**FINNISH TOWARDS SUSTAINABLE MINING (TSM) STANDARD**

**ASSESSMENT PROTOCOL**

**A Tool for Assessing Energy Use and Greenhouse Gas Emissions Management Performance**

**Introduction**

This document provides a tool for assisting companies in the facility-level assessment of their current standard of energy use and greenhouse gas (GHG) emissions management. The level of energy use and greenhouse gas emissions management performance is monitored using three performance indicators in accordance with this assessment tool. It enables key performance indicators to be segregated, and performance improvements for each indicator to be tracked from year to year. The use of the protocol also enhances the consistency of energy use and greenhouse gas emissions management performance assessments conducted across companies. In addition, the tool has been designed to enable the external verification of company performance.

# Assessing Energy Use and Greenhouse Gas Emissions Management Implementation

The purpose of the assessment protocol is to provide guidance – based on performance indicators – to companies in their planning and implementation of energy use and greenhouse gas emissions management.

The assessment should:

* assist companies in developing their capacity to monitor and improve their performance
* provide a basis for the related auditing.

Professional judgement is required when assessing the management system. The application of the assessment protocol of the Finnish TSM standard requires that the assessor have sufficient expertise in the practice of energy use and greenhouse gas emissions management and management systems assessment. When carrying out an assessment, account must be taken of cooperation between the employer and employees. The assessment protocol of the Finnish TSM standard is not, in itself, a guarantee of the effectiveness of energy use and reductions in greenhouse gas emissions, but can be used to measure performance levels. A self-assessment checklist is attached to the document (Appendix 2).

***What are energy use and greenhouse gas (GHG) emissions?***

*Energy use refers to the consumption of fossil fuels, electric*

*power, solar energy, steam, etc.*

*Greenhouse gases (GHGs) generally refer to the following:*

* *carbon dioxide (CO2)*
* *methane (CH4)*
* *nitrous oxide (N2O)*
* *hydrofluorocarbons (HFCs)*
* *perfluorocarbons (PFCs)*
* *sulphur hexafluoride (SF6)*

**Performance Indicators**

Three performance indicators have been established for energy use and greenhouse gas emissions management:

1. Energy use and greenhouse gas emissions management systems
2. Energy use and greenhouse gas emissions reporting
3. Energy use and greenhouse gas emissions performance targets

Five levels of performance are identified for each indicator. Assessment criteria are used to further define performance at each level. The assessor must evaluate whether the company or the performance of the site/facility meets the assessment criteria for the performance indicators, by answering the questions presented in the self-assessment checklist. A base assumption is made that all companies are in compliance with all legal and regulatory requirements.

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| **Energy Use and Greenhouse Gas Emissions Management****ASSESSMENT CRITERIA** |
| **Level** | **Criteria** |
| **C** | Activities meet the requirements set in Finnish legislation. No systems in place; activities tend to be reactive; procedures may exist but are not integrated with documented policies and management systems. |
| **B** | Actions are not fully consistent or documented. Systems/processes planned and being developed. |
| **A** | Processes have been developed and implemented for all assessment criteria. Communications are open and reporting is public. |
| **AA** | Systems/processes have been integrated into management decisions and business functions. |
| **AAA** | Excellence and leadership is demonstrated through validation of the system by an external, independent audit or assessment. |

Specific assessment criteria for each performance indicator are provided in subsequent tables, to enable the assessor to determine the appropriate level of performance (Levels C-AAA). When conducting the assessment, assessors should note that the three indicators complement one another. The assessor is required to select the level that best represents the status of the operation.

Wherever a performance element or performance indicator is irrelevant, the assessment given should be N/A. Only one level can be selected for each indicator, and it can be chosen only if all criteria for that level and all preceding levels have been met.

**The goal of each company is to achieve an “A” ranking at a minimum and to work towards continuous improvement.**

**Facility-level Assessments**

Companies are expected to complete an assessment and report on the performance indicators for energy use and greenhouse gas emissions for each distinct site or facility. When planning the assessment, account must be taken of the organisational structure of mining operators, as companies may categorise their facilities and define their sites in various ways. This assessment protocol focuses on companies operating in Finland and their sites and facilities, in particular.

Facility-level reporting has been found to be the most reliable, informative and useful approach to performance evaluation. An on-line database to be used for reporting will be designed to facilitate assessment on a facility-by- facility basis.[[1]](#footnote-1)

**Assessment Process**

It is recommended that the assessment include interviews, discussions and document reviews. The assessment must involve the management, as well as production and specialist personnel representing the site or facility. A level of expertise in auditing and management systems assessment and some knowledge and experience of energy use and greenhouse gas emissions management are required. Only one level can be selected for each performance indicator, and can be chosen only if all criteria for that level and all preceding levels have been met. No partial levels of performance (e.g. B+) can be reported.

Where an operation is shared between two parties, e.g. a joint venture, the two parties are encouraged to discuss who should complete the assessment, and whether it should be undertaken jointly or divided up so that the results reflect the activities of each company.

**Structure of the Assessment Protocol**

For each performance indicator, the assessment protocol provides:

* a statement of purpose that expresses the spirit and intent of the indicator
* assessment criteria for each level of performance (C-AAA)
* supporting guidelines to help the assessor understand the general scope of each indicator and to act as a framework for reviewing documentation and conducting interviews necessary for the assessment of the company’s or facility’s performance
* Frequently Asked Questions (FAQs) that provide further information, such as definitions of key terms and answers to more commonly asked questions.

**PERFORMANCE INDICATOR 1**

**ENERGY USE AND GREENHOUSE GAS EMISSIONS MANAGEMENT SYSTEMS**

**Purpose:**

To confirm that systems are in place for managing energy use and greenhouse gas emissions. This indicator applies to facilities and/or business units for which energy use and GHG emissions are deemed to be material (see FAQs).

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| **Performance Indicator 1****Energy Use and Greenhouse Gas Emissions Management Systems** **ASSESSMENT CRITERIA** |
| **Level** | **Criteria** |
| **C** | Activities meet the requirements set in Finnish legislation and the environmental permit. No management system in place; activities are not systematic. |
| **B** | An energy use and greenhouse gas emissions management system has been established that includes:* A demonstrated senior management commitment to managing energy use and GHG emissions at facility level
* Facility-level responsibility for energy use and GHG emissions assigned to departments or individuals
* Established practices (processes) for determining energy consumption sources and the associated GHG emissions at predefined intervals with respect to sources accounting for substantial consumption and/or offering considerable potential for energy performance improvement, by major process activity (e.g. mill, mine, smelter, refinery, etc.)
* Identification and estimation of significant sources of non-energy GHG emissions
* Standard quantification and estimation methodologies used to convert energy use and GHG emission data into comparable units.
* Facility-level data records are maintained.
 |
| **A** | An energy use and GHG emissions management system has been established that, in addition to the Level B elements, includes the following elements:* The facility or business unit has identified and annually evaluated – on an internal basis – which energy and emissions sources are material according to its established criteria
* The energy use and GHG emissions management system also covers own transportation
* The energy use and GHG emissions management system includes control of GHG emissions and the planning of measures for increasing the use of renewable energy sources
* Clear accountability for energy use and GHG emissions management is assigned to operational managers
* Energy data is reviewed regularly and integrated into operator actions for energy intensive processes
* Actions and process controls related to energy use and GHG emissions are included in management systems for material sources, as well as other selected sources
* General energy use and GHG emissions awareness training is provided to personnel, with additional training for key personnel

The energy use and GHG emissions management system has been subject to internal or external verification. |
| **AA** | Energy use and GHG emissions, as well as the use of renewable energy sources, are considered in business planning at facility and/or business unit level.The company invests in renewable energy projects and/or energy recovery projects. |
| **AAA** | The energy use and GHG emissions management system is integrated into a broader sustainable business strategy that includes at least two of the following:* Procurement and supply chain management policies that incorporate energy efficiency and GHG reduction criteria
* Voluntary corporate investments in research and development, feasibility studies and/or the demonstration of technologies and/or new processes that target energy efficiency and reduced GHG emissions
* Participation alongside communities of interest in order to improve energy efficiency and reduce GHG emissions (e.g., community events, environmental organisations, government energy efficiency programmes)
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**Energy Use and Greenhouse Gas Emissions Management Systems**

**FREQUENTLY ASKED QUESTIONS**

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| --- | --- | --- |
| **No. in APPX. 1.** | **FAQ** | **PAGE** |
| 1 | How can companies referred to in the Energy Efficiency Act achieve a Level A rating?  | See page 12 |
| [2](#_bookmark2) | How can companies not covered by the Energy Efficiency Act achieve a Level A rating for their management system? | See page 12 |
| 3 | How are energy management systems certified to the ISO 50001 standard taken into account in the assessment?  | See page 12 |
| 4 | How are management systems certified to the ISO 14001 standard and energy efficiency systems EES+ (developed by Motiva Ltd) or their combinations taken into account in the assessment? | See page 12 |
| 5 | [Can corporate documentation be used to demonstrate facility-level commitment?](#_bookmark3) | [See page](#_bookmark2) 12 |
| [6](#_bookmark4) | [What are quantification and estimation methodologies?](#_bookmark5) | [See page](#_bookmark4) 12 |
| [7](#_bookmark6) | [What is a major process activity?](#_bookmark7)  | See page 13 |
| [8](#_bookmark8) | [What is meant by “energy data is reviewed regularly and integrated into operator](#_bookmark9) [actions for energy intensive processes”?](#_bookmark9) | [See page](#_bookmark8) 13 |
| [9](#_bookmark10) | [What is meant by “actions and process controls related to energy use and GHG](#_bookmark11) [emissions are included in management systems for material sources”?](#_bookmark11) | [See page 1](#_bookmark10)3 |
| [10](#_bookmark12) | [Can a facility with several production processes [have separate energy/GHG emissions](#_bookmark13) [performance targets, for example one for each production process?](#_bookmark13)](#_bookmark13)  | [See page](#_bookmark12) 13 |
| [13](#_bookmark18) | [What determines whether energy use and/or GHG emissions are material to a facility or](#_bookmark19) [business unit?](#_bookmark19) | [See page](#_bookmark18) 14 |
| [14](#_bookmark20) | [What is considered a material energy source?](#_bookmark21) | [See page](#_bookmark20) 14 |
| 15 | [What is the threshold for significant sources of non-energy GHG emissions](#_bookmark24)? | [See page](#_bookmark22) 14 |
| 23 | [Can investments in renewable energy that provide the benefits of offsets for regulatory](#_bookmark41) [compliance fulfil the requirements of corporate investments under Performance Indicator 1, Level](#_bookmark41) [AA?](#_bookmark41) | [See page](#_bookmark39) 16 |
| 24 | [Can a facility or business unit develop a single plan incorporating both energy use and](#_bookmark43) [GHG emissions management?](#_bookmark43) | [See page](#_bookmark42) 16 |
| 27 | [What does “at predefined intervals” mean?](#_bookmark61) | [See page](#_bookmark60) 17 |
| 28 | [What does “established criteria” mean?](#_bookmark63) | [See page](#_bookmark62) 17 |
| 31 | [What is a “system”?](#_bookmark51) | [See page](#_bookmark50) 18 |
| 32 | [What does “accountability” mean?](#_bookmark53) | [See page](#_bookmark52) 18 |
| 33 | [What does “responsibility” mean?](#_bookmark55) | [See page](#_bookmark54) 18 |
| 34 | [What does “business unit” mean?](#_bookmark57) | [See page](#_bookmark54) 18 |

**Energy Use and Greenhouse Gas Emissions Management Systems**

**SUPPORTING GUIDELINES FOR THE ASSESSOR**

Through interviews and the review of documentation, clarify the following issues:

* Small mines: A voluntary Energy Efficiency Agreement or similar practice is in place, and systems in place for energy use and greenhouse gas emissions management meet all of the requirements of Levels A and B.
* Mines covered by the Energy Efficiency Act:
1. In addition to an energy analysis and energy audit conducted every four years, the activities meet all the other requirements of Levels A and B.
2. If the company has a voluntary Energy Efficiency Agreement and an energy efficiency system EES+ in place, the EES+ includes all of the requirements of Levels A and B.
3. If the company has management systems certified to the ISO 14001 and EES+ standard or ISO 50001 level, these systems include all of the requirements of Levels A and B
* For Levels A-AAA, also clarify the following issues:
* The level of accountability for energy use and greenhouse gas emissions management and the related responsibilities.
* The level of sophistication of energy use and greenhouse gas emissions measurement and analysis systems.
* The level of integration of energy use and greenhouse gas emissions management with the business planning of the facility/company.
* Operators have the procedures, instructions and systems required to manage energy use and greenhouse gas emissions.
* The level of training in energy use and greenhouse gas emissions management provided.
* An internal/external verification of the energy use and greenhouse gas emissions management system is conducted and the results are reported to senior management.
* The results of verification are acted upon through formal action plans including, at a minimum, actions, assigned responsibilities and timelines for completion.
* The extent to which the company and/or facility has integrated the energy use and greenhouse gas emissions management system into a broader sustainable business strategy.

**PERFORMANCE INDICATOR 2**

**ENERGY USE AND GREENHOUSE GAS EMISSIONS REPORTING**

**Purpose:**

To confirm that energy use and GHG emissions tracking and reporting systems are in place for internal use and public reporting. This indicator applies to all facilities, whether or not energy use and GHG emissions are deemed to be material (see FAQs).

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| **Performance Indicator 2****Energy Use and Greenhouse Gas Reporting****ASSESSMENT CRITERIA** |
| **Level** | **Criteria** |
| **C** | Activities meet the requirements set in Finnish legislation and the environmental permit. No system in place, and activities are not systematic. |
| **B** | Basic energy use and greenhouse gas emissions management system established that includes:* a facility-level reporting system for energy use and GHG emissions
* energy use and GHG emissions performance results being reported to management annually at facility level
 |
| **A** | Comprehensive energy use and GHG emissions reporting system established that includes:* energy use and GHG emissions performance results being reported regularly to management at facility level, in support of decision-making
* annual public reporting of energy use[[2]](#footnote-2) and GHG emissions
* where offsets are used by the facility or business unit to meet commitments, public reporting includes the amount of offsets as a percentage of total emissions generated at facility level and/or at business unit level, and the source and nature of the accreditation of offsets

Communications are open and reporting is public. |
| **AA** | Energy use and GHG emissions reporting system is internally verified.Annual public reporting of performance against targets. Overview of corporate energy use and the GHG emissions management strategy is publicly available. |
| **AAA** | Energy use and Scope 1 (direct) and Scope 2 (indirect) GHG emissions reporting systems are externally verified. Some Scope 3 (indirect emissions not included in Scope 2) GHG emissions are included in reporting. |

**Energy Use and Greenhouse Gas Reporting**

**FREQUENTLY ASKED QUESTIONS**

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| **No. in APPX. 1.** | **FAQ** | **PAGE** |
| 10 | Can a facility with several production processes have separate energy/GHG emissions performance targets, for example one for each production process? | [See page 1](#_bookmark12)3 |
| 11 | [If a facility uses multiple targets, does the facility have to meet all targets before it](#_bookmark15) [achieves a Level A rating?](#_bookmark15) | [See page](#_bookmark14) 13 |
| 12 | [When underground mines are developing new production zones at much greater depth,](#_bookmark17) the energy intensity increases due to the extra energy [required for ventilation, pumping, cooling, hoisting and sustaining the infrastructure at](#_bookmark17) [great depth. What methodology can be used to create a practical target in such cases?](#_bookmark17) | [See page](#_bookmark6) 13 |
| 18 | [Can offsets be used to meet performance targets?](#_bookmark30) | [See page](#_bookmark29) 15 |
| 25 | [What are Scope 1, Scope 2 and Scope 3 emissions?](#_bookmark45) | [See page](#_bookmark44) 16 |
| 26 | [What does “offset” mean?](#_bookmark59) | [See page](#_bookmark58) 17 |
| 27 | [What does “at predefined intervals” mean?](#_bookmark61) | [See page](#_bookmark60) 17 |
| 29 | [What does “additionality” mean?](#_bookmark65) | [See page](#_bookmark64) 17 |
| 30 | What is verification? | [See page](#_bookmark46) 17 |
| 34 | [What does “business unit” mean?](#_bookmark57) | [See page](#_bookmark56) 18 |
| **Energy Use and Greenhouse Gas Reporting** **SUPPORTING GUIDELINES FOR THE ASSESSOR**Through interviews and the review of documentation, clarify the following issues:* Practices (processes) the facility has in place for tracking and reporting on energy use and GHG emissions (e.g. procedures, etc.).
* Consistent approaches to reporting are used (e.g. energy types, energy units, emissions sources).
* Who is responsible for tracking, reporting and the approval of reports, etc.
* Data collectors have appropriate skills in energy use and GHG emissions tracking and reporting.
* How often energy use and GHG emissions are reported and how the data is used (internal or external reporting, performance assessments etc.).
* Systems are in place for internal/external verification of the energy use and GHG emissions reporting system.
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**PERFORMANCE INDICATOR 3**

**ENERGY USE AND GREENHOUSE GAS EMISSIONS PERFORMANCE TARGETS**

**Purpose:**

To confirm that energy use and GHG emissions performance targets have been established at each facility or business unit level[[3]](#footnote-3). This indicator applies to facilities and/or business units for which energy use and GHG emissions are deemed to be material (see FAQs).

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| **Performance Indicator 3****Energy Use and GHG Emissions Performance Targets** **ASSESSMENT CRITERIA** |
| **Level** | **Criteria** |
| **C** | Activities meet the requirements set in Finnish legislation and the environmental permit. No energy use or GHG emissions performance targets have been set for the facility and/or business unit. |
| **B** | Energy use or GHG emissions performance targets have been set for the facility and/or business unit. A performance strategy has been developed that is consistent with the energy policy and/or commitments to improving performance. |
| **A** | Energy use and GHG emissions performance targets for the facility and/or business unit are met in the reporting year.In establishing objectives and targets, the facility or business unit has taken account of significant energy uses identified in its energy management system, as well as its financial, operational and business conditions, legal requirements, technological options, the views of potentially affected parties and opportunities to improve energy performance. |
| **AA** | In establishing energy use and GHG emissions objectives and targets, the facility or business unit has considered the use of renewable energy sources.Facility and/or business unit has met its energy use and GHG emissions performance targets for three out of the last four years.Energy use and GHG emissions performance results have been internally or externally verified. |
| **AAA** | Some performance strategies or projects meet an additionality test (See FAQ).Two of the following:* set an ROI threshold to determine the criteria for implementing energy use or GHG emissions reduction projects and to demonstrate their implementation
* set continuous improvement targets that demonstrate energy use reductions based on historical trends
* investments in new technologies and/or new processes have resulted in meaningful reductions in energy use.
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**Energy Use and GHG Emissions Performance Targets**

**FREQUENTLY ASKED QUESTIONS**

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| --- | --- | --- |
| **No. in APPX. 1.** | **FAQ** | **PAGE** |
| [13](#_bookmark18) | [What determines whether energy use and/or GHG emissions are material to a facility or](#_bookmark19) [business unit?](#_bookmark19) | [See page](#_bookmark18) 14 |
| 16 | [What constitutes an energy use or GHG emissions performance target?](#_bookmark26) | [See page](#_bookmark25) 14 |
| 17 | [What should be considered during the process of selecting targets?](#_bookmark28) | [See page](#_bookmark27) 15 |
| 18 | [Can offsets be used to meet performance targets?](#_bookmark30) | [See page](#_bookmark29) 15 |
| 19 | [Do targets have to apply to the entire facility and/or business unit?](#_bookmark32) | [See page](#_bookmark31) 15 |
| 20 | [How can a facility or business unit express energy reduction targets?](#_bookmark34) | [See page](#_bookmark33) 15 |
| 21 | [[If a business unit target is achieved by realising reductions at a single facility,](#_bookmark36) [do all facilities in that business unit gain credit for the reduction?](#_bookmark36)](#_bookmark36)  | [See page](#_bookmark35) 15 |
| 22 |  [[How should progress against a multi-year emissions target and energy efficiency plan be](#_bookmark38) [assessed?](#_bookmark38)](#_bookmark38) | [See page](#_bookmark37) 16 |
| 26 | [What does “offset” mean?](#_bookmark59) | [See page](#_bookmark58) 17 |
| 29 | [What does “additionality” mean?](#_bookmark65) | [See page](#_bookmark64) 17 |
| 30 | [What is verification?](#_bookmark47) | [See page](#_bookmark46) 17 |
| **Energy Use and GHG Emissions Performance Targets** **SUPPORTING GUIDELINES FOR THE ASSESSOR**Through interviews and the review of documentation, clarify the following issues:* The practices (processes) in place for establishing, working towards, and achieving energy efficiency and GHG emissions improvement targets.
* If the company has set business unit or company level targets in place of facility level targets, adequate rationale for the scope and scale are established and communicated.
* The facility and/or business unit has set energy use and GHG emissions performance targets. Also determine, whether it is meeting its targets and whether, in the case of company level targets, the scope and scale of the targets are justifiable and appropriate.
* Where a company has multi-year targets, the facility and/or business unit has annual action plans in place that can be used to measure progress. Such progress may not necessarily be in the form of annual reductions, but may instead take the form of actions aimed at fuel switching or measurable progress towards the implementation of an emissions reduction or energy efficiency project.
* The facility and/or business unit has met the energy use and GHG emissions performance targets, and targets related to the use of renewable energy sources, for three out of the last four years.
* The facility and/or business unit has systems in place for the internal/external verification of energy use and GHG emissions performance.
* The facility and/or business unit has set and met energy use and GHG emissions performance targets for three out of the last four years. The facility and/or business unit has set performance targets related to the use of renewable energy sources.
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**APPENDIX 1:**

**Assessing Energy Use and Greenhouse Gas Emissions Management Performance**

**FREQUENTLY ASKED QUESTIONS**

##  How can companies referred to in the Energy Efficiency Act achieve a Level A rating?

Companies covered by the Energy Efficiency Act achieve a Level A rating if their practices meet the Level A requirements. For example, if the company can demonstrate that the energy efficiency system covers the performance indicators and meets the requirements set. In addition, the requirements set for greenhouse gas emissions management under the performance indicators must be met.

##  How can companies not covered by the Energy Efficiency Act achieve a Level A rating for their management system?

Companies not covered by the Energy Efficiency Act can achieve a Level A rating if they can demonstrate that their activities meet the Level B and A requirements set under the performance indicators. For example, if the company has made an Energy Efficiency Agreement whose implementation corresponds to the Level B and A requirements.

##  How are energy management systems certified to the ISO 50001 standard taken into account in the assessment?

If the company can demonstrate that the energy management system covers the performance indicators and meets the requirements set, the rating is either A, AA or AAA in accordance with the requirements met. In addition, the requirements set for greenhouse gas emissions management under the performance indicators must be met.

##  How are management systems certified to the ISO 14001 standard and energy efficiency systems EES+ (developed by Motiva Ltd) or their combinations taken into account in the assessment?

If the company can demonstrate that the energy management system covers the performance indicators and meets the requirements set, the rating is either A, AA or AAA in accordance with the requirements met. In addition, the requirements set for greenhouse gas emissions management under the performance indicators must be met. EES+ refers to the energy efficiency system EES+ developed by Motiva Ltd. (http://www.motiva.fi/toimialueet/energiakatselmustoiminta/pakollinen\_suuren\_yrityksen\_energiakatselmus/energiatehokkuusjarjestelma\_etj)

##  [Can corporate documentation be used to demonstrate facility-level commitment?](#_bookmark3)

A written senior management commitment at corporate level can only be accepted as evidence during a facility-level self-assessment or verification of the Finnish TSM standard, if accompanied by evidence that the corporate commitment is being applied and adhered to at facility level. There must be evidence of a link between corporate documentation and facility-level practices. If such a linkage is established, corporate documentation can be accepted as evidence of facility-level commitment.

##  [What are quantification and estimation methodologies?](#_bookmark5)

Standard quantification and estimation methodologies are conversion factors, process equations or process simulations that have been accepted for harmonised reporting processes for energy use or GHG emissions.

##  What is a major process activity?

A major process activity can be defined as a significant component of the production process that can be easily bounded and whose energy use and GHG emissions can be accurately measured.

##  What is meant by “energy data is reviewed regularly and integrated into operator actions for energy intensive processes”?

The key energy management principle applied in the case of this indicator is that floor level operators are managing energy consumption as a consumable of (or input to) the production process. This means that energy use for energy intensive processes must be metered and controlled by technologies and operators that run the energy intensive process. Information on energy use must therefore be available to the operator frequently enough to enable the operator to optimise energy consumption. Examples include maintaining a temperature range and optimising the speed of a variable speed pump.

##  What is meant by “actions and process controls related to energy use and GHG emissions are included in management systems for material sources”?

Operator actions related to energy use and GHG emissions must be included in the operator’s job procedures. In a situation where GHG emissions are directly related to energy use, energy related job procedures act as a proxy for GHG control procedures. Examples include procedures for identifying and repairing compressed air leaks as part of the operating manual for air compressors, and energy saving steps as part of the start-up procedures of a large item of equipment.

Where GHG emissions are a direct result of energy use (e.g. stand-by generators or diesel engines forming part of mobile mining equipment), the control of energy use can serve as a proxy for the control of GHG emissions. With the application of the appropriate conversion factors or quantification protocols, controlled energy performance can be expressed as GHG emissions performance.

## Can a facility with several production processes have separate energy/GHG emissions performance targets, for example, one for each production process?

Yes. A single performance indicator may not be sufficient in the case of an open pit facility that comprises the pit and a concentrator, or where smelters are processing an increasing amount of recycled material. It may be necessary to have multiple targets representing a single facility in cases where the dynamics of the production processes are so different that one common target is not an adequately representative consumption driver of each production process.

## If a facility uses multiple targets, does the facility have to meet all targets before it achieves a Level A rating?

Yes. The intent of the performance indicators is that they reflect the performance of the overall facility. Therefore, all targets must be met in order to achieve a Level A rating.

## When underground mines are developing new production zones at much greater depth, the energy intensity increases due to the extra energy required for ventilation, pumping, cooling, hoisting and sustaining the infrastructure at great depth. What methodology can be used to create a practical target in such cases?

The energy consumption of new equipment and activities is estimated. Operations typically monitor total monthly consumption versus the estimated consumption budget. However, total estimated monthly consumption can be divided by forecast production in order to determine monthly energy consumption targets. When purchasing new items of machinery and equipment, their energy efficiency is assessed and the related criteria and performance targets are set.

## What determines whether energy use and/or GHG emissions are material to a facility or business unit?

Energy use and/or GHG emissions must be considered material for a facility and/or business unit if:

* Annual GHG emissions exceed 25 kt CO2e or annual energy use exceeds 250,000 GJ
* The facility or business unit elects to define energy use and/or GHG emissions as material.

If required by responsible operations, emissions lower than this can also be considered material. The scope of the management system can be more extensive and the targets set can be stricter than the limits provided in this answer.

## What is considered a material energy source?

Companies must define the criteria used to determine whether an energy source is material in their management system. One such example of a material threshold for energy sources is that anything above 10% of total energy consumption must be considered material. This 10% threshold would apply to miscellaneous energy use at the mine site, which does not have a direct or indirect impact on its ability to create, preserve or erode economic, environmental and social value for itself and its stakeholders.

If an operation chooses or fails to define materiality, all energy sources will be deemed material.

## What is the threshold for significant sources of non-energy GHG emissions?

Facilities or business units must identify and estimate significant sources of non-energy GHG emissions over 100 tonnes. With respect to transportation, emission sources of less than 100 tonnes are also taken into account in practice.

## What constitutes an energy use or GHG emissions performance target?

A facility or business unit may designate one or both of the following types of energy use or GHG emissions performance targets:

* Volume targets: volume targets define a specified amount of carbon dioxide equivalent (CO2 equivalent) or energy consumption that will be consumed or emitted by the facility. Such targets are independent of the amount of product produced by the facility and/or business unit, and are calculated relative to current or historical data.
* Intensity targets: intensity targets define a specific amount of CO2 equivalent or energy consumption per unit of production, where production for a mine/mill is “head tonnes” and for smelters/refineries it is “refined metal or metal in matte”. “Head tonnes” is the term used for tonnes of ore delivered to a concentrator. It is the denominator that is commonly used to determine intensity. Head tonne volume is the most appropriate driver of energy consumption and GHG emissions production in production processes and is independent of changing ore grades.

## What should be considered during the process of selecting targets?

When selecting targets environmental, economic, and social issues should be taken into consideration. Below is a list of some of the issues a facility or business unit may wish to consider:

* Financial criteria and priorities,
* Health and safety issues,
* Available human and technical resources,
* Its energy management system including areas of significant use and drivers,
* Life of mine,
* Use of renewable energy sources and the environmental sustainability of energy production, which can be assessed using the criteria defined by the EKOenergy network, for example,
* Alternative energy production and procurement methods,
* Maintenance and infrastructure needs,
* Operational requirements and constraints,
* Quality and appropriateness of energy resources,
* Environmental impacts.

Targets should be:

* Ambitious, so as to commit the organisation to continual improvement;
* Realistic, so that they can be achieved within specific time limits;
* Specific and measurable.

## Can offsets be used to meet performance targets?

Yes, performance targets can be met by a combination of on-site reductions at the facility and offsets (including performance credits). However, if offsets have been used to meet targets, the percentage and source of offsets used must be clearly documented and the use of offsets should not exceed any regulatory caps on use that may be in place for a facility or business unit.

## Do targets have to apply to the entire facility or business unit?

No. Some targets may apply to equipment (e.g. specific item of equipment), while others may address the energy consumption of departments, training or energy awareness, or additional measuring and monitoring.

## How can a facility or business unit express energy reduction targets?

Energy use and GHG emissions reduction targets can be expressed either as absolute energy savings attributable to a given initiative, or through performance improvement metrics.

## If a business unit target is achieved by realising reductions at a single facility, do all facilities in that business unit gain credit for the reduction?

Yes, if an energy use and GHG emissions management system designates a business unit level target that calls for a defined emission reduction and the specified reduction target for the entire business unit is achieved by reducing emissions at a single facility, then all facilities listed in that business unit must receive credit for achieving the target. With respect to the climate, it makes no difference where a tonne of GHGs comes from and, as such, this protocol encourages the most cost-effective form of reduction, rather than reductions across all facilities. This principle is consistent with the principles underlying carbon pricing policies, such as emissions trading and cap-and-trade, in that the intent is to establish a price for carbon that should encourage companies to implement the lowest cost opportunities.

## How should progress against a multi-year emissions target and energy efficiency plan be assessed?

Energy efficiency plans must be made on a cycle of no more than three years. A multi-year target as referred to in this question is, for example, a 20% reduction in energy use or GHG emissions over a three year period. Such a target may make sense for a facility or business unit if it is implementing a multi-year capital plan or infrastructure upgrade that will result in emissions reductions and/or energy savings after its completion. In such a case, an action plan outlining the specific steps that will be implemented each year until the plan is complete should be used to assess progress. Such actions may include, but are not limited to, new operating procedures to be implemented, new equipment to be purchased and installed, or new processes to be commissioned. Actions in the plan should be specific and measurable and should clearly contribute to achieving the reduction specified in the multi-year plan. For a facility or business unit to achieve a Level A under Performance Indicator 3, it must be able to demonstrate that previously declared annual milestones for the current year of a multi-year target have been achieved in the reporting year.

## Can investments in renewable energy that provide the benefits of offsets for regulatory compliance fulfil the requirements of corporate investments under Performance Indicator 1, Level AA?

Yes.

## Can a facility or business unit develop a single plan incorporating both energy use and GHG emissions management?

Yes, the vast majority of GHG emissions produced as a result of mining are associated with burning fossil fuels and consuming energy. Based on this fact, many facilities will manage GHG emissions by managing their energy consumption and as such, it is very appropriate for facilities or business units to develop a single plan to address both energy use and GHG emissions. It is also appropriate for facilities or business units to establish a single reporting mechanism for both energy use and GHG emissions, as well as reduction targets focused only on energy use reductions where such reductions lead directly to GHG emissions reductions. GHG emissions not associated with energy production or consumption should also be included, where appropriate.

## What are Scope 1, Scope 2 and Scope 3 emissions?

Scope 1 emissions: the total global direct emissions from sources owned or controlled by the reporting facility or business unit:

* Stationary combustion;
* Mobile combustion;
* Process emissions; and
* Fugitive emissions.

Scope 2 emissions: indirect GHG emissions that the facility or business unit has caused through its consumption of energy in the form of electricity, heat, cooling or steam.

Scope 3 emissions: indirect emissions that arise due to a facility or business unit’s activities from sources that are owned or controlled by others. (Carbon Disclosure Project)

GHG emissions are calculated using the GHG Protocol calculation tool. The GHG Protocol categorises direct and indirect emissions into three broad scopes:

* Scope 1: All direct GHG emissions from the company’s own boilers or vehicles, or other operations producing GHG emissions
* Scope 2: Indirect GHG emissions from the production of purchased energy consumed, such as electricity or district heat production or other similar indirect sources
* Scope 3: Other indirect GHG emissions not covered in Scope 2, such as those from the production of purchased raw materials, outsourced transport services, daily employee commuting and other, similar indirect sources

## What does “offset” mean?

Offset: a unit of carbon dioxide-equivalent (CO2e) that is reduced, avoided, or sequestered to compensate for emissions occurring elsewhere, in this case at a mine or smelter. Offsets work in a financial system where, instead of reducing its own carbon use, a company can comply with emissions caps by purchasing an offset from an independent organisation that has completed and certified an emissions reduction, avoidance or sequestration project. An offset must be independently verified by a body accredited in accordance with the Emissions Trading Act. It must be fungible, and it has had to have passed a credible additionality test.

## What does “at predefined intervals” mean?

This is as defined for each material energy source in the energy use and GHG emissions management system.

## What does “established criteria” mean?

This is as defined in the energy use and GHG emissions management system.

## What does “additionality” mean?

The EU emissions trading scheme defines additionality in terms of the baseline emissions against which a project’s emission reductions are estimated:

* Baseline = emissions scenario in the absence of the proposed JI/CDM project
* Additionality = the JI/CDM project reduces emissions compared to the baseline

## What is verification?

Verification is a systematic, independent and documented process for the evaluation of an energy use or GHG emissions assertion (for example, related to management systems, reporting systems, or performance) against agreed verification criteria. (Adapted from ISO 14064: 2006.)

## What is a “system”?

A “system”, or “management system”, represents processes that collectively provide a systematic framework for ensuring that tasks are performed correctly, consistently and effectively in order to achieve specified objectives and to drive continual improvement in performance. A systems approach requires an assessment of what needs to be done, planning in order to achieve the set objectives, the implementation of the plan and a review of performance in meeting the objectives. A management system also considers any personnel and resource requirements and how the documentation required for the system’s implementation will be created. The documentation covers all types of documentation (paper documents, intranet documents, electronic documents, etc.). Not all practices need to be documented.

Within any system, processes and activities are usually given a certain status through clear and precise requirements that are documented as a written procedure, for example. This means that the company can clearly and easily demonstrate that the process or system in question is in place. This would also typically require documented processes or an “audit trail”.

Other definitions associated with systems are:

* Commitment: The management’s public commitment to energy efficiency/conservation and the reduction of GHG emissions.
* Practice: Informal, undocumented approaches to carrying out a task.
* Procedure: A formalised, documented description of how a task is to be carried out.

## What does “accountability” mean?

The management system defines the accountable party. Management is the party that is ultimately answerable for energy efficiency and GHG emissions management, and for the development and implementation of the energy use and GHG emissions management system within the facility. Such accountability cannot be delegated. Resources are available to the accountable party to ensure that the proper systems (training, equipment, communications, etc.) are in place for effectively meeting the energy use and GHG emissions management goals.

## What does “responsibility” mean?

Responsibility: Within the energy use and GHG emissions management system, specific energy use and GHG emissions management related requirements and tasks are identified and assigned to specific positions within the facility. It is important that responsibilities are clearly communicated so that the person in each position understands what is expected of him or her.

## What does “business unit” mean?

Business Unit: The energy use and GHG emissions management system allows a company to set targets at both facility and business unit level. For the purpose of this protocol, a business unit is defined as a [logical element](http://www.businessdictionary.com/definition/element.html) or [segment](http://www.businessdictionary.com/definition/segment.html) of a [company](http://www.businessdictionary.com/definition/company.html) representing a specific [business function](http://www.businessdictionary.com/definition/business-function.html) or a [definite](http://www.businessdictionary.com/definition/definite.html) place on the organisational chart, under the [domain of a](http://www.businessdictionary.com/definition/domain.html) [manager,](http://www.businessdictionary.com/definition/manager.html) or a [functional geographic area.](http://www.businessdictionary.com/definition/functional-area.html) This may include but is not limited to a series of mines located in a defined physical area, a series of mines producing a specific product, or a combination of a mine and smelter. For the purpose of this protocol, a business unit is defined by the company but requires a documented rationale for why two or more facilities have been grouped together in the business unit.

# APPENDIX 2: SELF-ASSESSMENT CHECKLIST

**Energy Use and Greenhouse Gas Emissions Management**

|  |  |  |  |
| --- | --- | --- | --- |
| **Facility/****Site:** |  | **Company:** |  |
| **Assessed by:** |  | **Date submitted:** |  |

|  |
| --- |
| **SUPPORTING DOCUMENTATION / EVIDENCE:** |
| **NAME OF DOCUMENT** | **LOCATION** |
|  |  |
|  |  |
|  |  |
|  |  |
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|  |  |
|  |  |
|  |  |

|  |
| --- |
| **Interviewees:** |
| **NAME** | **POSITION** | **NAME** | **POSITION** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| **INDICATOR 1: ENERGY USE AND GREENHOUSE GAS EMISSIONS MANAGEMENT SYSTEMS**  |
| **Indicator 1** **Level B** | Has an energy use management system been established that includes:* a demonstrated senior management commitment to managing energy use and GHG emissions at facility level?
 |  |  |  |  |
| * facility-level responsibility for energy use and GHG emissions assigned to departments or individuals?
 |  |  |  |  |
| * established practices (processes) to determine energy consumption sources and the associated GHG emissions at predefined intervals with respect to sources accounting for substantial consumption and/or offering considerable potential for energy performance improvement, by major process activity (e.g. mill, mine, smelter, refinery, etc.)?
 |  |  |  |  |
| * identification and estimation of significant sources of non-energy GHG emissions?
 |  |  |  |  |
| * standard quantification and estimation methodologies used to convert energy use and GHG emission data into comparable units?
 |  |  |  |  |
| * facility-level data records are maintained?
 |  |  |  |  |

|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| --- | --- | --- | --- | --- | --- |
|  | *If you have answered “Yes” to all of the Level B questions, continue to the Level A questions. If you have not answered “Yes” to all of the Level B questions, the facility is a Level C facility.* |
| **Indicator 1** **Level A** | Has an energy use and GHG emissions management system been established that, in addition to the Level B elements, includes the following elements:* the facility or business unit has identified and annually evaluated – on an internal basis – which energy and emissions sources, including own transportation, are material according to its established criteria?
 |  |  |  |   |
| * the planning of measures for increasing the use of renewable energy sources?
 |  |  |  |  |
| * clear accountability for energy use and GHG emissions management assigned to operational managers?
 |  |  |  |  |
| * energy data is reviewed regularly and integrated into operator actions for energy intensive processes?
 |  |  |  |  |
| * actions and process controls related to energy use and GHG emissions are included in management systems for material sources?
 |  |  |  |  |
| * general energy use and GHG emissions awareness training is provided to personnel?
 |  |  |  |  |
| Has the energy use and GHG emissions management system been subject to independent internal or external verification? |  |  |  |  |
| *If you have answered “Yes” to all of the Level A questions, continue to the Level AA questions. If you have not answered “Yes” to all of the Level A questions, the facility is a Level B facility.* |
| **Indicator 1 Level AA** | Are energy use and GHG emissions, as well as the use of renewable energy sources, considered in business planning at facility and/or business unit level?Does the company invest in renewable energy projects and/or energy recovery projects? |  |  |  |  |
|  | *If you have answered “Yes” to all of the Level AA questions, continue to the Level AAA questions. If you have not answered “Yes” to all of the Level AA questions, the facility is a Level A facility.*   |
|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| **Indicator 1** **Level AAA** | Is the energy use and GHG emissions management system integrated into a broader sustainable business strategy that includes at least two of the following:* procurement and supply chain management policies that incorporate energy efficiency and GHG reduction criteria
* voluntary corporate investments in research and development, feasibility studies and/or the demonstration of technologies and/or new processes that target energy efficiency and reduced GHG emissions
* participation alongside communities of interest in order to improve energy efficiency and reduce GHG emissions (e.g. community events, environmental organisations, government energy efficiency programmes)?
 |  |  |  |  |
| *If you have answered “Yes” to all of the Level AAA questions, the facility is a Level AAA facility. If you have not answered “Yes” to all of the Level AAA questions, the facility is a Level AA facility.* |
|  | **ASSESSED LEVEL OF THE COMPANY’S PERFORMANCE FOR INDICATOR 1** | **Level:**   |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| **INDICATOR 2: ENERGY USE AND GREENHOUSE GAS EMISSIONS REPORTING** |
| **Indicator 2 Level B** | Has a basic energy use and GHG emissions reporting system been established that includes:* a facility-level reporting system for energy use and GHG emissions?
 |  |  |  |  |
| * energy use and GHG emissions performance results being reported to management annually at facility level?
 |  |  |  |  |
| *If you have answered “Yes” to all of the Level B questions, continue to the Level A questions. If you have not answered “Yes” to all of the Level B questions, the facility is a Level C facility.* |
| **Indicator 2 Level A** | Has a comprehensive energy use reporting system been established that includes:* energy use and GHG emissions performance results being reported regularly to management at facility level, in support of decision-making?
 |  |  |  |  |
| * annual public reporting of energy use and GHG emissions?
 |  |  |  |  |
| Where offsets are used by the facility or business unit to meet commitments, does public reporting include:* the amount of offsets as a percentage of total emissions generated at facility level and/or at business unit level?
* the source and nature of the accreditation of offsets?
 |  |  |  |  |
| *If you have answered “Yes” to all of the Level A questions, continue to the Level AA questions. If you have not answered “Yes” to all of the Level A questions, the facility is a Level B facility.* |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| **Indicator 2** **Level AA** | Has the energy use and GHG emissions reporting system been internally verified?  |  |  |  |  |
| Is performance against targets reported publicly on an annual basis? |  |  |  |  |
| Is the overview of corporate energy use and the GHG emissions management strategy publicly available? |  |  |  |  |
| *If you have answered “Yes” to all of the Level AA questions, continue to the Level AAA questions. If you have not answered “Yes” to all of the Level AA questions, the facility is a Level A facility.* |
| **Indicator 2 Level AAA** | Are the energy use and Scope 1 and Scope 2 GHG emissions reporting systems externally verified? |  |  |  |  |
| Are some Scope 3 GHG emissions included in reporting? |  |  |  |  |
| *If you have answered “Yes” to all of the Level AAA questions, the facility is a Level AAA facility. If you have not answered “Yes” to all of the Level AAA questions, the facility is a Level AA facility.* |
|  | **ASSESSED LEVEL OF THE COMPANY’S PERFORMANCE FOR INDICATOR 2** | **Level:**   |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| **INDICATOR 3: ENERGY USE AND GREENHOUSE GAS EMISSIONS PERFORMANCE TARGETS** |
| **Indicator 3** **Level B** | Have energy use or GHG emissions performance targets been set for the facility and/or business unit?  |  |  |  |  |
| Has a performance strategy been developed that is consistent with the energy policy and/or commitments for improving performance? |  |  |  |  |
| *If you have answered “Yes” to all of the Level B questions, continue to the Level A questions. If you have not answered “Yes” to all of the Level B questions, the facility is a Level C facility.* |
| **Indicator 3****Level A** | Have the energy use and GHG emissions performance targets for the facility and/or business unit been met in the reporting year? |  |  |  |  |
| In establishing objectives and targets, has the facility or business unit taken account of significant energy uses identified in its energy management system, as well as its financial, operational and business conditions, legal requirements, technological options, the views of potentially affected parties and opportunities to improve energy performance? |  |  |  |  |
| *If you have answered “Yes” to all of the Level A questions, continue to the Level AA questions. If you have not answered “Yes” to all of the Level A questions, the facility is a Level B facility.* |
| **Indicator 3****Level AA** | Has the facility and/or business unit met its energy use and GHG emissions performance targets for three out of the last four years? |  |  |  |  |
| Have the targets set for the use of renewable energy sources been met, and has a measurable performance target been set? |  |  |  |  |
| Have the energy use and GHG emissions performance results been internally or externally verified?  |  |  |  |  |
| *If you have answered “Yes” to all of the Level AA questions, continue to the Level AAA questions. If you have not answered “Yes” to all of the Level AA questions, the facility is a Level A facility.* |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Question** | **Y** | **N** | **NA** | **Description & Evidence** |
| **Indicator 3****Level AAA** | Do some performance strategies or projects meet at least two of the following additionality conditions:* Has an ROI threshold been set to determine the criteria for implementing energy use or GHG emissions reduction projects and to demonstrate their implementation?
* Have continuous improvement targets been set that demonstrate energy use reductions based on historical trends?
* Have investments in new technologies and/or new processes resulted in meaningful reductions in energy use?
 |  |  |  |  |
| *If you have answered “Yes” to all of the Level AAA questions, the facility is a Level AAA facility. If you have not answered “Yes” to all of the Level AAA questions, the facility is a Level AA facility.* |
|  | **ASSESSED LEVEL OF THE COMPANY’S PERFORMANCE FOR INDICATOR 3** | **Level:**   |

1. The on-line database will later be made available at kaivosvastuu.fi. [↑](#footnote-ref-1)
2. The combination of energy consumption and mineral production data can significantly compromise a company’s position vis-à-vis its competition, particularly in instances where there are relatively few global competitors (e.g. iron ore). This may affect a company’s ability to disclose certain types of information on energy use and GHG emissions. Necessary limits on public reporting for competitive reasons should not prevent a facility from satisfying Level A criteria. Where information is not disclosed, reporting should include a list of information omitted and a reason for the omission. [↑](#footnote-ref-2)
3. Recognising that climate change is a global issue and that the geographic location/source of GHG emissions does not matter, companies are encouraged to set performance targets that achieve the greatest reductions at the lowest cost, regardless of location. [↑](#footnote-ref-3)