



Netherlands Commission for
Environmental Assessment

September 2019



ESIA and SEA for responsible mining

Environmental and social impact assessment (ESIA)¹ and strategic environmental assessment (SEA) can enhance the mining sector's contribution to sustainable development and avoid or reduce negative consequences for the natural environment and people.

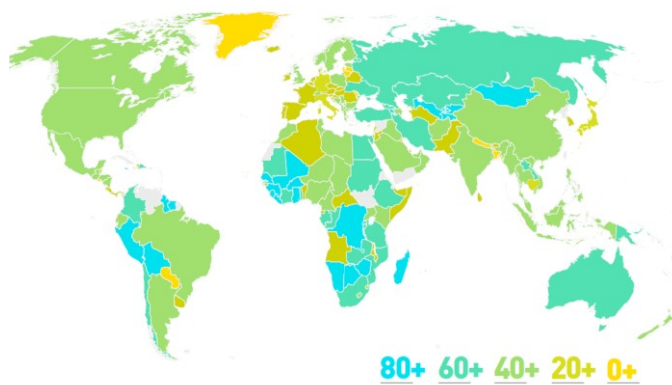
While the role of ESIA in large mining projects is well known, the positive role of SEA in developing a sector vision on responsible mining has only recently become apparent. The same applies to the role of SEA in integrating mining activities in the broader context of regional development planning and in aligning these activities with existing policies on for example biodiversity.

The mining sector

In 2010, the nominal value of world mineral production was nearly four times higher than it was in 2002. During this period, growth in value has been significantly greater than growth in world gross domestic product. This increase has in large part been driven by the unprecedented growth in China, India and other emerging economies. African countries represent half of the top 20 countries with the highest mineral export contributions.

The mining sector covers a range of extractive operations including open-cast mines, underground-tunnel mines, open-air quarries, ore upgrading and processing facilities. Operations range from artisanal mining to multi-billion

dollar investments by multinational companies. Mining activities require infrastructure that may include newly built or improved roads and railways, ports, pipelines, dams, energy and industrial facilities, and settlements.



Countries on a scale with the highest (blue) to the lowest (yellow) Mining Contribution Index. MCI scores and rankings provide an indication of the relative importance of mining to the economic life of a country. ICCM 2018.

Extractives, the environment and society

Projects, programmes and policies in or for the extractives sector have specific issues, which can lead to major environmental, social and economic effects:

- **Equity issues are often not sufficiently addressed:** it is common for a small group of actors to enjoy the benefits of exploitation, while many are exposed to its negative consequences. Compensation of individuals

national legal contexts; whether social aspects are included or not differs per country

¹ Multilateral development banks nowadays often use the term Environmental and Social Impact Assessment (ESIA) to emphasise the inclusive nature of impact assessment. The term EIA is used in most

and communities is often inadequate. Gender inequality can be a problem, both in terms of adverse effects of exploitation (e.g. men get jobs, women lose land that they use for gathering firewood) and in compensation given for these effects.

- **High impact projects require hi-tech expertise:** governments often lack sufficient knowledge. Impacts of exploitation on ecosystems and people may therefore not be foreseen and sufficiently mitigated.
- **Projects start before policy development:** private sector initiatives are often ahead of national sector strategies. The capacity of governments to regulate developments is often limited.
- **Exploitation causes conflicts:** where governance is weak, exploitation can lead to a poverty increase instead of a reduction, and to corruption and conflict.
- **Multiple sectors are influenced;** Exploitation affects other types of land use. A balance needs to be sought between various interests, especially in the water-food-resources nexus, rather than allowing the most powerful (often economic) interest to dominate.
- **Short term benefits overrule long term effects:** economic benefits of exploitation are immediate, while adverse effects on the environment and society are often long term and therefore easily remain un-addressed.

Issues specifically linked to mining

- **Mining site:** complete clearance of vegetation and excavation with associated loss in biodiversity and ecosystem services; creation of dust and erosion; downstream sedimentation; surface and groundwater pollution; relocation of population; loss of livelihoods; loss of cultural and paleontological heritage.
- **Transport facilities:** new or improved roads providing access to formerly remote or closed natural areas (rail and water transport, pipelines, port facilities), leading to impacts such as habitat fragmentation, temporary or permanent loss of livelihood or income and better access to service centres and markets.
- **Ore processing and upgrading facilities:** industrial facilities with high energy and water demand, and high risk of pollution and accidents; health & safety risks for work force, surrounding communities and natural areas.
- **Tailings:** commonly establishing a dam, resulting in loss of land for other uses; risk of dam breaks, and pollution of ground- and surface water.

- **Resettlement/ labour working conditions:** inhabitants may have to leave the area or lose their livelihoods, while new labour forces may move into the area resulting in increased pressure on ecosystems and natural resources. Artisanal mining is often associated with child labour; is a potential for social conflict and communicable diseases such as AIDS.
- **Surrounding communities:** conflicts among local communities, companies, migrating communities due to property rights and land use rights; risk of destabilisation of local economies and social structures.
- **Closure and rehabilitation:** after the decommissioning of a mine, an ecosystem rehabilitation plan of the deserted area is often lacking. Similarly, a social plan is needed for the dismissal of labour force and the future of surrounding communities.



The contribution of ESIA

Good quality environmental and social impact assessment can prevent or remediate many issues at the level of individual projects. A series of good practice guidance documents on safe, fair and responsible mining has been published by the International Council on Mining and Metals and many countries have developed guidance for ESIA for the mining sector.

Benefits of good ESIA for a mining company include fewer (unexpected) problems during construction, operation and decommissioning, improved relations with surrounding communities (licence to operate), regulation of natural resources use (e.g. water supply), and better relationships with government agencies.

The **benefits** for the **environment** include prevention and/or mitigation of local and downstream negative impacts, good site rehabilitation after decommissioning of mined areas, and maintenance or offsetting of important



biodiversity values and ecosystem services for surrounding communities.

From a social perspective ESIA can maximise the benefits of a mining project (local economy, jobs, opportunities for SME's), while minimising the costs.

Case 1: Recommendations Tin mining Indonesia

In 2015, the NCEA received a request from the Tin Working Group. The TWG is a voluntary, collaborative, multi-stakeholder initiative that aims to make meaningful changes in the Indonesian tin sector. The request was to review a sample of ESIA's for tin mining in Indonesia, as input for a roadmap for responsible tin mining. An independent expert working group reviewed the ESIA's and gave recommendations on good practice EIA for offshore, low impact tin mining, and onshore rehabilitation activities. Recommendations concern both the design of the EIA process and the information that the EIA should provide.

The list below is a summary of the recommendations that are valid for most contexts, also outside of Indonesia. The full list of recommendations can be found in the NCEA's advice.

A. For companies to implement

1. Enhanced public consultation beyond a one-off and one-way meeting. It could lead to improved community development initiatives.
2. Disclosure of monitoring reports and improved quality of monitoring reports. This could lead to the sector developing its own monitoring and reporting guidelines.
3. Elaborated partnership model with clear contractual arrangements between companies and smallholder miners, including improved transparency, improved efficiency of working operations, reduced environmental damage and improved working conditions of smallholder suppliers.
4. Community development initiatives that meet principles of sustainable community development, aimed at benefit sharing from tin-mining and including medium or long-term improvement of livelihoods, ideally associated with land rehabilitation initiatives (see next point).
5. Land rehabilitation initiatives with evidence of being successful (preferably at a large scale), linked to

economic activities and development of alternative livelihoods for unconventional miners as well as considerations for the legal status of any reclaimed lands.

6. Commitment to a longer-term vision and targets on how to scale land rehabilitation and enhance alternative livelihoods.

B. For companies to initiate

1. Analyse options for eco-dredging techniques by large companies – this would need to start out by a feasibility study to assess which techniques could be introduced as none of the new techniques are currently being applied in the SE-Asia region or for tin mining.
2. Analyse options for more efficient and environmentally sound techniques by smallholder miners – this would need to start out by a feasibility study to assess which techniques could be developed as such techniques are not yet available, but some initiatives have been taken.
3. Analyse options for planning measures to avoid and reduce environmental impacts, such as zoning and in particular the use of marine protected areas – in close collaboration with the relevant Ministries. Marine protected areas could be defined and agreed upon as part of an SEA.

C. For companies to promote and participate, for government to take the lead

1. Application of an SEA. The SEA could focus at sector wide solution strategies, identification of priority measures, and assurance of active involvement of stakeholders. Expected outcomes might include agreement on remaining tin reserves, ecosystem values, land and marine protected areas or zoning, technology benchmarks, community development priorities, livelihood standards.
2. Enhanced capacities at different levels of government agencies, especially mine inspectors at local level, to conduct audits and follow-up monitoring on social and environmental key issues.
3. Enhanced capacities within government agencies to conduct environmental and social baseline measurements, including at landscape level.
4. Increased clarity on roles and responsibilities in the mining sector at different government levels, and improved coordination between these levels. It would be in the interest of the companies to help improve this.



Limitations of ESIA

A number of major issues characterise countries with booming mining activities that cannot be addressed by ESIA at project level:

- lack of in-country staff, expertise, regulations, policies and institutions to coordinate the development of new mining activities and to balance the interest of the mining sector with other social, economic and environmental interests;
- regulation of and improved livelihoods for artisanal miners;
- cumulative effects of numerous mining activities;
- assessment of the contribution of mining to a country development strategy: how can mining contribute to inclusive and responsible growth (with a link to the SDGs).

Added value of SEA

To address the limitations of ESIA, two steps can be undertaken by countries or companies to address the challenges of mining development.

1) SEA for national sector planning

The first step is SEA for sector planning, to assist national mining departments/agencies in:

- linking mining sector development to infrastructure development needs governed by other departments (road, rail, pipeline, water transport);
- aligning mining sector plans with other national policies, such as avoiding conflicts with for instance a National Biodiversity Strategy and Action Plan;
- assessing the adequacy of the existing institutional capacity;
- strengthening of the mining sector regulatory framework as to environment, health & safety, cultural heritage, biodiversity, etc.;
- addressing the cumulative effects of (often unregulated) artisanal and small-scale mining;
- governance and revenue management; equitable distribution of mining revenues;
- employment, required skills (technical and vocational education), spin off (e.g. creation of SMEs/value added industries);
- population movements;
- technology issues; investment in mining-related research & development;
- (required capacity for) compliance and enforcement mechanisms.

Case 2: SEA for the Mongolia Mining Sector

Mining is an important source of growth in Mongolia and is likely to remain so in the foreseeable future. However, there was no clear and shared vision of how mining growth may affect the development of Mongolia. Therefore an SEA was carried out with the following objectives:

- diagnose the key environmental and social problems and opportunities associated with the rapid growth of Mongolia's mining sector;
- identify the policy, legal, regulatory, and institutional adjustments and capacity-building actions needed to minimise adverse environmental and social impacts of mining operations and associated infrastructure development, while enhancing the positive impacts;
- propose specific measures that the GoM can implement to improve the environmental and social sustainability of mining in Mongolia.

The SEA facilitated a shared understanding at all levels of Mongolian society of the synergies, trade-offs, and weaknesses of the mining sector in order to assist the GoM to identify priority actions that can be taken to foster the environmentally sustainable and socially equitable development of the mining sector.

Three scenarios were developed depicting a different level of economic growth and what this means for production of specific commodities, the number and type of mines, and the associated infrastructure in place to support mining development up to 2025.

The SEA commenced in step 1 with a situation assessment and stakeholder analysis to create understanding of the mining sector, the key environmental and socio-economic issues, and main actors. Step 2 involved stakeholder validation and refinement of the identified issues; the impact of the three growth scenarios on key issues; and the development of possible response options to manage the issues. Step 3 assessed the institutional and political economy gaps to implement the recommended responses and provides policy options to close the identified gaps. In Step 4, recommendations were provided in the form of an Action Plan. The approach included extensive stakeholder consultation and validation throughout.

Adapted from Strategic Environmental and Social Assessment of the Mining Sector of Mongolia. Government of Mongolia, Ministry of Mining & World Bank SEA for regional development planning (2014).

2) SEA for regional development planning

A second step is to apply SEA for regional development planning, to support authorities in the integration of (new) mining activities in this planning, by:

- assessing potential positive and negative interactions with other productive sectors, such as livestock, agriculture, fisheries, etc.;
- establishing priorities for conservation and development, characterisation of stakeholders;
- regional inter-sectoral coordination for increased efficiency of the transport network, rural and urban planning and biodiversity conservation efforts;
- addressing human rights, land use rights, and community participation;
- planning of public services where new mining developments are expected (education, healthcare, public water supply).

Case 3: Strategic Environmental Assessment for the Central Namib Uranium Rush

A favourable outlook for the world uranium market triggered interest in uranium exploration in Namibia, with 36 exploration licences for nuclear fuels being granted in 2007. The sudden scramble for prospecting rights urged the Namibian government to place a moratorium on further uranium prospecting licences. This was to ensure that the authorities and other stakeholders could consider how best to manage the "Uranium Rush".

An SEA for the so-called "Central Namib Uranium Rush" was undertaken in 2009. Mindful of the legislative and policy gaps on uranium mining and radiation protection in Namibia and the lack of a coherent development vision, the ToR required the SEA to deliver the following:

- develop and assess viable scenarios of mining and associated developments as a basis for decision making and formal planning;
- recommendations on responsible mining development in the Central Region;
- provide solutions on (cumulative) impacts and challenges stemming from the mining operations;
- outline of a Strategic Environmental Management Plan (SEMP).

The Uranium Rush offers a number of potential positive impacts ranging from increased government revenues to

upgrading of infrastructure and health care facilities. However, constraints can put these benefits at risks, in particular the capacity of physical infrastructure and the capacity of government at all levels to cope with the Uranium Rush. Further cumulative impacts were identified on natural resources, biodiversity and heritage landscapes, health, tourism, social structures, and stress on government ministries and parastatals.

Mining is in itself not sustainable, but there is a number of ways in which mining can leave a net positive legacy if the SEMP is applied correctly by all parties. The first step is to understand the nature of the potential cumulative impacts at a regional scale and to predict unintended consequences of the proposed actions. The SEA offered proactive guidance for decision makers ahead of development.

To ensure that the Uranium Rush contributes to sustainable development for Namibia, national government, mining companies, local authorities and civil society must work together to implement the SEMP, which has been formulated with considerable input from many stakeholders during this SEA process. Political will, technical capacity, enabling policies and laws, and mutually beneficial partnerships are needed to ensure that adequate capacity exists. Strong capacity, transparency and consistency in decision making will ensure that the Uranium Rush is a blessing and not a curse. The bottom line is the need for good governance.

Adapted from MME (2010). Strategic Environmental Assessment for the Central Namib Uranium Rush. Ministry of Mines and Energy, Windhoek, Republic of Namibia

Since 2011 annual SEMP reports measure the performance around twelve Environmental Quality Objectives (EQOs) that show the extent to which uranium mining is impacting the central Namib. Each EQO articulates specific goals and targets that are monitored by a set of key indicators.

See annual SEMP report 2017

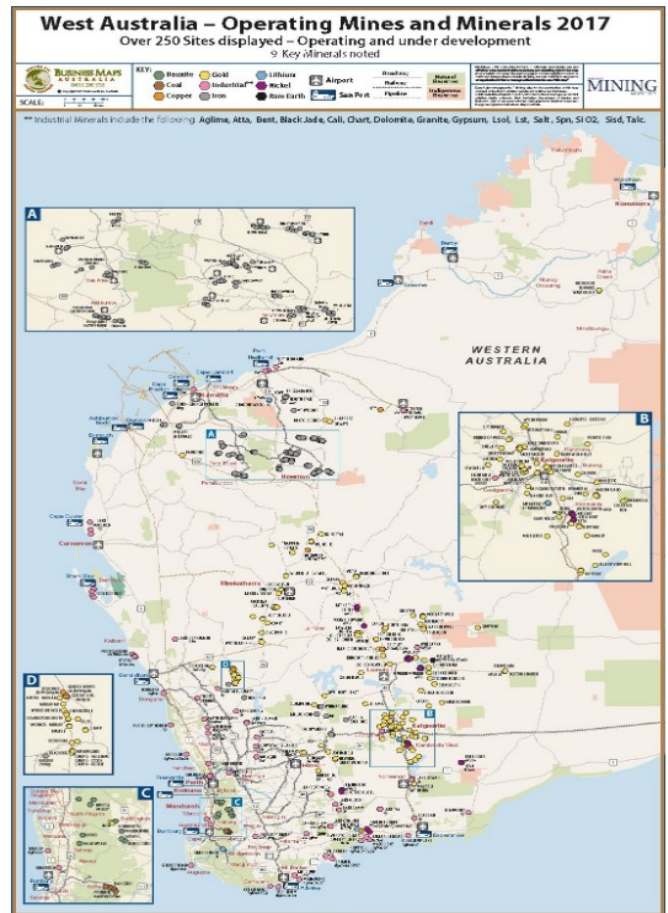
Advantages of SEA

For mining companies, an SEA carried out for an energy or development plan in the region where a company wants to invest, contributes to more sustainable and cost effective projects. An SEA may outline the most suitable areas for investments, preventing costly mistakes, for example caused by water scarcity. It will have already engaged local stakeholders in discussion on mining activities, which may have built support for mining and could prevent resistance or conflict. Research and assessment for the SEA can also be used for ESIA's for mining projects, saving time and money. This all contributes to effective investment in the mining sector and maximising benefits for companies as well as society.

The benefits of looking at the environmental and social impacts of (regional) investments on a more strategic level, is illustrated by the BHP Billiton Iron Ore example in Western Australia (WA). Under the WA Environmental Protection Act (1986), a developer can submit a strategic proposal which identifies one or more future proposals that, individually or in combination, may have a significant effect on the environment. In cooperation with the Environmental Protection Agency (EPA), these impacts are then assessed, stakeholder participation is organised, and conclusions documented and reviewed.

Between 2012–2017, BHP Billiton Iron Ore developed a Strategic Mining Proposal for the miner's operations in the region for the next 50–100 years, including opening up of new iron ore mines, the expansion of existing mines and development of associated infrastructure. According to Edgar Basto, asset president at BHP Billiton:

"Previously, we worked through the approval process for individual projects in isolation. We can now look at how future developments may interact and think about what we need to do to manage any impacts in advance. It gives the company, industry, the community and regulators a more comprehensive understanding of the region, which ultimately helps everyone to more effectively manage our natural resources. It's about being transparent in our future plans and recognising that environmental impacts are not confined to one particular mining project and should be looked at more holistically."



In July 2018 the EPA recommended the Strategic Mining Proposal for approval to the Ministry of Environment. EPA Deputy Chair Robert Harvey said:

"The benefit of assessing a strategic proposal is that we are able to take a bigger picture view of the potential environmental impacts the proposals may have. Through the assessment process, the EPA was able to consider the cumulative impacts of BHP's future proposals, rather than assessing impacts on a case-by-case basis, as individual mines or developments are proposed".

For governments, the use of SEA leads to better preparedness and strengthened governance for biodiversity and natural resources management. It provides clarity of tasks that need to be carried out, with clear division of responsibilities over different government agencies and private sector partners. It furthermore provides a clear view on the anxieties and aspirations of other stakeholders in society.

Box 1

Main decisions

National mining-related policies

- Policy on large and artisanal mining (e.g. regional priorities, revenue management, local or foreign investment)
- Mining regulatory framework (social, environmental, financial)
- Additional sector investment needs (infra, public services, urban planning, etc.)
- Capacity development (R&D, vocational training, compliance & enforcement, etc.)

Regional development planning

- Regional development priorities and planning
- Sector intervention priorities
- Public services planning & implementation
- Regional sectoral and stakeholder coordination

Mining project

- Siting and License decisions
- Enforcement of Environmental and Social Management Plan
- Roles & responsibilities of proponent and local government

Main issues

National sector SEA

- Sector development scenario's
- Assessment of adequacy of institutions
- Stakeholder analysis & consultation
- Environmental, biodiversity and social priorities
- Risk assessment
- Governance arrangements

Regional planning SEA

- Analysis of regional development opportunities & constraints
- Alternatives for transport, water supply and energy supply
- Regional stakeholders' consultation
- Environmental, biodiversity and social priorities
- Regional development scenarios (sector mix)
- Sector interactions & cumulative impacts

Project ESIA

- Mine site requirements and offsets (construction, operation, decommissioning)
- Alternatives for transport, settlements and facilities
- Resettlement planning and compensation
- Communities involvement plan

And it assures more transparent decision making which in general contributes to more support.

For society the use of SEA may lead to a better contribution of mining activities to regional and national development, while minimising the negative consequences of mining. The weakest groups in society and ecosystem services relevant for society receive the attention they require.

Summarising, box 1 identifies the main decisions taken in the mining sector at national, regional and local level. Also, the main issues that can be addressed in respectively National SEA, Regional SEA and ESIA are listed so it becomes clear how decision-makers at each level can benefit from respectively SEA and ESIA.

The NCEA

The Netherlands Commission for Environmental Assessment is an independent body of ESIA and SEA experts. Outside The Netherlands, since 1993 the Dutch Ministry of Foreign Affairs subsidises the NCEA to give independent expert advice on ESIA and SEA in low- and middle-income countries. Its advisory services include scoping for

ESIA/SEA and quality review of ESIA/SEA. The aim is to improve their quality and relevance for decision making. The NCEA also supports governments in strengthening ESIA/SEA systems through capacity development. These include for instance workshops for sector ministries and guidance on improving laws and regulations. In its advisory services and capacity development programmes, the NCEA works with a large database of experts, including experts in mining.



In October 2018, the NCEA contributed to the Annual meeting of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable development (IGF) in Geneva. As a result, IGF requested the NCEA to provide support as an independent reviewer to the development of guidance for ESIA/SEA legal frameworks for mining.



Case 4: Responsible mining in Ghana

In 2008, an SEA was conducted for the mining sector in Ghana. This SEA was of good quality, yet its influence on sector planning was limited. In 2011, the NCEA was asked to advise on how to increase this influence. It assessed the SEA and found a lack of clear objectives and ambitions for the sector. It recommended to prepare an addendum and indicated what should be included.

This addendum was prepared, and the Minerals Commission and Environmental Protection Agency of Ghana used it to improve the draft Mining Policy. It helped them to focus on strategic decisions with long term objectives.

Examples: the NCEA and mining

Some NCEA activities from the past years are:

- Madagascar, 2017/19: introductory SEA training with focus on the mining sector;
- Indonesia, 2015: Review of ESIA's for tin mining and smelting projects (see Case)
- Uganda and Cameroon, 2014: training on ESIA review for mineral resources projects;
- Ghana, 2011: advice on an approach for a mining sector SEA (see Case);
- Colombia, 2010: advice on mining ESIA/SEA and contribution to seminar on large-scale mining;
- DRC, 2010: advice on ToR for a mining sector Post-Conflict Impact Assessment;
- West Africa, 2010: regional 4-day workshop on SEA for extractive industries.

Earlier, the NCEA also advised on ESIA for gold mining (Suriname) and limestone mining (Nigeria) and SEA for planned lithium mining (Bolivia).

Contact

Mr Arend Kolhoff PhD, Technical secretary NCEA
akolhoff@eia.nl; www.eia.nl

List of mining related SEA's

Name	Country	By
2017 SEA for the Mining Sector. Ref. No: RFP/UNDPKEN/009/2016	Kenya	Kenyan Ministry of Mining
2017 Strategic Environment and Social Assessment for the Mining Sector	Lao PDR	Ministry of Mining.
2014 (start) SEA of the Cumulative Impacts on the Marine Ecosystem from Bulk Seabed Mining	Namibia	Government of Namibia
2014 Mining Sector Strategic Environment and Social Assessment (SESA)	Mongolia	Ministry of Mining & World Bank
2012 Environmental Assessment / Strategic Pilbara Mining Proposal	Australia	EPA Western Australia BHP Billiton
2012 Strategic assessment of a biodiversity plan for coal mining in the Upper Hunter Valley	Australia	Australian Government & New South Wales Government
2010 SEA for the central Namib Uranium Rush	Namibia	Ministry of Mines & Energy
2008/2010 SESA for the Development of the Mineral Sector in the Mano River Union	West Africa	World Bank
2009 Rapid Integrated SESA of Malawi Mineral Sector Reform	Malawi	World Bank
2008 SESA for the Mining Sector Reform	Sierra Leone	World Bank
2008 SEA for Responsible Mining Sector	Ghana	Minerals Commission & EPA Ghana
2003 Environmental Assessment of Gold Mining Greenstone Belt region	Suriname	Ministry of Natural Resources & NIMOS
2000 Strategic Assessment of Resource Use Options at Wavecrest	South Africa	Provincial Government Eastern Cape