



**SASB  
STANDARDS**

Now part of IFRS Foundation

# Electronic Manufacturing Services & Original Design Manufacturing

## Sustainability Accounting Standard

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TECHNOLOGY & COMMUNICATIONS SECTOR

**Sustainable Industry Classification System® (SICS®) TC-ES**

Under Stewardship of the International Sustainability Standards Board

**INDUSTRY STANDARD | VERSION 2023-12**



 **IFRS®**  
Sustainability

[sasb.org](https://sasb.org)

## About the SASB Standards

As of August 2022, the International Sustainability Standards Board (ISSB) of the IFRS Foundation assumed responsibility for the SASB Standards. The ISSB has committed to maintain, enhance and evolve the SASB Standards and encourages preparers and investors to continue to use the SASB Standards.

IFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* (IFRS S1) requires entities to refer to and consider the applicability of disclosure topics in the SASB Standards when identifying sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects. Similarly, IFRS S1 requires entities to refer to and consider the applicability of metrics in the SASB Standards when determining what information to disclose regarding sustainability-related risks and opportunities.

In June 2023, the ISSB amended climate-related topics and metrics in the SASB Standards to align them with the industry-based guidance accompanying IFRS S2 *Climate-related Disclosures*. In December 2023, the ISSB amended the non-climate-related topics and metrics in connection with the International Applicability of SASB Standards project.

### Effective Date

This version 2023-12 of the Standard is effective for all entities for annual periods beginning or after January 1, 2025. Early adoption is permitted for all entities.

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# INTRODUCTION

## Overview of SASB Standards

The SASB Standards are a set of 77 industry-specific sustainability accounting standards (“SASB Standards” or “Industry Standards”), categorised pursuant to the [Sustainable Industry Classification System<sup>®</sup> \(SICS<sup>®</sup>\)](#).

SASB Standards include:

1. **Industry descriptions** – which are intended to help entities identify applicable industry guidance by describing the business models, associated activities and other common features that characterise participation in the industry.
2. **Disclosure topics** – which describe specific sustainability-related risks or opportunities associated with the activities conducted by entities within a particular industry.
3. **Metrics** – which accompany disclosure topics and are designed to, either individually or as part of a set, provide useful information regarding an entity’s performance for a specific disclosure topic.
4. **Technical protocols** – which provide guidance on definitions, scope, implementation and presentation of associated metrics.
5. **Activity metrics** – which quantify the scale of specific activities or operations by an entity and are intended for use in conjunction with the metrics referred to in point 3 to normalise data and facilitate comparison.

Entities using the SASB Standards as part of their implementation of ISSB Standards should consider the relevant ISSB application guidance.

For entities using the SASB Standards independently from ISSB Standards, the [SASB Standards Application Guidance](#) establishes guidance applicable to the use of all Industry Standards and is considered part of the Standards. Unless otherwise specified in the technical protocols contained in the Industry Standards, the guidance in the SASB Standards Application Guidance applies to the definitions, scope, implementation, compilation and presentation of the metrics in the Industry Standards.

Historically, the [SASB Conceptual Framework](#) set out the basic concepts, principles, definitions and objectives that guided the SASB Standards Board in its approach to setting standards for sustainability accounting.

## Use of the Standards

SASB Standards are intended to aid entities in disclosing information about sustainability-related risks and opportunities that could reasonably be expected to affect the entity's cash flows, its access to finance or cost of capital over the short, medium or long term. An entity determines which Industry Standard(s) and which disclosure topics are relevant to its business, and which associated metrics to report. In general, an entity should use the SASB Standard specific to its primary industry as identified in [SICS<sup>®</sup>](#). However, companies with substantial business in multiple SICS<sup>®</sup> industries should refer to and consider the applicability of the disclosure topics and associated metrics in additional SASB Standards.

The disclosure topics and associated metrics contained in this Standard have been identified as those that are likely to be useful to investors. However, the responsibility for making materiality judgements and determinations rests with the reporting entity.

## Industry Description

The Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) industry consists of two main segments. EMS entities provide assembly, logistics and after-market services for original equipment manufacturers. ODM entities provide engineering and design services for original equipment manufacturers and may own significant intellectual property. Although EMS & ODM entities produce equipment for a variety of sectors, the industry is associated closely with the Hardware industry, which consists of entities that design technology hardware products such as personal computers, consumer electronics and storage devices for both personal consumers and businesses.

Note: The Electronic Manufacturing Services & Original Design Manufacturing industry does not include the design of technology hardware products. Entities that design and manufacture technology hardware products should consider the disclosure topics and metrics in the Hardware (TC-HW) industry.

# SUSTAINABILITY DISCLOSURE TOPICS & METRICS

**Table 1. Sustainability Disclosure Topics & Metrics**

TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Water Management	(1) Total water withdrawn, (2) total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic metres (m³), Percentage (%)	TC-ES-140a.1
Waste Management	(1) Amount of hazardous waste from manufacturing, (2) percentage recycled	Quantitative	Metric tonnes (t), Percentage (%)	TC-ES-150a.1
Labour Practices	(1) Number of work stoppages and (2) total days idle <sup>1</sup>	Quantitative	Number, Days idle	TC-ES-310a.1
Workforce Conditions, Health & Safety	(1) Total recordable incident rate (TRIR) and (2) near miss frequency rate (NMFR) for (a) direct employees and (b) contract employees	Quantitative	Rate	TC-ES-320a.1
	Percentage of (1) entity's facilities and (2) Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent, by (a) all facilities and (b) high-risk facilities	Quantitative	Percentage (%)	TC-ES-320a.2
	(1) Non-conformance rate with the RBA Validated Audit Process (VAP) or equivalent and (2) associated corrective action rate for (a) priority non-conformances and (b) other non-conformances, disaggregated by (i) the entity's facilities and (ii) the entity's Tier 1 supplier facilities	Quantitative	Rate	TC-ES-320a.3
Product Lifecycle Management	Weight of end-of-life products and e-waste recovered; percentage recycled	Quantitative	Metric tonnes (t), Percentage (%)	TC-ES-410a.1
Materials Sourcing	Description of the management of risks associated with the use of critical materials	Discussion and Analysis	n/a	TC-ES-440a.1

**Table 2. Activity Metrics**

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of manufacturing facilities	Quantitative	Number	TC-ES-000.A
Area of manufacturing facilities	Quantitative	Square metres (m²)	TC-ES-000.B

*continued...*

<sup>1</sup> Note to **TC-ES-310a.1** – The disclosure shall include a description of the reason for each work stoppage, effect on operations and any corrective actions taken.

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ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of employees	Quantitative	Number	TC-ES-000.C

# Water Management

## Topic Summary

The manufacturing of computers, computer components and other electronics requires significant volumes of water. Water is becoming a globally scarce resource because of increasing consumption from population growth, rapid urbanisation and climate change. Without careful planning, water scarcity may result in higher supply costs, social tensions with local communities and governments, or loss of access to water in water-scarce regions thereby presenting a critical risk to production and revenue. Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) entities that improve water use efficiency may reduce operating costs and maintain a lower risk profile, ultimately affecting cost of capital and market valuation. Furthermore, entities that prioritise water use efficiency may reduce regulatory risks as applicable jurisdictional environmental laws or regulations place more emphasis on resource conservation.

## Metrics

### **TC-ES-140a.1. (1) Total water withdrawn, (2) total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress**

- 1 The entity shall disclose the amount of water, in thousands of cubic metres, withdrawn from all sources.
  - 1.1 Water sources include surface water (including water from wetlands, rivers, lakes and oceans), groundwater, rainwater collected directly and stored by the entity, and water and wastewater obtained from municipal water supplies, water utilities or other entities.
- 2 The entity may disclose portions of its supply by source if, for example, significant portions of withdrawals are from non-freshwater sources.
  - 2.1 Fresh water may be defined according to the local laws and regulations where the entity operates. If no legal definition exists, fresh water shall be considered to be water that has less than 1,000 parts per million of dissolved solids.
  - 2.2 Water obtained from a water utility in compliance with jurisdictional drinking water regulations can be assumed to meet the definition of fresh water.
- 3 The entity shall disclose the amount of water, in thousands of cubic metres, consumed in operations.
  - 3.1 Water consumption is defined as:
    - 3.1.1 Water that evaporates during withdrawal, use and discharge
    - 3.1.2 Water that is directly or indirectly included in the entity's product or service
    - 3.1.3 Water that does not otherwise return to the same catchment area from which it was withdrawn, such as water returned to another catchment area or the sea



- 4 The entity shall analyse all its operations for water risks and identify activities that withdraw and consume water in locations with High (40–80%) or Extremely High (>80%) Baseline Water Stress as classified by the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct.
- 5 The entity shall disclose water withdrawn in locations with High or Extremely High Baseline Water Stress as a percentage of the total water withdrawn.
- 6 The entity shall disclose water consumed in locations with High or Extremely High Baseline Water Stress as a percentage of the total water consumed.

# Waste Management

## Topic Summary

The manufacturing of computers, computer components and other electronics requires significant volumes of chemicals and generates air and water emissions and solid waste, including hazardous substances. The handling and disposal of hazardous wastes produced during manufacturing may result in increased operating costs, capital expenditures, and in some instances, increased compliance costs or regulatory fines and penalties. Entities in the Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) industry that reduce waste produced during manufacturing and ensure it is appropriately reused, recycled or disposed may have a lower risk profile and face lower regulatory risks as applicable jurisdictional environmental laws or regulations place increasing emphasis on resource conservation and waste management.

## Metrics

### **TC-ES-150a.1. (1) Amount of hazardous waste from manufacturing, (2) percentage recycled**

- 1 The entity shall disclose (1) the total weight of hazardous waste generated, in metric tonnes, from manufacturing operations.
  - 1.1 Hazardous wastes are defined in accordance with applicable jurisdictional legal or regulatory frameworks where the waste was generated.
- 2 The entity shall disclose (2) the percentage of hazardous waste recycled as the weight of hazardous waste generated from manufacturing operations that was recycled, divided by the total weight of all hazardous waste generated.
  - 2.1 Hazardous waste that is reused, reclaimed or remanufactured shall be considered within the scope of recycled.
  - 2.2 Recycled, reused, reclaimed and remanufactured hazardous waste is defined in accordance with applicable jurisdictional legal or regulatory frameworks where the waste was generated.
  - 2.3 Materials incinerated, including for energy recovery, shall not be considered within the scope of recycled.
    - 2.3.1 Energy recovery is defined as the use of combustible waste to generate energy through direct incineration, with or without other waste, but with recovery of the heat.
    - 2.3.2 The entity may separately disclose the percentage of hazardous waste generated that was incinerated.
  - 2.4 Electronic waste material (e-waste) shall be considered recycled only if the entity can demonstrate that this material was transferred to entities with third-party certification to a standard for e-waste recycling, such as the e-Stewards® Standard for Responsible Recycling and Reuse of Electronic Equipment or the Responsible Recycling Practices (R2) Standard for Electronic Recyclers.

2.5 The entity shall disclose the standards with which the entities it has transferred e-waste to are compliant.

- 3 The entity may use the United Nations Environmental Programme's (UNEP) *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* for the purposes of defining hazardous waste or recycled hazardous waste for operations located in jurisdictions that lack applicable legal or regulatory definitions.
- 4 The entity shall disclose the frameworks used to define hazardous waste and recycled hazardous waste, and the quantities and percentages defined in accordance with each applicable framework.

# Labour Practices

## Topic Summary

Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) entities operate in a highly cost competitive environment and are therefore sensitive to labour costs and risks. Additionally, customers commonly require entities to meet tight production deadlines for important product launches, such as releases of new technology by hardware entities. Combined, these factors increase the importance of entities maintaining good relations with labour. Poor labour relations may expose entities to work stoppages and production disruptions. Such disruptions may result in reduced near-term revenue, as well as possible adverse effects on long-term productivity because of lower employee morale. In addition to maintaining an entity's brand value and social licence to operate, improvements in labour practices may mitigate production disruptions.

## Metrics

### TC-ES-310a.1. (1) Number of work stoppages and (2) total days idle

- 1 The entity shall disclose (1) the number of work stoppages involving 1,000 or more workers lasting one full shift or longer.
  - 1.1 The scope of work stoppages includes strikes and lockouts.
    - 1.1.1 A strike is defined as a temporary stoppage of work by a group of employees (not necessarily union members) to express a grievance or enforce a demand.
    - 1.1.2 A lockout is defined as a temporary withholding or denial of employment during a labour dispute to enforce terms of employment upon a group of employees.
- 2 The entity shall disclose (2) the total days idle because of work stoppages.
  - 2.1 'Days idle' is defined as the aggregate number of workdays lost because of work stoppages.
  - 2.2 Total days idle shall be calculated as the sum of the products of the number of workers involved in each work stoppage and the number of days each respective work stoppage was in effect.

#### Note to TC-ES-310a.1

- 1 The entity shall describe the reason for each work stoppage (as stated by labour), the effect on operations and any corrective actions taken as a result.

# Workforce Conditions, Health & Safety

## Topic Summary

The treatment of workers and the protection of workers' rights in the Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) industry is of growing concern among customers, regulators and leading entities. Critical aspects of this issue may include working conditions, environmental responsibility and workforce health and safety—particularly relating to hazardous materials and potentially dangerous manufacturing equipment. Entities in this industry operate in a cost competitive environment and therefore rely upon low-cost and contract labour. The industry's reliance on subcontractors, labour recruitment entities and a multi-tiered system of suppliers may make safety performance improvement difficult. Further, entities often are located in countries with relatively low direct costs and varying degrees of regulation and enforcement for protecting workers. This dynamic may increase an entity's exposure to reputational risks and impacts on short- and long-term costs and sales. Such effects may result from increasing regulation and enforcement in response to high-profile safety or labour incidents, or through a shift in demand away from entities associated with such incidents. Entities with strong supply-chain standards, monitoring and engagement with suppliers to manage labour concerns may better protect shareholder value over the long term.

## Metrics

### **TC-ES-320a.1. (1) Total recordable incident rate (TRIR) and (2) near miss frequency rate (NMFR) for (a) direct employees and (b) contract employees**

- 1 The entity shall disclose (1) its total recordable incident rate (TRIR) for work-related injuries and illnesses.
  - 1.1 An injury or illness is considered a recordable incident if it results in death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. Additionally, a significant injury or illness diagnosed by a physician or other licensed health care professional is considered a recordable incident, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness.
    - 1.1.1 First aid is defined as emergency care or treatment for an ill or injured person before regular medical aid can be provided.
    - 1.1.2 The entity may use applicable jurisdictional criteria for definitions of a recordable incident and a non-recordable incident such as first aid. The entity shall disclose the legal, regulatory or industry framework used as the source for these criteria and definitions.
- 2 The entity shall disclose (2) its near miss frequency rate (NMFR) for work-related near misses.
  - 2.1 A near miss is defined as an unplanned or uncontrolled event or chain of events that has not resulted in a recordable injury, illness, physical damage, or environmental damage, but had the potential to do so in other circumstances.
  - 2.2 The entity may disclose its process for classifying, identifying and reporting near misses.

- 3 All disclosed rates shall be calculated as:  $(\text{statistic count} \times 200,000) / \text{total number of hours worked by all employees in the year reported}$ .
  - 3.1 The '200,000' in the rate calculation represents the total number of hours 100 full-time workers working 40 hours per week for 50 weeks per year can provide annually.
- 4 The scope of the disclosure includes work-related incidents only.
  - 4.1 Work-related incidents are injuries and illnesses resulting from events or exposures in the work environment.
  - 4.2 The work environment is the establishment and other locations where one or more employees are working or are present as a condition of their employment.
  - 4.3 The work environment includes not only physical locations, but also the equipment or materials used by the employee during the course of work.
  - 4.4 Incidents that occur while an employee is travelling are work-related if, at the time of the injury or illness, the employee was engaged in work activities in the interest of the employer.
  - 4.5 A work-related incident must be a new case, not a previously recorded injury or illness being updated.
- 5 The entity shall disclose the rates by each of these employee categories:
  - 5.1 direct employees, defined as individuals on the entity's payroll, whether they are full-time, short service, part-time, executive, labour, salary, seasonal, migrant or hourly employees; and
  - 5.2 contract employees, defined as individuals who are not on the entity's payroll, but whom the entity supervises or manages, including independent contractors and those employed by third parties (for example, temp agencies and labour brokers).
- 6 The scope of the disclosure includes all employees regardless of employee location or type of employment.

**TC-ES-320a.2. Percentage of (1) entity's facilities and (2) Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent, by (a) all facilities and (b) high-risk facilities**

- 1 The entity shall disclose (1) the percentage of manufacturing facilities audited in compliance with the Responsible Business Alliance (RBA) Validated Audit Process (VAP) protocol for (a) all the entity's manufacturing facilities, and separately, (b) the entity's manufacturing facilities deemed 'high-risk'.
  - 1.1 High-risk facilities are defined as facilities that scored 65% or less on at least five sections of the RBA Self-Assessment Questionnaire, or that exhibit any of the disqualifying priority findings noted by the RBA, such as:
    - 1.1.1 child labour;
    - 1.1.2 forced labour;

- 1.1.3 bonded labour;
  - 1.1.4 inhumane treatment;
  - 1.1.5 imminent health and safety issues as defined by the VAP or equivalent;
  - 1.1.6 imminent environmental issues as defined by the VAP or equivalent;
  - 1.1.7 falsifying records; and
  - 1.1.8 bribery.
- 1.2 The entity shall calculate percentages by dividing the number of the entity's manufacturing facilities audited in compliance with the RBA VAP in each category (all facilities or high-risk facilities) by the total number of the entity's manufacturing facilities in each respective category.
- 2 The entity shall disclose (2) the percentage of its Tier 1 suppliers' manufacturing facilities audited in compliance with the RBA VAP for (a) all the Tier 1 suppliers' manufacturing facilities, and separately, (b) the Tier 1 suppliers' manufacturing facilities deemed high-risk.
- 2.1 Tier 1 suppliers are defined as those that transact directly with the entity for goods and services directly related to manufacturing.
- 2.2 The entity shall calculate percentages by dividing the number of the Tier 1 suppliers' VAP-audited manufacturing facilities in each category (all facilities or high-risk facilities) by the total number of the Tier 1 suppliers' manufacturing facilities in each respective category.
- 2.3 The entity may limit disclosure to those suppliers that, in aggregate, account for greater than or equal to 80% of supplier spending directly related to manufacturing.
- 3 The entity may use an alternative code of conduct and audit process to the RBA VAP, if the code of conduct and audit process are similar in scope and criteria to the VAP (an equivalent code of conduct). At a minimum, the criteria of an equivalent code of conduct shall include:
- 3.1 labour provisions, including criteria focused on freely chosen employment, child labour avoidance, working hours, wage and benefits, humane treatment, non-discrimination and freedom of association;
  - 3.2 health and safety provisions, including criteria focused on occupational safety, emergency preparedness, occupational injury and illness, industrial hygiene, physically demanding work, and dormitory and canteen operations;
  - 3.3 environmental provisions, including criteria focused on environmental permits and reporting, pollution prevention and source reduction, hazardous substances, wastewater and solid waste, air emissions, and product content restrictions;
  - 3.4 ethics provisions, including those focused on business integrity, improper advantage, payments and gifts policy, disclosure of information, intellectual property, fair business, advertising, competition, protection of identity, responsible sourcing of minerals, privacy and non-retaliation; and

- 3.5 management system provisions, including management system certification, management accountability to labour and ethics, worker feedback and participation mechanisms, and demonstration that management systems consider social and environmental responsibility-related issues through the tracking of laws and regulations, the tracking of customer requirements, risk assessments, the measurement of objectives and implementation plans, training and communication, audits and assessments, corrective action processes and the maintenance of documentation and records.
- 4 If an equivalent code of conduct is used, the entity shall disclose this, as well as how the criteria of the code of conduct are equivalent to those of the RBA VAP.

**TC-ES-320a.3. (1) Non-conformance rate with the RBA Validated Audit Process (VAP) or equivalent and (2) associated corrective action rate for (a) priority non-conformances and (b) other non-conformances, disaggregated by (i) the entity's facilities and (ii) the entity's Tier 1 supplier facilities**

- 1 The entity shall disclose (1) the rates of non-conformance with the Responsible Business Alliance (RBA) Validated Audit Program (VAP) for (a) priority non-conformances, and separately, (b) other non-conformances, reported for (i) the entity's manufacturing facilities and (ii) the entity's Tier 1 supplier manufacturing facilities.
- 1.1 The definition of priority non-conformances is aligned with that of the RBA VAP and includes the highest severity non-conformances with significant, immediate effects, and that require escalation by auditors. Priority non-conformances confirm the presence of underage child workers (below the legal age for work or apprenticeship), forced labour, health and safety issues that can cause immediate danger to life or serious injury, and environmental practices that can cause serious and immediate harm to the community. Issues presenting an immediate danger must be corrected as soon as practical, but not longer than 30 days after discovery.
- 1.1.1 In equivalent codes of conduct, priority non-conformances may also be referenced as 'zero tolerance' issues or 'core violations'.
- 1.2 Other non-conformances include major non-conformances and minor non-conformances.
- 1.2.1 The definition of a major non-conformance is aligned with that of the RBA VAP and includes significant management system failures that affect the ability of the system to produce the desired results. It also may be caused by failure to implement an established process or procedure, or if the process or procedure is ineffective.
- 1.2.2 The definition of a minor non-conformance is aligned with that of the RBA VAP and includes non-conformances that by themselves do not confirm a systemic problem with the management system but are typically isolated or random incidents.
- 1.3 Tier 1 suppliers are defined as those that transact directly with the entity for goods and services directly related to manufacturing.
- 1.4 For the entity's (i) own manufacturing facilities, the entity shall calculate the non-conformance rates as the number of non-conformances (priority or other non-conformances) identified among its manufacturing facilities divided by the total number of the entity's manufacturing facilities audited.



- 1.5 For the entity's (ii) Tier 1 supplier manufacturing facilities, the entity shall calculate the non-conformance rates as the number of non-conformances (priority or other non-conformances) identified among its Tier 1 supplier manufacturing facilities divided by the number of Tier 1 supplier manufacturing facilities audited.
- 2 The entity shall disclose (2) the corrective action rates associated with (a) priority non-conformances, and separately, (b) other non-conformances, reported for (i) the entity's manufacturing facilities and (ii) the entity's Tier 1 supplier manufacturing facilities.
- 2.1 A corrective action is defined by the timely completion of a Corrective Action Plan (CAP), which describes how and when the facility will address each of the identified non-conformances (in each respective category), according to the applicable time line.
- 2.1.1 The time line for priority non-conformances is defined as submission of a CAP within one week of discovery and completion of a CAP within 30 days of discovery.
- 2.1.2 The time line for major non-conformance is defined as submission of a CAP within two weeks of receipt of final Validated Audit Report (VAR) and completion of a CAP within 90 days of receipt of final VAR.
- 2.1.3 The time line for minor non-conformance is defined as submission of a CAP within two weeks of receipt of final VAR and completion of a CAP within 270 days of receipt of final VAR.
- 2.2 For (a) priority non-conformances, the entity shall calculate the corrective action rate as the number of corrective actions to address priority non-conformances divided by the total number of priority non-conformances identified, separately, for (i) the entity's manufacturing facilities and (ii) the entity's Tier 1 supplier manufacturing facilities.
- 2.3 For (b) other non-conformances, the entity shall calculate the corrective action rate as the number of corrective actions to address major non-conformances plus the number of corrective actions to address minor non-conformances divided by the total number of major and minor non-conformances identified, separately, for (i) the entity's manufacturing facilities and (ii) the entity's Tier 1 supplier manufacturing facilities.
- 3 The entity may limit its disclosure to those Tier 1 suppliers that, in aggregate, account for greater than or equal to 80% of its Tier 1 supplier spending directly related to manufacturing.
- 4 The entity may disclose compliance with an audit recognised by the RBA Membership Compliance Program or an equivalent code of conduct if the standard and audit are sufficiently similar in scope and enforcement to the VAP.

# Product Lifecycle Management

## Topic Summary

Entities in the Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) industry, along with the industry's customers such as hardware entities, face increasing challenges associated with environmental externalities attributed to product manufacturing, transport, use and disposal. Rapid obsolescence of hardware products may worsen such externalities. The industry's products commonly contain hazardous materials, making safe end-of-life disposal a critical aspect to manage. Entities unable to minimise the environmental externalities of their products may face increased regulatory costs as jurisdictional environmental laws or regulations place more emphasis on resource conservation and waste management. Through product innovation that facilitates end-of-life product recovery and the use of less impactful materials, EMS & ODM manufacturers can achieve improvements in lifecycle impacts, reduce regulatory risks and realise cost savings.

## Metrics

### **TC-ES-410a.1. Weight of end-of-life products and e-waste recovered; percentage recycled**

- 1 The entity shall disclose the weight, in metric tonnes, of end-of-life material recovered, including through reverse logistics services, recycling services, product take-back programmes and refurbishment services.
  - 1.1 End-of-life material recovered is defined as products, materials and parts, including electronic waste material (e-waste), that at the end of their useful life would have otherwise been discarded as waste or used for energy recovery, but have instead been collected.
  - 1.2 The scope of end-of-life material recovered includes materials physically handled by the entity.
  - 1.3 The scope of end-of-life material recovered includes materials of which the entity did not take physical possession, but were collected by a third party for the expressed purpose of reuse, recycling or refurbishment.
  - 1.4 The scope of end-of-life material recovered excludes materials collected for repair or that are under warranty and subject to recall.
- 2 The entity shall disclose the percentage of end-of-life material recovered and subsequently recycled.
  - 2.1 The percentage shall be calculated as the weight of end-of-life material recovered and subsequently recycled divided by the total weight of end-of-life material recovered.
  - 2.2 Recycled material (including remanufactured material) is defined as waste material reprocessed or treated by means of production or manufacturing processes and made into a final product or a component for incorporation into a product.
  - 2.3 The scope of recycled material includes material reused or reclaimed.

- 2.3.1 Reused material is defined as recovered products or components of products used for the same purpose for which they were conceived, including products donated or refurbished by the entity or by third parties.
  - 2.3.2 Reclaimed material is defined as material processed to recover or regenerate a usable product.
- 2.4 The scope of recycled material includes primary recycled material, co-products (outputs of equal value to primary recycled materials), by-products (outputs of lesser value to primary recycled materials) and material sent externally for further recycling.
- 2.5 The scope of recycled material excludes portions of products and materials that are disposed of in landfills.
- 3 Electronic waste material (e-waste) shall be considered recycled only if the entity can demonstrate that this material was transferred to entities with third-party certification to a standard for e-waste recycling such as the e-Stewards® Standard for Responsible Recycling and Reuse of Electronic Equipment or the Responsible Recycling Practices (R2) Standard for Electronic Recyclers.
  - 3.1 The entity shall disclose the standard(s) complied with by the entities to which it has transferred e-waste.

# Materials Sourcing

## Topic Summary

Entities in the Electronic Manufacturing Services (EMS) & Original Design Manufacturing (ODM) industry rely on numerous critical materials as important inputs for finished products. Many of these inputs have few or no available substitutes and often are sourced in a few countries, many of which may be subject to geopolitical uncertainty. Other sustainability impacts related to climate change, land use, resource scarcity and conflict in regions where the industry's supply chain operates are also increasingly shaping the industry's ability to source materials. Additionally, increased competition for these materials because of growing global demand from other sectors may result in price increases and supply risks. Since entities commonly source materials from supply chains that often lack transparency, they may face increasing difficulty managing potential materials shortages, supply disruptions, price volatility and reputational risks. Failure to effectively manage sourcing may constrain access to necessary materials, reduce margins, impair revenue growth or increase costs of capital.

## Metrics

### TC-ES-440a.1. Description of the management of risks associated with the use of critical materials

- 1 The entity shall describe how it manages the risks associated with the use of critical materials in its products, including physical limits on availability and access, changes in price, and regulatory and reputational risks, in which:
  - 1.1 a critical material is defined as a material both essential in use and subject to the risk of supply restriction; and
  - 1.2 examples of critical materials may include:
    - 1.2.1 antimony, cobalt, fluorspar, gallium, germanium, graphite, indium, magnesium, niobium, tantalum and tungsten;
    - 1.2.2 platinum group metals (platinum, palladium, iridium, rhodium, ruthenium and osmium); and
    - 1.2.3 rare earth elements, which include yttrium, scandium, lanthanum and the lanthanides (cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and lutetium).
- 2 The entity shall identify the critical materials that present a significant risk to its operations, the type of risks they represent and the strategies the entity uses to mitigate the risks.
  - 2.1 Relevant strategies may include diversification of suppliers, stockpiling of materials, development or procurement of alternative and substitute materials, and investments in recycling technology for critical materials.

- 3 All disclosure shall be sufficient such that it is specific to the risks the entity faces, but that disclosure itself would not compromise the entity's ability to maintain confidential information.
  - 3.1 For example, if an entity determines not to identify a specific critical material that presents a significant risk to its operations because of the competitive harm that could result from the disclosure, the entity shall disclose the existence of such risks, the type of risks and the strategies used to mitigate the risks, but the entity is not required to disclose the relevant critical material.



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