ISO and sustainable cities

164 *
members

23 000 *
International
Standards

100
new standards
each month

248 *
technical
committees

We are ISO,
the International Organization
for Standardization

We are an independent,
non-governmental organization.

We are a global network
of national standards bodies
with one member per country.

Our job is to make
International Standards.

We are coordinated by a Central
Secretariat in Geneva, Switzerland.

We are not for profit : selling
our standards allows us to finance
their development in a neutral
environment, to maintain them
and to make new ones.

ISO provides a platform for
developing practical tools through
common understanding and
cooperation with all stakeholders.

Cities need to plan now to be able to deliver the resources and services needed to ensure their populations survive – and thrive. Public transport and facilities, water supply, sanitation, energy, food and security are just some of the pressure points that will be affected by rising urbanization. ISO International Standards provide the tools, foundations and platforms to take cities into the future.

A holistic approach

The challenges that cities face, and will continue to face in the future, are complex and multisectorial. They are also very specific – no two cities are the same.

ISO standards represent the international consensus on best practice in a wide range of areas that contribute to making a city function better and fulfil the United Nations Sustainable Development Goals to end poverty, protect the planet and ensure prosperity for all. These include overarching frameworks that city leaders and planners can use to define objectives and priorities for making their cities more sustainable, as well as specific guidelines for things like energy management systems, road safety, intelligent transport, responsible water consumption, health and well-being, cybersecurity, connectivity and more.

Who develops ISO standards?

ISO standards are developed by groups of experts within technical committees (TCs). TCs are made up of representatives from industry, non-governmental organizations, governments and other stakeholders who are put forward by ISO's members. Each TC deals with a different subject, such as energy management, water quality or intelligent transport systems.

As an example, ISO/TC 268, *Sustainable cities and communities*, is made up of city and standardization experts from more than 50 countries around the world. It is responsible for the ISO 37100 series of standards to help cities define their sustainability objectives and put strategies in place to achieve them. Visit our Website ISO.org to find out more about the standards developed in a particular sector by searching for the work of the relevant technical committee.

By 2050, the world population is expected to reach nearly ten billion people. [1]

80 %
proportion of people living in cities in 2050 [2]

33
megacities with more than ten million inhabitants [2]

70 %
proportion of energy consumed by cities [2]

75 %
proportion of waste and greenhouse gas emissions produced by cities [2]

[1]   United Nations Department of Economic and Social Affairs, *World Population Prospects 2019 – Highlights*. New York: United Nations 2019

[2]   United Nations Department of Economic and Social Affairs, *World Urbanization Prospects – The 2018 revision*. New York: United Nations 2018

The starting point for cities

ISO standards provide cities with an overall framework for defining what "being smart" means for them and how they can get there. For example, ISO 37101, which sets out the basic requirements for sustainable development in communities, helps cities determine their sustainable development objectives and put in place a strategy to achieve them. Directly aimed at city leaders, this management system standard covers everything a city must address to become smarter, such as responsible resource use, environmental management, citizens' health and well-being, governance, mobility and more.

ISO 37101 is supported by a number of different standards in areas such as terminology and key indicators for measuring the performance of city services, which offer specific guidance for developing strategies and implementing them.

These include:
- **ISO 37100,** *Sustainable cities and communities – Vocabulary*
- **ISO 37105,** *Sustainable cities and communities – Descriptive framework for cities and communities*
- **ISO 37120,** *Sustainable cities and communities – Indicators for city services and quality of life*

In addition, ISO 26000, *Guidance on social responsibility*, helps organizations operate in a socially responsible way, thus contributing to the health and welfare of society.

ISO also develops standards for specific city needs, which cover a wide range of issues that are important to cities.

Energy

Meeting the energy needs of growing populations in a sustainable manner is a key pain point for cities. International Standards can play a vital role in helping to design and implement energy efficiency strategies and monitor their performance.

ISO has over two hundred standards directly related to energy efficiency and renewables.
- **ISO 17742,** *Energy efficiency and savings calculation for countries, regions and cities,* provides indicator-based and measure-based methods for calculating energy savings, taking into consideration end-use sectors such as households, industry, services, agriculture and transport.

There are many ISO standards dedicated to renewable energy solutions, including those for domestic heating such as the ISO 9459 series for solar power in water heating systems and the ISO 17225 series for solid biofuels.

Other relevant standards include the ISO 52000 family, which contains a comprehensive method for assessing the energy performance of buildings, ISO 50001, a strategic tool that helps organizations put in place an energy management system to use energy more efficiently, and ISO 50006, which gives guidance on how to establish, use and maintain energy performance indicators (EnPIs) and energy baselines (EnBs) as part of the process of measuring energy performance.

Transport

Keeping people moving safely and efficiently while reducing pollution is no mean feat for city leaders. ISO standards play an important role in the development of new technologies for clean and effective road transport and ensure the best possible use of the networks we have in place. For example, the ISO portfolio contains standards that support intelligent transport systems, hybrid and electric vehicles, the functional safety of vehicles, and hydrogen vehicle stations.

- **ISO 39001,** *Road traffic safety (RTS) management systems – Requirements with guidance for use,* provides a tool to help organizations that interact with the road traffic system reduce, and ultimately eliminate, the incidence and risk of death and serious injury related to road traffic crashes.

Currently under development,
- **ISO 39002,** *Road traffic safety – Good practices for implementing commuting safety management,* sets guidelines that organizations can use to protect their staff from road accidents when travelling to and from work.

Also in development,
- **ISO/SAE 21434**, *Road vehicles – Cybersecurity engineering,* addresses automotive cybersecurity. Produced in conjunction with SAE International, the global leader in technical learning for the mobility industry, it will provide guidelines, requirements and a common vocabulary throughout the supply chain, enabling manufacturers to keep up with changing technology and cyber-attack methods.

Water

With 40 % of the world's population living in water-stressed areas or exposed to polluted water sources, managing the current and future needs of communities is another pain point for cities.
ISO standards cover virtually every aspect related to water use and represent the international consensus on best practice for effective water management.
- **ISO 46001,** *Water efficiency management systems – Requirements with guidance for use,* aims to help organizations of all sizes and status be more water-efficient, providing methods and tools for assessing and accounting for water usage, as well as ways to identify and implement measures to optimize water use.
- **ISO 24510,** *Activities relating to drinking water and wastewater services – Guidelines for the assessment and for the improvement of the service to users,* is designed to help water authorities achieve quality levels that meet the expectations of users and the principles of sustainable development. It is one of a family of standards aimed at improving drinking water and wastewater services, which also features ISO 24511 (wastewater utilities) and ISO 24512 (drinking water utilities).

Other useful water standards include ISO 24536 (stormwater management in urban areas), the ISO 24516 series (management of assets of water supply and wastewater systems), and ISO 24518 (crisis management of water utilities).

ISO also has a number of standards for community resource-oriented sanitation, such as ISO 30500 for sustainable non-sewered sanitation systems (i.e. providing toilets in areas with no access to reliable water and waste infrastructure) and the future ISO 31800, which provides safety and performance requirements for a new technology that can turn faecal sludge into useful resources such as clean drinking water.

Connected cities

As our world becomes increasingly connected, so too does the risk of security breaches and their associated dangers. Published in conjunction with the International Electrotechnical Commission (IEC), standards such as ISO/IEC 27001 and ISO/IEC 27002 for information security management systems help organizations address security and privacy issues, while ISO/IEC 38500 on corporate governance of information technology provides a framework for the effective, efficient and acceptable use of IT within organizations.

Other useful standards in the field include:
- **ISO/IEC TR[1] 27550,** *Information technology – Security techniques – Privacy engineering for system life cycle processes*
- **ISO/IEC 21972,** *Information technology – Upper level ontology for smart city indicators*
- **ISO/IEC 30182,** *Smart city concept model – Guidance for establishing a model for data interoperability*

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1) TR: technical report

Infrastructure

Sustainable, safe and resilient buildings and civil engineering works are essential for cities to thrive in the future. ISO standards support the construction industry through internationally agreed guidelines and specifications for buildings, covering everything from the type and status of the soil they stand on to the roof. These include standards for all kinds of building products and materials, effective design planning, interconnectivity, energy performance, the protection against climate change and disasters, test methods for resilience and quality, information management in construction, and more.

In addition, technical specification
- **ISO/TS 37151,** *Smart community infrastructures – Principles and requirements for performance metrics,* describes 14 categories of basic community needs to measure the performance of smart community infrastructures, while technical report
- **ISO/TR 37152,** *Smart community infrastructures – Common framework for development and operation,* outlines the basic concept of a common framework for the development and operation of smart community infrastructures.
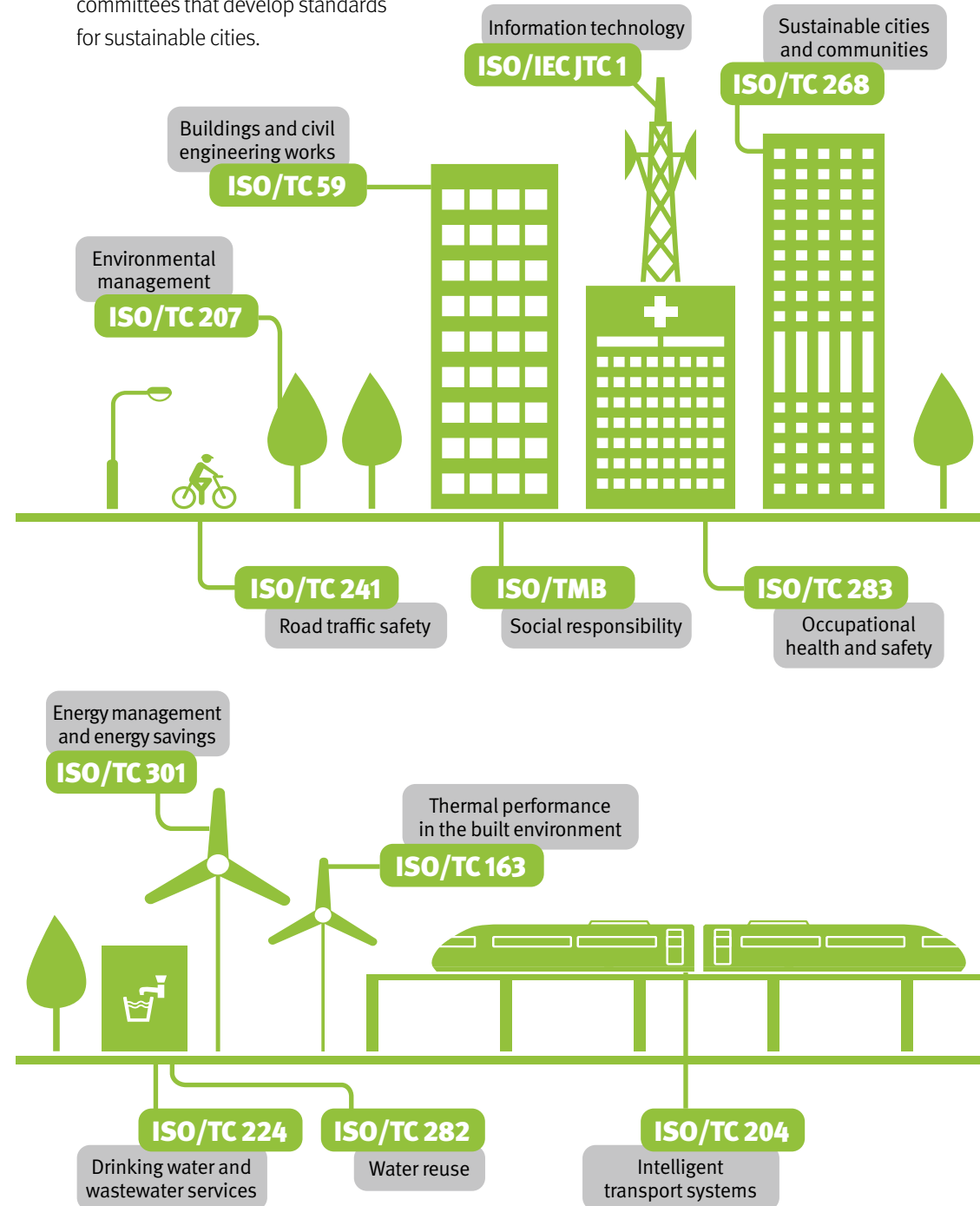
Security and resilience

Ensuring citizens feel safe and secure and having an emergency management plan in case of disaster or unexpected events is another key requirement – and challenge – for all cities and communities. ISO has a range of standards designed to help cities prepare for the worst and make the best of adverse circumstances.

Examples include the ISO 22300 range of standards for both physical and virtual security and resilience, which features:

• **ISO 22313,** *Security and resilience – Business continuity management systems – Guidance on the use of ISO 22301,* designed to support an organization's viability and productivity in times of crisis.

The ISO portfolio also has many standards for community resilience, such as ISO 22327, which provides guidelines for a community-based landslide early warning system, and ISO 22395 for supporting vulnerable persons in an emergency.

Here's a selection of ISO technical committees that develop standards for sustainable cities.

Information technology
ISO/IEC JTC 1

Sustainable cities and communities
ISO/TC 268

Buildings and civil engineering works
ISO/TC 59

Environmental management
ISO/TC 207

ISO/TC 241
Road traffic safety

ISO/TMB
Social responsibility

ISO/TC 283
Occupational health and safety

Energy management and energy savings
ISO/TC 301

Thermal performance in the built environment
ISO/TC 163

ISO/TC 224
Drinking water and wastewater services

ISO/TC 282
Water reuse

ISO/TC 204
Intelligent transport systems

Health and well-being

Ensuring citizens have access to good-quality healthcare and a decent standard of living is the responsibility of all city leaders. Good health and well-being are high on the agenda of the United Nations Sustainable Development Goals aimed at improving people's lives now and in the future.

ISO has more than 1 400 standards dedicated to all aspects of health and well-being, a number of which are devoted to helping cities ensure accessibility and a good quality of life for an increasingly older population.

These include :
- **IWA**[2] **18,** *Framework for integrated community-based life-long health and care services in aged societies*
- **ISO/IEC Guide 71,** *Guide for addressing accessibility in standards*
- **ISO 21542,** *Building construction – Accessibility and usability of the built environment*
- **ISO 45001,** *Occupational health and safety management systems – Requirements with guidance for use*

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2) IWA : International Workshop Agreement

Find out more

To find out more about how standards can help you, or to get involved in the standards development process, contact your ISO member.
Details can be found at **www.iso.org/members**.

Useful links

ISO #mysmartcity Website : **www.iso.org/sites/mysmartcity**

@ ISO Website : **www.iso.org**

ISOfocus magazine : **www.iso.org/isofocus**

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