IFRS® Sustainability

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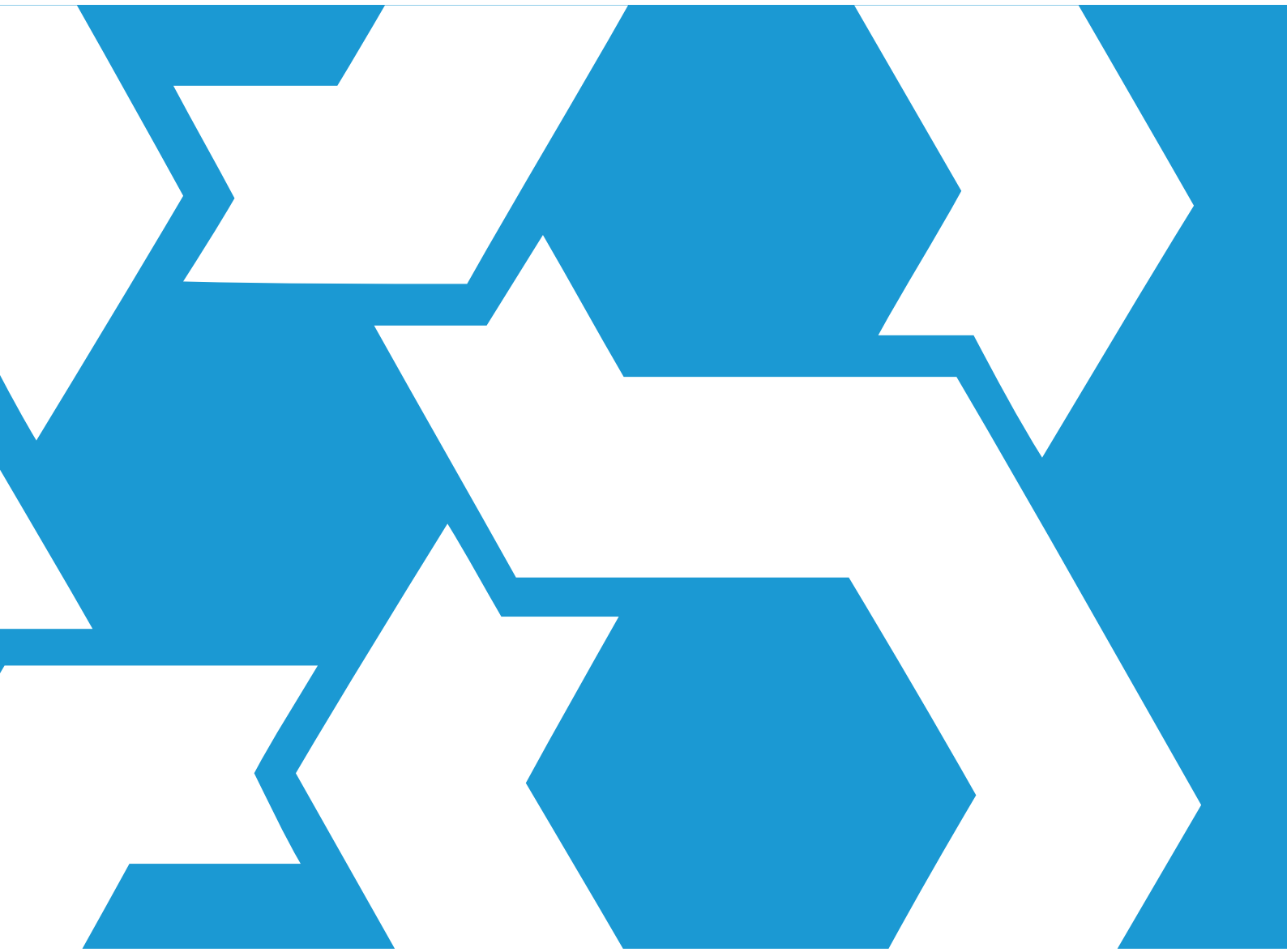
IFRS S2

IFRS® Sustainability Disclosure Standard

Industry-based Guidance on implementing Climate-related Disclosures

Volume 42—Fuel Cells & Industrial Batteries



International Sustainability Standards Board

This Industry-based Guidance accompanies IFRS S2 *Climate related Disclosures* (published June 2023; see separate booklet) and is issued by the International Sustainability Standards Board (ISSB).

Introduction

This volume is part of the Industry-based Guidance on Implementing IFRS S2 Climate-related Disclosures. *This guidance suggests possible ways to apply some of the disclosure requirements in IFRS S2 but does not create additional requirements.*

This volume suggests possible ways to identify, measure and disclose information about climate-related risks and opportunities that are associated with particular business models, economic activities and other common features that characterise participation in this industry.

This industry-based guidance has been derived from Sustainability Accounting Standards Board (SASB) Standards, which are maintained by the International Sustainability Standards Board (ISSB). The metric codes used in SASB Standards have been included for ease of reference. For additional context regarding the industry-based guidance contained in this volume, including structure and terminology, application and illustrative examples, refer to Section III of the Accompanying Guidance to IFRS S2.

Volume 42—Fuel Cells & Industrial Batteries

Industry Description

Fuel Cells & Industrial Batteries industry entities manufacture fuel cells for energy production and energy storage equipment such as batteries. Manufacturers in this industry mainly sell products to entities for varied energy-generation and energy-storage applications and intensities, from commercial business applications to large-scale energy projects for utilities. Entities in the industry typically have global operations and sell products to a global marketplace.

Note: This industry excludes fuel cells or batteries used in light automotive vehicle applications. See the Auto Parts (TR-AP) industry for reporting this business segment. This industry also excludes non-industrial batteries for personal consumer use, which are classified under the Household & Personal Products (CG-HP) industry.

Sustainability Disclosure Topics & Metrics

Table 1. Sustainability Disclosure Topics & Metrics

TOPIC	METRIC	CATEGORY	UNIT OF MEASURE	CODE
Energy Management	(1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable	Quantitative	Gigajoules (GJ), Percentage (%)	RR-FC-130a.1
Product Efficiency	Average storage capacity of batteries, by product application and technology type	Quantitative	Specific energy (Wh/kg)	RR-FC-410a.1
	Average energy efficiency of fuel cells as (1) electrical efficiency and (2) thermal efficiency, by product application and technology type	Quantitative	Percentage (%)	RR-FC-410a.2
	Average battery efficiency as coulombic efficiency, by product application and technology type	Quantitative	Percentage (%)	RR-FC-410a.3
	Average operating lifetime of fuel cells, by product application and technology type	Quantitative	Hours (h)	RR-FC-410a.4
	Average operating lifetime of batteries, by product application and technology type	Quantitative	Number of cycles	RR-FC-410a.5

Table 2. Activity Metrics

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE
Number of units sold	Quantitative	Number	RR-FC-000.A
Total storage capacity of batteries sold	Quantitative	Megawatt-hours (MWh)	RR-FC-000.B
Total energy production capacity of fuel cells sold	Quantitative	Megawatt-hours (MWh)	RR-FC-000.C

Energy Management

Topic Summary

Manufacturing in the Fuel Cells & Industrial Batteries industry requires energy to power machines and cooling, ventilation, lighting and product-testing systems. Purchased electricity is a major share of the energy sources used in the industry and accounts for a notable proportion of the total cost of materials and value added. Various sustainability factors are increasing the cost of conventional electricity while making alternative sources cost-competitive. Energy efficiency efforts may have a significant positive impact on operational efficiency and profitability, especially because many entities operate on relatively low or negative margins. By improving manufacturing process efficiency and exploring alternative energy sources, fuel cell and industrial battery entities may reduce both their indirect environmental impacts and their operating expenses.

Metrics

RR-FC-130a.1. (1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable

1 The entity shall disclose (1) the total amount of energy it consumed as an aggregate figure, in gigajoules (GJ).

1.1 The scope of energy consumption includes energy from all sources, including energy purchased from external sources and energy produced by the entity itself (self-generated). For example, direct fuel usage, purchased electricity, and heating, cooling and steam energy are all included within the scope of energy consumption.

1.2 The scope of energy consumption includes only energy directly consumed by the entity during the reporting period.

1.3 In calculating energy consumption from fuels and biofuels, the entity shall use higher heating values (HHV), also known as gross calorific values (GCV), which are measured directly or taken from the Intergovernmental Panel on Climate Change (IPCC).

2 The entity shall disclose (2) the percentage of energy it consumed that was supplied from grid electricity.

2.1 The percentage shall be calculated as purchased grid electricity consumption divided by total energy consumption.

3 The entity shall disclose (3) the percentage of energy it consumed that was renewable energy.

3.1 Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, such as geothermal, wind, solar, hydro and biomass.

3.2 The percentage shall be calculated as renewable energy consumption divided by total energy consumption.

3.3 The scope of renewable energy includes renewable fuel the entity consumed, renewable energy the entity directly produced and renewable energy the entity purchased, if purchased through a renewable power purchase agreement (PPA) that explicitly includes renewable energy certificates (RECs) or Guarantees of Origin (GOs), a Green-e Energy Certified utility or supplier programme, or other green power products that explicitly include RECs or GOs, or for which Green-e Energy Certified RECs are paired with grid electricity.

3.3.1 For any renewable electricity generated on-site, any RECs and GOs shall be retained (not sold) and retired or cancelled on behalf of the entity for the entity to claim them as renewable energy.

3.3.2 For renewable PPAs and green power products, the agreement shall explicitly include and convey that RECs and GOs be retained or replaced and retired or cancelled on behalf of the entity for the entity to claim them as renewable energy.

3.3.3 The renewable portion of the electricity grid mix that is outside of the control or influence of the entity is excluded from the scope of renewable energy.

3.4 For the purposes of this disclosure, the scope of renewable energy from biomass sources is limited to materials certified to a third-party standard (for example, Forest Stewardship Council, Sustainable Forest Initiative, Programme for the Endorsement of Forest Certification or American Tree Farm System), materials considered eligible sources of supply according to the *Green-e Framework for Renewable Energy Certification, Version 1.0* (2017) or Green-e regional standards, or materials eligible for an applicable jurisdictional renewable portfolio standard.

4 The entity shall apply conversion factors consistently for all data reported under this disclosure, such as the use of HHVs for fuel usage (including biofuels) and conversion of kilowatt hours (kWh) to GJ (for energy data including electricity from solar or wind energy).

Product Efficiency

Topic Summary

Both customer demand and regulatory requirements are driving innovation in energy-efficient products with lower environmental impacts and lower total cost of ownership. Therefore, research and development in the Fuel Cells & Industrial Batteries industry that drive energy and thermal efficiency and enhance storage capacities may lower barriers to adoption. Advances in battery technology to increase storage capabilities and improve charging efficiencies, while reducing costs for customers, are critical for the integration of renewable energy technologies into the grid. Pressured by stricter environmental regulations, high energy costs and customer preferences, fuel cell and industrial battery manufacturers that improve efficiency in the use phase may increase revenue and market share.

Metrics

RR-FC-410a.1. Average storage capacity of batteries, by product application and technology type

1 The entity shall disclose the average storage capacity of batteries by product application and technology type, weighted by unit sales volume per product application and technology type.

1.1 Storage capacity shall be measured as the specific energy, or gravimetric energy density, of batteries, and is calculated as the ratio of nominal energy in watt-hours to the mass of the product in kilogrammes: watt-hours / kilogrammes (Wh/kg).

2 The entity shall measure and disclose performance in accordance with the applicable product application or technology type standard(s), and it shall disclose the standard(s) used for performance measurement.

2.1 Applicable standard(s) include SAE J240—Automotive storage batteries and SAE J2185—Heavy-duty storage batteries.

3 The entity shall disclose performance by these application types, if applicable: portable, motive, stationary and 'all other', each further categorised by these technology types, if applicable: lead-based, nickel-based, lithium-based, sodium-based and all other types.

3.1 The entity may include additional categories of application types or technology types if appropriate, including categories for new products with low sales volumes, but strategic importance in terms of product efficiency or other attributes.

RR-FC-410a.2. Average energy efficiency of fuel cells as (1) electrical efficiency and (2) thermal efficiency, by product application and technology type

1 The entity shall disclose the average energy efficiency of fuel cells as (1) electrical efficiency and (2) thermal efficiency, weighted by unit sales volume per product application and technology type.

1.1 Electrical efficiency is calculated as net electricity produced divided by total fuel energy input.

1.2 Thermal efficiency is calculated as net useful power output divided by total fuel energy input.

1.3 The entity shall use lower heating values (LHV) in the calculation of electrical efficiency and thermal efficiency, and it shall disclose the heating values used.

2 The entity shall measure and disclose electrical and thermal efficiency in accordance with standard(s) applicable to the product application or technology type.

2.1 Applicable standard(s) may include: IEC 62282-3-200—Stationary fuel cell power systems and SAE J2615—Testing Performance of Fuel Cell Systems for Automotive Applications.

2.2 The entity shall disclose the standard(s) used for energy efficiency measurements.

3 The entity shall disclose electrical and thermal efficiency by these application types, if applicable: portable, motive, stationary and 'all other', each further categorised by these technology types, if applicable: direct methanol (DMFC), polymer electrolyte (PEM), alkaline (AFC), phosphoric acid (PAFC), molten carbonate (MCFC), solid oxide fuel cell (SOFC) and all other types.

3.1 The entity may include additional categories of application types or technology types if appropriate, including categories for new products with low sales volumes, but strategic importance in terms of product efficiency or other attributes.

4 The entity may disclose any other fuel cell outputs that have economic value (for example, hydrogen), including an appropriate measurement of sales-weighted average value, by product application and technology type.

RR-FC-410a.3. Average battery efficiency as coulombic efficiency, by product application and technology type

1 The entity shall disclose the average energy efficiency of batteries as coulombic efficiency, weighted by unit sales volume per product application and technology type.

1.1 Coulombic efficiency is calculated as energy removed from a battery during discharge divided by the energy used during charging to restore the original capacity.

2 The entity shall measure and disclose coulombic efficiency in accordance with standard(s) applicable to the product application or technology type.

2.1 Applicable standard(s) include SAE J240—Automotive storage batteries and SAE J2185—Heavy-duty storage batteries.

3 The entity shall disclose coulombic efficiency by these application types, if applicable: portable, motive, stationary and 'all other', each further categorised by these technology types, if applicable: lead-based, nickel-based, lithium-based, sodium-based and all other types.

3.1 The entity may include additional categories of application types or technology types if appropriate, including categories for new products with low sales volumes, but strategic importance in terms of product efficiency or other attributes.

RR-FC-410a.4. Average operating lifetime of fuel cells, by product application and technology type

1 The entity shall disclose the average operating lifetime of fuel cells, weighted by unit sales volume per product application and technology type.

1.1 Operating lifetime of fuel cells is calculated as operating hours until 20% net power degradation occurs.

2 The entity shall measure and disclose operating lifetime in accordance with standard(s) applicable to the product application or technology type.

2.1 Applicable standard(s) may include IEC 62282-3-200—Stationary fuel cell power systems and SAE J2615—Testing Performance of Fuel Cell Systems for Automotive Applications.

3 The entity shall disclose operating lifetime by these application types, if applicable: portable, motive, stationary and 'all other', each further categorised by these technology types, if applicable: direct methanol (DMFC), polymer electrolyte (PEM), alkaline (AFC), phosphoric acid (PAFC), molten carbonate (MCFC), solid oxide fuel cell (SOFC) and all other types.

3.1 The entity may include additional categories of application types or technology types, if appropriate, including categories for new products with low sales volumes, but strategic importance in terms of product efficiency or other attributes.

RR-FC-410a.5. Average operating lifetime of batteries, by product application and technology type

1 The entity shall disclose the average operating lifetime of batteries, weighted by unit sales volume per product application and technology type.

1.1 The operating lifetime of batteries is calculated as the number of times the battery can be fully charged and discharged, or 'cycles', until 20% capacity degradation occurs.

2 The entity shall measure and disclose operating lifetime in accordance with standard(s) applicable to the product application or technology type.

2.1 Applicable standard(s) include SAE J240—Automotive storage batteries and SAE J2185—Heavy-duty storage batteries.

3 The entity shall disclose performance by these application types, if applicable: portable, motive, stationary and 'all other', each further categorised by these technology types, if applicable: lead-based, nickel-based, lithium-based, sodium-based and all other types.

3.1 The entity may include additional categories of application types or technology types if appropriate, including categories for new products with low sales volumes, but strategic importance in terms of product efficiency or other attributes.

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