEVELOPMENT IN COASTAL AREA, NATIONAL PARK AND STATE PARK:

Development of tourist facilities, recreational facilities or other facilities-

(a) in any national park or state park; or

Prescribed Activities under Second Schedule (Cont')

12. DEVELOPMENT IN COASTAL AREA, NATIONAL PARK AND STATE PARK:

(b) on any island in surrounding waters which has been gazetted as a national marine park or marine reserve under the Fisheries Act 1985 [Act317].

13. DEVELOPMENT IN SLOPE AREA:

(a) Development or land clearing of 50 per cent or more of an area with slope greater than or equal to 25° but lesser than 35°.

(b) Construction of road, tunnel or bridge traversing an area with slope greater than or equal to 35°.

Prescribed Activities under Second Schedule (Cont')

14. WASTE TREATMENT AND DISPOSAL:

(a) Scheduled waste:

(i) Construction of thermal treatment plant.

(ii) Construction of off-site recovery plant for lead acid battery wastes.

(iii) Construction of off-site recovery plant/treatment facility that generates significant amount of wastewater which is located at upstream of public water supply intake.

(iv) Construction of secure landfill facility.

(b) Solid waste: Construction of thermal treatment plant; sanitary landfill facility; transfer station.

Prescribed Activities under Second Schedule (Cont')

15. CONSTRUCTION OF DAM:

(a) Construction of dam or impounding reservoir for purpose of irrigation, flood mitigation, control of siltation, recreational, water supply or any other reason with a surface area of 100 hectares or more.

(b) Dam and hydro-electric power scheme with either or both of the following:

(i) dam of 15 metres or more in height and ancillary structures covering a total area of 40 hectares or more;

(ii) reservoir with a surface area of 100 hectares or more.

Prescribed Activities under Second Schedule (Cont')

16. TRANSPORTATION:

(a) Construction of new routes or branch line for a mass rapid transport project.

(b) Construction of new railway route or railway branch lines.

17. RADIOACTIVE MATERIALS AND RADIOACTIVE WASTE:

Any activity specified in this Schedule and the First Schedule using radioactive materials and generating radioactive wastes.

E.I.A

- **E (Environmental)**

  begin at EARLY stage of a development (able to identify opportunities and constraints (gives guidance to the project).

- **I (Impact)**

  INTEGRATED manner (emphasized engineering, science and economic aspects + environmental components).

- **A (Assessment)**

  ALWAYS continue to accumulate data throughout project cycle, monitoring the implementation of environmental protection measures and suggestion mid-course correction to the management.

Objectives of EIA

- To examine and select the best from project options.
- To identify and incorporate into project plan, appropriate abatement and mitigating measures.
- To predict and determine significant residual environmental impact.
- To identify the environmental costs and benefits of the project to the community.

Concepts of EIA

- Need for a project (social, economic, cultural)
- Project Options (sites, design, etc.)
- Environmental data collection (e.g., soil, water, ecology, air quality etc.)
- Mitigating and abatement measures
- Public participation (e.g., community needs, social acceptability)
- Costs and benefits (e.g., implied values, monetary values)
- Monitoring environmental impacts (check to improve future planning)

Process in Preparing EIA

1. **PROJECT MANAGEMENT**
   - Develop objectives
   - Project components

2. **ENVIRONMENTAL COMPONENTS**
   - Physical characteristics
   - Hydraulic regime
   - Water quality
   - Socio-economy
   - Ecology (flora and fauna)

Process in Preparing EIA (Cont')

3. IDENTIFICATION AND ASSESSMENT OF IMPACTS

- Qualitative and quantitative
- Significant impact – to what extent.
  - Ecological Impact
  - Type of soil
  - Amount of soil eroded
  - Effects in terms of siltation, profile of dissolved oxygen (DO), biochemical oxygen demand (BOD)
  - Risk assessment

Process in Preparing EIA (Cont')

4. MITIGATION MEASURES

- Engineering measures such as for erosion of soil may require installation of silt trap or for waste oil may require installation of oil trap
- Non-engineering measures involves Environmental Management Plan, Best Management Practices, Zoning and others
- Project options – alternatives

Process in Preparing EIA (Cont')

5. MONITORING AND AUDITING

- Environmental monitoring and auditing program
- Environmental management system
- Continuous enforcement

Types of EIA in Malaysia

EIA	Detailed EIA
▪ No Term of Reference (TOR) required between consultant and DOE. ▪ No cost benefit analysis required in report. ▪ Report is reviewed by EIA committee at state DOE.	▪ Term of Reference (TOR) requires DOE and ad-hoc panel of experts approval. ▪ Cost benefit analysis required in report. ▪ Report is reviewed by EIA committee and ad-hoc panel of experts at DOE HQ.

THE END