

Unconventional Mining in Bangka-Belitung, Indonesia

Unconventional Mining in Bangka-Belitung: A consideration of options for improvement of environmental performance

Artisanal and small-scale mining (ASM) is defined generally as mining by individuals, groups, families or cooperatives with limited or no use of mechanical equipment. In Bangka-Belitung Province, these types of operation are locally termed unconventional mining 'tambang inkonvensional TI', or on an even smaller scale peoples mining 'tambang rakyat TR', as well as off-shore floating islands 'TI apung'. These operations have uncertain legal status, are most closely associated with environmental impacts and conflict with planned environmental management of larger scale operators.



Typical on-shore TI unit



Typical off-shore TI units

While numbers of TI units operating on-shore have decreased in the last few years, numbers off-shore have risen and despite the general reduction in easily accessible reserves and the trend to lower grades, production of significant tonnages continues. While both capital and operating costs have increased, tin price has also increased and any contribution to land reclamation remains low from the unofficial sector, seemingly making TI more profitable in comparison to formalised operations.

As long as poverty is an issue, and profitability good, then TI will remain an important livelihood activity. Many things would need to change in order to address the existing challenges cutting across multiple stakeholders. At the current rate of change, this is likely to take a substantial amount of time measured in years rather than months. The general objective of this report is therefore to consider if there are any practical methods for potentially improving the environmental performance of on-shore and off-shore TI mining, promoting the potential for more rapid uptake of such suggestions by focusing on methods that can, where possible, be linked to increased financial benefits, and therefore incentive for miners. Options that have been evaluated include;

- A. More efficient location and extraction of viable tin deposits to limit movement between sites
- B. More effective sampling to avoid unnecessary disturbance
- C. More efficient processing technologies to increase recovery
- D. Development of community approaches to knowledge sharing
- E. Land reclamation and restoration incentives
- F. Environmental community education programmes
- G. Training programmes for TI miners

There are no particularly conclusive results from this evaluation. In theory uptake of environmental improvement actions could be enhanced if performance is linked to improved profits but land access, conflict between operators and legality questions appear to override the potential actions. Linking improvements in environmental performance to increased profits may also be a two edged sword as it is likely to promote rather than reduce informal mining, attracting new entrants with the promise of even larger profits. Therefore, these approaches are high risk, cannot and should not be applied in isolation – increased enforcement and promotion of alternative livelihoods must also be used to limit the overall number of miners.

Options may only become useful and viable in the future if external factors change or as part of a broader enforcement / alternative livelihoods programme for TI in Bangka-Belitung.

Alternative Livelihoods in Bangka-Belitung: Identification of practical alternative options to unconventional mining

Artisanal and small-scale mining (ASM) is defined generally as mining by individuals, groups, families or cooperatives with limited or no use of mechanical equipment. In Bangka-Belitung Province, these types of operation are locally termed unconventional mining 'tambang inkonvensional TI', or on an even smaller scale peoples mining 'tambang rakyat TR', as well as off-shore floating islands 'TI apung'. Estimates in 2010 suggested there were around 10,000 TI operations across Bangka-Belitung, providing a livelihood for more than 50,000 people (plus dependents), with most being carried out without regard to good mining practices, safety or land reclamation. Unconventional mining of tin has therefore become a significant livelihood for many people in Bangka-Belitung and has a long and complex history interwoven in the communities of the area. Its importance as a livelihood is likely to continue as long as there are accessible mineral resources, unless alternatives that are financially viable, sustainable and attractive are available for local communities.

Employment for an equivalent number of locals, as well as the value of tin exported each year will be difficult to replace with other commodities, products or services as tin reserves are depleted, or as the market moves away from the traditional TI production. Previous attempts at increasing control and enforcement on TI have led to violent clashes between different groups and would likely be repeated if any strategy does not fully address every part of this complex situation. TI in Bangka Belitung can be categorised as having a strong tradition of mining in a region, and opportunistic (part-time and influx/rush), when alternative livelihoods programmes are generally considered to have a limited chances of success.

It is reasonable to assume that most TI miners in Bangka-Belitung place far greater emphasis on profitability than on health, safety and the environment and if miners could make more money doing something else, with minimal investment, then many would already be doing so. Therefore, although other income generating activities may carry lower risks in terms of health impacts, serious injury or death than TI mining (the possible exception being construction) this will not be sufficient to drive uptake of these alternatives.



The options evaluated are listed below, yet most appear inadequate in terms of potential to absorb large numbers of ex-TI miners and in terms of income replacements for individuals and the Province;

- Agriculture (food and commodities grown on plantations)
- White pepper production
- Natural rubber production
- Livestock farming
- Fisheries and aquaculture
- Large scale mining and related service providers
- Construction
- Manufacturing
- Small, micro and medium enterprises
- Travel and tourism (including wildlife, diving and eco-tourism)



White pepper, palm oil, rubber, fisheries/aquaculture, and tourism appear to be the most promising and best supported options locally. These options may become viable as part of a broader enforcement/environmental improvement programme for TI in Bangka-Belitung although alternative livelihoods may also present their own set of challenges in terms of environmental and social performance which would require consideration.

A concrete suggestion for next steps would be to carry out a census of the mining community to determine who is incentivised to mine, and why (see section 6). The current lack of quantitative data creates a major gap in planning the development of an alternative livelihoods programme and defining where to focus attention and efforts to maximise positive outcomes per dollar expended.

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