ISO and smart cities

Great things happen **when the world agrees.**

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.

162* members

21700* International Standards

100 new standards each month

247* technical committees

ἴσος

Notice that our acronym doesn't match our name ? It's not meant to. "ISO" is derived from the Greek word *isos* (equal), so that it's the same in all languages.

* September 2017

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 10 billion people[1].

80 %

Amount of people living in cities in 2050[2]

2 %

Surface occupied by today's cities on the earth's surface

60 %

Amount of energy consumed by actual cities

70 %

Amount of waste and greenhouse gas emissions produced by cities[3]

1) United Nations Sustainable Development Goals, press release, June 2017
2) World Food Research and Innovation Forum
3) Habitat III : The United Nations Conference on Housing and Sustainable Urban Development


ZIKOS
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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.

Taking a holistic approach

The challenges that cities face, and will continue to face in the future, are complex and multi-sectorial. 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 their 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, cyber security, connectivity and more.

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 37120**, *Sustainable development in communities – Indicators for city services and quality of life*
- **ISO 26000**, *Guidance on social responsibility*

ISO also develops specific 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 200 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.

Other relevant standards include 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.

Urban mobility

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, we have 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*

specifies requirements for a road traffic safety management system aimed at organizations that interact with the road traffic system to reduce death and serious injuries related to road traffic crashes which they can influence.

Currently under development,

- **ISO 39002**, *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.

Work has also started on ways to build cyber security into vehicles.

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 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. As one of a family of standards aimed at improving drinking water and wastewater services, it includes ISO 24511 (wastewater utilities) and ISO 24512 (drinking water utilities), two management-oriented standards for the assessment and improvement of wastewater and drinking water utilities.

Other useful water standards include future ISO 20325 (guidelines for stormwater management in urban areas), the ISO 24516 series (guidelines for the management of assets of water supply and wastewater systems), and ISO 24518 (crisis management of water utilities).

ISO also has a number of standards currently in development for community resource-oriented sanitation treatment, sustainable non-sewered sanitation systems (i.e. providing toilets when there is no access to reliable water and waste systems), flushable products, water efficiency management systems and water loss in urban supply systems.

Connected cities

As our world becomes increasingly connected, so too does the risk of security breaches and their associated dangers. Standards like 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.

Another useful standard in the field is:

- **ISO/IEC 30182**, *Smart city concept model – Guidance for establishing a model for data interoperability*

There are also three standards in development:

- **ISO/IEC 21972**, *Information technology – An upper level ontology for smart city indicators*
- **ISO/IEC 27550**, *Information technology – Security techniques – Privacy engineering*
- **ISO/IEC 27551**, *Information technology – Security techniques – Requirements for attribute-based unlinkable entity authentication*

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 number 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**, *Societal security – Business continuity management systems – Guidance,*

designed to support an organization's viability and productivity in times of crisis. We also have many standards in development for community resilience, such as:

- **ISO 22327**, *Security and resilience – Emergency management – Guidelines for implementation of a community-based landslide early warning system*
- **ISO 22395**, *Security and resilience – Community resilience – Guidelines for supporting community response to vulnerable people*

Health and well-being

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

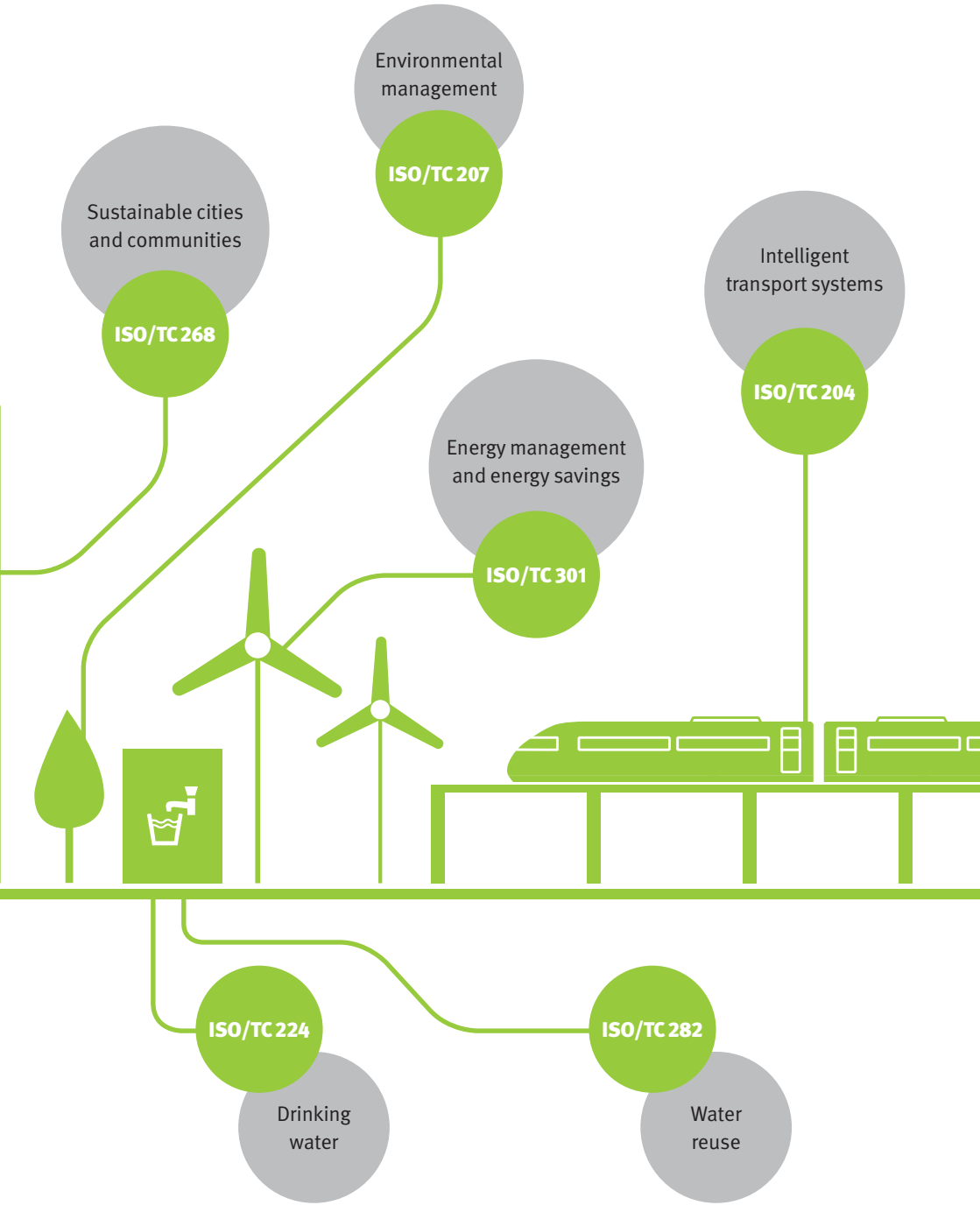
ISO has more than 1 300 standards and standards-type documents dedicated to all aspects of health and well-being, a number of which are devoted to helping cities ensure accessibility and a good quality of life for an increasingly older population.

These include:

- **IWA 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 45001**, *Occupational health and safety management systems*[4)]

4) Under development

ISO standards help make cities smarter. Below are just a handful of the many ISO technical committees that develop them.


Environmental management
ISO/TC 207
Sustainable cities and communities
ISO/TC 268
Intelligent transport systems
ISO/TC 204
Energy management and energy savings
ISO/TC 301
ISO/TC 224
Drinking water
ISO/TC 282
Water reuse

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**.

More information ?

ISO #worldsmartcity Website :
www.iso.org/sites/worldsmartcity

ISO Website
www.iso.org

ISO Website section : “Standards in action”
www.iso.org/standards-in-action

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Available on our Online Browsing Platform at **gotoi.so/isosymbols**.

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ISBN 978-92-67-10776-9