
KEY PRINCIPLES FOR COASTAL MINING DEVELOPMENT



Mining is an expanding industry that has major implications in the coastal areas. It can provide sustainable economic, environmental and social benefits to the communities and regions in which it operates. Achievement of these benefits to the full potential not only requires integrated and enabling policy frameworks but also depends heavily upon the commitment of the state sector and the industry to invest in high standards of environmental performance. Coastal mining is diverse. It is undertaken at varying levels of intensity from large-scale enterprises to small-scale and artisanal mining and employ a variety of methods to mine a variety of minerals. The sector can have far reaching environmental and social impacts and invariably requires the dedicated use of coastal land for which there is obvious competing community demands. Hence an integrated approach is required to manage the sector and seek a balance between ecological integrity, social equity and economic development.

1. Implementation of sustainable development principles in the coastal mining sector require integrated systems of governance.

National governments supported by the mining industry must create an enabling environment that promotes high environmental standards in the coastal mining sector. National policies for coastal mining should include strategies for ecologically sustainable development that promotes responsible environmental stewardship during the whole mining process and equitable sharing of benefits. All mining activities should operate within ecological limits and protect the critical natural capital. They must be consistent with local land use plans and be supportive of participatory decision making. Comprehensive reviews of legal and policy frameworks may be needed to ensure they are consistent with objectives of sustainable development.

- 1.1. Have the national or regional authorities developed Mining Development Plans that identify areas appropriate for coastal and marine mining activities; types, scale and intensity of mining activities and alternative sources for the materials? Are these plans regularly updated?
- 1.2. Do the plans recommend growth rates for the mining sector taking into account the carrying capacities of the different areas and biophysical parameters of the coastal environment?
- 1.3. Are the national or regional plans easily accessible to the prospective developers, and are they in a form that is easily understood?
- 1.4. Does national planning of mining activities provide guidelines for the future expansion of coastal and marine mining?
- 1.5. Do national and regional plans promote protection of sensitive areas?
- 1.6. Do existing policies require that mining activities do not occur in the active littoral system, but rather in inland or offshore sites?
- 1.7. Do the national and regional plans consider the cumulative impacts that may result from the mining activity at a regional level?
- 1.8. Is the proposed development compatible with existing land use plans and the ICM plans for the area? Are existing infrastructure facilities available in the area (waste disposal, electricity and water supply, roads, storage sites) adequate to support the proposed mining activity?
- 1.9. Do national and regional authorities provide advice and guidance to mining proponent to ensure that the project is environmentally, socially and economically sustainable?

2. Sustainable development requires a management framework including a mix of regulatory mechanisms, financial incentives and voluntary initiatives.

State oversight of coastal mining can be improved through a variety of tools such as EIA, siting restriction, quotas, licenses, sector guidelines, pollution and waste disposal standards, emergency response procedures and monitoring during every stage of the mining process. Consultation with stakeholders and the local community is essential to ensure that these provisions are understood and supported. There are several voluntary initiatives and 'codes of practice' currently being pursued by the industry, especially the large-scale developers. These initiatives augment the state led regulatory and financial measures and must be supported, promoted and their further development facilitated. It is also important to create synergy between the voluntary initiatives led by the private sector and the state led regulatory tools and financial incentives.

- 2.1. Does the legal framework for controlling mining of sand, aggregates and minerals include both regulatory tools such as a permit system as well as financial incentives?
- 2.2. Is the permit system properly enforced, and are the punitive measures implemented?
- 2.3. Have mining guidelines, pollution and waste disposal standards, emergency response procedures and monitoring procedures been developed and made available to prospective developers?
- 2.4. Is there an adequate understanding of available voluntary measures and "codes of practice" among the state planning and regulatory agencies and the mining sector?
- 2.5. Are there national efforts to promote the adoption of voluntary, self-regulating initiatives by the mining industry?

3. Through the application of EIA, seek consistency with national environmental priorities and continual improvements to environmental management.

Environmental Impact Assessment (EIA) provides an effective means of assessing the positive and negative impacts as well as direct and indirect environmental impacts of new mining projects from planning to closure. In order to gain the full benefits of an EIA, it should include an environmental management plan (EMP) that seek to integrate environmental responsibilities into everyday management practices. Developers must adopt a well -defined EMP and provide resources demanded for its implementation throughout the project cycle. The EMP provides a structured method for the developer and the regulatory authority to have an awareness and control of the performance of the project during all stages of the project cycle. The developers must be committed to undertaking restoration and mitigation measures demanded and invest in sustained monitoring programmes. Mining within or in the vicinity of protected areas should be discouraged and mining of coral reefs should not be permitted. Pollution abatement should be adequately addressed.

- 3.1. Does the existing legislation call for an EIA to be prepared for coastal mining projects?
- 3.2. Is the potential sand mining site part of the active littoral system, i.e. the local circulating sand budget?
- 3.3. Does the EIA lead to an understanding of the importance of the sand source for shoreline protection?
- 3.4. Does the site evaluation determine the available resource and its natural replenishment?
- 3.5. Does the analysis consider ocean currents and wave patterns to understand the potential movement of the sediment plume?
- 3.6. If the mining site is riverine, does the EIA consider impacts, such as deepening of the river channel, bank erosion, salt water intrusion, impacts on downstream and estuarine ecosystems and impacts on the coastal sediment budget?
- 3.7. Does that assessment characterize the areas of direct and indirect impacts from the mining operation?
- 3.8. Does the EIA assess the potential of the mining operation to aggravate coastal erosion, destroy sensitive habitats, and negatively affect other coastal users?

- 3.9. Has the EIA addressed the potential impacts of the mining operation on sensitive and critical habitats?
- 3.10. Does the mining operation avoid conflicts with other users of coastal and marine resources?
- 3.11. Has an environmental management plan (EMP) and a monitoring plan been prepared as a component of the EIA process?

4. Both large and small-scale sand mining within the coastal zone should be carefully regulated and monitored.

Sand mining in the nearshore areas, beaches, spits, lagoons and dunes should be regulated through a permit process to avoid unsustainable mining practices. Such mining have significant impacts on coastal stability leading to increased erosion in adjacent coastlines and also results in increased siltation and turbidity in adjacent areas, salt intrusion, flooding and degradation of coastal habitats. Governments must develop guidelines for both large scale and small scale sand mining including recommended locations and levels of mining. Local authorities should be empowered through delegation of authority to implement the guidelines and effectively monitor sand mining activities.

Early consultation with all primary stakeholders including the community facilitates identification, assessment and management of all significant social and environmental impacts.

Extensive consultation with all stakeholders and the local community is a major imperative since coastal mining requires the dedicated use of coastal property that will often have competing uses. In addition, mining has traditionally been seen as an environmentally harmful activity, hence it is important that the community has an understanding of how the environmental impacts will be ameliorated. Regulatory authorities and the industry must develop formal procedures to enable and facilitate such consultation so that reasonable participation of affected individuals and community groups in all planning decisions can be assured.

- 4.1. Have national and regional guidelines for sand mining been developed that identify suitable locations for mining, quantities of materials to be mined, and alternative sources of the materials?
- 4.2. Does a legal regulatory framework exist for regulating mining of sand, aggregates, and minerals through a permit system?
- 4.3. Does the permit specify the quality and quantity of material allowed, its composition and the precise site designated for mining?
- 4.4. Are enforceable policies in place to discourage sand mining in the beach system?
- 4.5. If authorities allow sand mining from the beaches, have they determined the optimum quantity of sand that can be removed in a sustainable manner from the beach each year?
- 4.6. Do existing policies allow riverine extraction of sand or aggregates only when downstream beaches do not show erosion?
- 4.7. Do existing policies favour the selection of ocean mining sites that do not contribute to the littoral sediment budget?
- 4.8. Has the developer proven that the mining site would not create an erosion problem somewhere else onshore or further along the littoral cell?
- 4.9. Has the developer considered all possible options to avoid impacts to fragile natural environments? Does a buffer zone exist between the mining site and any sensitive habitat?
- 4.10. If sand extraction is allowed, is the activity carefully monitored? Are the sediment budget and transport, grain size, and beach profile all monitored to detect unacceptable changes to the beach?

5. Restoration and rehabilitation of mining sites demand priority attention of both the developer and the regulating authority.

Incorporation of effective rehabilitation and restoration planning into coastal mining projects can ameliorate many of the short and long term environmental impacts. Governments and the industry must establish legal, financial and technical procedures to ensure that mining sites are rehabilitated for another appropriate economic or ecological use after mining operations ceases. To the extent possible, ecological engineering principles should be applied in preference to methods requiring hard

structures or extensive excavations. Rehabilitation objectives should be defined only after adequate consultation with the local community and local authorities and the performance of the rehabilitated areas should be monitored over adequate time periods. Research and development efforts to identify more effective and cost efficient measures should be supported.

- 5.1. Has the developer established a meaningful dialogue with the local community from the initial stages?
- 5.2. Has the developer taken all possible measures to minimise any negative impacts on the livelihoods of the local communities?
- 5.3. Has the developer explored possible ways and means of involving the local community in the mining activities so that the economic benefits of the project are adequately distributed?
- 5.4. Have the local authorities taken necessary action to enable local communities to participate effectively in addressing issues relating to development of mining the area?
- 5.5. Are programmes aimed at enhancing community awareness on coastal mining issues being implemented?

6. Sustained monitoring programmes that assess the performance of the coastal mining sector during the project cycle and post project rehabilitation is indispensable.

A high standard in the environmental performance of the coastal mining industry can be achieved only if the regulatory agencies and the industry are willing and committed to sustained monitoring programmes to assess the short and long term environmental impacts of mining and incorporate the results into the management process. Monitoring should extend to post project rehabilitation and restoration. Monitoring procedures, indicators, performance standards, reporting procedures and responsibilities are best defined during the planning and preparatory phases in a participatory manner.

- 6.1. Does a restoration and/or rehabilitation plan exist for the mining site?
- 6.2. Have the local communities been consulted and their support sought for the restoration and rehabilitation plans?
- 6.3. Does a formal mechanism exist to obligate the mining company to restore any environmental resources that may have been degraded?
- 6.4. Is the developer responsible for the restoration activities or for contribution to a restoration fund?
- 6.5. Are mining companies expected to contribute to an environmental rehabilitation fund as a permit condition?
- 6.6. Is there adequate investment in research and development efforts to improve the performance of restoration and rehabilitation of mining sites?

7. Capacities within state institutions, the industry and local communities to work towards ecologically and socially sustainable coastal mining should be enhanced.

There is a need to increase the understanding of sustainable development imperatives within the coastal mining sector- especially among the decision making and managerial levels, relevant government agencies and civil society organisations. Research directed towards development of innovative technologies that minimise ecological degradation and having relevance to stakeholder concerns must be supported. Improved co-operation and networking among institutions renders capacity building efforts more cost effective.

- 7.1. Do mechanisms exist at the national and regional levels to monitor and evaluate individual mining projects and their cumulative impacts on the environment?
- 7.2. If sand extraction is allowed, is the activity carefully monitored? Are the sediment budget and transport, grain size, and beach profile all monitored to detect unacceptable changes to the beach?

- 7.3. Does the permit require monitoring of the extractive activities, sedimentation rates, and turbidity levels?
- 7.4. Does a monitoring program exist in sensitive habitats closest to mining sites to detect any changes in ecosystem health?
- 7.5. Have well defined monitoring procedures, indicators and performance standards been developed to enable monitoring of impacts of the mining activities as well as monitoring the performance of restoration and rehabilitation efforts?

8. Regional and International organisations should strive to improve environmental performance in the coastal mining sector

There is much scope for co-operative intervention of regional and international organisations to develop and improve regulatory and monitoring procedures, standards and guidelines to strengthen government capacity to manage coastal mining. In addition, these organisations should focus on further development and improvements to voluntary initiatives for self-regulation as well as technology transfer. International and regional organisation need to co-operate in establishing user friendly, regularly updated linked information systems that enable wide dissemination of available guidance and promote exchange of knowledge and information.

- 8.1. Do the regional and inter-regional organisations assist and support governments in the development of national strategies for sustainable coastal mining development?
- 8.2. Do regional and inter-regional programmes support the development and application of guidelines, best management practices and “codes of conduct”?
- 8.3. Do regional and inter-regional organisations promote transfer of environmentally sound technologies, practices and management tools adapted for the coastal mining sector and disseminate information on these to governments and the mining industry?

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- 9.1. Is there adequate institutional capacity at national, provincial and local levels to oversee the planning and development of coastal mining?
- 9.2. Have the capacity building needs within the state and private sector organisation at national and local level been identified?
- 9.3. Are there regular training programmes aimed at enhancing skills within the state and private sector on environmentally sustainable coastal mining development?
- 9.4. Have networks, newsletters, publications and other mechanisms for promoting the sharing of information and expertise been established?
- 9.5. Are adequate financial resources allocated on a long term basis for capacity building and development of innovative technologies?
- 9.6. Do national and regional authorities provide advice and guidance to prospective developers to ensure that the project is environmentally, socially and economically sustainable?



For additional information, contact
Dr. Anjan Datta
Programme Officer
UNEP/GPA Coordination Office
Kortenaerkade 1,2518 AX The Hague
The Netherlands
Tel: +31 70 311 4468; Fax:+31 70 345 6648