



Technical Report

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Facility management's role in sustainability, resilience and adaptability

*Rôle du facility management dans la durabilité, la résilience et
l'adaptabilité*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Facility management's (FM) contribution to sustainability, resilience and adaptability of the built environment is evolving fast and is endorsed by an increasing number of countries and organizations. Given this dynamic, FM has a key role to play in taking the bold and transformative steps which are urgently needed to shift the world onto the path for a more sustainable, resilient and adaptive future.

The United Nations (UN) Sustainable Development Goals (SDGs) provide a holistic global framework for addressing poverty, inequality, climate change, environmental degradation, peace and justice. The 17 SDGs were adopted by the UN's 193 member countries in 2015 as a universal call to action to end poverty, protect the planet and ensure that by 2030 all people enjoy peace and prosperity. The management of the built environment figures directly and substantially in achieving such aspirations.

This document is intended for use by organizations, regardless of size, maturity or industry, that wish to work towards a more sustainable FM. The SDGs provide a holistic global framework for addressing and reporting on a range of global challenges. Using this framework, this document provides contextual insight into ways that demand organizations, FM professionals and their organizations can contribute to achieving a more productive, sustainable and liveable built environment for all.

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Facility management's role in sustainability, resilience and adaptability

1 Scope

This document provides a broad societal context for facility management (FM) to inspire organizations that wish to:

- establish and improve a sustainable integrated FM system;
- embrace the wide-ranging and positive contribution that FM makes in managing the built environment;
- support the United Nations (UN) Sustainable Development Goals (SDGs).

This document provides a non-exhaustive contextual introduction to relevant concepts, initiatives and terms that are in common use.

It is acknowledged that the practice of FM internationally is dynamic and diverse, hence this document provides generic information based on current experience without setting out any specific requirements, recommendations or permissions. Organizations are encouraged to make their own enquiries as to the extent this document is applicable to their circumstances.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 climate

statistical description of weather in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years

Note 1 to entry: The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization.

Note 2 to entry: The relevant quantities are most often near-surface variables such as temperature, precipitation and wind.

[SOURCE: ISO 14090:2019, 3.4]

3.2 climate change

change in *climate* (3.1) that persists for an extended period, typically decades or longer

Note 1 to entry: Change in climate can be identified (e.g. by using statistical tests) by changes in the mean or the variability of its properties, or both.

Note 2 to entry: Climate change might be due to natural processes, internal to the climate system, or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use.

[SOURCE: ISO 14090:2019, 3.5, modified — Note 1 to entry has been modified.]

3.3 adaptation

climate change adaptation

process of adjustment to actual or expected *climate* (3.1) and its effects

Note 1 to entry: In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities.

Note 2 to entry: In some natural systems, human intervention can facilitate adjustment to expected climate and its effects.

[SOURCE: ISO 14090:2019, 3.1, modified — “to climate change” deleted from the preferred term.]

3.4 circular economy

economy that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles

[SOURCE: ISO 41011:2024, 3.6.3]

3.5 CO₂e carbon dioxide equivalent CO₂ equivalent

unit for comparing the radiative forcing of a *greenhouse gas* (3.7) to that of carbon dioxide

Note 1 to entry: Mass of a greenhouse gas is converted into CO₂e using *global warming potentials* (ISO 14050:2020, 3.9.2).

[SOURCE: ISO 14050:2020, 3.9.3, modified — CO₂e becomes the preferred term. Note 1 to entry added.]

3.6 demand organization

entity which has a need and the authority to incur costs to have requirements met

Note 1 to entry: This is typically an authorized representative within a functional unit of an organization.

[SOURCE: ISO 41011:2024, 3.3.4]

3.7 greenhouse gas GHG

gaseous constituent of the atmosphere, both natural and anthropogenic (resulting from or caused by human activity), that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds

Note 1 to entry: For a list of GHGs, refer to the latest Intergovernmental Panel on Climate Change (IPCC) assessment report.

Note 2 to entry: Water vapour and ozone are anthropogenic as well as natural GHGs, but they are not included as recognized GHGs due to difficulties, in most cases, in isolating the human-induced component of global warming attributable to their presence in the atmosphere.

[SOURCE: ISO 41011:2024, 3.10.1]

3.8 greenhouse gas emission GHG emission

release of a *GHG* (3.7) into the atmosphere

[SOURCE: ISO 14064-1:2018, 3.1.5, modified — Note 1 to entry deleted.]

3.9
facility management
FM

facilities management

organizational function which integrates people, place and process within the built environment with the purpose of improving the quality of life of people and the productivity of the core business

[SOURCE: ISO 41011:2024, 3.1.1, modified — Note 1 to entry deleted.]

3.10
stakeholder

interested party

person or organization that can affect, be affected by, or perceive itself to be affected by a decision or an activity

[SOURCE: ISO 41011:2024, 3.3.5]

3.11
life cycle

consecutive and interlinked stages related to a product, from raw material acquisition or generation from natural resources to end-of-life treatment

[SOURCE: ISO 14067:2018, 3.1.4.2, modified — Notes to entry deleted.]

3.12
sustainability

state of the global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs

Note 1 to entry: The environmental, social and economic aspects interact, are interdependent and are often referred to as the triple bottom line, also known as the three dimensions of sustainability.

Note 2 to entry: Sustainability is the goal of *sustainable development* (3.13).

[SOURCE: ISO 41011:2024, 3.10.4]

3.13
sustainable development

development that meets the environmental, social and economic needs of the present without compromising the ability of future generations to meet their own needs

Note 1 to entry: Derived from the Brundtland Report^[53].

[SOURCE: ISO 41011:2024, 3.7.22]

3.14
social responsibility

responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that:

- contributes to *sustainable development* (3.13) including the health and the welfare of society;
- takes into account the expectations of *stakeholders* (3.10);
- is in compliance with applicable law and consistent with international norms of behaviour;
- is integrated throughout the organization and practised in its relationships.

Note 1 to entry: Activities include products, services and processes.

Note 2 to entry: Relationships refer to an organization's activities within its sphere of influence.

[SOURCE: ISO 41011:2024, 3.3.8, modified — “stakeholders” replaced “interested parties”.]

3.15

resilience

adaptive capacity in a complex and changing environment

[SOURCE: ISO 41011:2024, 3.7.17]

4 Concepts, context and challenges

4.1 United Nations 2030 Agenda

In 2015, the UN set an ambitious 15-year plan to address some of the most pressing issues faced by the world. All 193 Member States adopted “Transforming our world: the 2030 Agenda for Sustainable Development” [82] (also referred to as the “2030 Agenda”) as a plan for achieving a better future for all.

The 2030 Agenda has at its heart the 17 SDGs and 169 targets. This agenda is a plan of action laying out a path to end extreme poverty, fight inequality and injustice, and protect our planet.

The SDGs provide an integrated and indivisible balance of the three dimensions of sustainable development: the economic, social and environmental, and are of critical importance to humanity. The SDGs focus areas are: People, Planet, Prosperity, Peace and Partnership.

As an extract from the preamble of the UN General Assembly Resolution 70/1, adopted on 25 September 2015, these are described as:

- “People: We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.
- Planet: We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.
- Prosperity: We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.
- Peace: We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.
- Partnership: We are determined to mobilise the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.”

Fulfilling these ambitions will require unprecedented effort by all sectors of society and business.

The UN “The Sustainable Development Goals Report 2021” [79] sets out that the global community is at a critical moment in its pursuit of the SDGs. Reporting that progress in key areas had either stalled or reversed. In the wake of the global COVID-19 pandemic, the human and economic toll has been unprecedented, and recovery efforts so far have been uneven, inequitable and insufficiently geared towards achieving sustainable development. Decades of development gains have been threatened, further delaying the urgent transition to a greener, more inclusive economies, and throwing progress on the SDGs even further off track. Under the UN Agenda 2030, the world could have been better prepared to face this crisis – with stronger health systems, expanded social protection coverage, the resilience that comes from more equal societies, and a healthier natural environment.

A recommitment by governments, cities, businesses and industries to ensure that the recovery reduces greenhouse gas (GHG) emissions, conserves natural resources, creates better jobs, advances gender equality, and tackles growing poverty and inequalities is a further imperative.

4.2 CSR and ESG

With its origins in the 1950s, and coined as a term in the 1970s, the corporate social responsibility (CSR) concept is a self-regulating business model that helps an organization to be socially accountable to itself, its stakeholders, and the community. CSR evolved through the 1980s and 1990s, and by 2000 had become an essential strategy for many organizations. Through the practise of CSR, also sometimes referred to as "corporate citizenship", organizations were able to demonstrate accountability for their impacts on society, including economic, social and environmental issues.

By the 2000s, the environmental, social and governance (ESG) framework terminology emerged, taking the holistic view that sustainability extends beyond just environmental issues.

Overall, ESG criteria are considered more specific and actionable than CSR initiatives, leading to a growth in the alignment of ESG data with the UN SDGs since 2015.

In effect, CSR was the precursor to the ESG principles.

CSR provides a qualitative assessment of an organization's effects on its stakeholders and society. ESG measures an organization's impact on the environment and society, using quantitative measurement methods with the aim of delivering long-term stakeholder value. Concurrently, stakeholders and society are requiring that organizations become more transparent about their performance and reporting.

There is evidence of growing acceptance of ESG principles and the positive correlation with total shareholder return (TSR) as a measure of financial performance in terms of capital growth and dividends. There is also a trend toward more active regulation with increasingly granular requirements.

Despite the diversity of approaches to assessing ESG performance (see [Clause B.3](#)), the push has been for more accurate and robust disclosure. The implications of technologies, such as digital twins and data analytics, further blur the lines between physical and digital environments, along with challenging traditional concepts of connectivity, service level agreement, responsiveness, supply chains, carbon footprints, etc.

While the challenge remains that ESG has few uniform reporting standards, ESG principles, and making them quantifiable, meaningful and understandable across industries and sectors, are fundamental to achieving sustainability, resilience and adaptability.

4.3 Business and finance context

4.3.1 General

Global challenges and the rapidly changing complexity of society inform the development of mitigation plans. Increasingly FM is being required to be proactive in enhancing the demand organization's sustainability, resilience and adaptability capability to contribute to the quality of life of end users and the wider community.

The SDGs provide an overarching framework that can inform FM's contribution to a more sustainable, resilient and adaptive built environment. The SDGs can be used by organizations to directly inform their strategic goals, which in turn inform FM strategies, policies and operations.

In addition, the use of performance reporting frameworks, such as those observing the ESG principles, can be designed to support improved organizational outcomes in terms of efficiency, productivity, liveability, affordability, resilience and adaptability.

The prominence of the SDGs and ESG principles and influence on the demand organization's FM strategies, policies and operations, as shown in [Figure 1](#), are crucial to achieving sustainable outcomes and addressing contemporary performance metrics.

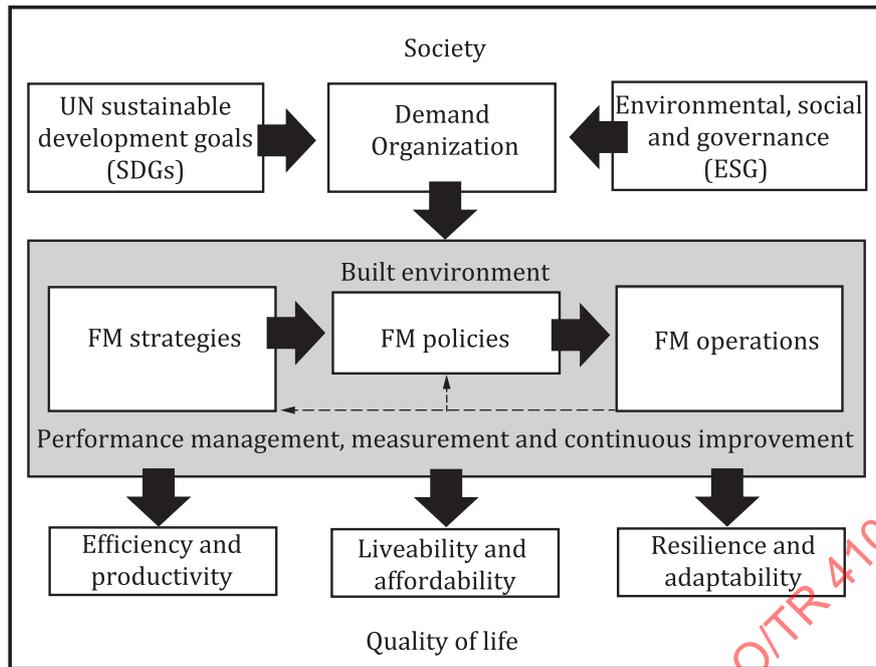


Figure 1 — Graphical representation of the broader societal context for the built environment and FM's contribution to quality of life

At a strategic level, the SDGs influence FM strategy as it relates to the organizational context and its impact on the demand organization's people and places with whom FM interacts in terms of core business, governance, inclusiveness and risk management. The processes that FM uses in services delivery are determined in terms of scope, specifications, sourcing and innovations. Specifically, examples include FM strategies covering:

- governance and context;
- core business activities;
- risk management;
- accessibility, inclusiveness and equalities of occupancy;
- functional requirements;
- scope of services;
- service specifications;
- outputs and targets;
- service levels, delivery, sourcing and innovations.

At the policy level, the SDGs inform by social responsibility, business relationships and financial systems, and the development of health, safety, security, environmental and information plans for the support of the demand organization's assets, workplace and occupancy. Specifically, examples include FM policies covering:

- health, safety and security;
- social factors;
- environmental management;
- information security;
- business continuity and recovery;

- support functions and supply;
- workplace and occupancy.

At the operational level, the SDGs underpin the development of good-practice guidance for the design and delivery of day-to-day activities. Operationally, the FM organization directly supports the people, place and process dimensions along with the productivity of the core business. Specifically, examples include FM operations covering:

- establishing criteria;
- implementing control;
- information management;
- relationship management;
- resource management, including the use of materials and energy efficiency;
- service level agreements;
- coordination of stakeholders;
- integration of services;
- emergency preparedness, monitoring and response;
- asset maintenance.

4.3.2 Business

Sustainable FM makes good business sense, contributing to the triple bottom line, expressed as the “three P's” of profit, people and the planet. Purpose-driven leaders can effect positive change in the world while improving financial performance. Adopting a reporting framework, such as ESG, can support business success.

Sustainable FM is “the integrated whole of a complex sociotechnical system at the building level, consisting of elements such as buildings and building operation, use, maintenance and management processes, and how this system can be managed to contribute to sustainable development in society. Sustainable FM in practice is not a simple matter but includes complex challenges with numerous dilemmas, such as how to prioritize environmental e.g. energy savings in comparison with quality, economy and health.”^[70]

Sustainable FM is being driven by a combination of societal concern, investor pressure, risk mitigation, regulatory changes and performance targets. In addition, a variety of organizations and end users are increasingly aware of the well-being, social and environmental benefits of optimized facilities, sustainable infrastructure and resilient urban systems. Hence, it is reasonable to assume that FM's role in providing ESG-friendly spaces will persist and the FM performance reporting requirements will expand.

Sustainable FM requires professionals to be aware of the global strategic context, and complexities of current and future performance expectations. Increasingly, in recent years, multiple industry tools, surveys and reports attest to the links between sustainability as a driver of an organization's innovative performance indicators and associated financial risks. Financial risks are always relevant to FM budgets and capital projects, requiring substantive evidence of the focal areas for performance measuring and reporting. Sustainable FM can expand this to additional issues such as:

- sustainability reporting;
- third party assurance and integrated reporting;
- GHG emissions (predominately carbon dioxide (CO₂) reduction goals);
- risks with respect to climate change and loss of biodiversity;

- alignment of activities with SDGs, linked to economic growth, climate change and responsible consumption becoming the priority;
- indoor environmental quality (IEQ) and working environment (lighting, acoustics, air quality, etc.) and the correlation with staff performance and attendance;
- emergency preparedness and business continuity planning, including a review of training exercises against the most common hazard threats;
- resilience assessment of internal systems and external supply chains.

If FM professionals are to play a key role in taking the bold and transformative steps required to shift the world onto a more sustainable, resilient and adaptive path, then aligning their business cases and FM reporting to recognized standards is essential. Verification of such requirements can be reflected within an organization's policies and strategic plan. Specific business sustainability areas where FM can be called upon to support reporting include: economic performance, procurement, energy, water, waste, health and safety, training, security, resourcing and others.

See [Annex B](#) for details on practical steps towards, and examples of, sustainable FM.

4.3.3 Finance

The SDGs were developed to be primarily actionable by governments and countries, rather than investors and businesses. With the SDGs addressing an array of global challenges, it can seem difficult to translate them into a core business strategy and meaningful FM actions.

There is no common or agreed methodology of measuring the SDGs contribution or impact from an investment portfolio perspective. However, ISO 41012:2017 states that an "investment strategy should include a clear investment model. It should also include an adaptive asset management strategy or plan and a continuous follow up on maintenance".

Globally, the International Financial Reporting Standards (IFRS) Foundation is responsible for accounting and sustainability disclosure standards across 77 industries, as developed by the International Accounting Standards Board (IASB) and International Sustainability Standards Board (ISSB). As of August 2022, the ISSB of the IFRS Foundation assumed responsibility for the SASB Standards.

In 2018, the Sustainability Accounting Standards Board (SASB) developed SASB Standards for sustainability accounting across a wide range of industries, including the real estate and engineering sectors. SASB Standards contain disclosure topics, associated accounting metrics and technical protocols, and activity metrics for each industry.

SASB's "Industry Guide to the Sustainable Development Goals"^[58] provides guidance on SDG mapping for business, noting that 6 of the 17 SDGs likely to present the greatest opportunity for business to contribute are:

- SDG 3 (good health and well-being);
- SDG 7 (affordable and clean energy);
- SDG 8 (decent work and economic growth);
- SDG 9 (industry, innovation, and infrastructure);
- SDG 12 (responsible consumption and production);
- SDG 13 (climate action).

It is widely acknowledged that some form of sustainability reporting is practised by a majority of modern organizations, with the Global Reporting Initiative (GRI) as the dominant global reporting standard.^[68] GRI claims to offer a complete set of sustainability reporting standards in support of the 2030 Agenda.

GRI Standards include indicators of performance on some subjects included in the SDGs. In general terms, some investments, such as those in infrastructure, renewables, social housing and construction, aligned with some SDGs, but currently the actual investment impact is not readily quantifiable nor is the contribution to

the SDGs a key driver of investment, or operational and life cycle decisions. However, in the interim, there is a great deal FM can achieve through acknowledging the SDGs alignment with its activities and reporting.

4.4 Climate change, net zero emissions and the circular economy

4.4.1 Climate change

According to the Intergovernmental Panel on Climate Change (IPCC) (2022 report^[64]), there is unequivocal evidence that human activity influence has warmed the atmosphere, ocean and land. This has led, and if left unchecked will continue to lead, to widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere. Human-induced climate change is already affecting many weather and climate extremes in every region across the globe, such as heatwaves, precipitation, droughts and storms.

Climate change represents a significant threat to life on Earth. Part of the solution has been identified that society must reduce and ultimately eliminate GHGs, principally CO₂ emissions, measured as CO₂e. Fortunately, this transformation to a zero-carbon economy has commenced in many industrial, commercial and governmental sectors, across local, national and regional markets. However, the IPCC 2023 report^[65] highlights that current mitigation and adaptation actions and policies are not sufficient.

As detailed in the IPCC 2021 report^[63], during 2020, the COVID-19 pandemic led to a rapid, temporary decline in CO₂ emissions. Overall, however, even lengthy lockdowns seem to have had a surprisingly small impact on the global climate. Despite this, COVID-19 has provided the world with an opportunity to pause and reflect that, without concerted global action, the path leads towards dangerous climate change.

With many governments and corporate leaders signalling a significant return to so-called “normality” in 2022 in terms of travel, trade, production, consumption, etc., the climate change challenge remains. Keeping the Paris Agreement’s goal in sight to reduce CO₂ emissions by 50 % and to limit global average temperature to well below 2,0 °C above pre-industrial levels (preferably to 1,5 °C by 2050) will require investment in widespread transformative structural change.

The IPCC 2022 report^[64] outlines five possible climate futures, all of which present challenges. The IPCC also introduces a range of terms; the one which resonates with FM is “climate resilient development (CRD)”: the process of implementing GHG mitigation and adaptation measures to support sustainable development.

The built environment is a major contributor to climate change in terms of operational and embodied carbon.

According to the United Nations Environment Programme (UNEP) “2021 Global Status Report for Buildings and Construction”^[86] and the International Energy Agency (IEA) “World Energy Outlook 2021”^[59], the buildings and construction sector accounted globally for 36 % of energy demand and 37 % of energy and process-related CO₂ emissions in 2020, 10 % of which resulted from manufacturing building materials and products, such as steel, cement and glass.

In conjunction with a range of initiatives, significant CO₂ savings can be achieved by 2030 by:

- improving facility design and construction;
- increasing reuse and recycling rates;
- contributing to deeper energy efficient retrofits;
- extending the life cycle of facilities.

In turn, climate change threatens the built environment’s resilience, the integrity of its assets and the ability of facilities to provide consistently reliable services. Enhancing resilience, and adapting to the coming changes, requires action to respond to capacity demands, extreme conditions, emergencies, and cope with climate-related hazards and utilization changes. The impacts of climate change can be cumulative and often have a complex interplay with other issues, such as social vulnerability and migration.

The UNEP’s “Adaptation Gap Report 2022: Too Little, Too Slow”^[84] highlights that climate adaptation failure puts the world at risk.

The 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) meeting in Egypt in November 2022, reported on a range of high-level goals. A summary of the COP27 commitments, expressed as specific actions for organizations, are as follows:

- support for the move to 100 % renewable electricity supply;
- plan and implement net zero emissions transformations;
- design for long-life products;
- creation of circular supply chains;
- work towards net zero emissions transportation;
- reduce travelling operations;
- review construction and building material business models;
- achieve net zero carbon owned or leased facilities.

In addition, the 15th Conference of Parties to the United Nations Convention on Biological Diversity (COP15) meetings in December 2022 adopted the “Kunming-Montreal Global Biodiversity Framework”, including 4 overarching global goals and 23 targets for achievement by 2030.

Not all of the 2030 Agenda’s targets for climate change and biodiversity are within the direct control of FM; however, enhanced awareness of such issues is a start.

The International Facility Management Association (IFMA) published a white paper entitled “Climate Change Fundamentals for Facility Management Professionals”^[60]. This provides for an understanding of climate change science, its impacts and areas of concern, specifically as it relates to managing the built environment.

4.4.2 Net zero emissions

CO₂ is the most significant of the GHG emissions that acts as a cap in trapping heat in the Earth’s atmosphere, creating the greenhouse effect. Organizations such as the Carbon Disclosure Project, UN Global Compact, World Resources Institute and the Worldwide Fund have created the Science Based Targets initiative (SBTi).

The SBTi provides guidance, criteria and recommendations to support the setting of net zero targets to reduce GHG emissions aligned with the 2015 Paris Agreement goals. As of September 2022, 194 members of the United Nations Framework Convention on Climate Change (UNFCCC) are parties to the agreement.

According to the UN, to meet the temperature increase limit of not more than 1,5 °C in global warming (as set out in the Paris Agreement), GHG emissions will need to be reduced 45 % by 2030 and net zero by 2050. The rate at which GHG emissions are reduced matters significantly, with longer delays resulting in increased net emissions – even when reaching milestones for reduction reductions. Early in 2024, the increase goal was exceeded for more than a year.

As organizations commit to science-based targets or simple carbon reduction goals, some or all of the responsibility for the delivery of a range of these commitments will fall to FM, particularly considering the contribution of the built environment in terms of operational and embodied carbon.

Decarbonizing supply chains is difficult, but the World Economic Forum’s “Net-Zero Challenge: The Supply Chain Opportunity”^[94], provides a practical step-by-step guide on actionable initiatives for organizations taking on supply chain emissions, as follows:

- build a comprehensive GHG emissions baseline, gradually filled with actual supplier data;
- set ambitious and holistic reduction targets;
- reduce GHG emissions by:
 - revisiting product design choices;

- reconsidering (geographic) sourcing strategy;
- setting ambitious procurement standards;
- working jointly with suppliers to co-fund abatement levers;
- working together with peers to align sector targets that maximize impact and level the playing field;
- using scale by driving up demand to lower the cost of green solutions;
- develop internal governance mechanisms that introduce GHG emissions as a steering mechanism and align the incentives of decision-makers with GHG emission targets.

Taking on board these principles, an example of the need for such customization can be observed in the “Towards Net-Zero Buildings, a quantitative study”^[74]. Notably, this report models six building archetypes representative of offices, hospitals, hotels, retail centres, education buildings and individual residences. Each building archetype has different energy demand profiles, and thus shows a different sustainability potential. The report’s findings are then based on 12 building configurations (new build and retrofit) across 19 regions in Asia, Europe and North America for 228 facilities with multiple simulations to evaluate the potential of carbon abatement, consumer energy costs and the economic rationale (return on investment).

4.4.3 Circular economy

The circular economy is about rethinking our approach to products and services. It is an economy that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles. A circular economy, in contrast to the environmental burdens originating from the traditional linear economy system (take-make-dispose), is more of a closed-loop system. It involves a focus on repurposing product materials, reducing GHG emissions, and ensuring resources are efficiently used and kept in circulation as long as possible.

Underpinned by a transition to renewable energy sources, the three principles of a circular economy are:

- design out waste and pollution;
- keep products and materials in use;
- regenerate natural systems.

For example, in terms of embodied carbon, one route to zero-carbon structural design is through the reuse and life extension of existing buildings and their components. However, where “building nothing” is not a viable option, then considerable facility planning and engineering analysis are essential to dramatically cut GHG emissions. Hence, end-of-life discussions (demolition, conversion, recycle or reuse in some form) are an integral part of every FM plan and design decision in achieving a circular economy.

The circular economy is a model for production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials, products and facilities for as long as possible. FM has a significant role to play in facilitating and operationalizing this circularity as a means of contributing to improved sustainability, competitiveness, innovation, growth and performance.

Independent research has found that “the strongest relationships exist between circular economy practices and the targets of SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 12 (responsible consumption and production) and SDG 15 (life on land).”^[74] Further, SDG 13 (climate action) acknowledges that UNFCCC is the primary international, intergovernmental forum for negotiating the global response to climate change.

FM practices contribute to realizing an effective circular economy, not only for its role in sourcing and supply chain relationships, but also the implications for a broad range of FM activities that directly and indirectly impact on achieving the SDGs.

The importance of the circular economy was acknowledged in 2018 with the establishment of ISO/TC 323 for the circular economy. At the time of the preparation of this document, ISO/TC 323 had 77 participating

and 20 observing member countries, with six publications under development within the ISO 59000 family of standards.

4.5 Sustainability, resilience and adaptability

4.5.1 General

The FM function within a demand organization is usually to support its strategic objectives and to ensure that new practices and operational tasks are developed, applied, monitored, measured and improved.

During periods of rapid change, uncertainty and risk, there is a need for new practices to ensure the built environment is capable of supporting well-being and productivity, enabling business continuity, lowering GHG emissions and preserving biodiversity, while also delivering services, affordability and quality of life to all.

While sustainability is increasingly receiving attention, leading to more focus on sustainable FM practices, a major challenge has been an apparent lack of comprehensive resilience strategies. This is despite the widespread changes, potential disruptions and acknowledged interdependencies of the ESG challenges that communities now face. These are all combined to create risk, complexity and opportunity for the planning, delivery and management of the built environment. To protect a society faced with an uncertain future, resilience and adaptability must be integral to FM systems and services.

This transformation requires FM to develop a global understanding of the risks involved in traditional and current practices, and the role of FM in planning for an uncertain future by addressing:

- demand organization priorities, and FM organization capabilities;
- end-user needs and preferences;
- the ways in which facilities interact and integrate;
- the systems and performance it influences;
- the SDGs it contributes to;
- the value of resilience and adaptability;
- responsibilities for managing risks.

The singular, siloed or sectoral perspectives that are common today can shift to an open collaborative culture within facilities and across organizations, systems, networks, portfolios, sectors and communities. This requires coordination and a systemic approach, including a robust, credible, and reliable environmental management system, and shared responsibility and accountability across all participants using consistent approaches and metrics.

The first steps in meeting this challenge are the pursuit of improved governance and decision-making in the integration of sustainability, resilience and adaptability solutions into FM practices. The adoption of standards, such as the ISO 41000 family of standards, can achieve this and contribute to improved systems, procedures and performance.

The World Economic Forum's "A Framework for the Future of Real Estate"^[93] provides a future vision of cities and buildings based on four pillars: liveability, sustainability, resilience and affordability.

This document considers the contribution of FM to the components described in [4.5.2](#) to [4.5.4](#), and the resources available.

4.5.2 Sustainability

It is possible that the sustainability policy concept officially has its origins within the 1987 Brundtland Report^[53]; but long before that, the idea of living in balance with nature and the logic of long-term lifestyle and business practices has traditionally been well-understood. However, it seems in the modern world

that there is increasing tension between humanity's aspirations for a better life on the one hand and the limitations imposed by nature on the other hand.

Simply put, sustainability involves taking action now to ensure the future, sometimes referred to as "transgenerational equity". The complexity is based on the number of variables, stakeholders, interactions and interdependencies. Hence, the emergence of an array of sustainability guidance, rating tools and reporting frameworks, some of which are described in this document.

Sustainability is relevant to all levels of human activity, from the global level to the national, regional and community levels, as well as to the behaviour of individuals, impacting a variety of organizations, including governments, non-governmental organizations, businesses, co-operatives, federations and not-for-profits. Sustainability is much more likely to be achieved by society as a whole if social, economic and environmental aspects are addressed in an integrated manner.

There are many sustainability standards, good practice guides, rating tools and certifications now available to organizations, and a growing number of performance rating agencies.

4.5.3 Resilience

The United Nations Office for Disaster Risk Reduction (UNDRR) was created in 1999 and defines resilience as: "The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management". [89] The UNDRR is concerned with the increasing number of people affected by natural hazards, and the growing recognition by governments and organizations that building resilient communities and reducing disaster risk is a core initiative.

The Sendai Framework for Disaster Risk Reduction 2015–2030 ("Sendai Framework") [88] was the first major agreement of the post-2015 agenda, supporting the SDGs, and is directly relevant to FM professionals. The Sendai Framework provides for actions to mitigate the risk of disasters. It outlines four priorities for action to prevent new and reduce existing disaster risks:

- understanding disaster risk;
- strengthening disaster risk governance to manage disaster risk;
- investing in disaster reduction for resilience;
- enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation and reconstruction.

Accordingly, specific climate-induced hazards require enhanced resilience and recovery capabilities. Instances include adapting to hotter temperatures, more severe storms, increased drought, warming oceans, rising sea levels, loss of species, food shortages, increased health risks, more poverty and population displacements. ISO/TR 22845:2020, while not specifically referencing FM, provides a range of information and assessment resources, noting that, in terms of climate-induced risks, there will be increased exposure and vulnerability brought about by urbanization.

One example of an operational tool is the Australian Institute of Refrigeration Air Conditioning and Heating (AIRAH) Resilience Checklist [52]. This guide discusses technical concepts involved in improving the resilience of buildings and their heating, ventilation, and air conditioning (HVAC) systems from the perspective of a range of stakeholders, including facility managers. It also includes an eight-step process for developing a resilience action plan.

FM professionals will increasingly find themselves on the frontlines of the growing physical risks associated with climate change, and identifying and developing mitigation plans to reduce the direct and indirect impacts on assets, people and services compromising quality of life issues.

4.5.4 Adaptability

Beyond embracing sustainability and understanding resilience, FM will be increasingly called upon to maintain facilities, services and productivity via risk mitigation strategies. According to ISO 41015:2023, the realization of adaptability, also referred to as “agility”, requires FM to maintain active awareness of changing demands, circumstances, priorities, opportunities, problems and challenges, within and outside of FM and demand organizations.

The IPCC 2022 report^[64] notes that there is already evidence of numerous climate-related impacts globally causing severe damages in many places and have projected that these impacts will increase in the future.

Adaptation can reduce these risks, often significantly, according to the IPCC 2022 report^[64]:

“adaptation typically focuses on:

- (i) increasing the standard of protection to compensate for the increased magnitude of extreme events;
- (ii) increased maintenance to cope with increased frequency of extremes and changes in ambient conditions;
- (iii) changed maintenance regimes from narrower maintenance windows e.g. as assets are used more frequently;
- (iv) land use planning and management to reduce exposure and manage hydrological flows, and
- (v) raising awareness, preparedness, and incident management.”

Adapting to climate-induced hazards can require changes in the physical and functional aspects of facilities. This can go beyond adjusting existing practices, including new approaches to decision-making on facility planning to integrate resilience and adaptation actions to advance sustainable development.

Mitigating climate-induced hazards impacts can reduce the need for short-term adaptation significantly. Addressing asset vulnerability via a resilience action plan is essential for extending facility life cycle expectancy, continuity of services, and avoiding increased failure rates and maintenance costs.

Adaptation options for FM and related infrastructure include engineering, technological and operational solutions. Such adaptive solutions can require innovative policy, planning, management and maintenance approaches.

The scope and specification of building adaptation projects can vary to meet the circumstances involved, and the objectives, priorities and approach to risk of the demand organization. Such initiatives can include improving environmental performance, refurbishment/capacity upgrades, life cycle extension or change of use.

Resilience can be seen as involving a more pre-emptive design, while adaptation implies activities of a retroactive nature. In essence, a “resilient facility” is one that is designed for sustainability in the face of anticipated hazards, while an “adaptable facility” is one that can be readily modified to meet those challenges.

The Institute of Asset Management (IAM) has published a white paper entitled “Climate Change Action Planning: Guidance for Asset-owning Organizations”^[62]. This provides guidance on sustainability and in particular, the need for mitigation and adaptation to improve constructed assets resilience to climate change to support an organization’s goals. The paper provides some details on how to develop and apply mitigation and adaptation plans.

A range of design, construction and management initiatives can be employed to reduce or eliminate potential hazards which have not been always been considered a priority in the past. There are many mitigation measures that can improve the resilience of the built environment: these apply to both new developments and existing facilities. Some of the early drivers of adaptability can come from the insurance industry to cope with an increase in climate-induced claims.

It is apparent that “business as usual” is no longer an option.

5 Sustainable Development Goals (SDGs)

This clause outlines the background and basic concepts related to the SDGs. The forerunner to the SDGs were the Millennium Development Goals (MDGs). The eight MDGs agreed to in September 2000 committed the world to combat poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women. Each MDG had 2015 targets and indicators to monitor progress from 1990 levels.

The MDGs have now been superseded by the SDGs, see [4.1](#).

It is important to note that the indicators are solely a global impetus, as UN member states can further refine the indicators at a national level to ensure accurate measurements.

Broad methodological convergence has been reached for certain indicators, while for others further research must be conducted. Therefore, there is scope for the indicators to evolve.

Currently, the global indicator framework includes 231 unique indicators. However, 12 indicators repeat under two or three different targets. Hence, the total number of indicators listed in the global indicator framework of SDG indicators is 248.

For further details on the SDGs, see Reference [\[92\]](#).

Many of the SDG indicators relate to national performance criteria and per capita contributions. Although fundamentally it can seem that the achievement of the SDGs is dependent on government implementation at a national level, the SDG targets simply cannot be achieved without private sector engagement via business and community organizations, and individual action. The SDG Compass [\[55\]](#) provides guidance based on five-step process to align core business strategies with the SDGs, see [Table 1](#).

Table 1 — Five steps for using SDGs

Step	Description
1) Understanding the SDGs	As a first step, organizations are assisted in familiarizing themselves with the SDGs.
2) Defining priorities	To seize the most important business opportunities presented by the SDGs and reduce risks, organizations are encouraged to define their priorities based on an assessment of their positive and negative, current and potential impact on the SDGs across their value chains.
3) Setting goals	Goal setting is critical to business success and helps foster shared priorities and better performance across the organization. By aligning an organization's goals with the SDGs, the leadership can demonstrate its commitment to sustainable development.
4) Integrating	Integrating sustainability into the core business and governance, and embedding sustainable development targets across all functions within an organization, is key to achieving set goals. To pursue shared objectives or address systemic challenges, organizations increasingly engage in partnerships across the value chain, within their sector or with governments and civil society organizations.
5) Reporting and communicating	The SDGs enable organizations to report information on sustainable development performance using common indicators and shared set of priorities. The SDG Compass encourages organizations to build the SDGs into their communication and reporting with stakeholders.

NOTE Source: Adapted from SDG Compass – The guide for business action the SDGs, with minor edits for consistency with the ISO 41000 family of standards.

In this context, relative to the industry, sector and maturity of the demand organization, it is estimated that FM has a direct or indirect role to play in 30 % to 40 % of the 248 SDG indicators. It is anticipated that FM can contribute to all 17 SDGs and, in collaboration with other built environment professions, significantly influence SDGs 6, 7, 8, 9, 11, 12, 13 and 16.

Further details of each of the SDGs is available via the UN's SDG portal. [\[78\]](#)

In addition to information on how to meet the SDGs, the portal provides the four levels of action as “The Lazy Person’s Guide to Saving the World”: [\[81\]](#)

- Things you can do from your couch.
- Things you can do at home.
- Things you can do outside your house.
- Things you can do at work.

This is a non-technical tool that enhances accessibility so businesses, employees, households and individuals can do their part.

In July 2023, the UN’s “The Sustainable Development Goals Report 2023: Special Edition”[\[80\]](#) highlighted that at the midpoint of the implementation of the 2030 Agenda, the world is falling short of meeting most of the Goals by 2030. While certain areas have witnessed progress, there remains a concerning proportion of the SDG targets that are either progressing too slowly or regressing. Regional conflicts, climate change, the lingering effects of the COVID-19 pandemic and other global challenges are potentially threatening to derail hard-earned progress towards the SDGs.

6 Role of International Standards in supporting the SDGs

The theme of World Standards Day 2021 was “A shared vision for a better world” as part of a multi-year campaign aimed at raising awareness of how International Standards contribute to achieving the UN SDGs. This campaign for sustainable change was in the face of the continued struggle with global challenges, such as climate change, inequality and COVID-19.

ISO has committed to identifying which of its standards make the most significant contribution to our global challenges via alignment with the SDGs.[\[67\]](#)

As of 2023-08-30, there are 33 847 individual International Standard alignments with single SDGs.[\[67\]](#)

International Standards support the three pillars of sustainable development: economic, social and environmental.

The ISO committees and standalone International Standards considered by ISO/TC 267 as directly related to sustainable finance are listed in [Annex C](#).

In December 2022, an agreement was made between ISO and the International Chamber of Commerce (ICC), the world business organization representing more than 45 million businesses in over 130 countries. This marked ISO and ICC agreeing to explore and develop new ways of working together.

For ICC, it is a reflection of the important role that International Standards play in international trade, as well as the numerous solutions that International Standards bring to businesses of all sizes.

One of ISO’s ambitions for the partnership is to enable and empower businesses through standards. Through this collaboration ISO intends to better understand the ways in which it can respond to the changing needs of the business community.

7 FM and SDGs in context

FM is defined in ISO 41011:2024, 3.1.1, as an “organizational function which integrates people, place and process within the built environment with the purpose of improving the quality of life of people and the productivity of the core business.”

This definition provides FM with an inherent context for addressing the challenges of sustainability, resilience and adaptability.

The 2030 Agenda and its 17 [SDGs](#) are an ambitious global framework for thinking about the challenges the world faces today. They address the interconnected goals of achieving economic prosperity, social justice and environmental sustainability for all.

FM can make positive contributions, directly and indirectly, to each of the 17 SDGs and their related targets and indicators. Details have been provided in [Annex A](#), with regard to the management of facilities and provision of services. Subject to the specific organizational circumstances and contracting arrangements, FM professionals can exert influence via FM planning, resourcing, procurement, operational, maintenance, occupancy, renewal and end-of-life activities.

Achieving transformational change involves organizations transcending their current positioning, performance and capabilities. This requires leadership commitment and collaborative effort across an organization with the appropriate internal and external stakeholders. To this end, potential FM impacts can involve collaboration with regulatory authorities, top management, various business units, suppliers and end users.

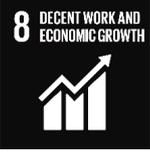
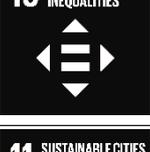
The 17 SDGs and a summary of potential FM contributions are shown in [Table 2](#).

Table 2 — SDGs and potential FM contributions

SDG icon	SDG descriptor ^a	Potential FM contributions
	No poverty End poverty in all its forms everywhere.	Job creation and ensure fair terms, conditions, remunerations and contract administration. FM, via direct employment and contract work, can affect a fairer and more inclusive society, because of its low threshold for participation and access to remunerations.
	Zero hunger End hunger, achieve food security and improved nutrition and promote sustainable agriculture.	Configuration of supply chains, food storage, catering services and waste management. FM can influence catering procurement, and in turn support sustainable supply chains, changed consumption patterns, healthy choices and reduced food waste impacting people's lifestyles.
	Good health and well-being Ensure healthy lives and promote well-being for all at all ages.	Indoor environment quality including air, temperature, humidity, noise, light, odours, CO ₂ levels, etc. This directly contributes to the health, safety and workplace culture of end users. FM can promote a healthy, diverse and sustainable workplaces which enhance organizational vitality and support a positive culture and lead to better performance regardless of location (on-site or remote workplaces).
	Quality education Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.	The design, delivery and maintenance of educational facilities, plus professional and technical competence development and training programmes. Campus FM can enhance the access to a quality educational and lifelong learning experience for all stakeholders across all academic and technical levels.
	Gender equality Achieve gender equality and empower all women and girls.	The design, delivery and maintenance of equitable facilities, contributing to human resource recruitment and retention, and promoting an appropriate workplace culture for teams, employees, contractors and end users.
	Clean water and sanitation Ensure availability and sustainable management of water and sanitation for all.	The design, delivery and maintenance of water services, sanitation and infrastructure. FM can monitor the quality and efficient usage of water within organizations and across the built environment, to ensure access to clean water and sanitation promoting safe and healthy lifestyles.

^a Source: Reference [92].

Table 2 (continued)

SDG icon	SDG descriptor ^a	Potential FM contributions
	Affordable and clean energy Ensure access to affordable, reliable, sustainable and modern energy for all.	The design, delivery and maintenance of affordable, reliable, sustainable and modern energy services and infrastructure. FM plays an active role in the sustainable utilization of energy within organizations and in retrofits to increase efficiency, interacting with supply agencies, monitoring consumption, promoting smart metering and achieving performance ratings.
	Decent work and economic growth Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.	The design, delivery and maintenance of workplace strategies, appropriate facilities and space management. FM supports the workplace across various sectors and industries, hence is a significant economic multiplier.
	Industry, innovation and infrastructure Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	The design, delivery and maintenance of resilient infrastructure, and sustainable facilities, services and technologies fostering innovation. FM can be used to leverage innovations and fundamentally infuse sustainable initiatives into an organization's operations.
	Reduced inequality Reduce inequality within and among countries.	Ensure access and equity for all in terms of organizations, procedures and facilities across locations. FM employment and contracting can be a practical mechanism for reducing inequality in the workplace.
	Sustainable cities and communities Make cities and human settlements inclusive, safe, resilient and sustainable.	The design, delivery and maintenance of an inclusive, safe, resilient and sustainable built environment to optimize facility life cycles. FM is directly responsible for managing the built environment impacting on liveability, sustainability, resilience and affordability.
	Responsible consumption and production Ensure sustainable consumption and production patterns.	Ensure supply chains and procurement practices as a basis for effective decision-making for efficient demand and supplier management. FM can influence the use of alternative products, employing waste reduction and recycling, etc., and mitigating waste by taking a holistic view of supply chains and their place in the circular economy.
	Climate action Take urgent action to combat climate change and its impacts.	Contribute to climate action planning to ensure appropriate technologies, responsible consumption, efficient energy use and carbon accounting.
	Life below water Conserve and sustainably use the oceans, seas and marine resources for sustainable development.	Contribute to responsible water use, waste water treatment and management of sustainable waterways, while respecting aquatic and marine ecosystems. How people manage the built environment impacts directly on the consumption and pollution of water as an essential resource for life.
	Life on land Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.	Contribute to responsible land use, rehabilitation, waste stream management and minimization in support of sustainable built environment management, while respecting terrestrial ecosystems. After climate change, diminishing biodiversity is the next great challenge. FM can prioritize approaches that provide for enhanced harmony between the built environment and nature.

^a Source: Reference [92].

Table 2 (continued)

SDG icon	SDG descriptor ^a	Potential FM contributions
	<p>Peace, justice and strong institutions</p> <p>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.</p>	<p>Contribute to sustainable development by reporting locally, regionally and globally.</p> <p>Feeling insecure, vulnerable and uncertain has a significantly negative impact on people's perceptions of their quality of life.</p>
	<p>Partnerships for the goals</p> <p>Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.</p>	<p>Support partnerships for sustainable development locally, regionally and globally.</p> <p>ISO recognizes the importance of global partnerships. International Standards are developed with the collaboration and consensus of a wide range of stakeholders worldwide, including representatives from government, industry and standardization bodies.</p>

^a Source: Reference [92].

Further high-level details regarding the alignment of ISO 41000 family of standards with individual SDGs are provided in [Annex A](#).

The SDGs are based on creating long-term value for our governments, organizations and society.

Regardless, there is considerable scope for FM to contribute via strategic commitment, performance metrics, measuring, prioritizing, implementing, monitoring, reporting and communicating relevant SDGs alignment and progress.

8 Role of the ISO 41000 family of standards

The overarching roles of FM are represented in ISO 41001:2018, 0.1, which states that: "The benefits of an integrated system standard for FM include:

- improved workforce productivity, safety and health and well-being;
- improved communication of requirements and methodologies among and between public and private sector organizations;
- improved efficiency and effectiveness, thus improving cost benefits to organizations;
- improved service consistency;
- providing a common platform for all types of organizations."

The ISO 41000 family of standards can contribute directly and indirectly to SDGs alignments depending on the organization, industry, sector, etc.

The role of the ISO 41000 family of standards in supporting the achievement of the SDGs can be summarized as shown in [Table 3](#).

Table 3 — ISO/TC 267 documents and the potential for alignment with the SDGs based on the assessments shown in [Annex A](#)

Subject	Document	Potential for alignment with SDGs
Concepts and context: provide the context of FM and the opportunities for outcomes that have positive impact on support required for the purpose of improving the quality of life of people and the productivity of the core business.	ISO 41011:2024	The vocabulary of FM includes multiple terms and concepts specifically relating to sustainability, resilience and adaptability.
	ISO/TR 41013:2017	Highlighting the importance of FM adding to the sustainability of an organization through focus on social/economic/environmental issues and life cycle approaches.
	This document (ISO/TR 41019)	FM issues and SDGs alignment. Defining the role of FM in managing the built environment to achieve sustainability, resilience and adaptability.
Finance and management: provide a framework of critical elements, outcomes, outputs or tools for successful FM delivery related to the oversight, management, operations and maintenance of the built environment as well as FM service delivery, including but not limited to strategy, policy, resourcing, total cost of ownership (TCO), procurement, contract management, investment planning and supply change management.	ISO 41012:2017	No specific reference to sustainability as part of strategic sourcing and contracts. However, sustainable reporting principles are increasingly an anticipated inclusion within modern FM procurement practices.
	ISO 41014:2020	Enhancing the demand organization's reputation: FM requirements include "assess the facility's contribution to sustainability goals and social responsibility".
	ISO 41018:2022	Subclause 4.4 is dedicated to sustainability goals: environmental, social and economic. Subclause 5.1 provides for the inclusion of "guidance on sustainable operation and use of space".
Human factors and experience: deliver, support and improve facilities and facility services which satisfy the aspirations of the demand organization and meeting the needs of internal and external stakeholders.	ISO 41015:2023	There are 15 value drivers identified and categorized as to the outcome impact on people, process and product, economy and society. Of these value drivers most align with and impact on the SDGs. For example, FM activity driver 14: sustainability influences organizational performance via the realization of "develop, manage, promote, and monitor throughput of energy and materials and sustainable practices. Communicate with stakeholders and maintain liaison with local community".
Leadership and innovation: develop a highly effective and efficient FM function that demonstrates leadership by influencing change and culture and is aligned to strategy.	ISO 41001:2018	Demands for general FM management system. Open to but not limited to sustainability as a quality dimension. NOTE A Management System Standard (MSS) is the way in which organizations manage the interrelated parts of their business(es) in order to achieve their objectives, including those of their environmental management system(s) in accordance with ISO 14001.

Table 3 (continued)

Subject	Document	Potential for alignment with SDGs
Digital, data and technology: provide guidance on how to appropriately optimize frameworks, protocols, workflows, systems, processes, data, and facilities to effectively utilize new technologies and digital capabilities in line with life cycle principles and business strategy.	ISO/TR 41016:2024	Digital, data and technology touch multiple aspects of people's everyday lives and experience the built environment while enabling a deeper understanding, connection and awareness of data, including data for environmental management.
Resilience and business continuity: respond to and support the demand organization including requirements or guidance, or both, for emergency preparedness, emergency management, crisis management, business continuity and resilience, disaster response and recovery.	ISO 41017:2024	FM supports an organization to monitor and respond to all relevant aspects related to an emergency including epidemic situations that can pose risk to people, or influence business performance, competitiveness and sustainability
Performance measurement and improvement: provide operational performance frameworks and requirements to influence positive outcomes of the design on people, place and process, including requirements or guidance, or both, for measuring, monitoring and improving the FM performance management.	ISO/TR 41030:— ¹⁾	Not specifically addressed at the time of publication of this document.

9 Towards sustainable FM

FM has a crucial role to play in achieving sustainable development and community resilience. The built environment underpins aspects of adaptive economic growth and delivers the services that are essential for supporting the productivity of core business and improving the quality of life of people. Equally, an unsustainable, poorly planned, delivered and maintained built environment can have disastrous implications for organizations, communities and individuals.

Sustainable FM can also contribute to mitigating risks, increasing resilience, integrating technologies, generating decent jobs, addressing inequalities and delivering on broader sustainability objectives.

Based on a review of the work of the United Nations Environment Programme (UNEP), which has produced guidance for the banking, insurance and infrastructure sectors, a generic three-step process for sustainable FM is as follows:

- a) Impact analysis: Identifying the most significant impacts of facilities and services.
- b) Target setting and implementation: Setting and achieving measurable targets in the areas of most significant impact with set milestones and defined actions.
- c) Regular reporting: In terms of transparency and accountability about facility life cycles, impacts, assessments and performance.

Sustainable FM is intended to support demand organizations pursuing sustainability and can be justified for the following range of reasons (listed alphabetically):

- alignment with the SDGs and adoption of reporting, such as an ESG framework;
- compliance with regulatory or statutory requirements;
- compliance with industry guides and best practice;
- demonstration of industry leadership and enhanced reputation;

1) Under preparation. Stage at the time of publication: ISO/DTR 41030:2024.

- enable an environmental management system;
- increased end-user amenity and return on investment (ability to charge);
- increased productivity and profitability (changes to processes or access to resources);
- reduced capital costs during the design and construction phases;
- reduced life cycle costs during the operational phases;
- responsiveness to stakeholder communities.

The above list is not exhaustive, and there can be combinations in practice applied to FM decision-making. Regardless, International Standards, industry guides, benchmarking and continuous improvement have a substantial role to play in the implementation.

Adopting extensive integration of performance reporting, such as the GRI, increasingly requires the identification, development, monitoring and maintenance of an organization's sustainable development activities and investments. FM can provide the strategic, tactical and operational level support to ensure the cost:benefit expectations are met. However, doing so involves a prolonged and progressive development of capability, including top management commitment, stakeholder engagement, responsible investment, documented life cycle planning, SDGs alignments, ESG targets, systems and resourcing, and performance reporting.

Further, the UNEP's "International Good Practice Principles for Sustainable Infrastructure"^[85] paper provides the following 10 guiding principles relevant to FM:

- strategic planning;
- responsive, resilient and flexible service provision;
- comprehensive life cycle assessment of sustainability;
- avoiding environmental impacts;
- resource efficiency and circularity;
- equity, inclusiveness and empowerment;
- enhancing economic benefits;
- fiscal sustainability and innovative financing;
- transparent, inclusive and participatory decision-making;
- evidence-based decision-making.

These 10 principles for sustainable infrastructure are supported by 10 case studies provided in an accompanying publication, see Reference [83]. These 10 case studies illustrate specific aspects of the 10 principles and how governments can use the guiding principles to adopt sustainable infrastructure at scale.

Specifically from an FM perspective, the following lists, while not exhaustive, provide some information on the opportunities and challenges involved.

FM initiatives supporting organizational and societal transformation can include the following (listed alphabetically):

- climate change resilience and adaptability;
- data quality and availability in reporting and assessing performance;
- ecosystem preservation;
- efficient LED lighting;

- embodied carbon reduction;
- energy efficiency;
- energy efficient glass;
- environmentally preferable purchasing (EPP) programmes;
- flora and fauna protections;
- IEQ practices;
- life cycle extension;
- net zero facilities;
- onsite power sourcing: solar panels/battery storage;
- operational and maintenance planning;
- rainwater harvesting and reuse;
- recycling and reuse of materials and products;
- renewable energy use;
- site potential optimization and facility configuration/orientation;
- sustainability performance ratings;
- sustainably sourced materials;
- waste management systems;
- water conservation and efficiency;
- wellness factors;
- workplace strategies and space utilization.

Obstacles to address when implementing sustainable FM include the following (listed alphabetically):

- addressing negative environmental and social impacts;
- conducting an impact analysis, setting targets and progress reporting;
- cost and budget considerations;
- COVID, or similar events;
- data quality and availability;
- design complexity;
- gaining or maintaining momentum;
- governance;
- internal understanding of sustainability principles and priorities;
- meeting contractual requirements;
- resourcing availability;
- site location;

ISO/TR 41019:2024(en)

- skills shortage;
- stakeholder engagement;
- time and scheduling considerations.

See [Annex B](#) for an example of a 10-step approach for achieving sustainable FM with the ISO 41000 family of standards. [Annex B](#) also provides practical examples of FM actions for sustainable development.

Similar FM action lists and activity steps can be developed to specifically address FM's role in performance measurement, disaster risk reduction, emergency preparedness and business continuity planning.

STANDARDSISO.COM : Click to view the full PDF of ISO/TR 41019:2024

Annex A
(informative)

Alignment of the ISO 41000 family of standards with the UN SDGs

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Table A.1 — SDG alignment summary as at 2023-08-30

Sustainable Development Goals (SDGs)	ISO 41001: 2018	ISO 41011: 2024	ISO 41012: 2017	ISO/TR 41013: 2017	ISO 41014: 2020	ISO 41015: 2023	ISO/TR 41016: 2024	ISO 41018: 2022	ISO 41017: 2024	This document
1 No poverty	•	—	—	—	—	—	—	—	—	•
2 Zero hunger	•	—	—	—	—	—	—	—	—	•
3 Good health and well-being	✓	•	•	•	✓	✓	—	✓	✓	✓
4 Quality education	✓	•	•	•	✓	✓	✓	✓	•	✓
5 Gender equality	•	•	•	•	•	•	•	•	•	✓
6 Clean water and sanitation	✓	•	•	•	✓	•	•	✓	•	✓
7 Affordable and clean energy	✓	•	✓	✓	✓	•	•	✓	•	✓
8 Decent work and economic growth	✓	•	✓	✓	✓	✓	—	✓	—	✓
9 Industry, innovation, and infrastructure	✓	✓	•	•	✓	✓	•	✓	•	✓
10 Reducing inequality	•	•	•	•	✓	•	—	✓	—	✓
11 Sustainable cities and communities	✓	✓	•	✓	✓	•	✓	✓	✓	✓
12 Responsible consumption and production	✓	✓	✓	✓	✓	•	•	✓	•	✓
13 Climate action	✓	✓	•	•	✓	✓	•	✓	•	✓
14 Life below water	•	•	•	•	—	•	—	—	—	✓
15 Life on land	•	•	•	•	✓	✓	—	✓	—	✓
16 Peace, justice, and strong institutions	•	•	•	•	✓	•	•	✓	•	✓
17 Partnerships for the goals	—	—	—	—	—	—	—	—	—	—

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Key
 ✓ direct
 • indirect
 — not applicable

Annex B (informative)

Towards sustainable FM via the ISO 41000 family of standards

B.1 Sustainable FM: A 10-step approach with the ISO 41000 family of standards

Table B.1 provides an example of how sustainable FM can be achieved with the ISO 41000 family of standards in support of SDGs alignment. This model can be used alongside consideration of organizational objectives, requirements and maturity.

Table B.1 — Sustainable FM: A 10-step approach with the ISO 41000 family of standards

Sustainable FM steps		FM standards that provide support
1.	Define success criteria based on the demand organization's FM requirements. Conduct a preparation assessment of the organization's capacity by asking questions (see the sample questions in Clause B.2) to identify the objectives, requirements and maturity. Based on the responses, prepare an FM plan and progress.	ISO 41001 ISO/TR 41013 ISO 41014 ISO 41018
2.	Identify the appropriate FM organizational design, culture and capabilities. Engage with stakeholders to validate assumptions, confirm gaps and agree targets. EXAMPLE Agreed a term in years and translate this into prioritized FM key performance indicators.	ISO 41001 ISO 41012 ISO 41015
3.	Prepare facility performance assessments and service analyses by objective and location and across the organization's portfolio. Consider current and future user requirements in terms of scope of works, condition, functionality, technical specifications, service capacity, budget, performance criteria, etc. Include stakeholder engagement and feedback reporting.	ISO 41001 ISO/TR 41013 ISO 41014 ISO 41015
4.	Prioritize required actions under the organization's FM strategy to identify the most important efforts in order to reach the organization's target. There is typically a need for long-lasting initiatives that are divided into short- and long-term efforts.	ISO 41001 ISO/TR 41013 ISO 41014 ISO 41015
5.	Benchmark internally and externally across relevant sectors nationally and internationally to identify good practice and thought leadership.	ISO 41001 ISO 41015
6.	Invest in preparation and planning to ensure a qualified base and data set for decision-making. The use of a digitalization strategy can enhance access to relevant data.	ISO 41001 ISO 41015 ISO/TR 41016 ISO/TR 41030
7.	Ensure knowledge development and a competence-based approach across stakeholders, FM professionals and end users as part of informed communications to develop ambassadors and minimize the risk of greenwashing.	ISO 41001 ISO 41012 ISO 41015

Table B.1 (continued)

Sustainable FM steps		FM standards that provide support
8.	Document the organization's specific expectations for suppliers and require progressive reporting of SDG alignments, innovations and performance over time.	ISO 41012 ISO/TR 41016 ISO 41018
9.	Maintain the FM plan, and modify it to suit, based on actual results, changing requirements and communications feedback. It is important to share the organization's progress results, celebrate success and learn from setbacks.	ISO 41001 ISO 41015
10.	Conduct strategic reviews, challenging the FM plan in terms of contributions to the organization's sustainability, reliance and adaptability. Think holistically and consider the boarder societal context of the organization's FM activities.	ISO 41001 ISO 41012 ISO 41015

B.2 Demand organization preparation assessment

Considering organizational objectives, requirements and maturity can involve a demand organization preparation assessment. Some sample questions include the following:

- a) Do you think sustainable practices are important?
 - 1) yes, they are critical for success;
 - 2) yes, they are a high priority;
 - 3) yes, they are a desirable inclusion;
 - 4) neutral, other criteria are equally important;
 - 5) no, the costs exceed the benefits;
 - 6) no, other criteria are more important.
- b) Does your organization have sustainability targets?
 - 1) yes, and they are aligned with the SDGs;
 - 2) yes, as per other reporting standards;
 - 3) under development;
 - 4) do not know.
- c) If yes or under development, what are your organization's targets based on?
 - 1) International Standards and reporting;
 - 2) industry guides and rating schemes;
 - 3) internal benchmarking and continuous improvement;
 - 4) do not know.
- d) If yes or under development, which initiatives are you pursuing? (Select as many as you like.)
 - 1) climate change resilience and adaptability;
 - 2) energy efficiency;
 - 3) geothermal energy, heat pumps and wastewater energy recovery, etc.;

- 4) IEQ practices;
- 5) life cycle extension;
- 6) net zero facilities;
- 7) sustainability performance ratings;
- 8) sustainably sourced materials;
- 9) waste management systems;
- 10) water conservation and efficiency;
- 11) workplace strategies and space utilization;
- 12) others.

FM data collection needs can be modified or customized to reflect the demand organization's requirements and to suit the specific industry, sector and facilities involved.

B.3 Examples of FM actions striving for sustainable development

An inventory of examples found in the reference materials to provide inspiration for FM organizations is given in [Table B.2](#). Each example describes an action topic in a specific case, the related SDG and an explanation of what was undertaken/achieved. This inventory of examples not an exhaustive list of ideas, actions or outcomes.

Table B.2 — Examples of FM actions striving for sustainable development

Action	Alignment with SDGs	Examples of what can be undertaken/achieved
Sustainable procurement policy	SDG 12	An FM climate change mitigation report can provide insight into the organization's procurement policy, including which areas contributed most to their carbon emissions. The categories "food and canteen", "building services engineering" and "IT services and software" can be important focus areas and the procurement team can start such dialogues on the sustainability of existing and future supply chains with their suppliers.
Furniture recycling	SDGs 11 and 12	The preservation, restoration and reuse of quality designer furniture for the benefit of all end users of a facility. An organization striving to recycle its furniture, fixtures and equipment (FF&E or FFE) and extend the life of valuable assets can have an accessible central FF&E warehousing system rather than prematurely disposing of short-term surpluses. Such a policy can also contribute to reducing waste and save on the cost of replacements.
Replacing older lighting with light-emitting diode (LED) lighting	SDGs 11 and 12	This initiative supports the target in an organization's climate plan to reduce energy consumption. In addition, carbon emissions, operating energy costs and maintenance levels can all be reduced.
Rainwater harvesting	SDGs 6, 13 and 15	Rooftop rainwater harvesting can be used to provide drinking water, domestic water, water for livestock and water for landscape irrigation, as well as means of controlled replenishment groundwater levels. Organizations can easily and cost effectively incorporate improved design in both new and existing facilities. The use rainwater harvesting for irrigation and toilet flushing is one practical way to demonstrate sustainability in office buildings.