CHAPTER 16

Recent Advances in EIA Procedure for Mining Projects

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Environmental Impact Assessment (EIA) Definitions

(a) The process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made. (International Association for Impact Assessment).

(b) An orderly and systematic process for evaluating a proposal including its alternatives and its effect on the environment including the mitigation and management of these effects. The process extends from the initial context of the proposal through implementation to commissioning and operation, and where appropriate, decommissioning. (Western Australian Government).

EIA Objectives

- To ensure that proponents take primary responsibility for the protection of the environment influenced by their proposals.
- To ensure that best practicable measures are taken to minimize adverse impacts on the environment, and that proposals meet relevant environmental objectives and standards to protect the environment and implement the principles of sustainability.

- To provide opportunities for local community and public participation, as appropriate, during the assessment of proposals.
- To encourage proponents to implement continuous improvement in environmental performance and the application of best practice environmental management in implementing their proposals.
- To ensure that independent, reliable advice is provided to the government before decisions are made.

Evolution and Spread of EIA

Date and Phase	*Trends and Innovations*
Prior to 1970 Pre-EIA	Project review based on engineering, economic and legal framework; very limited consideration on environmental consequences.
1970–1975 Methodological development	EIA introduced in some developed countries; initially focused on identifying, predicting and and mitigating bio-physical effects; initiation of opportunity for public involvement.
1975–1980 Socialdimensions included	Multi-dimensional EIA incorporating social impact assessment (SIA) and risk analysis; public hearing/consultation integral part of development planning and assessment, increased emphasis on issues of justification and alternatives in project review.
1980–1985 Process and procedural redirection	Efforts to integrate project EIA with policy planning and follow up phases; research and development on effects of monitoring, on EIA audit and process evaluation, and on mediation and dispute resolution approaches; adoption of EIA by international aid/lending/funding agencies and by developing countries.
1985–1990	Scientific and institutional frameworks for WIA begin to be rethought in response to sustainability ideas and imperatives, search begins for ways to address regional and global environmental changes and cumulative impacts; growing international cooperation on EIA research and training.

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Date and Phase	*Trends and Innovations*
1990–present	Strategic environmental assessment (SEA) of policies, plans and programmes introduced in some developed countries; international convention on Transboundary EAI; UNCED places new demands on EAI for expanded concepts, methods and procedures to promote sustainability.

A Set Typical Guidelines for an EIA and EMP of a Mining Project

EIA of a Mining Project

1. Executive summary
2. Outline of the public consultation process
3. Description of the mining project and its setting (covering local and regional environment).
4. Description and analysis of potential impacts and proposed ameliorative measures under the following heads:
   - 4.1 Visual impact
   - 4.2 Water management (covering run-off and erosion control, water storage capacity, water discharges, water pollution, and ground water resources).
   - 4.3 Flora and fauna
   - 4.4 Noise pollution
   - 4.5 Vibrations and ground stability problems
   - 4.6 Dust and air emissions
   - 4.7 Traffic
   - 4.8 Management of process chemicals, explosives, etc.
   - 4.9 Risk management
   - 4.10 Waste disposal
   - 4.11 Heritage and aboriginal sites
   - 4.12 Social and economic impacts
5. Rehabilitation and end use of land
   - 5.1 Final concept plan
   - 5.2 Progressive rehabilitation plan
   - 5.3 Tailings dam
   - 5.4 Waste dumps
   - 5.5 Open cut pits
   - 5.6 Underground mines
6. Environmental management
   - 6.1 Maintenance of environmental control system
   - 6.2 Monitoring programme
   - 6.3 Environmental policies and proposals
7. Alternatives
   (Including transport routes, ore processing, waste disposal, mining techniques and end use of mined out land)

EMP of a Mining Project

1. Air quality management
2. Noise pollution control
3. Hydrology and water quality management
4. Solid waste management
5. Land management including rehabilitation and restoration (e.g., biological reclamation)
6. Socio economic issues
7. Health and safety management
8. Tailings management
9. Acid mine drainage containment
10. Greenbelt development
11. Mine closure and decommissioning