



Netherlands Commission for
Environmental Assessment

Recommendations for Good Practice EIA in Indonesian Tin Mining

An Analysis of Environmental and Social Issues in Indonesian
EIA Reports

INDONESIA



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Advisory report by the NCEA working group

Subject: Recommendations for Good Practice EIA in Indonesian Tin Mining – An Analysis of Environmental and Social Issues in Indonesian EIA Reports

To: The IDH Indonesian Tin Working Group

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List of acronyms

AMDAL	Environmental Impact Assessment or EIA
ASM	Artisanal and small scale mining
BUMN	Badan Usaha Milik Negara (Indonesian state owned enterprises)
BPK	Badan Pemeriksa Keuangan (State Audit Agency)
EIA	Environmental Impact Assessment
ESMS	Environmental and Social Management System
FPIC	Free Prior and Informed Consent
GIS	Geographical Information System
GR	Government Regulation
GRI	Global Reporting Initiative
HACCP	Hazard Analysis and Critical Control Point
IDH	Sustainable Trade Initiative
ICMM	International Council for Mining and Metals
IFC	International Finance Corporation
ILO	International Labour Organisation
ITRI	International Tin Research Institute
NCEA	Netherlands Commission for Environmental Assessment
OH&S	Occupational Health and Safety
OECD	Organisation for Economic Co-operation and Development
PERDA	Peraturan Daerah (regional law)
RKL/RPL	Environmental Management Plans/EMPs
SEA	Strategic Environmental Assessment
TSS	Total Suspended Solids
TWG	Tin Working Group
UNREDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation

1. Introduction: purpose and way of working

The Netherlands Commission for Environmental Assessment (NCEA) is an independent expert body that provides advisory services and capacity development on environmental assessment. Since 1993 the NCEA provides services internationally as well.

Most –but not all– of our international work is carried out under an agreement with the Department for International Cooperation of the Netherlands Ministry of Foreign Affairs.

The purpose of this assignment is to analyse a number of Environmental Impact Assessments (EIAs) and the associated environmental monitoring and management plans for existing tin mining and smelting projects, in order to provide recommendations on best practice EIA for off shore, low impact tin mining, and onshore rehabilitation activities. The purpose is also to propose criteria for assessment of social and environmental sustainability in the tin sector in Indonesia. Both the criteria and recommendations will be used by the Indonesian Tin Working Group (TWG) of the IDH (the Sustainable Trade Initiative) to develop a roadmap for responsible tin mining in Indonesia.

The scope of the analysis encompasses the environmental and social issues of offshore, low impact tin mining and onshore rehabilitation activities. Offshore tin mining is expected to strongly increase in coming years as onshore tin deposits are dwindling, while the need for rehabilitation is widely considered as a priority.

The working group of the NCEA consisted of a technical secretary (EIA expert) and two experts with extensive expertise in the environmental and social aspects of tin mining in Indonesia:

- Jan Joost Kessler (technical secretary and EIA expert)
- Bernadetta Devi (expert social issues)
- Joop de Schutter (expert environmental issues)

The NCEA working group analysed five EIAs of five tin mining companies that were provided by the TWG. The EIA documents and related information were submitted in the original Indonesian language version. Some details on each EIA is provided in Section 2 of this report.

Other documentation that was used for the analysis comprise the following:

- Estelle Levin Ltd (2013)¹. A situational analysis and sustainability assessment of tin production in Bangka-Belitung. Prepared for the TWG (confidential);
- confidential progress reports of the TWG;
- Devi et al (2013)². Mining and development in Indonesia: an overview of regulatory framework and policies. International Mining for Development Centre;
- Indonesian laws and legislation and international conventions (ILO, AMDAL, Mining laws, regional development, tin trading, specific PERDA issued by Bangka Government);
- literature related to child labour issues; offshore activities and its impacts, ASM, OH&S;
- publicly available reports from the Indonesian government (e.g. the auditing report from BPK);

¹ Estelle L (2013). Situational analysis and sustainability assessment of tin production in Bangka Belitung, Indonesia. Estelle Levin Ltd. (confidential report).

² Devi B (2013). Mining and Development in Indonesia: An Overview of the Regulatory Framework and Policies. Centre for Social Responsibility in Mining Sustainable Minerals Institute, The University of Queensland, Australia.

- publicly available documents with reference to offshore tin mining, dealing with environmental aspects of dredging and sand mining, green dredging and eco-dredging;
- a number of recent news articles on tin mining in Indonesia that have been consulted – see for a list Annex 5.

The NCEA did not undertake any additional interviews, field visits or research to collect primary data. The analysis was done on the basis of a desk study of the EIAs, with reference to the sources of information and the expertise and experiences of the working group.

2. Basic information on EIAs

Five EIAs have been reviewed with the analysis focusing on quality of information, strengths and weaknesses, and presence of best practices. Below is a tabulated overview of the EIAs and monitoring reports received from each company. The table represents the main characteristics of each EIA and respective company (a more elaborate overview is available but is confidential). The EIA reports and companies will be referred to in this document in an anonymous way, by their numbers as indicated in this overview. It can be observed that the five EIAs differ very much with respect to location, scope and date (thus also the legal reference framework). Therefore it does not make much sense to carry out a comparison between these EIAs.

EIA 1	
Amdal or RKL/RPL	Amdal (Books 1, 2, 3, 4); RKL; RPL and sustainability report. No monitoring report
Date	2009
Region	Belitung and Bangka, both onshore and offshore. The operating license was approved by the Ministry of Energy and Mineral Resources in 1993.
Size of area onshore / offshore	The 2007 license mentions an IUP of 330,664 Ha onshore and 143,135 Ha offshore for Bangka Belitung in total.

EIA 2	
Amdal or RKL/RPL	EIA, RKL and EIA public question and answer session reported, 2008. RKL/RPL reports 2014. No monitoring report
Date	2008
Region:	Karimun island (other province), offshore
Size of area onshore / offshore	The actual size of the offshore concession is 398 Ha.

EIA 3	
Amdal or RKL/RPL	AMDAL for mining activities and RKL/RPL for smelter No monitoring report
Date	2006 (AMDAL) 2003/2004 (RKL/RPL)
Region	Bangka Tengah Regency, in swamp and floodplain areas

Size of area onshore / offshore	Mining block of 10,182 Ha, onshore but located in a swamp areas nearby waterways; as a consequence a ship dredger will be used.
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EIA 4	
Amdal or RKL/RPL	AMDAL and RKL/RPL Documents Monitoring report 2014
Date	2007
Region	Bangka Island
Size of area onshore / offshore	Onshore mining activities are planned to cover 200 Ha

EIA 5	
Amdal or RKL/RPL	AMDAL and RKL/RPL Documents Monitoring report 2014
Date	2012
Region	Belitung Timur Regency
Size of area onshore / offshore	Onshore mining activities are planned to total 991 Ha.

3. Criteria and priority issues for analysis

For the analysis of the EIAs that were provided, the NCEA developed a set of criteria covering the main institutional, social and environmental sustainability issues for tin mining in Indonesia. This set of criteria was developed on the basis of three existing sets of references and benchmarks:

1. Indonesian legal EIA requirements:

With respect to environmental assessment legislation, the key environmental law is the Environmental Protection and Management Law 2009. A number of decrees have been issued on EIA by the Ministry for Environment, including: Decrees no. 22/1999, 40/2000, 41/2000, 17/2001, 86/2002, 8/2006, and 11/2006. These have been replaced by the Environmental Permit Regulations of 2012, which newly define the EIA procedures. In addition, there is relevant legislation for the mining sector and on management of the marine environment.

2. Benchmarks provided by TWG:

Proposed benchmarks were received from two members of the TWG, one private sector member and one civil society member.

3. Environmental and social issues on the ground:

Use was made of the situational analysis carried out by Estelle Levin (2013) and subsequent confidential reports by the TWG that refer to key issues on offshore mining. The issues that were found to be most critical have been 'translated' into criteria for screening of the EIAs that were provided.

The following set of criteria emerged, with reference to applicability to onshore and offshore tin mining.

Criteria	Onshore	Offshore
Institutional		
• Legal compliance with Indonesian law and process obligations EIA	✓	✓
• Existence of environmental and social management system (ESMS) within the company, such as ISO 14001	✓	✓
• Existence of systems to mitigate risks of bribery, corruption and anti-competitive behaviour	✓	✓
• Clarity provided on legal requirements with respect to issuance of licenses, monitoring and audits, at different government levels	✓	✓
• Reference to capacities to carry out the proposed environmental management activities and monitoring	✓	✓
• Transparency and disclosure of EIA results and licenses provided: public announcement, participation and consultations	✓	✓
Environmental		
• Avoid environmental damage due to waste disposal. Existence of a 'waste hierarchy'	✓	✓
• No mining in protected areas (marine areas, protected forests, conservation areas)	✓	✓
• No direct or indirect adverse impacts on critical species and habitats. Existence of a 'mitigation hierarchy'	✓	✓
• Use of measures (e.g. zoning, no mining periods) and best available technology to reduce environmental damage	✓	✓
• Existence of a restoration and redevelopment plan when mining has stopped	✓	
• Existence of a restoration plan of damage to corals and mangroves		✓
• Existence of an environmental management and monitoring plan, including a good baseline, with targets and responsibilities	✓	✓
Social		
• Adequate community consultation including local fisher, use of the principle of free prior and informed consent (FPIC)	✓	✓
• Respect for ILO working standards, especially child labour, including by all suppliers	✓	✓
• Respect for occupational health and safety standards, supported by training and supervision, including by all suppliers	✓	✓
• Adequate community engagement plan, integrated in the overall management plan	✓	✓
• Engagement of artisanal miners with the aim to improve their environmental and socio-economic performance	✓	✓
• No use of mining revenues for the financing of armed conflict	✓	✓

Priority issues

Following a first analysis of two EIA reports, and based on the preliminary findings that focused on the above criteria for offshore tin mining, the second assessment of five EIA reports focused on a number of defined priority issues, being the following:

1. Identify and advise in EIAs on national and international best practices of dredging and other technologies (environmental –dredging) and measures (such as zoning or time-bound production) that could be adopted to *avoid* damage to critical species and habitats, such as in particular damage to mangroves and avoiding turbidity in shallow sea areas with effects on coral reefs and sea grasses.
2. Stimulate transparency of information and dialogues on improved tin mining between tin mining companies, including public release of their respective EIAs, with a focus at exchange of best practices in the areas of: public consultation, community development, partnership and collaboration agreements with small miner suppliers, environmental restoration activities, dredging techniques that avoid damage to corals, and compensation schemes.
3. Identify and advise in EIAs on best practices in community development, on the basis of concrete socioeconomic results that have been achieved and the effects of these activities on satisfactory collaboration with local communities. Especially best practices on generating incomes, such as alternative sources of income and employment in ecosystem restoration activities, would be worthwhile.
4. Identify and advise in EIAs on approaches and contractual models of partnerships of tin companies with unconventional and small miners as suppliers of tin, including:
 - a. reference to good practices of relationships with smallholder suppliers, with comparison of differences between situation on Banka and Belitung, and different companies;
 - b. information about the extent to which tin mining companies currently depend upon supply by small miners;
 - c. information on the current types of collaboration and contractual arrangements between companies and small miner suppliers.
5. Identify current capacity and advise in EIAs on measures for additional capacity building, e.g. of mine inspectors in the region, e.g. on auditing, OH&S and community development. Verify availability of field surveying and lab-analysis equipment.
6. Identify the quality of environmental and social baseline information, and the possible need to conduct a good baseline study followed by a regional plan for monitoring key indicators, with indicated the role of different actors including the companies themselves.
7. Identify whether the EIA considers impacts at a larger landscape scale, including cumulative effects and alternative options at a landscape scale. Review whether the need to conduct an SEA (strategic environmental assessment) of the tin mining activities in the Bangka region has been identified, which could offer a wider spatial and institutional framework to tackle some of the key problems (e.g. license policies) that cannot be adequately solved by separate company EIAs.

On shore

8. Define mitigating or compensating measures or other best practices concerning the onshore tension between reclamation and unconventional miners.

4. Findings with respect to the defined priority issues

On the basis of the analysis of the five EIA reports, as well as two monitoring reports, and for each of the eight defined priority issues, the NCEA reports its findings under the following three headings:

- Quality of information
- Best practices within the set of EIAs
- Potential improvements.

The following tabular overviews present the main findings per priority issue. The best practices and potential improvements are considered relevant in particular for tin companies. Reference is made to government responsibilities when this would also be in the interest of companies.

Issue and headings	Findings
1. Advise on best practices of dredging and other technologies and measures to <i>avoid</i> damage to critical species and habitats.	
Quality of information	<p>Information is provided on current techniques used. For offshore activities there is an increasing use of plain or cutter suction dredgers instead of bucket dredgers (EIA1 and EIA2). This change is led by technical efficiency objectives.</p> <p>The EIAs do not provide information on best practices with reference to dredging technology used. The technical reference material generally dates back to the 1990s and does not refer to international standards and benchmarks. There is no reference to advanced offshore dredging that can avoid or reduce environmental damage.</p> <p>There is no information on the techniques used by unconventional miners; they operate small pontoons near shore and use simple technology (drums and bamboos) as reported in the current online news.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> • The EIAs of larger companies provide more information on the techniques used than the smaller ones. Some EIAs include a field survey for water and environmental quality (e.g. mangroves, coral reefs, etc.) but this information is not used to determine dredging locations that cause least damage. Dredging locations are actually not specified. • EIA1 indicates the need to keep a certain distance from an environmentally sensitive area in order to not surpass benchmark total suspended solids levels. • There is no reporting of marine protected areas for coral reefs or mangroves.
Potential improvements	<ul style="list-style-type: none"> • Offshore and nearshore, techniques and measures are available to avoid and reduce turbidity caused by dredging. The only way to <i>avoid</i> turbidity is by not exploiting in a wide region (e.g. marine protected areas). To <i>reduce</i> damage, there are environmental dredging techniques including: low turbidity cutter suction systems, sediment screens, green valves, seabed shaping, and building with nature (see Annex 1). There are also planning measures that make use of seasonal changes, weather conditions and tidal current systems. • More attention could be given to cooperation with artisanal pontoon miners. Research has been done on development of a mini production suction dredge for small scale tin mining (UB-ASEE Conference 2009), but no follow up on this development has been reported.

	<ul style="list-style-type: none"> In response to reports from local fishers that illegal tin pontoons have negatively impacted the coral reefs and mangroves, the Minister for Fisheries and Marine Affairs considers controlling the illegal offshore tin mining activities. She considers a rule that 0 – 4 sea miles will be barred from any mining activities.
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Issue and headings	Findings
2. Stimulate transparency of information and dialogues on improved tin mining between tin mining companies, including public release of EIAs.	
Quality of information	<p>It is common practice that EIA reports are not publicly available. Monitoring reports (on execution of environmental and social management plans) are also not publicly available. These reports are only submitted to the responsible government agency.</p> <p>EIA reports provide information on the consultants who carried out the EIA and the expertise used for the baseline survey.</p> <p>The EIAs do not refer to policies for information transparency. In most cases, there has been a one-off and one-way public consultation meeting in the EIA approval process. Most EIAs value the importance of community engagement and information transparency but it is not described if and how this is translated into action.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> At least in one case, the EIA was announced in a local newspaper (EIA5). EIA1 shows a best practice by sharing information in the “Tin Mining Sustainability Report” and engaging in discussion with for example the Friends of the Earth Campaign “Make it Better”. Their annual report is produced in line with the “Sustainability Reporting Guidelines” published by the “Global Reporting Initiative (GRI)”. There is evidence of the intention by companies to promote better community engagement. Intentions include: <ul style="list-style-type: none"> needs assessments to inform community development (EIA4); acknowledged importance of dialogues with communities (EIA3); recognised importance to engage with fishers to mitigate, prevent and manage conflicts (EIA1); willingness to support fishers with aquaculture and other fishing related training (EIA2).
Potential improvements	<ul style="list-style-type: none"> It is international best practice to provide details with respect to stakeholder consultation, e.g.: who represented the community, how has engagement been conducted, how have interest groups like fisheries been involved, where were EIA results announced, etc. One potential improvement is in line with the results of a recent ITRI seminar (2013), to introduce the OECD due diligence guidelines for responsible supply chains “traceability, risk assessment, third party audit”.³ In regards to improving transparency and dialogues, actions that companies can undertake individually and/or collaboratively include: <ul style="list-style-type: none"> disclose information on the proportion of tin from own operations and from 3rd party suppliers; if possible, disclose information on the technical and socio-economic conditions of 3rd party supplier production conditions. The new Trade Ministerial Decree No 33/2015 regarding tin export will introduce a new system to regulate tin exporters. They will need to have

³ Information can be found under the heading “ITRI Tin Forum in Indonesia discusses Trade and Sustainability of Tin Production”, at the ITRI website.

	<p>Clear and Clean Certificate that describes the sources of their tin products, pay the royalties, have an export agreement letter and be registered. To enforce this, the government will appoint its surveyors. This new decree will take into effect on 1 August 2015.</p> <ul style="list-style-type: none"> In line with the need for traceability, a quality control system would be required, which could be similar to the HACCP certification system for the food chain.
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Issue and headings	Findings
3. Advise on best practices in community development	
Quality of information	<p>Companies are required to conduct community Development and Empowerment according to the Indonesian Mining Law (4/2009). All EIAs provide information on this subject. However, the information we found in the EIA is rather limited and many companies see community development as a form of compensating impacts rather than benefit sharing that can flow-on to communities as results of tin mining. Community development is also seen as philanthropic, ad-hoc and incidental activities.</p> <p>With limited details provided, the community programmes mentioned in the EIAs have a wide spectrum; these also include measures that would not be classified as community development:</p> <ul style="list-style-type: none"> Cash compensation for land acquisition (EIA3) or compensation of fishers if their fishing gears/boats are damaged (EIA1). These should rather be considered as (mandatory) impact mitigation of operations and not as community development activities. Community infrastructure, which in most cases should be considered a service to be provided by (local) government (in most EIAs). <p>EIA4 typically acknowledges that mining activities will impact villagers who rely on subsistence livelihoods such as fishing and farming. The RKL/RPL provides a standard description on how social and economic impacts will be mitigated without implementation details.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> EIA1 shows relevant community development programmes, including: <ul style="list-style-type: none"> protection of sensitive ecosystems and sea pollution mitigation; coastal and marine tourism programmes; promote safe and proper standards of offshore mining activities; negotiate and agree on community transportation routes; community cooperation and loans; income generating activities following mine-closure, e.g. tourism, coral transplantation, 'green babel' biogas, aquaculture, duck farming, re-vegetation programmes; non-tin livelihood programmes, e.g. white pepper programme. For the above community development activities, the company related to EIA1 allocates 1–3% of net profit, which is based on BUMN ministerial decree No S-273/MBU/2005. There are no monitoring reports whether the above activities have been implemented and the reserved funds have been made available. In EIA5 community development programmes are focused on mined land rehabilitation programmes through community forestry programmes. Further details are provided under priority issue 8.
Potential improvements	<ul style="list-style-type: none"> From international experiences on community development and empowerment we define the following principles for good projects: <ul style="list-style-type: none"> strategic and long-term investments (as opposed to philanthropic, ad-hoc and incidental activities) that have a business case for the key stakeholders (private and public);

	<ul style="list-style-type: none"> ○ done in partnerships with governments, investors and NGOs; ○ based on or including community engagement (FPIC) ○ focused at improving livelihoods and the natural resources upon which they depend, with related human capacity and financing/marketing conditions. <ul style="list-style-type: none"> • Best practices on community development in mining have been defined by several international organisations such as International Council for Mining and Metals (ICMM), International Finance Corporation (IFC) as well as tool-kits prepared by companies (e.g. SEAT tool box by Anglo American and Socio-economic Diagnosis by Vale). • For the region, special programmes are needed for the unconventional miners. This could be done under the nucleus and smallholders partnership (Mitra) structure that occurs in the industry (see below). • It would be useful if monitoring reports provide information on the implementation of community development activities. Civil Society groups may be involved as partners and/or to carry out such monitoring. • The EIAs could provide more details on how communities were consulted and details of compensation. • The application of FPIC in the mining industry in Indonesia is still premature and minimal. Elements of FPIC can be promoted as part of the company-community engagement strategies. There are experiences in forest programmes or UNREDD+ projects in Indonesia.
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Issue and headings	Findings
4. Advise on approaches and contractual models of partnerships of tin companies with unconventional and small miners as suppliers of tin.	
Quality of information	<p>Unconventional mining is highlighted in the EIA documents for two reasons. First, the mining leases held by some companies generally overlap with unconventional mining operations. Second, unconventional mining has become a major tin ores supply to smelters operated by larger companies. There is reference to as much as 90% of the ore produced by smelters originating from small miners. However, there is recent reference to smallholders smuggling their ore illegally to neighboring countries (Finance Detik News, 22 June 2015).</p> <p>The EIAs do not provide details on the 'technologies' used by the small scale miners or the contractual matters that govern any partnership between unconventional mining and the tin mining smelter or company. Some EIAs do mention the existence of the partnership (Mitra) system, which is a type of nucleus small holder scheme that assures the supply of tin ore for processing.</p> <p>The Mitra scheme was originally developed to allow unconventional miners to work on the company's mining leases. The EIAs do not provide further details or information on these contracts. Contracts and partnerships have a close link to transparency and accountability.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> • The Mitra system forms a good starting point to develop contractual agreements between smelters / large companies and small miner suppliers. • However, best practice would imply formal contracting with third party suppliers, which could also include: <ul style="list-style-type: none"> ○ details on the dependency of companies on third party suppliers; ○ details on price agreements; ○ details on health & safety and working conditions; ○ information on mutual responsibilities, with companies providing technical support to smallholders, as well as supervision and quality control; ○ measures taken to improve the quality of operations, reduce environmental impacts and improve socio-economic conditions.

Potential improvements	<ul style="list-style-type: none"> • There is a large potential for companies to prepare contractual matters in a way that will not only be beneficial for their operations but also for their social and reputational benefits. This includes taking responsibility for smallholders in their mining operations and post mining restoration. • The Indonesian President visited Bangka in June 2015. He suggested that the national government will announce new strategies to handle illegal unconventional miners. With the issuance of the new Trade Ministerial Decree No 33/2015 on tin export, companies will need to declare where they source their tin ores. With these requirements, it would be beneficial for companies to improve their contractual and partnership models on the above mentioned aspects. • Partnerships could also be promoted amongst entities such as governments, communities and tin mining companies. The essence of such partnerships is to share information, harmonise programmes (e.g. community development, technical assistance and quality control).
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Issue and headings	Findings
5. Identify current capacity and advise in EIAs on measures for additional capacity building, e.g. of mine inspectors in the region	
Quality of information	<p>In all EIAs, reference to human resources capacity is limited to capacities within companies being directed towards servicing the technical and management requirements of mining operations. EIA studies, base line surveys and monitoring activities are almost without exception done by consultants, specialised laboratories and university research groups. There is no reference to collaboration with local government agencies or other organisations, other than what is required to arrange for the necessary permits and licenses.</p> <p>Technical and managerial knowledge and skills of mining company staff is related to direct production needs, as evidenced by the human resources capacity tables in the EIA reports. This does not favour initiatives that would be required for improved environmental performance (mining technologies, landscape restoration, etc.) of the sector.</p> <p>Smallholders do not feature in the EIA development process. There is also no reference to human resources capacity required to provide technical and managerial assistance to unconventional mining producers that is nevertheless responsible for more than 50% of the total tin production in the province.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> • There is no reference to possible best practices as capacity building needs are not specified. Nor are existing capacities mentioned as possible risks for implementing mitigation measures or monitoring impacts.
Potential improvements	<ul style="list-style-type: none"> • It is international best practice to specify responsibilities and capacities required to implement environmental management plans. There is apparent need for institutional strengthening on monitoring tin mining activities and their social and environmental impacts. • The EIAs could refer to the need for enhanced capacities at different levels of government agencies, especially mine inspectors at local level, to conduct baseline measurements, audits and follow-up monitoring on social and environmental key issues. This will become more urgent with regards to the new Trade Ministerial Decree No 33/2015 regarding tin export. • This would first of all require more clarity on roles and responsibilities in the mining sector, especially with respect to environmental management and monitoring. Currently, there is reference to overlapping responsibilities (e.g. in issuance of IUPs), lack of clarity (e.g. in monitoring) and lack of coordination (e.g. on standards for compensation payment). It would be in the interest of the companies to help improve this. This could be achieved

	by a local steering committee or working group, which takes into account the Regional Government Law 23/2014 on decentralization in Indonesia.
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Issue and headings	Findings
6. Identify the quality of environmental and social baseline information	
Quality of information	<p>The baseline surveys that are part of the EIAs all follow a similar structure, with specific chapters on socio-economic impacts and relationship with the local population, environmental impacts and post mining landscape restoration. In most EIAs only basic information is provided, which in turn leads to weak RKL/RPL management plans. The RKL/RPL plans do not specify monitoring responsibilities.</p> <p>As regards social or community aspects, community perception surveys are mentioned in the RKL/RPL. There is no reference to indicators or targets of social and community aspects.</p> <p>The monitoring reports repeat the main elements of the environmental management plans, and provide some updates. Conclusions on compliance are not based on set targets and robust evidence, and the reports do not provide trends.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> • EIA1 shows an advanced practice because of the quality of the baseline study and indicator framework. The environmental aspects are better covered than the social and community impacts. • Both EIA1 and EIA2 refer to the respective companies of having laboratory facilities available, e.g. for water quality surveys • For smelter industries, reference benchmarks are mentioned and will be adhered to. • The environmental and monitoring plans offer a starting point for dealing with environmental impacts and setting up a monitoring system. The main environmental impacts are listed and benchmarks are proposed.
Potential improvements	<ul style="list-style-type: none"> • For building best practice base-line assessment, further improvements to baseline information and its use would be desirable, as follows: <ul style="list-style-type: none"> ◦ assure that baseline information is up-to-date (most references now date back to the 1980s and 1990s); ◦ include GIS information and/or thematic maps; ◦ include information on protected, endangered and vulnerable species; ◦ more attention to be given to social and community aspects; ◦ make use of the baseline information as a reference for the monitoring plan; for example, EIA4 provides erosion data that is relevant to its operation but this data is not translated into mitigation measures, management targets or monitoring plans; ◦ verify data from documents with ground or field checking. • Turbidity (TSS) effects may spread as much as 10 km, but monitoring usually takes place close to the dredger (500 meters) only and with a low frequency. The scope would need to be expanded. • There is scope to improve the quality of monitoring reports, including trends and analyses in relation to set benchmarks or standards.

Issue and headings	Findings
7. Identify impacts at a larger landscape scale and assess the need to conduct an SEA (strategic environmental assessment).	
Quality of information	<p>The EIAs provide limited information on the scale of operations and linkages to landscape values. In general, the larger company provides better quality of information, including provision of results of own surveys.</p> <p>The need for a landscape approach is based on the scale and impact of landscape damage by tin mining, which has affected up to 30% of the coral reefs and mangroves and almost 70% of the land surface area to be under critical threat (Draft Report SEA Pilot Banga Belitung, 2012). Also, from the facts reported in the five EIAs it is justified to conclude that there are cumulative effects to be expected for both the landscape (onshore and offshore) as well as with respect to general environmental indicators (especially around smelters). In addition, the tension between landscape reclamation and unconventional miners should be considered.</p> <p>The need for a landscape approach is also related to the rehabilitation issue (see next section), for instance 3,000 Ha of already restored land was reopened for mining again by small-scale miners, thus requiring it to be restored again.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> • A Strategic Environmental Assessment pilot study and related report has been produced (Draft Report SEA Pilot Bangka Belitung, 2012). It provides a good overview of baseline conditions which highlights the dominant effects of tin mining in the whole region. The SEA pilot study, however, does not include sector wide solution strategies, scenarios and priority measures. • EIA1 and EIA 3 have relatively good indicator frameworks that could be further upgraded to address the relation with neighboring land uses, cumulative effects and spill-over effects from company operations.
Potential improvements	<ul style="list-style-type: none"> • An effective way of dealing with landscape impacts is by introducing protected areas both on- and off shore. To do so, there is need for a survey of remaining tin reserves to allocate areas for tin mining together with its appropriate scale of operations, as well as current land use and landscape values with the aim to map future developments both within and outside the mining sector. • Local governments (Province and Regency) are required to delineate and allocate specific areas for mining (<i>Wilayah Pertambangan</i>) either for large, medium or people mining areas (<i>Wilayah Pertambangan Rakyat</i>). To date, these however have not been established. Subsequently, SEA will become crucial to be conducted in parallel with these tasks. • There is a need to take into account the environmental values of critical ecosystems, such as marshlands and wetlands (which are counted as 'non-valuable resources' in the EIAs and therefore easily exploited even if tin reserves are low). • The SEA should identify the critical lands and zoning between mining, potential reclaimed areas and subsequently protected areas and other activities within the region. It could also propose a generic system of licensing and monitoring framework for selected and agreed indicators. • The SEA process should assure that stakeholders are actively involved. • The SEA could also specify institutional responsibilities at different levels to grant permits at different levels, assure legal compliance, reduce corruption and bribery.

Issue and headings	Findings
8. Advise on measures or best practices to solve onshore tension between reclamation and unconventional miners	
Quality of information	<p>All EIAs highlight the importance of land rehabilitation however most do not provide details on how this will be done. Only EIA1 refers in detail to how onshore and offshore landscape restoration will take place for Bangka. The restoration of underwater mining areas does not receive any attention. A solution strategy for the relation with unconventional miners is not developed in any of the EIAs.</p> <p>Regarding rehabilitation, it is relevant to acknowledge the reopening of former mining sites by unconventional miners. The EIA1 reports that since 1992 6000 Ha was restored out of which 1500 in 2007 alone. It also mentions that over a period of three years restoration of closed mining sites was suspended because of reopening of these sites by small miner companies. This is an issue where the regional and local governments have to take up their role as custodians (and often first owners) of the land.</p> <p>An issue related to land reclamation is that of remaining tin ore reserves. According to the US Geological Survey the 2006 reserves are 800–900,000 tons, which means that at the current rate of production the industry would close within 10 years only (Draft Report SEA Pilot Bangka Belitung, October 2012). This means that the time left to develop alternative sources of business and income, where the affected post mining sites (estimated at about 25% of the total according to the SEA of 2012) play an important role, is very short and would therefore be expected to receive high priority in provincial development policies.</p>
Best practices within set of EIAs	<ul style="list-style-type: none"> • EIA1 describes current technologies applied for restoration of shores (breakwaters), mangroves and coral reefs. However, it does not elaborate on the link with illegal miners or community development. In most cases the involvement of local communities is limited to the provision of labour for company-led rehabilitation activities. Also, none of the EIAs provide the criteria for successful land rehabilitation. • There are few examples on community participation in landscape restoration activities and analysis of future exploitation of the restored areas, including the perspectives for the local population to profit from the restoration. • In this regard, advanced thinking is presented in EIA5, with land rehabilitation linked to economic activities and development of alternative livelihoods. For instance, ponds that cannot be rehabilitated will be transferred into fisheries and plantation purposes. There is also reference to 'inti-plasma' programmes (bio-diesel programmes). It is apparent that for funding this programmes the company relies on donations. It is too early to know whether the above plans are being implemented and what are the initial results. • The existing initiatives on restoration of mangrove areas and coral reefs are most likely not successful, based on information provided about the restoration methods applied in the EIA1 and EIA2 reports. It is also important to improve understanding of the species that are suitable for rehabilitation and to provide value to the local communities in future. • Local Government Regulation (Bangka Regency) requires mining companies to allocate reclamation bonds, i.e. funds to set aside for rehabilitation purposes. The amount ranges from USD 750 to USD 500 per hectare. Also, reclamation bonds are required under the Government Regulation (GR) No 78/2010. This GR provides principles and mechanisms of reclamation and post-mining.

	<ul style="list-style-type: none"> • However, the integrity of reclamation bonds needs further improvement. For example, companies can pay reclamation bonds and not conduct their reclamation activities if the cost of reclamation is higher than the required bonds. Subsequently, these activities can be left to the government to conduct with the risk that nothing is done to reclaim the mined areas. Also, reclamation bonds may not be returned to the companies if reclamation is successfully carried out.
Potential improvements	<ul style="list-style-type: none"> • It is important to have a comprehensive understanding about the status of unconventional mining in Bangka-Belitung, which areas that are allocated for them to conduct the tin mining activities and subsequently way forwards to restore critical mined lands in the region. The governing system as well as the legal status of any reclaimed areas need to be defined as part of any reclamation pilot programme. • The pilot SEA report states that around 29% of the land area of Kepulauan Bangka Belitung Province is very severely or severely degraded, largely because of the tin mining industry. Reclamation of these lands is considered to be a complex process that also takes much time. Reference is made to technological reclamation innovations, such as the use of local organic materials, mutualistic microbes, and fast-growing plants (fast growth species) (see for details Annex 2). • A pilot programme on land rehabilitation would need to be firmly integrated with community engagement and assure medium or long-term benefits that enable a future livelihood without incomes from tin mining. The pilot projects would be expected to provide tangible show-cases of the benefits of reclamation and identify/inform the overall strategic assessment activities that can be implemented at the local and regional levels. • It is important for the companies to partner with other tin mining operations to conduct community empowerment programme in order to sustain the land rehabilitation results, as mentioned in EIA5.

5. Key recommendations

Based on the above, the following key recommendations are identified on best practice EIA/UKL/UPL for off shore, low impact tin mining, and onshore rehabilitation activities. Recommendations concern both the design of the EIA/UKL/UPL process and the information that the EIA/UKL/UPL should provide.

A. For companies to implement – based on best practices in the EIAs analysed

1. Enhanced public consultation beyond a one-off and one-way meeting. This would link up to the good intentions of several companies to improve interaction and engagement with local communities. It could lead to improved community development initiatives.
2. Disclosure of monitoring reports and improved quality of monitoring reports. This could link up with the “Global Reporting Initiative (GRI)”, which one company already has taken the initiative to adopt. This could lead to the sector developing its own monitoring and reporting guidelines.
3. Enhanced transparency on 3rd party suppliers. This would anticipate on the new Trade Ministerial Decree No 33/2015 on tin export, stating that companies will need to declare where they source their tin ores. This would also be a necessary first step for companies to improve their contractual and partnership models.
4. Elaborated partnership model with clear contractual arrangements between companies and smallholder miners; based on the existing ‘mitra’ system and including improved transparency, improved efficiency of working operations, reduced environmental damage and improved working conditions of smallholder suppliers.
5. Community development initiatives that meet principles of sustainable community development (see Annex 3), 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).
6. 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. This links up to ongoing small scale initiatives on land rehabilitation, which however in many cases do not receive sufficient follow-up.
7. Commitment to a longer term vision and targets on how to scale land rehabilitation and enhance alternative livelihoods for the Babel community (framing the above mentioned initiatives in a coordinated approach).

B. For companies to initiate – based on EIA international best practices

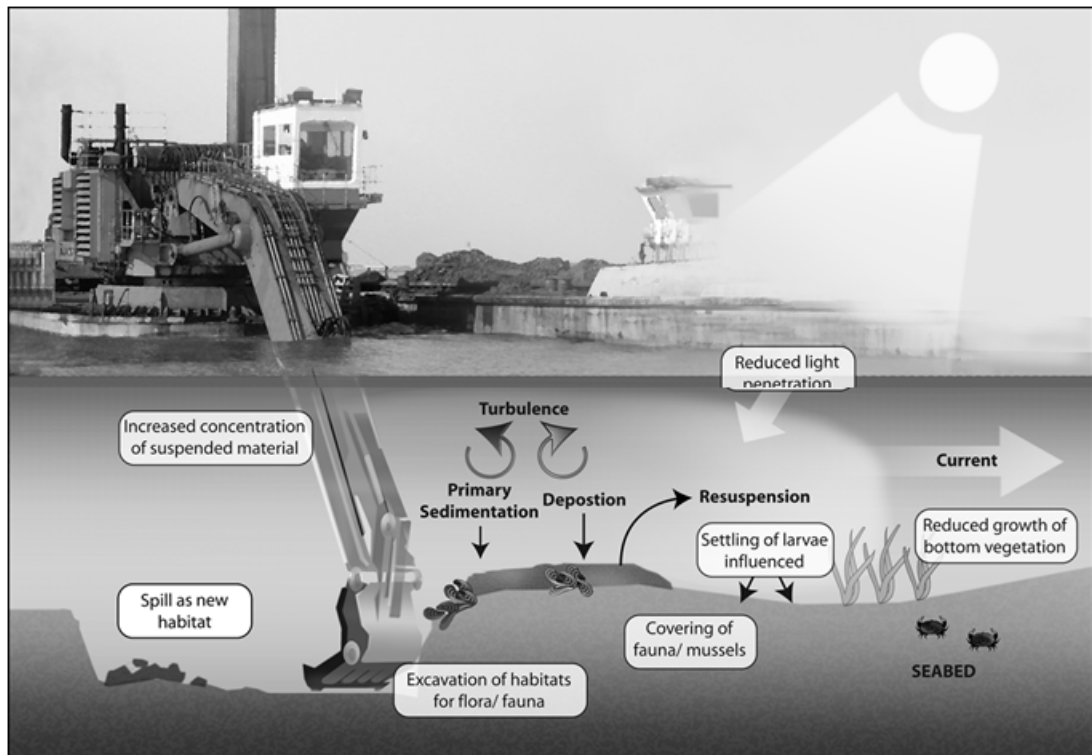
1. Analyse options for eco-dredging techniques by large companies – this would need to start out by a feasibility study to assess which techniques could be introduced as none of the new techniques are currently being applied in the SE Asia region or for tin mining (see Annex 1).
2. Analyse options for 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 Ministry of Fisheries and Marine Affairs who is responsible for establishing marine protected areas. There are marine protected areas in Indonesia but their implementation is very weak. Marine protected areas could be defined and agreed upon as part of the proposed extension of the pilot SEA (see below).

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

1. Application of an SEA based on the problem analysis in the existing SEA pilot study. 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. The existing pilot SEA forms an excellent starting point.
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. This could be achieved by a local steering committee or working group, which takes into account the Regional Government Law 23/2014 on decentralization in Indonesia.
5. Increased clarity on the level of required reclamation bonds and assurance of proper governance and effective use of these bonds for the set purpose, with defined responsibilities for companies and local governments (see for some details Annex 4).

Annex 1: Green / Eco / Environmental Dredging⁴



Mining of sea-sand and sea bottom-based ores is common practice both in developed and developing countries. However, these projects may have considerable impacts on the local marine environment as well as coastline stability and fisheries and other socio-economic activities. Many publications refer to these effects and steps to minimise, prevent or correct these environmental effects. Some known mitigating measures for example are:

- strategic selection of mining areas
- ecologically efficient dredging (selected layers)
- exclusion of specific (protected) areas (zoning) and monitoring
- excluding specific periods (seasonal dredging)
- limiting overflow losses and use of green valves (decreasing material brought into suspension)
- use of silt screens
- restoration of sea beds, mangroves, corals, etc.

Some useful references are:

- Environmental aspects of dredging (RN Bray, CRC Press)
- Environmentally friendly sandmining (R. Van Oostrum, EDC)
- International Association of Dredging Companies (IADC)

⁴ IADC (International Association of Dredging Companies)

Annex 2: Land degradation in Bangka Belitung Province⁵

The results of land cover analysis of Kepulauan Bangka Belitung Province in 2009 shows that there are 18 land cover types which are dominated by a mix of dryland farming covering 510,835.1 ha (31.1%), scrub area of 369,658.23 ha (22.51%) , secondary dryland forest 148,924.19 ha (9.07%), plantation 126,191.24 (7.68%), mining 110,753.77 ha (6.74%) and others.

Of the land cover above, the size of critical to very critical land is about 112,838.86 ha (6.93%) of the total land area of the Kepulauan Bangka Belitung Province, while degraded land in the forest is about 99,146.97 ha (6.089%) of the land area. For rather critical area the size is 359,918.71 ha (22.1%) of the mainland. Thus, for criteria 1, 2 and 3 or unproductive land area the size is approximately 472,757.57 ha (29.03%) of the land area. While the remaining area, with the size of 1,155,426 ha (70.97%), is potentially critical area and non-critical one for more productive land.

One critical area that is mostly formed in Kepulauan Bangka Belitung Province is tailing of the former tin mining land. Based on the calculations, 50–70% of the ex-mined land is in the form of tailing. Tailing soil does not support plant growth due to its property, such as the high content of sand fraction, low nutrient, low organic matter, low cation exchange capacity, low pH and low soil moisture. Tin mining activities alter soil physical and chemical properties, and microclimate. Texture of tailing is sand with an increase of more than 30% sand fraction compared to undisturbed land (forest, rubber plantations, and orchards pepper), and a decrease in the clay fraction and at least 50% dust. Organic matter in tailing is almost none, (C almost and N is close to zero). Decrease in total of P and K is very significant on the transfer of rubber and pepper gardens into tin tailings.

Similarly, the content of exchangeable cations Ca, Mg, K, and Na also significantly decreased in the conversion of forest land and pepper garden. Total exchangeable cations in the forest and pepper gardens reduced 50% and 90% respectively. Cation exchange capacity (CEC) was reduced between 50–80%, and base saturation and concentration of Al^{3+} was also decreasing compared the nature of pre-mined land.

The results of a study by Inonu (2010) on PT Koba Tin mined lands show that even 20 years after the reclamation, the physical properties and chemical sand tailings is still worse than that of the non-mined land. This means that a land that have been damaged due to mining may take a long time to recover. The land conversion cause the soil moisture and humidity around the post-mining land and its surroundings becomes lower, the temperature of post-mining soil and air around the post-mining land becomes higher. Soil moisture decreased around 10%, while humidity around 10–20%, and soil temperature increased by 2–10 °C. The temperature of the air in the postmining land that increased about 6–9 °C is allegedly not supportive for the growth of vegetation and soil microbes, as well as for fauna habitat.

The size of Babel Province is 16,424.14 km² or 1,642.414 ha. Based on data from the Department of Mines and Energy of Babel province, the area of Production Operation IUP until 2012 reached 424,658.3 hectares or 25.86% of the total land area of Babel. The size will be increasing due to the upgrading of exploration IUP into IUP OP in 2012 which covers an area of 49,336.44 hectares. Such data of mining area from the Department of Mines and Energy is that of licensed one, while in fact some areas are illegally tilled mined in the form of small-

⁵ Source: Draft Report SEA Pilot Bangka Belitung, 2012.

scale or unconventional mining. The more land area used for mining, the more critical land with low land quality.

Main Factors (drivers) influencing likely future trends: The driving factors of land degradation in Kepulauan Bangka Belitung include:

1. The extending ex-mined lands
2. Slow progress of land reclamation after mining which resulted in slow restoration of soil fertility.

Likely expected positive or negative impacts of these factors on the given trend: The critical land with its poor quality is expected to further increase if nothing is done to speed up the recovery process through land reclamation and revegetation. The abandoned tin mining tailings will widely spread with the help of wind and rain, and the sand tailings will cover the surrounding good quality lands. The result of the expansion is the phenomenon of "dissertation" or the formation of desert. Mitigation that can be done is to closely monitor the implementation of the reclamation and closure of mining companies that have obtained IUP OP. To speed up the recovery, a technological reclamation innovations is need, such as the use of local organic materials, mutualistic microbes, and fast-growing plants (fast growth species).

Annex 3: Sustainable community development principles⁶

- Long- or medium term feasibility: the proposed initiatives should be commercially viable and generate incomes. The scope of the activities should be to improve livelihoods in a sustainable way. Non tangible social benefits should be based on a needs assessment study.
- Activities are aligned with local strategies: development programmes and activities require long-term strategic objectives for the company and must be aligned with the existing and/or future community and/or regional development plans. Programmes should be prioritised based on this. If not, the initiatives will remain isolated initiatives.
- Consultation and participation: local communities should be the focus of beneficiaries and they should be actively involved in all stages of project formulation (conception), design and implementation including closure and post-closure. Women, youth and other vulnerable/marginalised groups should be included. It is important to ensure that communities are enabled to participate fully in decisions made about the allocation of benefits that flow from projects will offer the best chance for community development programme sustainability.
- Working in partnership: company, governmental, NGO and civil society / community groups bringing different skills and resources – but shared interests and objectives – can achieve more through working together than individually. Formal and informal partnerships can also reduce costs, avoid duplication of existing initiatives and reduce community dependency on the mining operations.
- Capacity building is part of the initiative: community development programmes/activities need to emphasise strengthening local community, NGO and government capacity. These programmes are believed to be more sustainable in the long term than supply of cash, materials or infrastructure. While infrastructure is often essential for the development of remote communities, it will only be sustained if there is support for an adequate maintenance programme by local communities.
- Sustainability is ensured: activities should aim to improve the resource-base upon which livelihoods depend (restoration, rehabilitation) or make sustainable use of these resources, meaning that it does not lead to over-exploitation or degradation.
- Monitoring and adaptiveness: it is important to monitor programmes and to periodically evaluate them against the set objectives. Regular monitoring enables the adjustments of programmes to enhance success, which means that activities should be 'adaptive'. Participatory monitoring will facilitate the relation with the communities.

⁶ ICCM (2010) and Devi et al (2013). Mining and development in Indonesia: an overview of regulatory framework and policies. International Mining for Development Centre.

Annex 4: Reclamation bonds⁷

Local government regulation (Bangka) No 6/2001 requires mining companies to allocate reclamation bonds. Article 50 of this regulation requires companies to provide a certain amount of money as the financial guarantee in the form of 'deposito' under the Bupati's name. The amount range for the reclamation bonds is from USD 750 (metals) to USD 500 (non-metals) per hectare.

Reclamation bonds are also required under the GR No 78/2010 (Chapter VI). The regulation identifies the key principles and mechanisms necessary for reclamation. All that hold a valid: mining; mineral; coal; mineral mining; coal mining; mining business permit; or a special mining business permit are required to undertake reclamation activities during the entire phase of mining operations. This is for the purpose of arrangement of activities for restoring and improving the local environment where the operations take place. The holders of the mining exploration business permits and mining production permits are additionally required to undertake reclamation post-mining upon. This is also for the purpose of restoring environmental conditions of the local area and allow the conducting of local social activities within the former mine location. Overall, the regulation provides for the:

- compilation of reclamation and post-mining plans;
- approval of reclamation and post-mining plans;
- reporting and performance of reclamation and post-mining activities;
- reclamation and post-mining guarantee;
- the return of reclaimed or post-mining land;
- administrative sanctions.

The procedure is the following:

- companies submit their request to the responsible government (national or sub-national) to release their reclamation bonds;
- the responsible government will conduct an evaluation of the success of the reclamation programmes;
- the reclamation bonds will be given back to companies depending on the success results (based on a formula);
- if companies do not conduct reclamation (or results are unsatisfactory), governments can appoint a third party to do the reclamation.

Currently, the following issues exist based on NCEA's knowledge of this topic:

- little incentives are given to companies to conduct proper reclamation programmes (e.g. issues surrounding reclamation bonds as we discussed previously)
- limited government capacities to audit the success of reclamation programmes as suggested in their reclamation plans
- no standards on how to access the completeness of reclamation as well as issues surrounding coordination (e.g. inter-sectoral coordination with Ministry of Fisheries and Marine Affairs if operations are on coastal or small islands) or Ministry of Forestry (if operations are located within forested areas).
- reclamation bonds are vulnerable to corruption.

⁷ Extracted from a confidential report.

Annex 5: Recent news articles on tin mining in the Indonesian press

<http://finance.detik.com/read/2015/06/22/070000/2948285/1036/tambang-timah-ilegal-babel-yang-kini-jadi-perhatian-jokowi> – the President has given his attention to the tin mining activities.

<http://finance.detik.com/read/2015/06/22/070000/2948285/1036/2/tambang-timah-ilegal-babel-yang-kini-jadi-perhatian-jokowi> – a description about the traditional ways of unconventional tin mining. It is interesting that the article mentioned about the mining activities from tailing and ex-mined land areas.

<http://finance.detik.com/read/2015/06/22/074412/2948305/1036/hp-canggih-di-tangan-anda-pakai-timah-dari-babel> – AETI and the Tin Working Group.

<http://finance.detik.com/read/2015/06/22/082214/2948329/1036/tambang-timah-ilegal-di-babel-luar-biasa-dan-tak-tersentuh> – the magnitude of illegal tin mining activities in Bangka-Belitung Province (it involves mafia network and other neighboring countries).

<http://finance.detik.com/read/2015/06/22/084819/2948351/1036/ini-modus-penambangan-timah-ilegal-puluhan-tahun-di-babel> – there are many ways on how the illegal mining activities operating in Bangka – Belitung including: partner with licensed operations; smuggling to nearby countries; illegally sold to larger smelters; there are many supply chains in tin market (middle persons and collectors). For the offshore, miners can sell the ores directly to other collector ships from other countries. There is new ministerial decree No 33/2015 on tin export.

<http://finance.detik.com/read/2015/06/22/102540/2948487/4/berantas-tambang-timah-ilegal-ini-usul-bupati-basuri-purnama> – to stop illegal mining, it is important to stop the buyers of the illegal tin. There should be a system to trace the source of tin from mine to market. Alternative livelihoods need to be developed. Idle lands need to be handed over to local government so that the lands can be developed. The local government would like to open up 1,000 Ha paddy rice in Buding. Land in Buding (600 Ha) however is dedicated for mining but is now idle.

<http://finance.detik.com/read/2015/06/22/105947/2948527/1036/ada-mafia-di-tambang-timah-cukongnya-dari-malaysia-dan-thailand> – illegal miners are migrants from Lampung, Palembang, Padang and from nearby areas.

<http://finance.detik.com/read/2015/06/22/105201/2948526/1036/sindiran-bupati-belitung-timur-cek-singapura-tak-punya-timah-tapi-ekspornya-banyak> – illegal tin is sold in Singapore and there is an indication that this happens with the involvement of local officials.

<http://finance.detik.com/read/2015/06/22/112627/2948551/1036/tunggu-perintah-jokowi-susi-siap-tertibkan-tambang-timah-ilegal-di-babel> – the minister of fisheries and marine affairs are awaiting a command (a go sign) from President to act on illegal tin mining. She intends to conserve coastal areas 0–4 miles from mining activities.

<http://finance.detik.com/read/2015/06/22/112250/2948544/1036/bupati-belitung-timur-tambang-timah-ilegal-ditertibkan-penambang-marah> – international cooperation needs to work on stopping illegal tin (e.g. not buy tin from Singapore).

<http://finance.detik.com/read/2015/06/22/112354/2948557/1036/seperti-mau-perang-ini-penampakan-kapal-tambang-timah-ilegal-di-babel> – the illegal pontoons are about 1,640 units; the miners are mostly from outside Babel.

<http://finance.detik.com/read/2015/06/22/122118/2948643/1036/penambang-timah-ilegal-di-babel-bisa-dapat-rp-1-juta-hari> – the lucrative benefit from tin mining is high – the illegal miners can earn 1 million IDR per day. Many of them are indicated to use drugs so that they can work continuously without taking rests for couple days.

<http://finance.detik.com/read/2015/06/22/122737/2948647/1036/pasar-dunia-bisa-teriak-bila-ri-setop-ekspor-timah> – the article states the role of Indonesian tin in global market.

<http://finance.detik.com/read/2015/06/22/135443/2948801/1036/parah-penambang-timah-ilegal-juga-beraksi-di-hutan-lindung> – illegal tin miners have encroached protected forests to conduct tin mining activities. Many illegal miners encroached PT Timah mining leases and do not sell the tin to PT Timah.

<http://finance.detik.com/read/2015/06/22/140533/2948839/1036/timah-babel-diduga-banyak-diselundupkan-ke-malaysia-dan-thailand> – Indonesian tin has been smuggled to Malaysia and Thailand.

<http://finance.detik.com/read/2015/06/22/144621/2948913/1036/tambang-ilegal-marak-sofyan-djalil-akan-panggil-penambang-hingga-eksportir> – the Indonesian government will hold a meeting this week to work on illegal mining. The illegal miners will be regulated to work with companies that hold IUP including PT Timah. They will be registered and provided with equipments. PT Timah will remain the major exporter for Indonesian Tin.

<http://finance.detik.com/read/2015/06/22/150033/2948948/1036/tambang-timah-ilegal-marak-di-babel-dpr-itu-sudah-cukup-lama> – illegal miners cannot be stopped due to livelihoods but they need to be supervised.

<http://finance.detik.com/read/2015/06/22/151500/2948990/1036/tambangnya-dikeruk-penambang-ilegal-pt-timah-rugi-rp-20-triliun> – PT Timah experienced financial loss due to illegal miners. The ICW predicts the nominal loss as given in this article.

<http://finance.detik.com/read/2015/06/22/183649/2949229/4/berani-berantas-tambang-timah-ilegal-sofyan-kita-tegakkan-hukum> – illegal mining will be enforced in particular for offshore.

<http://finance.detik.com/read/2015/06/22/191113/2949279/1036/tambang-timah-ilegal-marak-di-babel-ini-kata-menteri-esdm> – illegal tin mining has known for a long time and this is not new to the public. Efforts to control were done with limited results.

<http://finance.detik.com/read/2015/06/22/171531/2949147/1036/sofyan-djalil-ri-produsen-timah-terbesar-no2-dunia-tapi-nggak-bisa-apa-apa> – illegal miners will be regulated and encouraged to have a legal entity.

<http://bangka.tribunnews.com/2015/05/19/permendag-eskpor-timah-direvisi-timah-solder-harus-dari-bursa> – Trade Ministerial Decree No 33/2015. The driver of this ministerial decree is to eliminate the illegal tin exporters. The exporters are required to have Clear and Clean Certificate for the source of tin ores, pay the royalties and Export Agreement letter. The export can only be done by the Registered Exporter (*Exportir Terdaftar*). Before tin is exported, the surveyor will do the clarification and checking. The surveyor will be established by the government.