



# **ASEAN Reporting Mechanism (RM) to Monitor the Adoption of Sustainability Assessment Frameworks and Tools for the Minerals Sector**



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**ASEAN Reporting Mechanism (RM)  
to Monitor the Adoption of Sustainability  
Assessment Frameworks and Tools  
for the Minerals Sector**

The ASEAN Secretariat  
Jakarta

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**For inquiries, contact:**

The ASEAN Secretariat  
Community Relations Division (CRD)  
70A Jalan Sisingamangaraja  
Jakarta 12110  
Indonesia  
Phone : (62 21) 724-3372, 726-2991  
Fax : (62 21) 739-8234, 724-3504  
E-mail : [public@asean.org](mailto:public@asean.org)

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# ASEAN Reporting Mechanism (RM) to Monitor the Adoption of Sustainability Assessment Frameworks and Tools for the Minerals Sector

1. Minerals are material inputs to the economic activities and production processes of any modern economy, and are especially crucial to the infrastructure, construction, and manufacturing industries. Indeed, any product that is not plant or animal-based would have been initially mined. Intra-ASEAN trade in mineral products increased by 86.20% while extra-ASEAN trade increased by 52.45% in the period from 2005 to 2015<sup>1</sup>. The minerals sector of ASEAN remains a significant and largely untapped potential growth driver in the region.
2. Meanwhile, economic benefits arising from minerals resource extraction are frequently associated with environmental and social impacts, such as potential acid drainage, emissions of dust and greenhouse gases, and, potential benefits or disruption to local communities. The need to strike a balance between economic gain and social and environmental impacts is recognised by the ASEAN Minerals Cooperation Action Plan 2016-2025 (AMCAP-III), Phase I: 2016-2020, where AMCAP-III's Strategy 2 clearly states ASEAN's commitment to promote environmentally and socially sustainable minerals development in the region.
3. AMCAP-III aspires to apply the concept of sustainable development to mineral resource development in the region and to direct ASEAN mineral cooperation towards ensuring that (i) sustainable practices are undertaken at every stage of minerals development, focusing on social and environmental well-being, and (ii) all mining activities in the ASEAN region are conducted sustainably, both during and after mining activities.
5. To initiate such process and prior to any discussion towards standardising indicators to assess the sustainability of the ASEAN minerals sector, the ASEAN Senior Officials Meeting on Minerals (ASOMM) agreed in July 2017 to establish a Reporting Mechanism (RM) to monitor the adoption and implementation by AMS of Sustainability Assessment Frameworks and Tools (SAFT). ASOMM also adopted the RM reporting template that was based from the 'Review of Sustainability Assessment Tools for the ASEAN Minerals Sector' undertaken in 2014 by the Department of Primary Industries and Mines of Thailand as part of measures implemented under AMCAP-II.
6. The RM aims to help track AMS progress and long-term performance in instituting frameworks and tools to support sustainability in the minerals sector. It is an initial but a crucial step to take stock of efforts across the region in the design and management by AMS of efforts to improve sustainability. The RM results will contribute to the information base to support ASEAN's future efforts to (i) advance the regional agenda for sustainable development in the minerals sector, (ii) share AMS experience and converge towards best practice on framing, realising, and assessing sustainability in minerals development, and (iii) help improve the image of mining as a responsible stakeholder in the larger ASEAN Economic Community.
7. Specifically, the RM will monitor SAFTs adopted and/or implemented by AMS, such as (Appendix I):
  - Sustainable Indicators and Indices, such as (i) Global Reporting Initiative Indicators, (ii) Commission on Sustainable Development Indicators, and (iii) Sustainable Development Indicators for the Mining and Minerals Industry.
  - Product-Related Sustainability Assessment Tools, such as (i) Life Cycle Assessment, and (ii) Life Cycle Costing.
  - Integrated Assessment Tools, such as (i) Environment Impact Assessment, and (ii) Strategic Environmental Assessment.
  - Other relevant legislations, rules, frameworks and guidelines.

## Institution of a Reporting Mechanism

4. ASEAN minerals cooperation recognises the need to implement sustainability assessment frameworks and guidelines, as reflected by the action line of AMCAP-III (ES 2.ii). It likewise recognises the need for mechanisms and processes to measure and assess the sustainability performance of the minerals sector across the various ASEAN Member States (AMS) and to demonstrate continuous improvements over the long term.

<sup>1</sup> ASEAN Secretariat (<https://data.aseanstats.org/>)



8. AMS reporting will include an assessment of their own stage of adoption and/or implementation of SAFTs by indicating a 'qualitative description' (e.g., C, B, A, AA and AAA) that corresponds to their respective overall level of implementation, as follows:

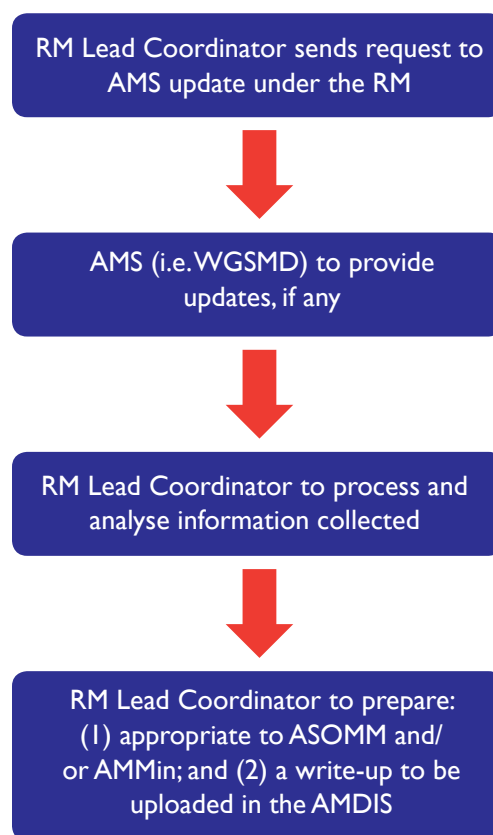
Level	Criteria
C	<ul style="list-style-type: none"> <li>Sustainability frameworks and sustainability assessment tools for the mining and minerals industry yet to be adopted.</li> <li>Activities tend to be reactive in nature.</li> <li>Assessment procedures may exist but they are not integrated into policies and management systems.</li> </ul>
B	<ul style="list-style-type: none"> <li>Systems/processes are planned and being developed.</li> <li>Assessment procedures exist but are not fully consistent or documented, or are optional in nature.</li> </ul>
A	<ul style="list-style-type: none"> <li>Systems/processes are developed and implemented.</li> </ul>
AA	<ul style="list-style-type: none"> <li>Integrated into management decisions and business functions.</li> </ul>
AAA	<ul style="list-style-type: none"> <li>State of continuous innovation towards excellence; indicates leadership in sustainable minerals development.</li> </ul>

9. The RM will also compile relevant documents providing details on existing SAFTs in the AMS and the respective AMS agencies responsible for their oversight and implementation. The information collected through the RM will be uploaded to the ASEAN Mineral Database and Information System (AMDIS), which shall benefit internal ASEAN discussion, potential investors, local community stakeholders, and the general public seeking information on AMS sustainability efforts in the minerals sector.

## Reporting Process, Timetable and Responsible Bodies

10. The ASOMM Working Group on Sustainable Minerals Development (WGSMD) is the primary sectoral body responsible to ASOMM and AMMin for implementing the RM. WGSMD shall also be responsible for (i) initiating analysis of the RM results, (ii) preparing recommendations to advance the sustainability agenda of ASEAN in the minerals sector, and (iii) initiating review and enhancement of this RM, as the need arises.

11. AMS will submit the required information under the RM through the WGSMD based on the agreed reporting template in Appendix 3.
12. Based on the information from AMS, the Lead Coordinator for the RM will take lead in preparing (i) a brief annual report to the ASOMM on the progress of the monitoring of the RM and (ii) a biennial report/briefer for AMMin on the results and policy recommendations corresponding to each two-year monitoring cycle. Thailand is the current Lead Coordinator for the AMCAP-III action line corresponding to SAFT implementation. Other AMS may be invited to take over the leadership of the RM, upon agreement by the WGSMD.
13. The steps in monitoring and reporting under the RM are as follows:



## Initial Baseline Information

14. The RM was activated through ASOMM's endorsement in July 2017. This formed basis for the initial collection of baseline information from AMS (Appendix 4) that was presented to the 14<sup>th</sup> WGSMD held in July 2017 in Nay Pyi Taw, Myanmar. The baseline information is provided in Appendix 4, indicating SAFTs adopted/implemented by AMS as well as the corresponding 'qualitative description' of their implementation stage, as follows:

i. Brunei Darussalam:	a) Environment Impact Assessment;	[A]
	b) Strategic Environmental Assessment;	[A]
	c) Business Proposal; and	[A]
	d) Environmental Protection Work Plan and Rehabilitation Work Plan.	[A]
ii. Cambodia:	a) Environmental Impact Assessment;	[A]
	b) Strategic Environmental Assessment;	[B]
	c) Environmental Protection Work Plan;	[A]
	d) Guideline on Environment, Social and Health Impact Routine Check;	[B]
	e) Mine Safety Rule and Measure; and	[B]
	f) Environmental Protection and Mine Rehabilitation Work Plan.	[A]
iii. Indonesia:	a) Five-Year Reclamation Plan and Mine Closure Plan.	[AA]
iv. Lao PDR:	a) Environmental Impact Assessment;	[AA]
	b) Environmental Protection Law No. 29, dated 18 December 2012;	[AA]
	c) Decree on Compensation and Resettlement Development Projects No. 84, dated 5 April 2016;	[AA]
	d) Regulation on Mines Closure and Post-Monitoring; and	[B]
	e) Environment and Social Monitoring Plan.	[AA]

v. Malaysia	a) Global Reporting Initiative Indicators, with some adoption and modification to suit local conditions;	[A]
	b) Sustainable Development Indicators for the Mining and Minerals Industry, adopted partly, merged and modified;	[A]
	c) Sustainable Ratings of Mining and Quarrying Industries; and	[A]
	d) Environmental Impact Assessment.	[AA]
vi. Myanmar	a) Environmental Impact Assessment;	[A]
	b) Business Proposal;	[A]
	c) Environmental Management Plan; and	[A]
	d) Mines Closure Plan.	[A]
vii. Philippines	a) Environmental Impact Assessment.	[A]
viii. Singapore	None reported	-
ix. Thailand	a) Global Reporting Initiative Indicators, adopted and applied by large-scale mining companies;	[AA]
	b) Green Mining Initiative;	[AA]
	c) Environmental Impact Assessment; and	[AA]
	d) Environmental Health Impact Assessment/ Health Impact Assessment.	[AA]
x. Viet Nam	a) Environment Impact Assessment;	[A]
	b) Strategic Environmental Assessment;	[A]
	c) Environment Rehabilitation Plan in Mineral Mining; and	[A]
	d) Mine Closure Programme.	[A]

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- Appendix 1: Glossary of Sustainability Assessment Frameworks and Tools (SAFTs)**
- Appendix 2: Qualitative Description of the Level of Implementation of SAFTs in AMS**
- Appendix 3: Reporting Template for ASEAN Reporting Mechanism (RM) to Monitor the Adoption of SAFTs in the Minerals Sector**
- Appendix 4: Initial Baseline Information for the ASEAN Reporting Mechanism (RM) to Monitor the Adoption of SAFTs in the Minerals Sector (c. Sep 2017)**



## Appendix 1: Glossary of SAFTs<sup>1</sup>

Sustainable Indicators and Indices	Sustainable Indicators and Indices are intended to help address key sustainability concerns, including in the economic, environmental and social context, by translating related issues into quantifiable measures (Azapagic, 2004).
Global Reporting Initiative (GRI) Indicators	Launched in 1997, the GRI is intended to be applicable to organisations of all sizes and types that operate at any location with the goal of enhancing the quality, rigor and utility of sustainability reporting for voluntary use (GRI, 2002). The latest version of GRI's sustainability reporting guidelines, namely GRI Standards, was launched in 19 October 2016 and superseded the G4 (GRI, 2017).
Commission on Sustainable Development (CSD) Indicators	The CSD Indicators were published in 1996, aiming to serve as reference for countries in developing or revising national indicators of sustainable development. The third set of CSD Indicators, which are currently in use, was launched in 2006, consisting of 96 indicators of sustainable development and covering 14 themes (UNDESA, 2006).
Sustainable Development Indicators for Mining and Minerals Industry	The Sustainable Development Indicators for Mining and Minerals Industry was developed in 2004 by Adisa Azapagic. The indicators are intended to help assess the performance of mining and minerals industry with the aim to contribute some of the sustainability challenges in the context of economy, environment, social, labour practices and decent work, human rights, society and product responsibility (Azapagic, 2004).
Product-Related Sustainability Assessment Tools	The Product-Related Sustainability Assessment Tools focus on the flows in connection with production and consumption of products and/or services (DPIM, 2014).
Life Cycle Assessment (LCA)	The LCA is a compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle (DPIM, 2014). The LCA is often recognised as an effective tool for evaluating the environmental performance and supporting decision-making in any operation process (DPIM, 2014).
Life Cycle Costing (LCC)	The LCC is an economic evaluation technique that determines all the elements of cost of a product or service system over its entire life time (AS/NZS-4536, 1999). It seeks to optimise the cost of acquiring, owning and operating physical assets over their useful lives by attempting to identify and quantify all the significant costs involved during that life by using the net present value technique (AS/NZS-4536, 1999).
Integrated Assessment Tools	The Integrated Assessment Tools are often carried out in the form of scenarios and most of these tools are based on systems analysis approaches and integrate nature and society aspects for managing complex issues (Ness, Urbel-Piirsalu, Anderberg, & Olsson, 2007).
Environmental Impact Assessment (EIA)	The EIA is the process by which the anticipated effects on the environment of a proposed development or project are measured. If the likely effects are unacceptable, design measures or other relevant mitigation measures can be taken to reduce or avoid those effects (EPA, 2017).
Strategic Environmental Assessment (SEA)	The SEA is the process by which environmental considerations are required to be fully integrated into the preparation of Plans and Programmes and prior to their final adoption. The assessment aims to provide for a high level of protection of the environment and to promote sustainable development by contributing to the integration of environmental considerations into the preparation and adoption of specified Plans and Programmes (EPA, 2017).

<sup>1</sup> This Glossary was developed based on the *Review of Sustainability Assessment Tools for Minerals Sector*, a special publication of the ASOMM WGSMD completed in 2014 as part of the implementation of AMCAP-II.

## References:

- AS/NZS-4536. (1999, December). *Life-Cycle Costing - An Application Guide*. Council of Standards Australia/Council of Standards New Zealand.
- Azapagic, A. (2004). Developing a Framework for Sustainable Development Indicators for the Mining and Minerals Industry. *Journal of Cleaner Production* 12, 639-662.
- DPIM. (2014). *Review of Sustainability Assessment Tools for Minerals Sector*. Thailand: Department of Primary Industry and Mines.
- EPA. (2017). *Environmental Impact Assessment*. Retrieved March 18, 2017, from Environmental Protection Agency: <http://www.epa.ie/monitoringassessment/assessment/eia/>
- GRI. (2002). *The 2002 Sustainability Reporting Guidelines*. Global Reporting Initiative.
- GRI. (2017). *G4 Sustainability Reporting Guidelines*. Retrieved March 20, 2017, from Global Reporting Initiative: <https://www.globalreporting.org/information/g4/Pages/default.aspx>
- Ness, B., Urbel-Piirsalu, E., Anderberg, S., & Olsson, L. (2007). Categorising Tools for Sustainability Assessment. *Ecological Economics*, 498-508.
- UNDESA. (2006). *CSD Indicators of Sustainable Development - 3<sup>rd</sup> edition*. Retrieved March 19, 2017, from <http://www.un.org/esa/sustdev/natlinfo/indicators/factsheet.pdf>

## Appendix 2: Qualitative Description of the Level of Implementation of SAFTs in AMS

The following 'qualitative descriptions' are intended to give a general indication of the stage of AMS adoption and/or implementation of relevant sustainability frameworks and assessment tools for mining and the minerals sectors in respective AMS. It is intended to assist the self-reporting process undertaken by AMS and to provide a limited measure of comparability across the region.

LEVEL	CRITERIA
C	<ul style="list-style-type: none"><li>• Sustainability frameworks and sustainability assessment tools for the mining and minerals industry yet to be adopted.</li><li>• Activities tend to be reactive in nature.</li><li>• Assessment procedures may exist but are not integrated into policies and management systems.</li></ul>
B	<ul style="list-style-type: none"><li>• Systems/processes are planned and being developed.</li><li>• Assessment procedures exist but are not fully consistent or documented, or are optional in nature.</li></ul>
A	<ul style="list-style-type: none"><li>• Systems/processes are developed and implemented.</li></ul>
AA	<ul style="list-style-type: none"><li>• Integrated into management decisions and business functions.</li></ul>
AAA	<ul style="list-style-type: none"><li>• State of continuous innovation towards excellence; indicates leadership in sustainable minerals development.</li></ul>

## Appendix 3: Reporting Template for ASEAN Reporting Mechanism (RM) to Monitor the Adoption of SAFTs<sup>1</sup> in the Minerals Sector

### I. INTEGRATED ASSESSMENT TOOLS

Country	Environment Impact Assessment (Yes/No)	Strategic Environmental Assessment (Yes/No)	Other Integrated Assessment Tools <sup>2</sup> (Please indicate the title of the Tool(s))	Implementation of the Indicated Assessment Tools	
				Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>3</sup> )	Responsible AMS Agency
Brunei Darussalam					
Cambodia					
Indonesia					
Lao PDR					
Malaysia					
Myanmar					
Philippines					
Singapore					
Thailand					
Viet Nam					

### II. SUSTAINABLE INDICATORS AND INDICES

Country	Global Reporting Initiative Indicators (Yes/No)	Commission on Sustainable Development Indicators (Yes/No)	Sustainable Development Indicators for the Mining and Minerals Industry (Yes/No)	Other Sustainability Indicator Frameworks <sup>4</sup> (Please indicate the title of the Framework(s))	Implementation of the Indicated Assessment Tools	
					Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>5</sup> )	Responsible AMS Agency
Brunei Darussalam						
Cambodia						
Indonesia						
Lao PDR						
Malaysia						
Myanmar						
Philippines						
Singapore						
Thailand						
Viet Nam						

<sup>1</sup> Please refer to Appendix 1 (Glossary) for a brief information on each of the tools.

<sup>2</sup> Other integrated assessment tools may include Multi-Criteria Analysis, Risk Analysis, Vulnerability Analysis and Cost Benefit Analysis.

<sup>3</sup> Please refer to Appendix 2 for the criteria for qualitative description.

<sup>4</sup> Other sustainability indicators frameworks may include Environmental Pressure Indicators (EPIs), Sustainable National Income (SNI), Index of Sustainable Economic Welfare (ISEW), General Progress Indicators (GPI), Adjusted Net Savings, Ecological Footprint, Wellbeing Index, Environmental Sustainability Index (ESI), Human Development Index (HDI), Material Flow Analysis (MFA), Economic-wide Material Flow Analysis, Input-Output Energy Analysis, Regional Energy Analysis and Regional Exergy Analysis.

<sup>5</sup> Please refer to Appendix 2 for the criteria for qualitative description.

### III. PRODUCT-RELATED SUSTAINABILITY ASSESSMENT TOOLS

Country	Life Cycle Assessment (Yes/No)	Life Cycle Costing (Yes/No)	Other Product-related Sustainability Assessment Tools <sup>6</sup> (Please indicate the title of the Tool(s))	Implementation of the Indicated Assessment Tools	
				Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>7</sup> )	Responsible AMS Agency
Brunei Darussalam					
Cambodia					
Indonesia					
Lao PDR					
Malaysia					
Myanmar					
Philippines					
Singapore					
Thailand					
Viet Nam					

<sup>6</sup> Other product-related sustainability assessment tools may include Product Material Flow Analysis and Product Energy Analysis.

<sup>7</sup> Please refer to Appendix 2 for the criteria for qualitative description.

### IV. COMPENDIUM OF EXISTING SUSTAINABILITY FRAMEWORKS AND ASSESSMENT TOOLS

The copy/copies of AMS' existing SAFTs to be appended in the future RM Reports and to be deposited in the ASEAN Minerals Information Database (AMDIS), as follows:

1. Brunei Darussalam:
2. Cambodia:
3. Indonesia:
4. Lao PDR:
5. Malaysia:
6. Myanmar:
7. Philippines:
8. Singapore:
9. Thailand:
10. Viet Nam:

## Appendix 4: Initial Baseline Information for the ASEAN Reporting Mechanism (RM) to Monitor the Adoption of SAFTs<sup>1</sup> in the Minerals Sector (c. Sep 2017)

### I. INTEGRATED ASSESSMENT TOOLS

Country	Environment Impact Assessment (Yes/No)	Strategic Environmental Assessment (Yes/No)	Other Integrated Assessment Tools <sup>2</sup> (Please indicate the title of the Tool(s))	Implementation of the Indicated Assessment Tools	
				Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>3</sup> )	Responsible AMS Agency
Brunei Darussalam	Yes	-	-	A	Prime Minister's Office (PMO)/ MOD
	-	Yes	-	A	PMO/MOD
	-	-	Business Proposal	A	PMO/MOD
	-	-	Environmental Protection Work Plan and Rehabilitation Work Plan	A	PMO/MOD
Cambodia	Yes	-	-	A	Ministry of Environment (MoE)
	-	-	Environmental Protection Work Plan	A	GDMR
	-	-	Guideline on Environment, Social, and Health Impact Routine Check	B	-
	-	-	Mine Safety Rule and Measure	B	GDMR
	-	-	Environmental Protection and Mine Rehabilitation Work Plan	A	GDMR
	-	Yes	-	B	MOE
Indonesia	Yes	-	5 Years Reclamation Plan & Mine Closure Plan (Government Regulation 78/2010, Reclamation & Mine Closure)	AA	MOEF & Regional Environmental Agency (MEMR as Technical Team)
	-	No	-	-	-

<sup>1</sup> Please refer to Appendix I (Glossary) for brief information on each of the tools.

<sup>2</sup> Other integrated assessment tools may include Multi-Criteria Analysis, Risk Analysis, Vulnerability Analysis and Cost Benefit Analysis.

<sup>3</sup> Please refer to Appendix 2 for the criteria for qualitative description.



Country	Environment Impact Assessment (Yes/No)	Strategic Environmental Assessment (Yes/No)	Other Integrated Assessment Tools <sup>2</sup> (Please indicate the title of the Tool(s))	Implementation of the Indicated Assessment Tools	
				Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>3</sup> )	Responsible AMS Agency
Lao PDR	Yes (Environment and Social Impact Assessment)	-	-	AA	DESIA (MONRE)
	-	No (SESA was introduced and is optional in nature)	-	-	-
	-	-	Environmental Protection Law No. 29, dated: 18 Dec 2012	AA	DESIA (MONRE)
	-	-	Decree on Compensation and Resettlement Development Projects-No.84, dated: 05 April 2016	AA	DESIA (MONRE)
	-	-	Regulation on Mines Closure and Post-Monitoring (Draft)	B	DOM (MEM)
	-	-	Environment and Social Monitoring Plan	AA	DOM (MEM)
Malaysia	Yes	-	-	AA	Department of Environment Malaysia
	-	No	-	-	-
	-	-	No	-	-
Myanmar	Yes	-	-	A	MONREC
	-	No	-	-	-
	-	-	Business Proposal, Environmental Management Plan, Mines Closure Plan	A	MONREC
Philippines	Yes	-	-	A	Environmental Management Bureau under the Department of Environment and Natural Resources
	-	No	-	-	-
Singapore	No	No	Nil	-	-

Country	Environment Impact Assessment (Yes/No)	Strategic Environmental Assessment (Yes/No)	Other Integrated Assessment Tools <sup>2</sup> (Please indicate the title of the Tool(s))	Implementation of the Indicated Assessment Tools	
				Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>3</sup> )	Responsible AMS Agency
Thailand	Yes	-	-	AA	DPIM; and, Office of Natural Resources and Environmental Policy and Planning (ONEP)
	-	No (The SEA was introduced but it is not fully consistent or documented, or is optional in nature)	-	-	-
	-	-	Yes (Environmental Health Impact Assessment (EHIA)/Health Impact Assessment (HIA))	AA	DPIM and ONEP
Viet Nam	Yes Environment Assessment Report (Approved by MONRE)	-	-	A	GDGMV and VEA
	-	Yes (IPONRE)	-	A	GDGMV and VEA
	-	-	Environment Rehabilitation Plan in Mineral Mining	A	GDGMV and VEA
	-	-	Mine Closure Programme	A	GDGMV and VEA

## II. SUSTAINABLE INDICATORS AND INDICES

Country	Global Reporting Initiative Indicators (Yes/No)	Commission on Sustainable Development Indicators (Yes/No)	Sustainable Development Indicators for the Mining and Minerals Industry (Yes/No)	Other Sustainability Indicator Frameworks <sup>4</sup> (Please indicate the title of the Framework(s))	Implementation of the Indicated Assessment Tools	
					Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>5</sup> )	Responsible AMS Agency
Brunei Darussalam	No	No	No	-	-	Ministry of Development (MOD)
Cambodia	No	No	No	-	-	General Department of Mineral Resources, Ministry of Mines and Energy (GDMR)
Indonesia	No	No	No	-	-	-
Lao PDR	No	No	No	-	-	Department of Mines/Ministry of Energy and Mines and DESIA/Ministry of Natural Resources and Environment
Malaysia	Yes, adopted and modified to suit local conditions	-	-	-	A (The sustainable ratings were developed in 2015 and progressively enhanced as they are applied on state by state basis)	Department of Mineral and Geoscience (JMG)
	-	No	-	-	-	-
	-	-	Yes, adopted partly, merged and modified	-	A	JMG
	-	-	-	Sustainable Ratings of Mining & Quarrying Industries	A	JMG

<sup>4</sup> Other sustainability indicators frameworks may include Environmental Pressure Indicators (EPIs), Sustainable National Income (SNI), Index of Sustainable Economic Welfare (ISEW), General Progress Indicators (GPI), Adjusted Net Savings, Ecological Footprint, Wellbeing Index, Environmental Sustainability Index (ESI), Human Development Index (HDI), Material Flow Analysis (MFA), Economic-wide Material Flow Analysis, Input-Output Energy Analysis, Regional Energy Analysis and Regional Exergy Analysis.

<sup>5</sup> Please refer to Appendix 2 for the criteria for qualitative description.

Country	Global Reporting Initiative Indicators (Yes/No)	Commission on Sustainable Development Indicators (Yes/No)	Sustainable Development Indicators for the Mining and Minerals Industry (Yes/No)	Other Sustainability Indicator Frameworks <sup>4</sup> (Please indicate the title of the Framework(s))	Implementation of the Indicated Assessment Tools	
					Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>5</sup> )	Responsible AMS Agency
Myanmar	No	No	No	-	-	Ministry of Natural Resources and Environmental Conservation (MONREC)
Philippines	No	No	No	-	-	-
Singapore	No	No	No	Nil	-	-
Thailand	Yes (adopted and applied by large-scale mining companies, such as Siam Cement Group)	-	-	-	AA	Department of Primary Industries and Mines (DPIM)
	-	No	-	-	-	-
	-	-	No	-	-	-
	-	-	-	Green Mining Initiative	AA	Department of Primary Industries and Mines (DPIM)
Viet Nam	No	No	No	-	-	GDGMV and VEA

### III. PRODUCT-RELATED SUSTAINABILITY ASSESSMENT TOOLS

Country	Life Cycle Assessment (Yes/No)	Life Cycle Costing (Yes/No)	Other Product-related Sustainability Assessment Tools <sup>6</sup> (Please indicate the title of the Tool(s))	Implementation of the Indicated Assessment Tools	
				Level of Implementation Stage (Please indicate C/B/A/AA/AAA <sup>7</sup> )	Responsible AMS Agency
Brunei Darussalam	No	No	No	-	MOD
Cambodia	No	No	No	-	GDMR
Indonesia	No	No	No	-	-
Lao PDR	No	No	No	-	DOM (MEM) and DESIA (MONRE)
Malaysia	No	No	No	C	JMG
Myanmar	No	No	No	-	-
Philippines	No	No	-	-	-
Singapore	No	No	Nil	-	-
Thailand	No	No	No	C (The assessment tools were introduced to some large-scale mining companies but they are not fully consistent or documented, or are optional in nature)	DPIM
Viet Nam	No	No	No	-	MONRE

<sup>6</sup> Other product-related sustainability assessment tools may include Product Material Flow Analysis and Product Energy Analysis.

<sup>7</sup> Please refer to Appendix 2 for the criteria for qualitative description.

## IV. COMPENDIUM OF EXISTING SUSTAINABILITY FRAMEWORKS AND ASSESSMENT TOOLS

The copy/copies of AMS' existing SAFTs to be appended in the future RM Reports and to be deposited in the ASEAN Minerals Information Database (AMDIS), as follows:

1. **Brunei Darussalam:** (1) Business Proposal; (2) Environmental Protection Work Plan; and (3) Rehabilitation Work Plan.
2. **Cambodia:** (1) Environmental Protection Work Plan; (2) Guideline on Environment, Social, and Health Impact Routine Check; (3) Mine Safety Rule and Measure; and (4) Environmental Protection and Mine Rehabilitation Work Plan.
3. **Indonesia:** (1) 5 Years Reclamation Plan & Mine Closure Plan; and (2) Government Regulation 78/2010, Reclamation & Mine Closure.
4. **Lao PDR:** Regulation on Mines Closure and Post-Monitoring (Draft).
5. **Malaysia:** Rating Criteria Form (*Borang Kriteria Penarafan*).
6. **Myanmar:** (1) Business Proposal; (2) Environmental Management Plan; and (3) Mine Closure Plan.
7. **Philippines:** (1) Environmental Protection and Enhancement Program; (2) Final Mine Rehabilitation and Decommissioning Plan; (3) Social Development and Management Program; (4) Environmental Work Program for Exploration; and (5) Safety and Health Program.
8. **Singapore:** -
9. **Thailand:** Green Mining Initiative<sup>8</sup>.
10. **Viet Nam:** (1) Environment Rehabilitation Plan After Mining; (2) Standards in Mineral Mining; and (3) Regulations on Mine Closure.

<sup>8</sup> Thailand's Green Mining Initiative was developed based on the Commission on Sustainable Development Indicators and the Sustainable Development Indicators for the Mining and Minerals Industry. It includes the following principles: (1) to operate with environmental and social responsibility; (2) to prevent and reduce environmental impact; (3) to provide safety and healthcare for workers and community; (4) to preserve green area; (5) to be transparent; and (6) to manage resource efficiently.











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