

ISO Focus+

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Smart cities

- Users' verdict on ISO 20121
- ISO 26000 forum



ISO Focus+

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ISO Central Secretariat
(International Organization for Standardization)
1, chemin de la Voie-Creuse
CH – 1211 Genève 20
Switzerland
Tel.: +41 22 749 01 11
Fax: +41 22 733 34 30
E-mail: isofocus+@iso.org

Manager: Roger Frost
Editor in Chief: Elizabeth Gasiorowski-Denis
Assistant Editor: Maria Lazarte
Communication Officer: Sandrine Tranchard
Artwork: Xela Damond, Pierre Granier and Alexane Rosa
Copy editor/Proofreader: Vivienne Rojas
Translation: Translation Services, ISO Central Secretariat

Subscription enquiries: Sonia Rosas Friot
ISO Central Secretariat
Tel.: +41 22 749 03 36
Fax: +41 22 749 09 47
E-mail: sales@iso.org

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Coming Up

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Simpler, faster, better *and smarter* ISO's challenge

Providing city dwellers with quality of life, while at the same time managing the pressures exerted by demographic growth, urbanization and climate change, is a major challenge. Today, half of the world's seven billion inhabitants live in cities and urban areas and it is estimated that in little more than a generation this will increase to two thirds of the world's population. "Smart cities" are needed to safeguard their inhabitants' right to a liveable, sustainable environment. When people live in close proximity, everyone and everything must work together. That's where ISO comes in.

ISO standards have a key role to play in the construction and development of cities. The January 2013 issue of *ISO Focus+* includes an overview of the major issues facing cities today and tomorrow, and of the standards addressing these issues. The cities of tomorrow must be smart cities, utilizing scant resources to best effect.

As the world goes into 2013, it is clear that the last decade has shown the need to ensure global resources are not being frittered away, and that money spent is money well spent. New ideas and new solutions need to be found if the need to efficiently and sustainably manage natural resources and requirements are to be met. We also have a responsibility to future generations to ensure the 21st century will allow the 22nd century to thrive... or at least to exist.

In an increasingly interconnected world which, at the same time is experiencing increasingly sharp differences, ISO cannot be content to merely go along with the "same old, same old". We cannot only react to events and respond to stimuli; we have to take the lead: to be proactive as well as reactive; forestalling problems where possible, not just coping when they occur. ISO is changing because it must.

We must manage what we do in a way that is not only simpler, faster and better – but smarter too. Our mission is not just to passively respond to market needs once these have been identified, but to help try and anticipate them. Our job is to ensure we keep pace with – or be a step ahead of – the increasingly rapid evolution of

customer expectation. We need to add the label "innovative" to our trusted brand name if we are to meet the challenges of the future.

"Sustainable" and "smart" are inextricably linked.

And we must ensure that everybody has a stake in standardization. Technological advances happen every day, in every corner of the world. ISO's 164 members include industrialized, developing and transitional economies from every region on earth. ISO standards support the international community by providing practical tools to meet clear opportunities and problems. Standards are produced that show the know-how of experts from every part of the world, but increasing the input from emerging economies has to take place.

We need to encourage greater participation by every potential standards maker, providing the facilities to make this possible, ensuring that stakeholders from developed, developing and transitional economies alike can develop standards that help them to work and compete on a level playing field. And this can be accomplished by making sure that "standards takers" get the support to become "standards makers" in areas of interest to them.

ISO's image as "the authority" on developing International Standards must

be defended vigorously. Our standards are the basis of our reputation, a reputation that must be maintained against all comers. In 2013, ISO will be innovative in our efforts to ensure quality is maintained and our lines of distribution protected. The benefits of using International Standards will be promoted as the experts who developed the standards intended.

When new technologies or business sectors emerge, so does the need for corresponding, internationally agreed ISO standards. Focusing on basic features, such as terminology, compatibility and interoperability, as well as health, safety and environmental aspects, ISO helps to disseminate newly acquired knowledge and expertise. ISO standards increase the market share for the cutting-edge products and services derived from innovation. Exploring new fields of endeavour, proactively promoting ISO's involvement in new areas of technical expertise must be our priority.

ISO has contributions to make to add value and ensure "sustainable" and "smart" are inextricably linked, supporting a world where everyone and everything must work together. That's ISO's challenge.

My very best wishes to all for a happy, healthy, prosperous and smart 2013! ■



Rob Steele, ISO Secretary-General.

International year of water cooperation

The United Nations declared 2013 the International Year of Water Cooperation. Led by the UN Educational, Scientific and Cultural Organization (UNESCO), the objective is to raise awareness, both on the potential for increased cooperation, and on the challenges facing water management in light of the increase in demand for water access, allocation and services.



The Year will highlight the history of successful water cooperation initiatives, as well as identify burning issues on water education, water diplomacy, transboundary water management, financing cooperation, national/international legal frameworks, and the linkages with the Millennium Development Goals.

ISO's multi-stakeholder and consensus-based approach exemplifies international cooperation. Its numerous water standards constitute global solutions for a problem that cannot be treated in isolation, helping us manage our shared resources equitably and durably. ISO water standards target areas such as water quality, hydrometry, drinking and wastewater services, piping systems and irrigation among others.

Future of vehicles

The 8th Fully Networked Car (FNC) workshop, organized jointly by ISO, the International Telecommunications Union, and the International Electrotechnical Commission,

will be held on 6-7 March 2013, in association with Geneva's International Motor Show.

Last year's event attracted more than 100 experts from around the world, and covered a series of interactive discussions on the need for standardization for electric vehicles, driver distraction and vehicle safety, intelligent transport systems (ITS) communications, and standards for cooperative ITS systems. Participants also gained insight into the challenges and opportunities that are present in under-developed markets.

The 2013 FNC will cover further developments in these areas, and any new solutions or challenges that have arisen since 2012. In addition, we hope that participants will be treated to informal tours of several exhibits on the show floor.

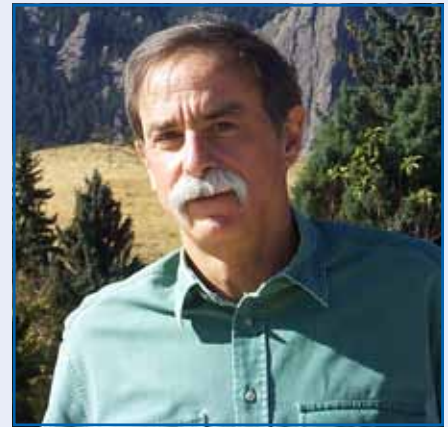
The contributions and expertise provided by the panellists and the audience will help foster a better understanding of the challenges the auto industry faces over the coming years, and how International Standards can help the industry to continue to meet customer needs.

Nobel Prize in physics

Dr. David J. Wineland, a physicist and researcher at the US Department of Commerce's National Institute of Standards and Technology (NIST), was awarded the 2012 Nobel Prize in physics for his work pioneering methods to allow the measurement and manipulation of individual atoms.

Dr. Wineland, who works at NIST's laboratory in Boulder, Colorado, and serves as a lecturer in the physics department of the University of Colorado Boulder, shared the award with Dr. Serge Haroche, a professor at the *Collège de France* and *École Normale Supérieure*. Dr. Wineland is the fourth scientist at NIST to receive the Nobel Prize in physics since 1997.

Dr. Wineland has been working for NIST for 37 years. He has long been internationally recognized for his innovative research on electrically charged atoms known as trapped ions. In 1978, he carried out the first demonstration of laser cooling, in which lasers are used to reduce the temperature of ions trapped in a vacuum to near absolute zero, allowing researchers to study the properties



David J. Wineland was awarded the 2012 Nobel Prize in physics.

of individual atoms for the first time. His research has led to the development of laser-cooled atomic clocks, which are even more accurate than traditional clocks, as well as to significant advances in quantum computing, an experimental science that holds the potential to vastly outpace the speed and effectiveness of today's computers.

Under-Secretary of Commerce for Standards and Technology and NIST Director Patrick Gallagher said, "Dave's work embodies NIST's mission to pioneer new measurement science that will substantially advance technology and innovation."

NIST experts widely participate in ISO's work through the ISO member for the USA, ANSI.

German Ministry takes up ISO 50001

The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has published a guide to help organizations in the country implement ISO 50001:2011, *Energy management systems – Requirements with guidance for use*.

By 2020, Germany aims to reduce its primary energy consumption by 20% (from 2008), and by 50% for 2050. Energy efficiency is crucial to meet these goals. The new document, *Energy Management Systems in Practice – ISO 50001: A guide for companies and organizations*, will contribute to this initiative by introducing the content of the standard, as well as highlighting differences and similarities with the European environmental management system (EMAS) and ISO 14001 (environmental management), which also forms part of EMAS. The Ministry believes that organizations implementing the latter may already comply with some of the requirements of ISO 50001.

The guide is intended to be used by both large and small organizations. It highlights the benefits of ISO 50001 by stating that systemic energy management is an appropriate instrument for continually improving energy efficiency in companies and organizations. The cost reductions also help to strengthen a company's competitive edge in the market.



John F. Malloy

Chairman, President & CEO Victaulic



Photo : Courtesy of Victaulic

John F. Malloy is Chairman, President and Chief Executive Officer of Victaulic, a global leader in the design and manufacture of mechanical pipe-joining system solutions.

Prior to joining Victaulic, Mr. Malloy spent 19 years working for United Technologies Corporation, rising to the position of President for North America for UTC's Carrier Division. Before joining UTC, Mr. Malloy worked for Air Products & Chemicals and taught economics at

Hamilton College. He holds a bachelor's degree in economics from Boston College and a doctorate in economics from Syracuse University.

In addition to his leadership role at Victaulic, Mr. Malloy shares his talents through active participation on the boards of several well-regarded companies and not-for-profit organizations, including Hubbell Inc., Hollingsworth & Vose, Lehigh Valley Hospital Network and DeSales University.

ISO Focus+: *As one of the world's leading providers of mechanical pipe-joining systems, how do International Standards contribute to success at Victaulic?*

John F. Malloy: Victaulic is a global organization. We have manufacturing and support centres located in countries throughout the world, including Australia, Belgium, Canada, China, Dubai, India, Mexico, Poland and the United States. Our products are used in countries all over the globe and in markets ranging from oil and gas to mining, power generation, water treatment, marine and commercial building.

International Standards are part of the Victaulic difference.

The nature of our business and the breadth of markets in which we operate require a global perspective. International Standards are part of the Victaulic difference. As we design and develop solutions, it is important that we adhere to, or even exceed, these standards to support customers worldwide in any industry we serve. It is equally important that we be involved in organizations such as ISO that are helping to propel these industries forward in terms of better quality, safety and protection.

Each country has its own standards and regulations. The complexity of those regulations varies from one country to another, and can also vary from region to region within a country. The harmonization of these individual performance criteria into a single, globally relevant standard can significantly increase our company's operating efficiency.

As such, it is very important that a company like ours, which continues to expand globally, have direct input into the development of International Standards. By participating in ISO technical committees, we have the opportunity to influence the development or revision of these standards, and introduce the type of technology that a company like Victaulic is employing in its products.

Until those International Standards are fully developed and adopted, we need to be completely knowledgeable about a wide range of local codes and standards, and whether or not our current materials and technology can be incorporated within the scope of these documents. Through the



Photo: Courtesy of Victaulic

Victaulic designs and develops solutions that incorporate ISO standards to support customers worldwide.

development of International Standards, we gain a better understanding of local practices, laws and regulations, as well as market and cultural considerations.

ISO Focus+: *Regulation and conformity with standards are crucial to ensure the safety, quality and efficiency of products*

and services. How do standards play a role in regulations? How do International Standards for conformity assessment benefit the global operations of Victaulic?

John F. Malloy: Regulations are typically government-mandated legislation, and are enforced by specific agencies that have



Photo : Courtesy of Victaulic

About Victaulic

Founded in 1925, Victaulic is a leading producer of mechanical pipe-joining systems. It is the originator of the grooved pipe-joining system, which was conceived during World War I to make laying temporary wartime overland steel pipelines quicker and easier.

The grooved piping method – which dramatically reduces the amount of installation time and reduces total installed costs compared to welding, threading and flanging – is now the predominant global method for the assembly of heating, ventilation and air conditioning (HVAC), plumbing and fire protection piping systems. In addition to commercial buildings, Victaulic products are used in utility and process piping applications in some of the world's most demanding markets, including oil, gas and chemical, mining, power generation, water and wastewater treatment, and military and marine systems.

Headquartered in Easton, Pennsylvania, USA, Victaulic has manufacturing and distribution facilities worldwide and employs approximately 4 000 people. For more information, visit www.victaulic.com.

been granted oversight authority. Regulations often reference relevant standards, where some type of performance or other acceptance criteria may require validation by an independent third-party examiner or testing organization.

The relevant standards provide guiding principles for the qualification of a process, product or system, and incorporate input from a wide range of stakeholders. When ISO standards are harmonized and widely adopted, a manufacturer like Victaulic can shorten the time to market by eliminating redundancies in testing and qualification. We also capitalize on the global consistency the standard affords to our international operations.

It's important that we be involved in organizations like ISO.

I foresee Victaulic becoming more involved with the development of, and participation in, ISO standards because they are looked upon in many countries as the building blocks upon which other standards are developed.

ISO Focus+: *As product testing requires considerable time and money, how can International Standards contribute to increasing efficiency? Can you give us a few examples?*

John F. Malloy: International Standards contribute to efficiency by harmonizing test requirements. Their intent is to have a

single set of criteria that is acceptable to all technical committee members, and yet still meets the local code or laws of the country or jurisdiction they represent.

A manufacturer benefits greatly when they can economically produce a single product or component that complies with an International Standard adopted and used by a wide range of supporting countries. The technical committee developing the standard strives to reach consensus as to the specific tests that should be included, and what is most sensible for the global

market. Global relevance is key to ensuring that products can pass all applicable tests, be sold and distributed around the world, and function properly in all applications.

When ISO standards are harmonized and widely adopted, manufacturers can shorten the time to market.



Photo : Courtesy of Victaulic

By adopting ISO standards globally, Victaulic is able to consistently manufacture products that meet International Standards.

At Victaulic, a key portion of our business is the design and development of fire protection systems components, including sprinklers, couplings, fittings, valves, alarm devices, accessories and pipe preparation tools. Our Director of Global Regulatory Compliance, Len Swantek, chairs ISO technical committee ISO/TC 21, *Equipment for fire protection and fire fighting*, subcommittee SC 5, *Fixed firefighting systems using water*. The committee takes input from global manufacturers, testing authorities, installers, fire code enforcement officials and others. These organizations bring their unique perspective to the committee on how they test products and view the advancement of the global fire safety industry.

ISO Focus+: *Since its establishment in 1925, Victaulic has prided itself on innovation. What in your view is the contribution*

of International Standards to innovation? Is there a right moment for the development of standards for new technologies?

John F. Malloy: ISO, through its standards development process, seeks to promote innovation. As members of ISO technical committees (TC), we are encouraged to introduce and share technology or new materials. There is a certain level of “cross-training” during committee sessions that provides a new understanding for those delegates who may not have the same level of expertise or market experience in their home region.

You quickly realize that you are all there for the common good.

Because of the need to ensure harmonization, consensus building and global relevance, the introduction of new technologies must be timed appropriately. This can be critical to those manufacturers who may have patent concerns, or may not have sufficient field history to support the introduction of such technologies on a global scale. However, many companies with proven expertise and statistical data to back up their work often take the lead in introducing new materials, technology or scientific breakthroughs.

ISO Focus+: *What are the benefits of getting involved in international standardization? Can you tell us about some of the areas in which Victaulic participates?*

John F. Malloy: As I previously mentioned, Victaulic is active on ISO technical committee ISO/TC 21/SC 5. Through our participation on SC 5 and, more directly, on the US Technical Advisory Group (USTAG), we play a role in shaping fire safety standards that affect the most critical components and qualification methods. Ultimately, our contribution – like that of others – hopefully improves the quality and reliability of fire protection products and life safety systems in general.

Our TC and SC members are focused on life safety and loss prevention.

There are also a number of intangible benefits. Interacting with delegates from countries all over the world provides a well-rounded and balanced perspective. You learn of their challenges and the solutions they employ. We share knowledge, cultural experiences, and numerous unique perspectives and, in many cases, it sparks great friendships. At the end of the day, the technical committee members are all trying to save lives, protect property, and minimize risk. You quickly realize that you are all there for the common good.

ISO Focus+: *What is the value of management system standards like ISO 9001?*

John F. Malloy: Our quality management system (QMS) certification, which we achieved in the late 1980s, has become a key element in our overall regulatory operations.



Photo: Courtesy of Victaulic

Victaulic openly collaborates on system design and product applications to the benefit of other ISO TC delegates who may have less technical expertise in their home region.

Originally, certification to ISO 9001 was viewed as an important part of our European sales portfolio. However, in more recent times, this certification has become an invaluable asset in terms of how our operations are viewed by the many regulatory auditing bodies.

In more recent times, ISO 9001 certification has become an invaluable asset.

We have found that having a quality management system certified to ISO 9001 provides other external auditing bodies with a well-organized structure to follow in their own auditing process. This reduces auditing time and enables a multitude of regulators to quickly check those key elements that have the greatest impact on product and process control.

Additionally, the ISO 9001 certification is widely recognized by testing organizations and labs, and the process we went through to achieve this, gives them an added level of assurance. Achieving and maintaining certification to ISO 9001 is not an easy task, but it certainly lends credibility to an organization like Victaulic, which manufactures and distributes its products worldwide.

In addition to our QMS certification, we have taken steps to ensure that we control the quality of every component of our products. At Victaulic, we are vertically integrated in our manufacturing processes to ensure maximum quality control from the development phase through to the commercialization of our solutions. ■



Photo: Courtesy of Victaulic

As building and construction codes evolve, Victaulic takes an active role in helping shape the standards that impact performance, quality, safety and protection.



Photo: Courtesy of Victaulic

Qualification testing is a key function in determining individual component durability that makes up the overall performance of the end device or complete system.

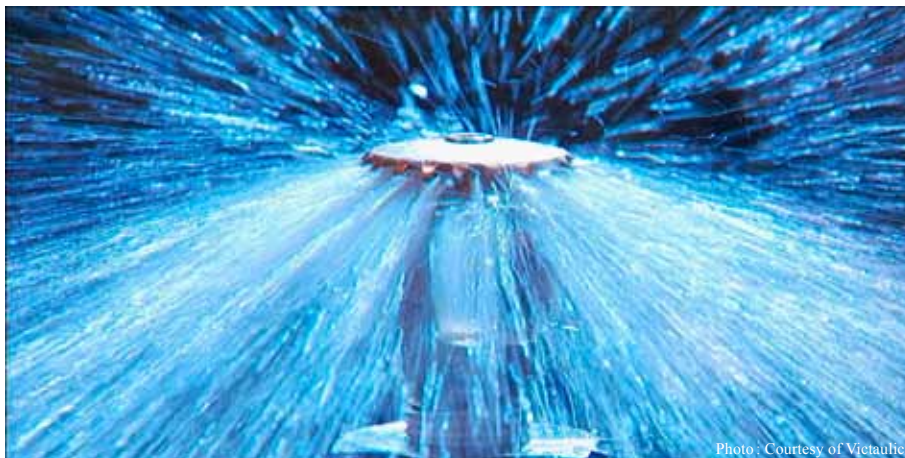


Photo: Courtesy of Victaulic

Victaulic views qualification testing to exacting specifications as the most important output of developing concise and globally relevant standards.



Photo: Courtesy of Victaulic

Fire safety standards incorporate a wide range of laboratory data obtained by replicating known field scenarios.





Building smart cities

How ISO standards contribute

by Sandrine Tranchard

Half of humanity today lives in cities. The world's cities are growing as people move from rural areas in search of jobs and opportunities to improve their lives and create a better future for their children.

According to the United Nations, by 2030, six out of every 10 people will live in a city, and by 2050, this will increase to seven out of 10 people. Currently, around half the world's inhabitants live in cities of between 100 000 and 500 000 people, and nearly 10% live in megacities [cities with a population of over 10 million, as defined by Human Settlements Programme (UN HABITAT)].

Waste, sewage and air pollution are among the major problems. Other risks include disease. Cities promote greater interaction between people than rural areas, which also increases the risk of contagion.

Security is another concern. Studies have shown that the crime rate in cities is higher and the chances of being arrested and punished are lower. Finally, the high concentration of people results in traffic congestion and longer commuting times, whether by vehicle or on foot.

Cities, however, may also have a positive influence on the environment. UN HABITAT has suggested that city living may be the best solution for dealing with the rising population. This is because cities concentrate human activity into one place, limiting the geographical spread of environmental impacts. This can only be achieved, however, if urban planning is improved and city services are properly maintained.

ISO standards can be used to tackle many urban challenges by supporting sustainable development. They can also, at a micro-level, provide requirements for monitoring technical and functional performance. They take into account good business practice and optimal management of resources, while helping to monitor and thus reduce environmental impact.

Governments, municipalities and the public at large can use International Standards to meet the needs of city dwellers in a rapidly urbanizing world. They can help tackle climate change, address security and transport issues, and ensure the quality of water services, even in disasters.

The following Special Report on smart cities gives an overview of the major concerns of cities today and how ISO standards provide the support for better, healthier and safer city living. It highlights how International Standards contribute to building smart cities by improving energy efficiency, increasing safety, planning sustainable urban development, developing reliable road networks and effective means of transportation, reducing pollution and dealing with water and wastewater management. ■

Sandrine Tranchard is a Communications Officer, ISO Central Secretariat.

Sustainable communities

Together for a better world

by Jacques Lair and Christian Bougeard

A tsunami can cause lasting disruption in the economic activity of a country like Japan and affect its citizens' daily lives in cities and local communities for a long time. A hurricane can hamper recovery of an island that has been devastated by an earthquake (Haiti) and leave one of the most modern cities in the world (New York City, USA) and its surroundings paralyzed. Extensive exploitation of forests or plant species, such as soya or palm oil, can destroy ecosystems and threaten traditional ways of life. From these examples, the need to anticipate and assess project sustainability is self-evident.

Governmental authorities, international organizations and non-profit associations have identified the scale of the challenge and have developed programmes individually to meet their own objectives and needs. The consequent proliferation of benchmarks on sustainable development and planning – whether developed within the framework of the United Nations system, by the World Bank or by the Organisation for Economic Co-operation and Development, or private certification systems such as BREEAM Communities, Casbee City, HQE Aménagement or LEED Neighborhood – has led to the creation of technical committee ISO/TC 268, *Sustainable development in communities*.

A common language

Sustainable development projects in rural or urban areas are flourishing all around the world. Stakeholders are confused because there is no international consensus on the evaluation of community projects from cradle to grave, hence the need for International Standards on sustainable development and resilience in communities.

A priority will be to develop a common language for all stakeholders and thereby contribute to greater clarity and harmonization in this field. This is why a management system standard is vital. ISO/TC 268 will thus focus on the development of a management system standard, ISO 37101, *Sustainable development and resilience of communities – Management systems*

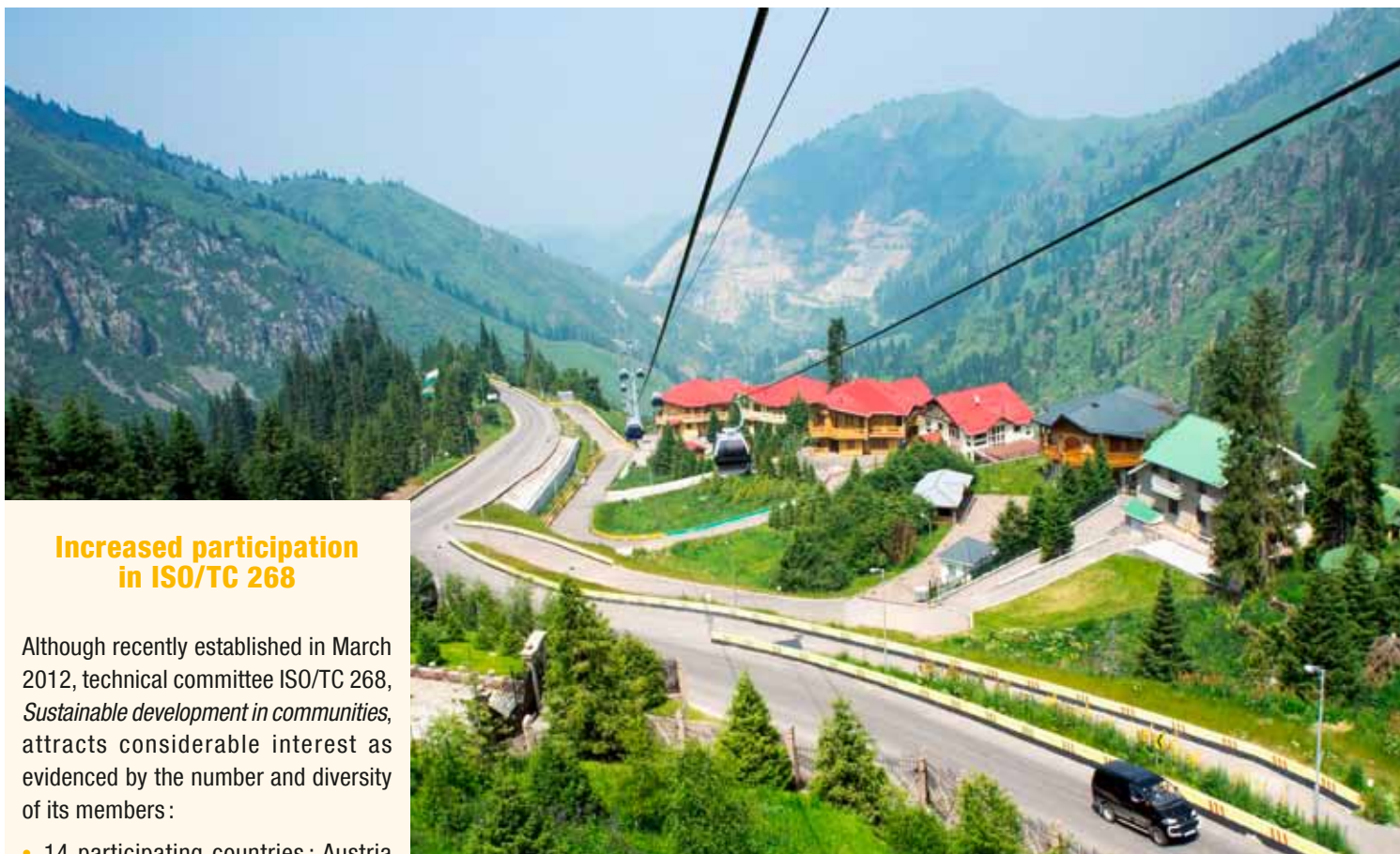
– *General principles and requirements*, by building on ISO 26000:2010, *Guidance on social responsibility*.

Another standard under development in the technical committee's work programme is ISO 37120, *Sustainable development and resilience of communities – Global city indicators for city services and quality of life*, which will help harmonize performance indicators in these fields.

Sustainable development projects are flourishing all around the world.

Finally, ISO/TC 268 also has a subcommittee dedicated to smart urban infrastructures, subcommittee SC 1, *Smart community infrastructures*, with two preliminary items already included in its work programme: ISO/TR 37150, a technical report on smart





Increased participation in ISO/TC 268

Although recently established in March 2012, technical committee ISO/TC 268, *Sustainable development in communities*, attracts considerable interest as evidenced by the number and diversity of its members:

- 14 participating countries: Austria (ASI), Belgium (NBN), Canada (SCC), China (SAC), Denmark (DS), France (AFNOR), Germany (DIN), Japan (JISC), Netherlands (NEN), Senegal (ASN), South Africa (SABS), Spain (AENOR), Sweden (SIS) and United Kingdom (BSI)
- 16 observer countries: Argentina (IRAM), Australia (SA), Brazil (ABNT), Colombia (ICONTEC), Czech Republic (UNMZ), Egypt (EOS), Finland (SFS), India (BIS), the Republic of Korea (KATS), Malaysia (DSM), Norway (SN), Singapore (SPRING SG), Switzerland (SNV), Thailand (TISI), United Arab Emirates (ESMA) and USA (ANSI).

urban infrastructures around the world, which will serve as a basis for the development of the future ISO 37151 standard on harmonized metrics for benchmarking smartness of infrastructures.

A family of standards

A number of mirror committees bringing together the best experts from all member bodies are being set up. They will provide ISO/TC 268 with information on the state of the art in sustainable development and planning, and on the needs and expectations of the various communities throughout the world.

The future ISO 37101 management system standard – will then serve as a basis for the development of specific implementation standards tailored to communities. These may be as diverse as a business centre in an industrialized country, a rural area in a developing country, a mountain area, a seaside resort or even an indigenous or nomadic community.

ISO 37101 is being developed by ISO/TC 268/WG 1, *Management Systems Standards*

A priority will be to develop a common language for all stakeholders.

Drawing on the example of the ISO 14000 environmental management series, ISO/TC 268 will develop a large family of standards and other deliverables on sustainable development in communities.





The draft technical report on metrics for benchmarking smart urban infrastructures developed within the scope of ISO/TC 268/SC 1/WG 1, which is convened by Yoshiaki Ichikawa (Hitachi Electronics), inventories the various metrics used around the world. It identifies commonalities, contradictions and gaps and sets a roadmap which will be particularly useful when drafting the future standard.

Cities will be better able to share their experience and knowledge.

of their permanence or their capacity to face unexpected events and to return to normal within a reasonable time. This is what we would like to address in the standard.

To foster consensus among interested parties at all stages in the development of a project – conception, operation and end-of-life – it is essential for communities and will notably contribute to the evolution of cross-sector, multidisciplinary, life cycle and global costing policies.

Improved knowledge sharing

The draft standard on urban indicators developed within the scope of ISO/TC 268 working group WG 2, *Urban indicators*, convened by Patricia McCarney (University of Toronto), aims for a harmonization of terminology, indicators and methods. Cities adopting this standard will then be better able to share their experience and knowledge. Besides, comparative analyses will help them assess their respective performance levels, which will encourage a healthy competitive spirit.

Consensus building

ISO/TC 268 will thus lay the foundation for an international consensus on principles and approaches that each “community” will be able to replicate and adapt to its own needs and specificities.

This will never prevent the above-mentioned disasters from occurring, but let us hope that it will help better anticipate them, limit their financial, environmental and human costs and, most importantly, speed up restoration of normal living conditions. ■

for sustainable development in communities. It will address two aspects which are today somewhat neglected in existing deliverables:

- **The specific notion of “community”:** we believe that beyond the pure property or infrastructure aspect often covered by urban development standards, the community notion should not refer to the territories to which human groups relate, but to the actual human groups themselves and their interactions with their environment.
- **The notion of resilience:** the snapshot at a particular point in time of the actions taken to address sustainable development does not give a clear idea

About the authors



Jacques Lair is the Chair of ISO/TC 59/SC 17, *Sustainability in buildings and civil engineering works*. He is an engineer and a former senior executive of

construction, building and civil engineering companies. He has been a member of the bureau and executive committee of the *Fédération Française du Bâtiment* (French Building Federation).



Christian Bougeard is Convenor of the ISO/TC 268/WG 1, *Management systems standards for sustainable development in communities*. Since 2000,

he is President and CEO of *Architectes Ingénieurs Associés* (AIA Group). He has an Engineering PhD from the *École Centrale*, Paris, France, and a Master’s degree in Architecture from the *École des Beaux Art UPA*, Versailles, France.

Green buildings



Laying tomorrow's foundations today

by Dick van Dijk, Essam E. Khalil, Egil Öfverholm, Jonas Santesson and Stephen Turner

Expectations about what buildings should be like have dramatically changed over time. Now the industry must strive to meet demands for functionality, comfort and design together with environmental sustainability and energy efficiency. ISO has developed a toolbox of practical state-of-the-art International Standards to meet today's building challenges.



More than 100 building standards have been developed by ISO technical committees ISO/TC 163, *Thermal performance and energy use in the built environment*, and ISO/TC 205, *Building environment design*. These standards help define, calculate and test building elements, while addressing environmental concerns. Design and building operation issues are also addressed by the committees.

Innovative insulation

Three ISO/TC 163 subcommittees (SCs) are responsible for the standards that define, calculate and test building elements, which are essential for ensuring the energy efficiency of buildings.

The SCs take into account the different specifications, challenges and innovations in the building industry. For example, a newcomer for building standardization is sheep wool insulation – a renewable material offering good thermal and acoustic insulation performance as well as protection against fire. In contrast to some other insulation types, wool's uniquely high moisture absorption is not compromised by its isolating performance.

*ISO/TC 205
and ISO/TC 163
collaborate closely.*

At the other extreme of the spectrum are high-tech insulation materials such as vacuum insulation panels (VIPs), which have very low thermal conductivity. Thin, VIC-based walls can help to maximize usable interior space and offset high land prices, and can be useful in the thoughtful renovation of culturally historic buildings.

A matter of design

ISO/TC 205 has published standards offering an integrated methodology for the design of high-performance indoor environments. These standards exist within the overarching framework of ISO 16813:2006, *Building environment design – Indoor environment – General principles*.

As technology and expectations evolve, so does the work of ISO/TC 205 and ISO/TC 163.

The comprehensive package of solutions developed with experts from around the world tackles energy-efficient and indoor environmental quality design. The standards also cover building automation control systems, radiant systems and other systems that relate directly to the indoor environment.

Notably, the standards aim to respond to design challenges while addressing sustainability concerns. As technology and expectations evolve, so does the work of ISO/TC 205, in order to ensure continual benefits.

Commissioning

Building commissioning refers to the quality process to verify and document that the completed project meets the owner's needs. Commissioning at some level is

required for building projects to achieve a rating or certification under the leading green building rating systems. Often, the minimum accepted is commissioning during construction, which includes functional performance testing of energy-related systems.

These systems also give additional credit to projects such as commissioning involvement during design. In comprehensive commissioning processes, design-phase commissioning activities provide vital quality-related enhancements to the design process.

Such enhancements also set the stage for meaningful commissioning activities in post-design project stages. ISO/TC 205 plans to include the design-related aspects of commissioning in its future standardization work. Through these and similar forward-looking initiatives, ISO's standards for indoor environmental design will remain relevant.

The holistic approach

ISO/TC 205 collaborates closely with ISO/TC 163, including in the adoption of new work items, as these are needed to improve the standardization of the design process. A joint working group (JWG) helps coordinate common areas between both committees and has developed a holistic approach to address buildings' energy performance.

Under this approach, energy performance comprises:

- Heating
- Cooling
- Lighting
- Ventilation



- Domestic hot water
- Appliances (in some cases)

The approach can be applied to evaluate the energy performance of badly insulated existing buildings, for example, compared to that of new, nearly zero-energy buildings, in order to assess compliance with minimum primary energy performance requirements in building regulations. A nearly zero-energy performance can only be achieved if all expertise and disciplines are effectively combined and coordinated.

The wide range of disciplines involved means that this work is quite challenging, but also important and urgent. Examples include:

- Thermal insulation
- Façade technologies
- Passive solar techniques
- Ventilation systems and air infiltration
- Heating, ventilation and air-conditioning systems
- Day-lighting and lighting systems
- Building and system control
- Automation

This holistic approach requires a common set of terms, definitions and symbols, which are provided in the newly published technical report ISO/TR 16344:2012, *Energy performance of buildings – Common terms, definitions and symbols for the overall energy performance rating and certification*.

The approach also requires:

- Common rules on the assessment boundary of the building or building site
- Calculation procedures for the interaction between energy uses (such as the way dissipation from lighting affects the building's thermal balance)
- Aggregation of the different energy uses



- Conversion of the delivered gas or electricity and, for example, the produced electricity from photovoltaic or (micro-)combined heat and power, to the overall energy use of the building

This last requirement will be addressed by the future ISO 16346, *Energy performance of buildings – Assessment of overall energy performance*.

Finally, it is important to define a single numerical indicator that expresses overall energy performance. This can be used as the basis for classification on an energy performance certificate and/or for judging compliance against minimum requirements in building regulations. That is the job of the future ISO 16343, *Energy performance of buildings – Methods for expressing energy performance and for energy certification of buildings*.

The JWG has also started work on a standard for addressing the indoor environmental conditions assumed in energy performance calculations.

Especially when addressing the energy performance of nearly zero-energy buildings, many specific technologies need to be included in the overall calculation procedures such as:

- High-performance thermal insulation materials
- Thermal solar systems
- Photovoltaic systems
- Combined heat and power

JWG uses a holistic approach to address buildings' energy performance.

- Ventilation heat recovery
- Active façades
- And micro-combined heat and power

A spin-off from these key energy performance items currently under development

is ISO 12655, *Energy performance of buildings – Presentation of measured energy use of buildings*. The standard will provide a methodology that will serve as a common basis to unify the collected data of measured building energy use, therefore facilitating parallel analytical comparisons.

ISO 12655 will maximize consistency with the other standards discussed here as another step towards harmonization.

Complex operation

Since modern commercial buildings have rather complex systems for heating and cooling, it is important to define the way energy goes through the building and how it is controlled.

Building energy management systems (BEMSs) are supposed to provide data on the performance of building technical systems. However, to carry out quality control of a building's energy performance, it is

necessary to integrate data from standards (requirements), BEMSs, measurements and building documentation.

Existing standards do not yet cover these demands. One example is hydraulic systems, where performance is greatly influenced by the use of new components such as frequency-controlled pumps, dynamic pressure balance valves and constant pressure control valves. A new proposal is being prepared to deal with this issue within the JWG.

Road ahead

Although much progress has already been made in providing the tools to help the building industry ensure sustainable buildings, the end of the road has not yet been reached. ISO must be ready to respond to rapidly evolving technology, and emerging global challenges that meet the needs of today and of the future. ■



About the authors

Dick (H.A.L.) van Dijk, of the Netherlands-based research organization TNO, is also Co-Convenor of JWG of ISO/TC 205 and ISO/TC 163.

Prof. Dr. Essam E. Khalil, of Cairo University, Egypt, is also Co-Convenor of JWG of ISO/TC 205 and ISO/TC 163.

Egil Öfverholm, of the Swedish Energy Agency, is also Chair of ISO/TC 163.

Jonas Santesson, of SIS (ISO member for Sweden), is also Secretary of ISO/TC 163.

Stephen Turner is Chairman of Stephen Turner Inc. and Chair of ISO/TC 205.



Re-energizing energy saving

Boosting global efforts to save energy and the environment

by Li Pengcheng and Li Tienan

Over recent years, concerns about rising energy demands and climate change have greatly affected global energy-related practices. Both suppliers and users of energy resources now have to work toward conservation and increasing efficiency.

ISO technical committee ISO/TC 257, *General technical rules for determination of energy savings in renovation projects, industrial enterprises and regions*, has a key role to play in cutting global energy consumption.

Energy savings and the resulting improved energy efficiency are the best ways to

restrain energy consumption and reduce greenhouse gas (GHG) emissions.

The gains could be huge: total potential energy savings could reach 82,1 EJ by 2030, exceeding the annual electricity consumption in 2009 of China, Japan and the USA combined.

Determining energy savings

Measurement, calculation and verification have established themselves as the cornerstone to stimulate technologies and policies and encourage efficiency.

According to the International Energy Agency, when determining energy savings it is important to ensure consistency in methodology; overcome uncertainties in quantifying the benefits of investments; and stimulate increased private-sector involvement.

Formed in 2010, ISO/TC 257 is actively involved in developing the basic standards for determining energy savings in projects, organizations and regions; and providing effective tools, including quantitative methodologies, to enable stakeholders to better define, adopt, manage and improve technical and management measures.

When used properly, these tools can provide significant advantages and benefits to users in the private and public sectors. As a solid technical foundation for energy savings quantification, ISO/TC 257's work products may create a flourishing market in energy saving.

Potential users of the standards

Although some of their particular reasons may vary, both the private and public sectors are keen to save energy and increase energy efficiency.

For International Standards on this issue, target users may include:

- Organizations quantifying their tally in relation to energy saving projects, installing the equipment and implementing the programmes
- Investors evaluating projects and/or technologies
- Policy makers evaluating and quantifying the energy savings of energy efficiency policies and programmes
- Stakeholders quantifying cuts in GHG emissions due to initiatives at project, organizational or regional level

Benefits of the standards

Adopting ISO standards to determine energy savings – whether in projects, organizations or regions – can help to manage increased numbers of national, regional and private methodologies.

International Standards will provide the comprehensive tools to better understand

and communicate scores at different levels, and to improve performance.

When used properly, the standards can bring users significant advantages and benefits. These include :

- More opportunities to identify worthwhile investment in technologies/ projects
- Enhanced clarity in understanding energy savings in projects/ organizations/regions
- Greater confidence in the guaranteed/ declared energy savings for projects

Total potential energy savings could reach 82,1 EJ by 2030.

- Increased potential to use energy rationally and to minimize waste
- More consistent, scientific and effective policy instruments to promote efficiency or cut consumption
- Greater assurance for consumers of the validity of energy savings
- More firmly grounded assessments of GHG emission reductions linked to projects/organizations/programmes
- No technical barriers for energy efficiency services

These advantages and benefits contribute directly and indirectly to the interested parties' commitments to improved energy performance and sustainable development.

Working framework

Figure 1 shows the working framework for measuring, calculating and verifying energy savings. According to the working scope, five categories are proposed to promote the development of standards in ISO/TC 257. These are :

- General technical rules
- Guidance on cross-cut issues
- Methodology for regions
- Methodology for organizations
- Methodology for projects

To enhance collaboration in related technical subjects at an organizational level, an ISO/TC 242, *Energy management* (leading body)-ISO/TC 257 joint working group (JWG) for the *Measurement and verification*

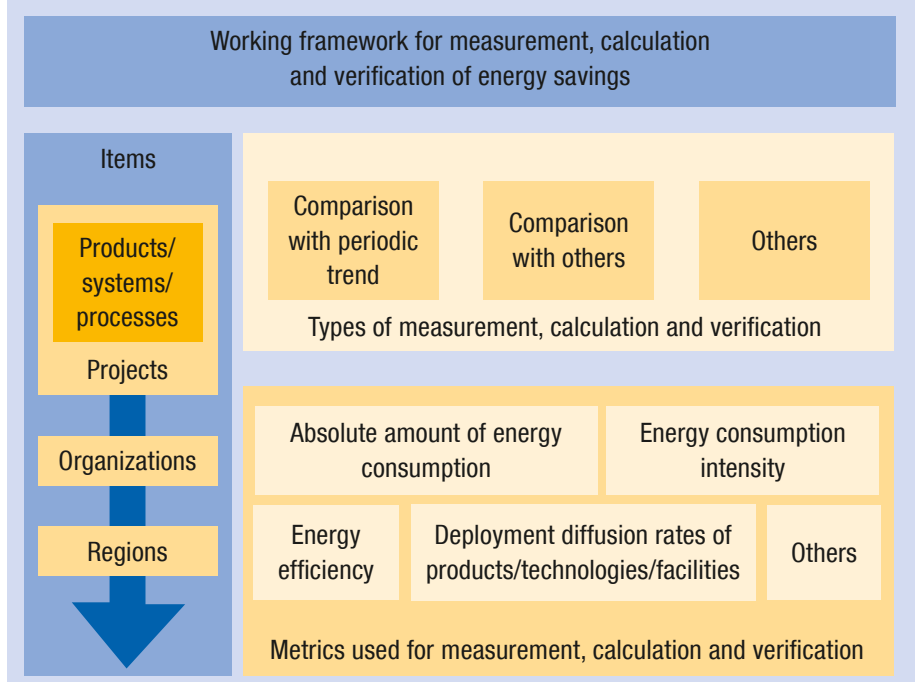


Figure 1: Working framework for quantifying energy savings.



of organizational energy performance – General principles and guidelines, has also been established.

Work programme

Prior working items include general technical rules and some fundamental methodologies. These subjects will build the framework of principles and essential guidelines for developing special methodologies in different levels of items.

As shown in **Figure 2**, the following four standards have already been launched as new work-in-progress items and approved for registration within ISO/TC 257:

- Definition of a methodological framework applicable to calculation and reporting
- General calculation methods on energy efficiency and savings for countries, regions or cities
- General technical rules for measurement, calculation and verification of energy savings for projects
- General calculation methods for organizations and other enterprises

More subjects could be developed as International Standards, or as a part of International Standards, and all are intended to enrich guidelines and tools to develop special methodologies in different levels of items. They are: energy savings through efficient services; through evaluators; through the quality of data for quantification; analysis of potential; and the evaluation and declaration of energy savings. ■

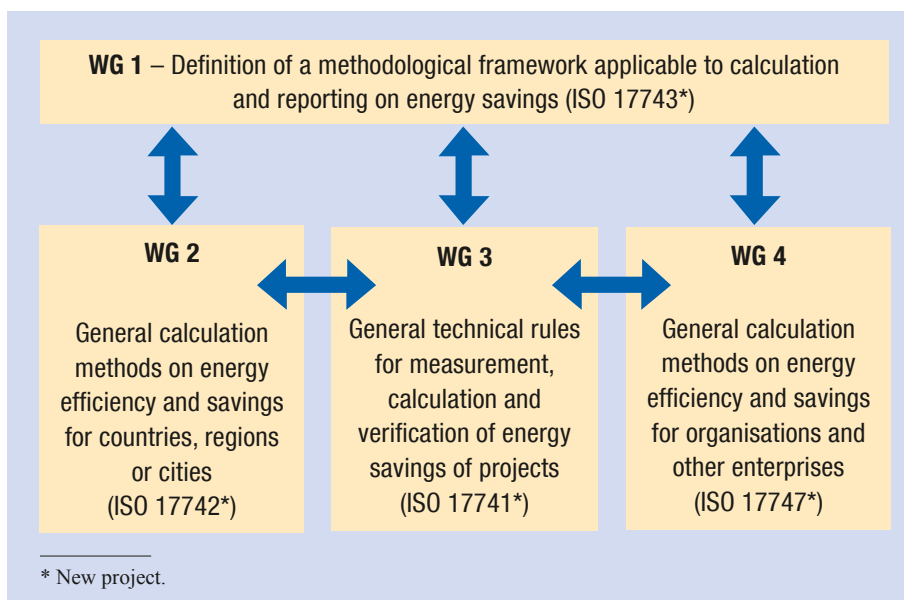


Figure 2: ISO/TC 257 working groups (WGs).

About the authors



Dr. Li Pengcheng is an associate researcher at the China National Institute of Standardization. He is also Secretary

of ISO/TC 257. Dr. Pengcheng has extensive experience in the standardization of energy efficiency for energy-using products, energy efficiency services and the measurement and verification of energy savings.



Prof. Li Tienan is Deputy General Manager of China Quality Mark Certification Group (CQM). He is also Chair of ISO/TC 257. Prof. Tienan has over 25 years' experience

in International Standards, including having played a key role in the introduction of ISO 9000 (quality management) in China. He manages product certification programmes for CQM on conformity, energy efficiency, water conservation, environmental protection and safety.

Towards the ultra-efficient home

ISO standard supports the development of energy-efficient homes

by Takao Sawachi

ISO 13153:2012, *Framework of the design process for energy-saving single-family residential and small commercial buildings*, helps architects and designers to develop energy-efficient buildings well suited to their locations.

There are many ways to make a home more energy efficient. However, for all the available options, architects, designers of home energy systems and other building-design professionals still need more reliable quantitative information on energy saving according to the method used.

For example, in a particular building project, they would like to know how much energy can be saved by a certain increase in the building envelope's thermal resistance, by using a more energy-efficient water heater and so on. If the initial cost increase is known, they can then calculate operational cost savings and the payback period.



There are many ways to make a home more energy efficient.

Timely new standard

Responding to this need, ISO 13153:2012 is intended to assist and support the developers of design guidelines, architects and other building-design professionals. The standard provides the framework to express such quantitative knowledge and includes an example in its annex.

The key parameters are “reference energy consumption” and “energy consumption ratio”. The former is the base energy consumption for each energy use, before adopting any energy saving measures (see **Figure 1** for an example), and the latter is the ratio of predicted energy consumption, after adopting a certain method, to the reference energy consumption.

Table 1 shows the energy consumption ratio for the thermal performance of the building envelope for detached houses in a relatively mild climate.

The specification of each level must be clearly explained in the design guidelines. Building-design professionals can estimate

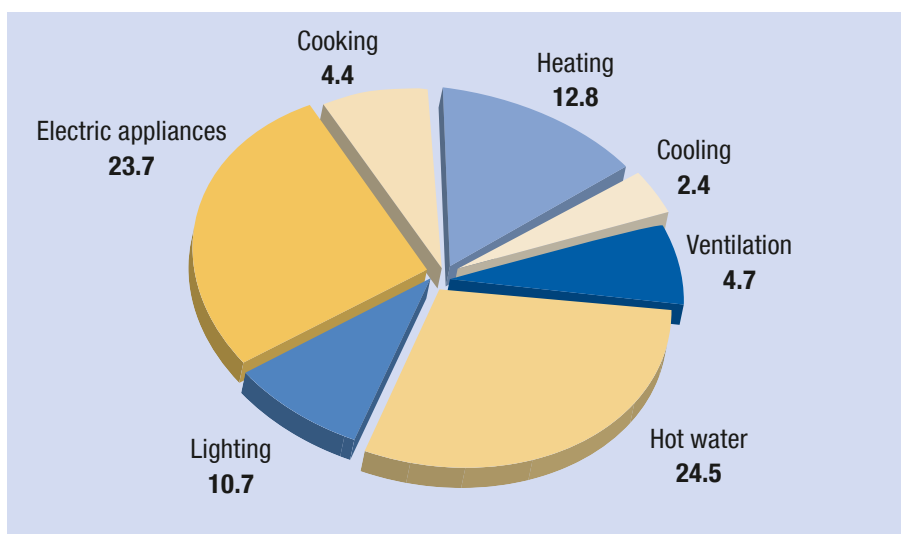


Figure 1: Reference energy consumption (GJ/year/household) of an average four-person detached home, built around 2000 and in a mild climate.

the energy consumption for space heating simply by multiplying the reference energy consumption and one of the energy consumption ratios of the adopted level.

For instance, if they choose Level 3 for the envelope of a certain detached house project, energy consumption for space heating is estimated to be 12.8 x 0.55 (GJ), which is equal to 7.0 (GJ).

A complete set of energy consumption ratios is shown in **Table 2**.

For all elemental technologies, Level 0 means the basis specification. In this case, no reduction of energy consumption can be expected and its energy consumption ratio is inevitably 1.0.

For photovoltaic power generation, its effectiveness in saving energy is not

Reference energy consumption (for space heating)	Energy consumption ratios for different levels (specifications) of thermal performance of the building envelope				
	Level 0	Level 1	Level 2	Level 3	Level 4
12.8 Giga-Joules/year/household	1.0	0.80	0.65	0.55	0.45

Table 1: Reference energy consumption for space heating, and energy consumption ratios for different levels of thermal performance of the building envelope.

expressed in an energy consumption ratio, but in the amount of energy reduction. It means that if photovoltaic panels of 3 kW (Level 1) and 4 kW (Level 2) are installed, energy consumption is reduced by 29.3 GJ and 39.1 GJ, respectively. No energy saving method for cooking is assumed in this

set, and its reference energy consumption is 4.4 GJ.

Figure 2 illustrates a complete example of designing for an ultra-energy-efficient home. Suppose the designer selects levels of specification marked in blue in **Table 2**. In the design guidelines complying with this standard, the explanation of each technological element and levels of specification aims to facilitate design-guideline implementation.

As an example, here is a combination of 11 elemental technologies and levels of specification :

1. Insulating building envelope planning/Level 3 : envelope (opaque parts and windows) compliant with a certain energy conservation standard
 2. Use of solar radiant heat/Level 2 : area ratio of windows facing south exceeds 20% of the total floor area, and the thermal performance of windows is one rank higher
-
- The design solution depends on factors such as climate, site conditions, economics, building type and lifestyle.*
-
3. Energy efficiency of heating equipment/Level 3 : air-to-air heat-pump air conditioners with a coefficient of performance (COP) higher than 6.0
 4. Natural ventilation for heat removal/ Level 2 : low-density area, with two windows in every habitable room for cross-ventilation, or equivalent countermeasures for adequate wind-induced ventilation
 5. Solar shading method/Level 3 : solar heat gain coefficient of windows

Energy use	Reference energy consumption	Elemental technology		Energy consumption ratio (reference value considered to be 1.0)				
				Level 0	Level 1	Level 2	Level 3	Level 4
Space heating	12.8 GJ	Insulated building envelope planning		1.0	0.8	0.65	0.55	0.45
		Use of solar radiation heat*		1.0	0.95	0.9	0.8	0.6
		Heating and cooling system planning (heating)	Partial intermittent heating by room air conditioner	1.0	0.8	0.7	0.6	
Space cooling	2.4 GJ	Natural ventilation for heat		1.0	0.85	0.8	0.7	
		Solar shading method	South-facing	1.0	0.85	0.7	0.55	
			Southeast/Southwest-facing	1.0	0.8	0.75	0.65	
			East/West-facing	1.0	0.8	0.75	0.65	
		Heating and cooling system planning (cooling)	Partial intermittent cooling by room air conditioner	1.0	0.8	0.7	0.6	
Ventilation	4.7 GJ	Ventilation system planning		1.0	0.7	0.6	0.4	
Domestic hot water	24.5 GJ	Solar water heating and hot-water system planning		1.0	0.9	0.8	0.7	0.5
Lighting	10.7 GJ	Daylight utilization		1.0	0.98	0.95	0.9	
		Lighting system planning		1.0	0.7	0.6	0.5	
Consumer electronics	23.7 GJ	Introducing high-efficiency consumer electronics		1.0	0.8	0.6		
Other (cooking)	4.4 GJ	-						
Total	83.2 GJ	-						
Power	-	Photovoltaic power generation		-0.0 GJ	-29.3 GJ	-39.1 GJ		

* Requires insulated building envelope planning of at least Level 3

Table 2: Relationship between energy use, reference energy consumption, elemental technology and energy consumption ratio at each level of specification.

other than those facing north $\pm 30^\circ$ is 0.3 or less

6. Energy efficiency of cooling equipment/Level 3: air-to-air heat-pump air conditioners with COP higher than 6.0
7. Ventilation system planning/Level 2: the shortest route of ducting with at least 75 mm diameter, and the adoption of a fan with small specific fan power
8. Solar water heating and hot-water system planning/Level 4: solar system with solar heat collector of at least 3.5 m², and condensing gas boiler
9. Daylight utilization/Level 2: low-density area, with every habitable room having two openings
10. Lighting system planning/Level 2: lamps' efficiency exceeds 70 lm/W, dimming function in the main habitable room and timer/sensor to at least one light fitting
11. Introducing high-efficiency consumer electronics/Level 2: adopt television (with rated electric power of 75 W or lower), refrigerator (annual power consumption of 520 kWh or lower), hot-water-heated toilet seat (annual power consumption of 200 kWh or lower), and washing machine with inverter control.

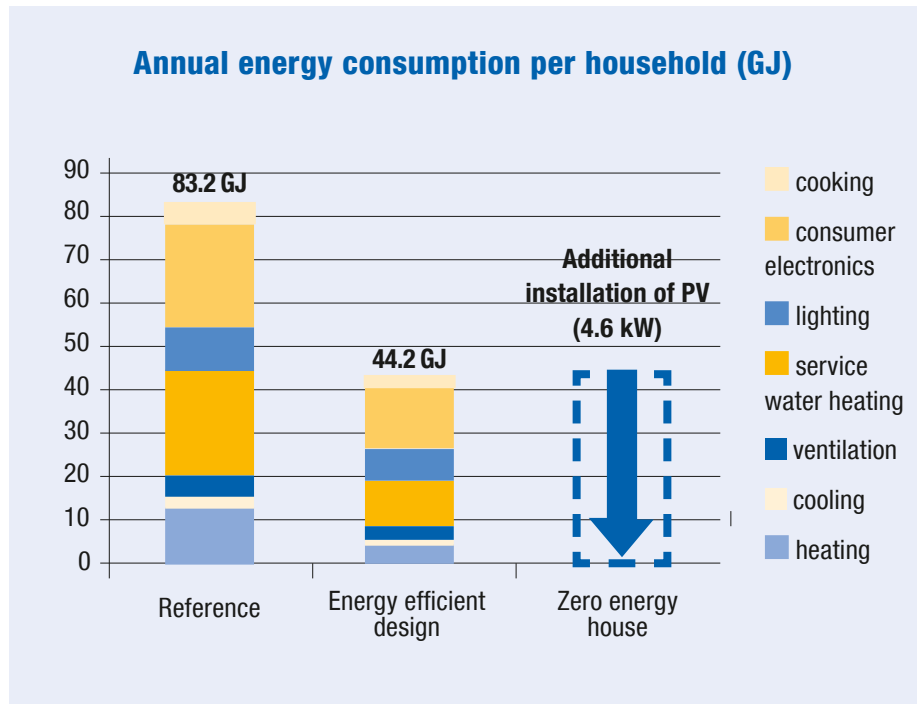


Figure 2: Example of energy-efficient design, in which specifications 1-11 of elemental technologies are adopted. **Table 3** shows how energy consumption can be calculated by reference energy consumptions and energy consumption ratios.

Assessing energy consumption

For this design process, there is a strong need for reliable and unbiased evidence for reference energy consumptions and energy consumption ratios. This is especially applicable to equipment for space heating and cooling, and for providing hot water.

The energy consumption of consumer electronics cannot be easily estimated simply by using information found in their brochures. Fortunately though, many countries have established energy calculation tools for so-called energy certification, and these can be used to determine reference energy consumptions and energy consumption ratios.



Energy use	Equations to predict the design values by inserting energy consumption ratios into blankets, referring to Table 2	Predicted energy consumption or power generation	Reference energy consumption	Reduction rate (%)
Space heating	$12.8 \times ([0.55] \times [0.9] \times [0.6])$	3.8 GJ	12.8 GJ	-70 %
Space cooling	$2.4 \times ([0.8] \times [0.55] \times [0.6])$	0.6 GJ	2.4 GJ	-75 %
Ventilation	$4.7 \times [0.6]$	2.8 GJ	4.7 GJ	-40 %
Domestic hot water	$24.5 \times [0.5]$	12.3 GJ	24.5 GJ	-50 %
Lighting	$10.7 \times ([0.95] \times [0.6])$	6.1 GJ	10.7 GJ	-43 %
Consumer electronics	$23.7 \times [0.6]$	14.2 GJ	23.7 GJ	-40 %
Other (cooking)	4.4×1.0	4.4 GJ	4.4 GJ	0 %
Subtotal			83.2 GJ	
Power	Power generation by photovoltaic cells depending on the capacity (3 kW or 4 kW) (square -29.3 GJ (3kW) square -39.1 GJ (4kW))	-0 GJ	-	
Total		44.2 GJ	83.2 GJ	-47 %

Table 3: Calculation of predicted energy consumption and energy saving.

Early use of ISO 13153

In Japan, following the framework of the design process specified in ISO 13153, three design guidelines have been developed for detached houses in cold, mild and hot-humid climates.

Also in Japan, more than 14 000 experts have participated in building design seminars (see Photo right).

There seems to be a huge market for design guidelines for energy-efficient buildings. These enable architects and other building-design professionals to find a swift solution appropriate to their particular building project.



A seminar for design guidelines.

In Japan, three design guidelines have been developed for detached houses in cold, mild and hot-humid climates.

Generally speaking, the design solution depends on factors such as climate, site conditions, economics, building type and lifestyle. For this reason, it is not acceptable to apply a general rule-of-thumb of building design to all situations.

For example, when budgets are limited, such as in developing countries, design guidelines should focus on affordable elemental technologies.

If a certain industry hopes to promote its products to help save energy, it should develop its own product design guidelines for its architect and building-design clients.

ISO 13153 highlights the importance of reliable energy consumption ratios. For all its benefits though, it must be remembered that this standard is only one of the possible frameworks for design guidelines for building energy saving. ■

About the author



Takao Sawachi, Dr. Eng., is Director at the Building Research Institute, Japan. He is also Project Leader in ISO technical committee ISO/TC 205, *Building environment design*, which developed ISO

13153:2012.



Service life planning

Responding to the needs of an evolving industry

by Kathryn Bourke

“If I have seen further, it is by standing on the shoulders of giants” is a quotation normally attributed to Isaac Newton, although he borrowed it from early writers. This points to the development of future intellectual pursuits by understanding and building on the research and works created by notable past thinkers. It is certainly true of the technical committee and subcommittee of which I am a member, ISO technical committee ISO/TC 59, *Buildings and civil engineering works*, subcommittee SC 14, *Design life*.

course were particularly good at sourcing original thinking.

They also brought us into close contact with aligned organizations, such as the international construction research organization (CIB), and with conferences, where relevant papers were presented.

Our closest link was with the triennial “Durability of Materials and Components” conference – to the extent that we normally meet one year in three. This ensures we meet like-minded individuals who bring their own contributions and solutions.

Broad expertise

From the start, we had representatives who were difficult to put into any single category – I am one myself – who had crossed from one discipline to another. This challenged us to widen our narrow “home territory”.

We had travelled a variety of routes to a similar place, and all had something to offer the committee.

Over time, the committee’s work changed as the representation changed.



SC 14 was the result of the vision of one man, Sir Roger Browne, and his commitment to a subject he believed was ripe for standardization, service life planning. The result was ISO 15686, *Buildings and constructed assets – Service life planning*; 25 years later and 10 published parts on, it seems he was right!

Starting with a blank piece of paper, we developed guidance on how to plan the service life of buildings or other constructed

assets or works. We had many long discussions on purpose, scope and title – suffice it to say that we know the value of clarifying what we are trying to achieve, why, how and for whom.

Initially, the committee principally comprised materials scientists, mainly from a research background, although all had close links with industry and had their “feet on the ground”. They brought scientific rigour and discipline to our discussions, and of





Gradually, the focus moved to solving the problems linked to working in integrated teams.

To give an example, the theme of sustainable construction has changed from an academic pursuit to a real and challenging professional dilemma. Indeed, I lead a working group that focuses on balancing environmental and economic impacts.

Another working group is tackling the many problems of applying the overall methodology of service life planning to open source data transfer, for example, through the future ISO 16739, *Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries*.

Don't neglect the terms

Terminology is probably the most recognizable and universal area for those involved in codes and standards development.

When I first started working in the committee, I was a drafting consultant for ISO 15686-1, *Buildings and constructed assets – Service life planning – Part 1: General principles and framework*. As a novice in standardization, I did not pay a lot of attention to terms and definitions. There seemed to be a long list of terminology with specific definitions, and similar sounding concepts.

At the time I thought that “component” was a good generic term for all the various terms others had used, such as asset, material, assembly, system and part. In the long term, I realized that we should have proceeded differently.

We had travelled a variety of routes to a similar place, and all had something to offer the committee.

Although we have recently worked closely with ISO/TC 59/SC 2, *Terminology and harmonization of languages*, to align our terms more closely with other standards, it would have been much easier if we knew then what we know now. Over many years the committee has developed terms specific to our work, but this meant missing some chances to build on the work of our predecessors for greater harmony and consistency.

Not reinventing wheels

Another key theme is interaction between different but related standards, which have been, or are being, developed both internally and nationally. We are liaising closely with ongoing work within CEN, the European standardization body, on the integrated assessment of sustainable construction.

We have also built on the work carried out by the Architectural Institute of Japan and by the National Institute of Standards and Technology in the USA.

Work in the Nordic countries, the USA and the United Kingdom (UK) has heavily contributed to several parts of ISO 15686 within our committee. We contribute, both individually and as a committee, to the work of other groups, who now find our output useful and relevant.

Challenges ahead

Funding is a big challenge. When I started, my own work was funded by the UK government, and many representatives who provided the foundations for the work were similarly funded. We were free to be independent contributors to a joint resolution of issues affecting a broad spectrum of industries and professions.

Professional institutions played their part, too, in sponsoring and identifying local experts to contribute. In addition,



national mirror committees freely contributed to reviewing and improving the drafts at ballot points.

Few of us are funded now (other than for travel expenses), either nationally or internationally. I know that we could not have achieved what has been done without the core work done early on by representatives who could spend a week or two really working on a draft.

This is a dilemma for a committee whose focus is not on a single product or material or profession – which individual organizations benefit enough from the work of the committee to pay for the time of the committee members?

Most members give their time freely and our employers donate our time to attend the meetings, but it is hard to work outside of the meetings, and paid work often has to take precedence.

Following this, progress has slowed, the mean age of committee members has increased, and representation by government, academics, clients and users has fallen.

Of course the risk is that we become less relevant, or less independent, or less rigorous. I believe the purpose of this committee is to develop methodologies and guidance where the need is foreseeable, but not yet obvious.



There is another risk, too. If we move too slowly, each local interest group will develop its own methods to resolve problems. As each group becomes committed to its local approach, which represents a considerable investment of time and resources (and possibly also an income stream), the chances of coming together to produce a common approach are greatly reduced.

*This is a plea
for working together.*

To conclude, this is a plea for working together – because together we can see further. ■



About the author



Kathryn Bourke, MA, MRICS, MPhil, is Con-venor of ISO/TC 59/SC 14, WG 4, *Maintenance and life cycle costing*, and the UK representa-

tive to CEN/TC 350/WG 4. Ms. Bourke is Managing Director of Whole Life Ltd. (www.wholelifeltd.co.uk) and a specialist consultant on whole-life cost and value in construction. She has over 20 years' experience in issues relating to long-term performance, costs and value of buildings and components. With a background in law and as a chartered building surveyor, most of her work currently involves construction cost consultancy.

How ISO makes our cities smarter

URBAN
RESILIENCE

INTELLIGENT
AND
SUSTAINABLE
BUILDINGS

SUSTAINABLE
DEVELOPMENT
IN COMMUNITIES

SERVICE
LIFE
PLANNING

ZERO-
ENERGY
BUILDINGS

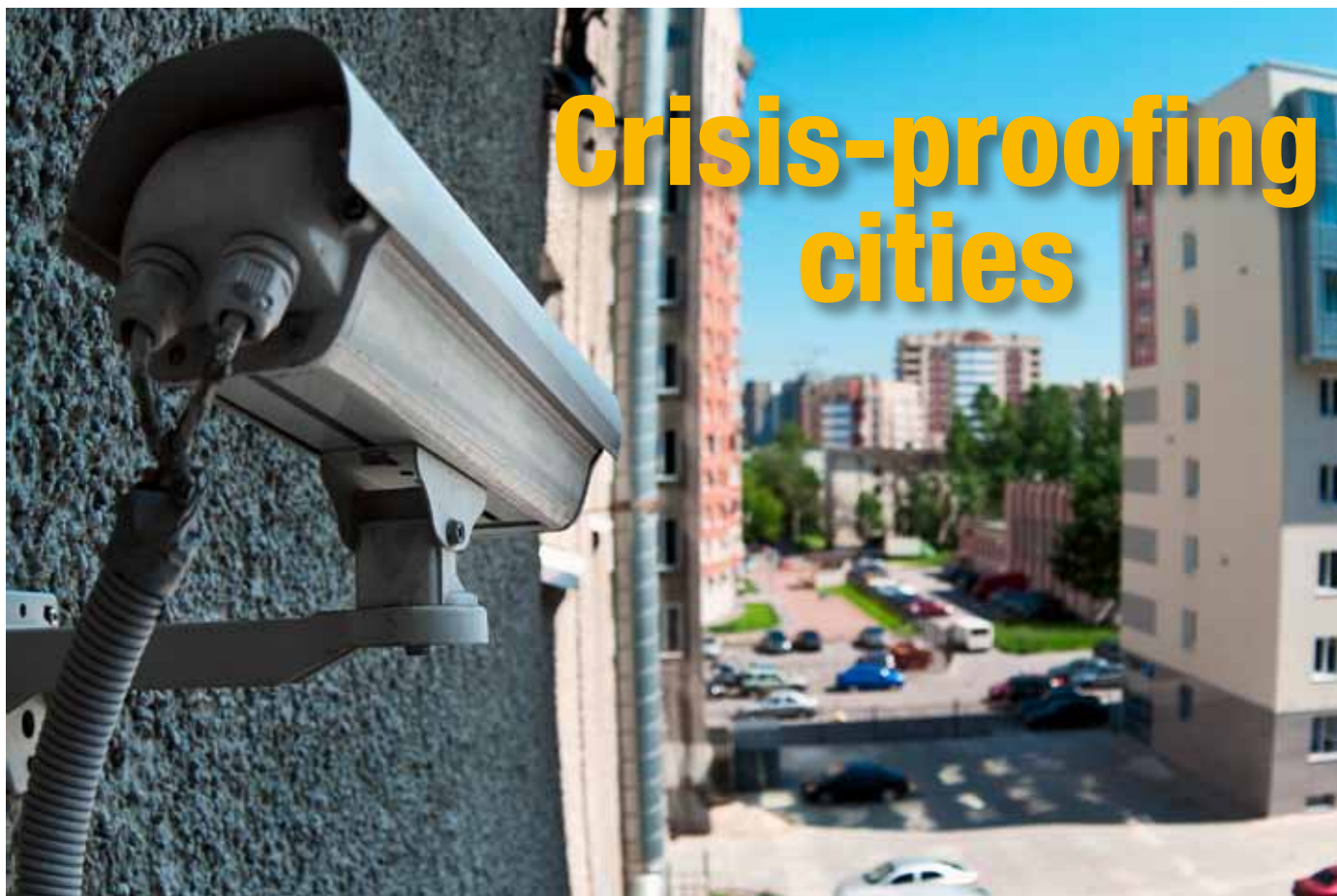
DRINKING
WATER AND
WASTEWATER
SERVICES

GREENER
CARS



Smart cities exemplify how sustainable development can go hand in hand with increasing consumption and economic growth. ISO standards play a key role in the construction and development of cities – today and tomorrow. Here are just some examples among hundreds of others.





Crisis-proofing cities

ISO standards are making cities more resilient



by Åsa Kyrk Gere and Stefan Tangen

Can your city withstand incidents and emergencies, can it respond and recover, and can it save lives along the way? ISO technical committee ISO/TC 223, *Societal security*, is addressing these issues and developing International Standards to boost urban resilience.

Our society is becoming more heterogeneous. This is creating larger and more complicated networks and makes us more vulnerable and dependent than before.

Complex networks lead to unforeseen dependencies between actors and across sectors. In turn, disruptions in these networks have unpredictable results which can quickly escalate and trigger larger, multi-sector

crises. For example, a relatively isolated electrical power cut in one part of a city can easily affect both that and other areas.

A multi-sector crisis places great demands on inter-organizational coordination and cooperation with other actors, as well as on prepared and trained organizations.

A network with many heterogeneous actors has many benefits and is not

necessarily negative. However, this does create unique risks when multiple actors depend on similar infrastructure.

ISO/TC 223 is developing International Standards to boost urban resilience.

In this situation, standards can provide processes to reduce dependencies and so increase organizational resilience. As more

of the city's actors improve their resilience, there is an aggregate effect across the entire network.

An inter-disciplinary approach helps to cope with the sensitivity of our complex society. This enables knowledge and practices to be shared and the positive effects of synergies to be realized. The result is a dynamic, adaptive and integrated approach towards global change, safety and security.

As more of the city's actors improve their resilience, there is an aggregate effect across the entire network.

The generic standards for individual organizations such as those produced by ISO/TC 223 are important prerequisites for the inter-disciplinary approach advocated above.

Organizations and sectors that rely on a network and each other can use these generic standards to assist with the coordination of business processes. The efforts and practices of each individual organization are aggregated across the network, increasing the resilience of both the network and the organizations that depend on it.

Below are a few of the issues that need to be addressed in a resilient city, and some of the ways in which our standards will help. It is important to note that ISO/TC 223 standards are produced for public and private organizations in such areas as: resilience, exercises, public/private partnership, emergency management, capability assessment, mass evacuation, and continuity management.



Preparing for the worst

Actors that have assessed, adapted and prepared their businesses for today's changing world will together build a more resilient city.

In progress, ISO 22316, *Societal security – Organizational resilience – Principles and guidelines*, guides businesses in developing an organizational capacity that is adaptive to changes and events. Often referred to as “resilience”, this capacity brings an internal culture that secures transformation and renewal during interactions and events.

Another essential preparation is a structured approach to manage the large and diverse risks that may cause an interruption.

ISO 22301:2012, *Societal security – Business continuity management systems – Requirements*, and ISO 22313:2012, *Societal security – Business continuity management systems – Guidance*, enable businesses to obtain services and implement continuity management to maintain operations. The standards provide a process to deal with and/or eliminate risks to protect their businesses and ensure the provision of electricity, water and other key services.

Preparations, plans and implemented processes contribute to appropriate awareness and development. Exercises are essential in preparations and make sure everything works properly. The future ISO 22398, *Societal security – Guidelines for exercises*, helps businesses to plan and carry out joint exercises and test their preparations, ability and capacity to deal with unexpected events.



Colour	Meaning	Suggestion
Red	Danger	Take appropriate safety action immediately
Yellow	Caution	Prepare for taking appropriate safety action
Green	Safety	No need to take safety action



Figure 1: Colour codes and their meanings.

Effective emergency management

When disasters strike, it is important to protect people at risk. Without effective emergency management, lives will be lost and there may also be significant damage to a city's businesses and economy.

ISO 22320:2011, *Societal security – Emergency management – Requirements for incident response*, applies to all the private- and public-sector organizations that can be involved in incident response and enables them to work efficiently and effectively.

The standard outlines global best practice for establishing organizational structures and procedures for emergency management, decision support, traceability and information management. Interoperability among involved organizations is essential for successful incident response and overall emergency management.

ISO 22320:2011 also helps to ensure timely, relevant and accurate operational information by specifying processes, work systems, data capture and management. In addition, it establishes a foundation for coordination and cooperation, making

sure all relevant parties are closely aligned during a disaster, minimizing the risk of misunderstandings and securing a more effective use of combined resources.

People in the city need to be warned when something happens. Under development, ISO 22322, *Societal security – Emergency management – Public warning*, provides principles and generic guidelines for developing, managing and implementing public warning before, during and after incidents. This enables response organizations to alert their responders and at-risk people to take safety measures.

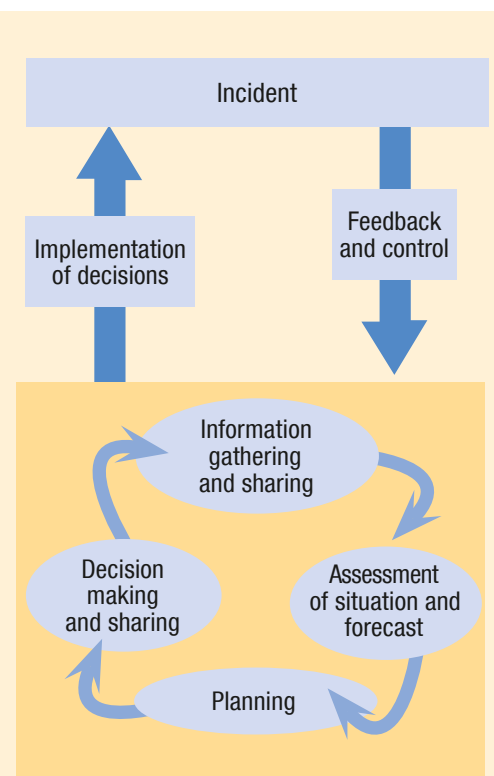


Figure 2: Example of the command and control process in a single hierarchical organization with limited coordination needs.



Often a specific message that requires practical action must be disseminated to a large group. Effective public warning can prevent a panic reaction and help response organizations to optimize their responses.

ISO/TC 223's standards provide some of the answers.

To warn the public effectively, pre-prepared colour-coded alerts can be used. Also under development, ISO 22324, *Societal security – Emergency management – Colour-coded alert*, assists with drawing rapid attention to the severity of a situation so that people can respond

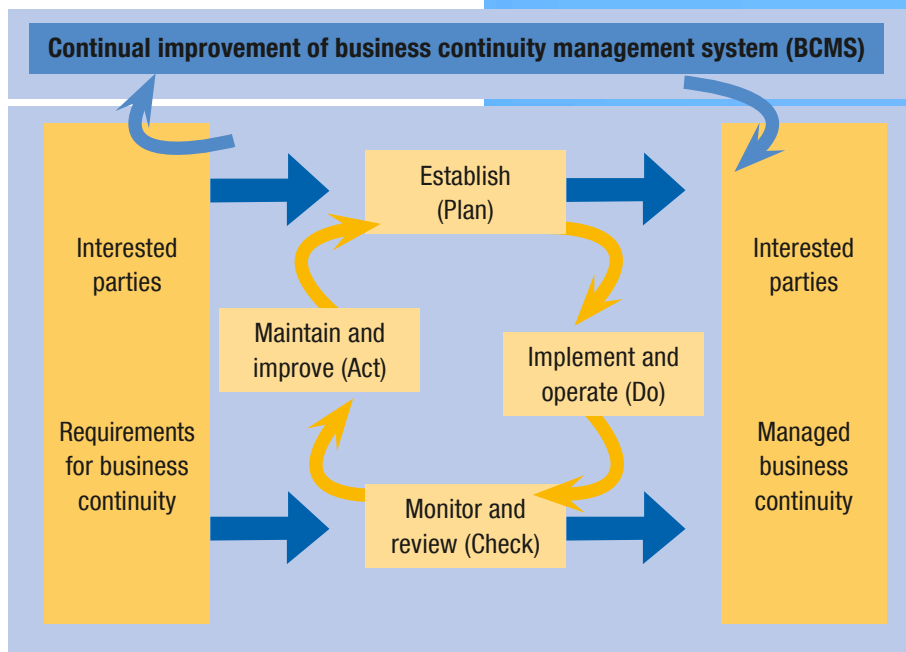


Figure 3: Management system for business continuity management.

accordingly. ISO 22324 standardizes alert colours to indicate the degree of danger, regardless of the type of hazard. These are mainly intended to help people – who may lack the expert knowledge about a particular hazard – maintain or increase their personal safety.

Greater resilience

Now that half of the world's inhabitants live in cities, we are faced with increasingly difficult issues linked to urban adaptation, climate change and societal security.

ISO/TC 223's standards provide some of the answers and play a useful role in creating more resilient cities. ■

About the authors



Åsa Kyrk Gere is Chair of ISO/TC 223, *Societal security*. She works as a senior expert at MSB, the Swedish Civil Contingencies Agency, on emergency and

disaster management, often with a focus on international coordination and cooperation for civil protection. Ms. Kyrk Gere holds a Master's degree in Political Science.



Dr. Stefan Tangen is Secretary of ISO TC 223, *Societal security*. He is also Secretary of the joint technical coordination group on management system stand-

ards harmonization. A project manager at SIS, the Swedish Standards Institute, Dr. Tangen holds a PhD in Production Engineering.



In many countries, road crashes are the biggest culprits when it comes to deaths and serious injuries. ISO 39001 was published in October 2012 partly to support the United Nations' (UN) Decade of Action for Road Safety. Covering the period 2011 to 2020, the UN initiative aims to halt the global rise in road traffic casualties.

Road crashes cause more deaths and serious injuries than anything else.

Almost all organizations use roads for delivery of goods and services. ISO 39001 outlines a management system to enable these organizations to integrate safety into their use of roads. The standard will help them improve safety in a structured and simple way.

Significant benefits

ISO 39001 will assist governmental and private sector organizations alike by providing a structured, holistic approach to road traffic safety as a complement to existing programmes and regulations. It is based on the process approach, proven by successful ISO standards such as ISO 9001:2008 for quality management, including the Plan-Do-Check-Act cycle, and a requirement for continual improvement. This makes it highly accessible to organizations that already implement other ISO management systems. We, therefore, expect ISO 39001 to be particularly popular, saving many lives.

In fact, the standard can have a significant positive effect, due to the large amount of traffic generated by organizations and to the many vehicles they own or rent.

This, in turn, could benefit the rest of the road transport system. If all taxis, buses, trucks, rental cars and company cars operate at the highest safety standard, there would be fewer fatalities and injuries. Similarly, if road administrations, the police, vehicle manufacturers, suppliers and others adopt ISO 39001, our roads would be safer.

In the past, attempts to improve road safety have focused on the behaviour of individual road users, and particularly on education, enforcement and engineering. These, however, proved largely ineffective, and sometimes even counterproductive.

Saving lives

ISO 39001 will make roads safer

by Peter Hartzell and Claes Tingvall

Road accidents account for some 1.3 million fatalities each year. The number of people killed is on the increase, particularly in low- and middle-income countries. Use of ISO 39001:2012, *Road traffic safety (RTS) management systems – Requirements with guidance for use*, can help reduce death and serious injury due to road accidents.



Notable differences

ISO 39001 has a few elements that are unique within the family of management system standards. Firstly, the long-term target is already set and only organizations wishing to eliminate accident-related deaths and serious injuries should use the standard. While elimination is quite normal in production processes, it has been a far less common approach in road traffic.

Another key difference from other management system standards is that some factors are mandatory. Organizations must meet vehicle safety, use of restraint systems and speed compliance.

ISO 39001 also places greater emphasis on the external context. As road transport and safety can be understood as a system,

many organizations would have to cooperate with, or consider, other stakeholders in the system. This is even more relevant if the organization is a car manufacturer or a road administration.

We expect ISO 39001 to be particularly popular – and to save many lives.

Overall, ISO 39001 has great potential to tackle one of the most dangerous challenges of our times, road traffic safety. Now, it is up to organizations around the world to start using it and save lives. ■

Compliance with speed limits, avoiding driving under the influence of alcohol and drugs, and using personal safety equipment such as helmets and seat belts, offer plenty of potential for society and individuals. But an organizational approach can take this even further. With ISO 39001 it is possible to :

- Improve the well-being of employees and transport contractors
- Facilitate the use of new technology to improve behaviour and limit the consequences of human failure
- Enable organizations to become more effective and reduce their costs
- Help organizations to be seen as good corporate citizens



About the authors



Peter Hartzell is Secretary of ISO/TC 241, Road traffic safety management systems, and Project Manager for the Swedish technical committee on quality management. He has a degree in business and over 18 years' experience in management systems.



Dr. Claes Tingvall is Chair of ISO/TC 241 and Director of Traffic Safety at the Swedish Transport Administration. He is also an Adjunct Professor at the Department of Applied Mechanics at Chalmers University of Technology, Gothenburg.

Cuba's 50th anniversary in ISO

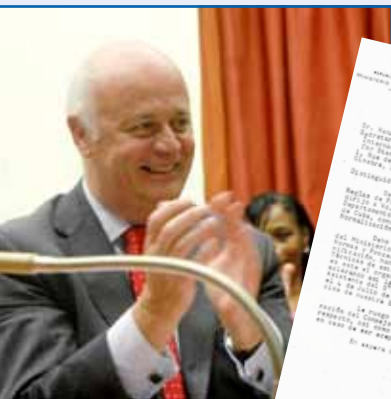
Ernesto "Che" Guevara, the then Minister of Industry in Cuba, requested that the Oficina Nacional de Normalización (NC) join ISO – the Cuban member is celebrating today its 50th anniversary.

During his visit to Cuba in October 2012, ISO Secretary-General Rob Steele congratulated the Cuban member on its involvement: "NC participates in many areas of the ISO standards development work, taking part in over 200 technical committees and steadily increasing their use of new ISO IT tools and other services, with an excellent voting record."

He encouraged NC to participate even further in ISO technical work, and to fully reap the benefits of international standardization: "We hope to see Cuba become a more active standards maker in the future, and drive International Standards development relevant to the country's economic, social and environmental development."

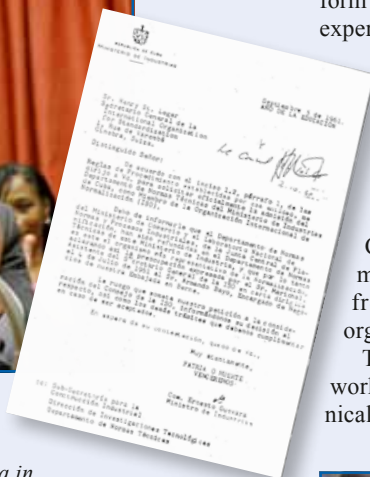
Rob Steele also met with the Minister and Deputy Minister of the Ministry of Science Technology and the Environment, as well as the Minister of Foreign Trade and Foreign Investments.

NC has twice taken on a key role in ISO Council, the organization's governance body. It is also a longstanding member of the ISO policy development committees on conformity assessment, consumers, and developing countries. NC has participated in various training events hosted by ISO in recent years.



Left above:
ISO Secretary-General **Rob Steele** visits Cuba in October 2012.

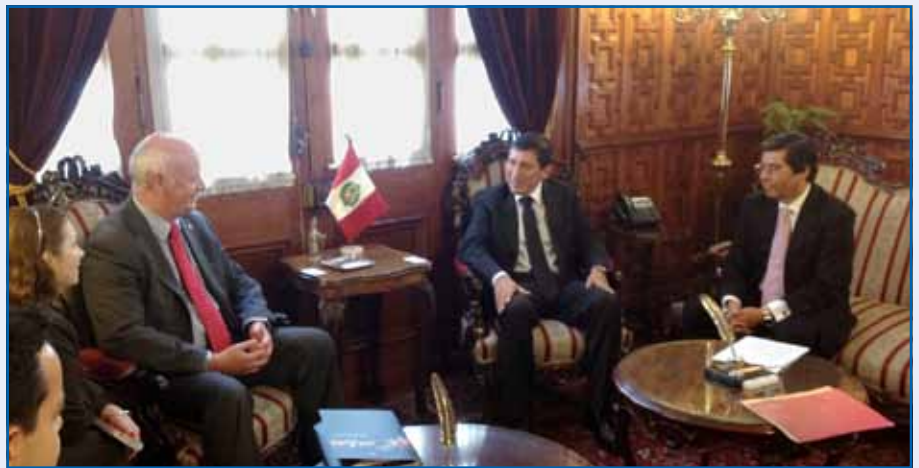
Right above: Letter signed by Ernesto "Che" Guevara, requesting Cuba's accession to ISO.



Encouraging Peru

ISO Secretary-General Rob Steele met with the President of the Peruvian Congress and with the Director of the National Competitiveness Council, of the Ministry of Economy and Finance, during a visit to Lima, Peru, in October 2012.

The ISO Secretary-General celebrated World Standards Day 2012 on the theme of "Less waste, better results – Standards increase



From left: ISO Secretary-General **Rob Steele** with the President of the Peruvian Congress **Victor Isla Rojas** (centre) and the Parliamentary Speaker of the ruling party **Jaime Delgado** (right).

efficiency". He also had the opportunity to learn about the skills and needs of the ISO member for Peru, INDECOPI.

The ISO Secretary-General said: "This is my first visit to the country, and I am impressed by the dedication, hard work and enthusiasm from everyone I met at INDECOPI, and by the stakeholders and government officials I have had the opportunity to speak to."

Rob Steele noted the country's advances and development in standardization and encouraged INDECOPI to fully take advantage of the services ISO offers to its members. Agreement was made on the importance of increasing awareness of INDECOPI's use of ISO's e-services, the online browsing platform and ISolutions among others. An ISO expert will follow up to assist INDECOPI in implementation.

ISO in Hollywood

The ISO technical committee responsible for cinema standards ISO/TC 36, *Cinematography*, met in Hollywood, California, USA, in October 2012. The meeting was attended by 26 delegates from eight countries and two liaison organizations.

The main goal was to review the structure, work programme and resources of the technical committee. The scopes of its working

groups were revised and aligned to meet future needs. A number of existing standards were confirmed as up-to-date, and drafts on future standards advanced to the next stage.

The Society of Motion Picture and Television Engineers was encouraged to submit their standards to ISO/TC 36 for eventual publication as International Standards on such subjects as:

- Archive frame rates for D-Cinema
- Reference projector and environment
- Theater projection leader
- Trailer and cue marks

Julian Pinn was reappointed Chair for a new three-year term. The committee agreed to meet again in Beijing, China, in 2014.

Bright future with coalbed methane

A new ISO technical committee on coalbed methane (CBM), ISO/TC 263, held its first plenary meeting in October 2012, in Beijing, China.

CBM is a form of natural gas extracted from coal beds. Its development and use provides an alternative source of clean energy, easing the strain on the world's dwindling oil and gas resources. Moreover, extraction of CMB improves the safety of coal mines by decreasing the gas content of coal seam. It also reduces greenhouse gas emissions from mining.



Discussing cinema in Hollywood at the ISO/TC 36 plenary.



Coalbed methane experts at the plenary in Beijing, China.

The new committee will standardize requirements and disseminate best practice in order to promote international communication and collaboration, and facilitate the development of this innovative technology.

At its first plenary, it was agreed that future work would target:

- Terminology and definitions in resource evaluation, engineering, production and development, and other related fields
- Reservoir evaluation, production prediction and resource evaluation
- Exploration, development and utilization
- Production and development

The plenary was attended by experts from China, Germany, India and South Africa. The event was hosted by SAC, the ISO member for China – which holds the Chair and Secretariat of the committee – and by the China National Petroleum Corporation.

An international conference on CBM development and utilization technology and standardization followed the plenary. The event was attended by about 100 participants, including several multinational companies.

Take-off for biogas

A new ISO technical committee, ISO/TC 255, will develop standards for biogas.

Biogas is a combustible mixture of gases produced by micro-organisms when manure and other biological wastes are allowed to ferment in the absence of air. It can be an important source of fuel. Since biogas is a bi-product of waste, it is a global low-cost source of renewable energy. Its development contributes to environmental protection, sanitary improvement, nuisance-free agriculture and recycling.

The first plenary meeting of ISO/TC 255 was held in October 2012, in Beijing, China. It will cover the design, construction, check and acceptance of installations, plants, equipment and products to facilitate the exchange, transfer and provision of biofuels in an economically sustainable manner.

The plenary was attended by experts from China, France, Germany, India, Israel, Kenya and South Africa. SAC, the ISO member for China, which holds the Chair and Secretariat of



Biogas experts at the ISO/TC 255 plenary in China.

the committee, and the Ministry of Agriculture of the People's Republic of China hosted the inaugural meeting.

Safe and efficient industrial furnaces

ISO technical committee ISO/TC 244, *Industrial furnaces and associated processing equipment*, held its fourth plenary meeting in Kyoto, Japan, in November 2012.

ISO/TC 244 was created in 2008 to develop standards for industrial furnaces and related equipment. It has already developed and published five International Standards addressing safety requirements and energy efficiency.

At the plenary, the committee focused on four draft standards dealing with:

- Combustion safety

- Handling of atmosphere gases
- Safety-related control systems of industrial furnaces
- Vocabulary.

Standards and regulations

How can standards work alongside policies and regulations? This is the theme of an international workshop to take place on 7 February 2013 in London, United Kingdom.

The event, hosted by ISO and the British Standards Institution (BSI), will bring together business leaders, policy makers and senior standards professionals, including ISO

Secretary-General Rob Steele, to discuss how standards can contribute to regulations.

Standards can be a low-cost solution for local, national and international government bodies looking to support policies with flexible, consensus-based tools with a high degree of market acceptance.

The workshop will discuss such issues as:

- How can standards work alongside regulations?
- Are standards an effective alternative to regulation?
- How can governments support delivery of their policies through using standards?
- How can we build and nurture links between standards bodies and governments?
- Which examples of best practice already exist worldwide? ■



Participants at the plenary on industrial furnaces in Kyoto, Japan.

Event sustainability management

ISO 20121 passes 2012 Olympic Games test

by Garry Lambert

Rarely has a new ISO management standard been put to such immediate and successful use as ISO 20121:2012, *Event sustainability management systems – Requirements with guidance for use*. The 2012 Olympic Games in London was the first major test of the new standard.

ISO 20121 has been developed to help ensure that events, ranging from local celebrations to “mega events” such as the Olympic and Paralympic Games, leave behind a positive legacy in terms of economic, environmental and social benefits, with minimum material waste, energy consumption, or strain on local communities.

The new management standard was created by the event industry for the event industry. It is applicable to any organization that wishes to establish, implement, maintain and improve an event sustainability management system as a framework for identifying the potentially negative impacts of events, removing or reducing them, and capitalizing on the more positive impacts through improved planning and processes.

London 2012 – the catalyst for ISO 20121

Among stakeholders who provided input to the development of the standard were members of the sustainability team for the London Organising Committee of the Olympic and Paralympic Games (LOCOG).

David Stubbs, Head of Sustainability at LOCOG, said: “London 2012 is proud to have been the catalyst for ISO 20121. This is a piece of legacy with the potential to transform how events around the world consider their economic, environmental and social impacts.”

ISO Focus+ asked David Stubbs and other early users of ISO 20121, including Manchester United Ltd., the 2012 Danish Presidency of the Council of the

European Union, Croke Park Stadium in Dublin, Ireland, and Sustainable Events Ltd., to comment on their experiences in implementing the new standard, and its effectiveness in action.



The London 2012 Olympic and Paralympic Games operated in conformity with ISO 20121, including the hosting of the spectacular opening and closing ceremonies, and world-class sporting events across over 30 venues.

LOCOG

ISO Focus+: *When did LOCOG begin implementing an event sustainability management system following ISO 20121 requirements and guidance?*

David Stubbs: We identified the need for an effective sustainability management system as part of our bid to host the Olympic Games back in 2004/5. At the time we identified a gap in the market for a sustainability management system that addressed sustainability in the context of events. From the earliest stage of our development as an organizing committee, we started developing our management system, which of course pre-dated the British Standard BS 8901, let alone ISO 20121.



David Stubbs, *Head of Sustainability for the London Organising Committee of the Olympic and Paralympic Games (LOCOG).*

Nevertheless, we were engaged in the development of BS 8901 so there was an element of iteration, and, as our organization matured, we were able to formalize our arrangements in line with the then newly published BS 8901 (2007), and subsequently the 2009 version to which we were independently certified in September 2011. We achieved third-party certification to ISO 20121 in June 2012.

ISO Focus+: *Could you confirm the full scope of application of ISO 20121?*

David Stubbs: Our management system in conformity with ISO 20121 covers LOCOG. Thus we are certified as the organizing committee of the Olympic and Paralympic Games across all our activities and operations. Some of our venues have also implemented ISO 20121, but they have done this in their own right, not as part of London 2012. The Olympic Delivery Authority separately achieved ISO 20121 for its transport operations.

ISO Focus+: *Can you comment on the benefits of running events in conformity with the standard?*

David Stubbs: The benefit of the management system is that it gives you a structured approach to addressing sustainability aspects. This allows you to put together a more effective programme than if you just dabbled in it. Secondly, a management system approach will give you more credibility with stakeholders and regulators – and for any large event these days, it is

essential to get this element right. Sustainability can achieve significant cost savings through resource efficiency, but it is hard to realize these without having a proper management system.

ISO Focus+: *Can you describe some of the initiatives and measures you have already taken in doing so?*

In response, David Stubbs pointed to LOCOG's Pre-Games Sustainability Report, *Delivering change*, for details of initiatives implemented in conformity with ISO 20121. It stated: The London 2012 Sustainability Plan was structured around five sustainability themes – climate change, waste, biodiversity, inclusion and healthy living. The priority issues were:

- Carbon management to deliver a low-carbon Games
- Delivering a zero-waste Games
- Providing sustainable and accessible transport solutions

We identified the need for an effective sustainability management system.

- Using the Games to showcase the economic benefits of sustainability
- Promoting sustainable living by making sustainability a visible part of the Games
- Ensuring the Olympic Park legacy contributes to the regeneration of communities in east London

London 2012 was the first zero-waste-to-landfill Games, achieved by designing out waste, maximizing product lifetime, hiring rather than buying new, refurbishing items for reuse, composting waste, and using incineration with energy recovery. About 99% of waste created during construction of the Olympic Park was recovered, reused and recycled. Food waste and food and drink packaging was channelled into colour-coded recycling, food and compostable packaging and non-recyclable waste streams.

Existing venues were used wherever practical, and new permanent venues were built only where there was a strong legacy case. Temporary structures were erected for all other needs. A cable-net roof built



for the Velodrome instead of the original steel arch design saved about 1 000 tonnes of steel and resulted in embodied carbon savings of over 27%. Biomass boilers and photovoltaic arrays on buildings were used to generate renewable energy.

After the Games, all homes in the Olympic Village were to be connected to the existing community heating system and be water efficient, achieving a usage intensity of 105 litres per person per day (versus a 144 litre average).

ISO Focus+: *Have you found ISO 20121 easy to implement – or did you meet any challenges en route?*

David Stubbs: I certainly think that if ISO 20121 had existed in 2005 when we started, our work would have been so much easier. The biggest challenge was due to the scale of the project and the constant growth of LOCOG from a micro-enterprise to a major corporation in the space of seven years. Most events are, relatively, much simpler and have clearer boundaries, so ISO 20121 should be a valuable tool for most professional event organizers.

ISO Focus+: *Is there any advice you could give to other organizations contemplating ISO 20121 implementation and certification?*

David Stubbs: It is easiest to implement sustainability from the outset, rather than try to retrofit it at a later stage. Of course, that is particularly relevant for one-off events. For those who do repeat events or are already established organizations in the event sector, you have to start where you are and build from there.

Some of the key elements to get right early on are (a) establishing leadership commitment and putting sustainability into your governance structure, and (b) identifying your stakeholders and their main issues. For those who delay because of fears about committing resources, it is important to remember that doing this properly is most likely to save you money. ■

Danish Presidency of the EU Council

Sustainability has been an integral part of the Danish Presidency of the Council of the European Union during its term of office in 2012. The objective was to promote practical solutions to highlight the benefits of making the Presidency more sustainable. In recognition of this achievement, Denmark has become the first EU Presidency to be awarded ISO 20121 certification.

ISO Focus+ interviewed Andreas Clausen Boor, Head of Section and Sustainability Coordinator for Denmark's Foreign Ministry, responsible for organizing some 100 events taking place in a sustainable way under the Danish Presidency.

ISO Focus+: *When did the Danish Foreign Ministry first implement an event sustainability management system following ISO 20121 requirements and guidance?*

Andreas Clausen Boor: The EU Presidency was the first time. The standard became official in June 2012, so we were the first event to receive it. The Olympics also received it, but in advance as the Games had not yet started.

ISO Focus+: *How many and what type of events have you organized using the standard?*

Andreas Clausen Boor: Around 100 political meetings ranging from large high-level conferences to small workshops (all meetings had more than 60 participants and the largest was attended by 900 people).

We also arranged nine Informal Councils (meetings of ministers of finance, foreign secretaries, justice ministers, etc.) and two meetings between the EU-Commission/EU-Parliament and the Danish Government.

ISO Focus+: *Can you comment on the benefits of running events in conformity with the standard?*

Andreas Clausen Boor: Following the standard provides a strategic and coherent approach to working with sustainability. Instead of scattered “green” initiatives, we were able to incorporate sustainability into all aspects of the Presidency logistics, and the ISO International Standard helped us implement the necessary systems and procedures.

ISO Focus+: *Can you describe some of the initiatives and measures you have already taken in doing so?*

Andreas Clausen Boor: Among the many initiatives were: a ban on bottled water, with only tap water served at meetings (hence our nickname “the Tap Water Presidency”); sustainable food (local, organic, seasonal); eco-certified hotel rooms and conference venues; all electricity from wind turbines; food waste processed into natural gas used to heat Danish households; waste management; use of public transportation and free bicycles for delegates; a smart VIP transport system reducing the need for cars by 75%; collection and recycling



Photo: Denmark's Foreign Ministry

EU Ministers for General Affairs, attending an Informal Council Meeting organized by the Danish Presidency in conformity with ISO 20121, visit the ARoS Museum in Aarhus, Denmark.



Photo : Denmark's Foreign Ministry

Andreas Clausen Boor, Head of Section and Sustainability Coordinator; Danish Foreign Ministry.

Following the standard provides a strategic and coherent approach to sustainability.



Photo : Denmark's Foreign Ministry

Delegates to many EU Council meetings are encouraged to use free bicycles to and from local hotels as part of Denmark's drive to be the first sustainable EU Presidency.

of conference badges and lanyards ; CO₂-neutral freight and shipping ; green flights and CO₂-offsetting for EU delegates sponsored by Scandinavian Airlines.

ISO Focus+: *Is there any advice you would give to other organizations contemplating*

ISO 20121 implementation and certification ?

Andreas Clausen Boor: Start early and use common sense. The standard is fairly easy to implement as long as the systems are set up from the beginning. ■



Photo : Denmark's Foreign Ministry

Danish Prime Minister **Helle Thorning-Schmidt** and German Chancellor **Angela Merkel** at a meeting of the Council of the European Union, run sustainably under the auspices of the ISO 20121-certified Danish Presidency.

Manchester United Ltd.

ISO Focus + interviewed Keith McIntosh, Health, Safety and Environmental Manager of ISO 20121-certified Manchester United Limited, owner of the famous Manchester United Old Trafford Stadium and home venue of Manchester United, one of the wealthiest and most widely supported football teams in the world. In 2012, *Forbes Magazine* voted the team No. 1 in its annual ranking of the world's 50 most valuable sports teams, valuing the club at USD 2.23 billion.



ISO Focus+: *When did you begin implementing an event sustainability management system following ISO 20121 requirements and guidance?*

Keith McIntosh: Prior to the introduction of ISO 20121, we spent the last two years working towards and implementing BS 8901. When we realized we could go forward with the new ISO sustainability standard as soon as it was confirmed, we decided to implement it prior to the Olympic

Games, working closely with a team from Sustainable Events Ltd.

We are working to offer our events services in line with ISO 20121.

Manchester United Ltd. was awarded ISO 20121 certification of its sustainability management system in July 2012, covering the planning and delivery of sporting activities and events at the Old Trafford Stadium.

ISO Focus+: *What type of events have you organized using the standard?*

Keith McIntosh: We trialled a number of events in preparation for certification, working with two events organizers to trial the system with regard to waste monitoring, management and reporting. Going forward, we are working in partnership with events organizers and their clients to offer our events services in line with ISO 20121 for exhibitions, conferences, award ceremonies, etc. These services include internal facilities such as rooms, suites and lounges, and also encompass all the football matches. During London 2012 we hosted nine men's and women's Olympic football matches.

ISO Focus+: *Can you comment on the benefits of running events in conformity with the standard?*



Photo: Manchester United Ltd

Keith McIntosh, Health, Safety and Environmental Manager, Manchester United Limited.

Keith McIntosh: It is early days, we are very much in the process of engaging, liaising and encouraging events organizers who bring their events to Old Trafford to be aware of the standard, to engage with it and work in partnership with us. We see that as one of our responsibilities. We want to encourage members of the events industry to consider a venue that will help make their event more sustainable – and help them meet some of their social responsibility requirements.

Organizations such as Envirolink North West, the Carbon Trust, and WRAP (the Waste Resources Action Programme), are keen to be involved in partnering with us to bring their events to our venue because we are in a position to offer suppliers to the event industry opportunities to learn, educate and progress, particularly in sustainability.



Photo: Manchester United Ltd

ISO 20121-certified Old Trafford Stadium, home of Manchester United and scene of many memorable Premier League and international football matches, conferences, award ceremonies and other events.

In doing so, they get a lot of kudos from their association with Manchester United, and that's a bonus.

ISO Focus+: *Can you describe some of the initiatives and measures you have already taken?*

Keith McIntosh: We are already doing a lot, particularly in environmental best practice. Recently, we achieved the Carbon Trust best-practice standard for the second time, underlining our commitment to energy efficiency and carbon energy reduction. Also, the Manchester United Foundation has been doing fantastic work in its goal of motivating and inspiring future generations to build better communities. It's a shop window to our sustainability programmes.

ISO Focus+: *Have you found ISO 20121 easy to implement – or have you met any challenges en route?*

Keith McIntosh: It has been challenging, but we have met the challenges such as how to adapt ISO 20121 requirements to our business and operation, how to make it relevant. That's because of the nature of our business – we have a very broad scope of stakeholder interest, with extensive international business and a very recognizable brand.

We were awarded ISO 20121 certification in July 2012.

But we find the standard very helpful. When this standard was announced our Chief Operating Officer, Michael Bolingbroke – the director responsible for our sustainability initiatives – made it quite clear that we must achieve internationally recognized “five-star gold standards” such as ISO 20121 and ISO 14001. In this respect, the support and leadership from the top makes a big difference.

ISO Focus+: *Is there any advice you would give to organizations contemplating ISO 20121 implementation and certification?*

Keith McIntosh: Yes – make sure you get reputable and credible advice, guidance and support. Be very careful whom you approach. We are very appreciative of mentoring support from organizations such as Sustainable Events. That is key. ■



Photo: Croke Park

Event sustainability starts at grass level with Croke Park's ISO 20121-certified “Greener. On and off the pitch” sustainability initiative.

Croke Park Sports Stadium

ISO Focus+ interviewed Alan Gallagher, Head of Stadium Operations, and Tracy Bunyan, Sustainability Manager at Croke Park in Dublin, Ireland, one of the first sports stadiums in the world to achieve ISO 20121 certification. The 82 000 capacity stadium, the fourth largest in Europe, has been at the heart of Irish sporting life for over a hundred years, hosting many notable Gaelic football and hurling matches in addition to rugby, soccer, and athletics events, and concerts.

ISO Focus+: *When did Croke Park begin implementing an event sustainability management system following ISO 20121 requirements and guidance?*

Alan Gallagher: In May 2009, Croke Park gained ISO 14001 certification as one of the first net-carbon-neutral stadiums in the world. We then undertook a holistic, sustainable approach to stadium operations, and in 2010 became the first stadium to achieve the BS 8901 standard, progressing to ISO 20121 certification in June 2012.

Croke Park's new sustainability initiative – “Greener. On and off the pitch” – is aimed at building on the sustainability lessons learnt to date and to minimize the environmental impact of events both on and off the pitch, encourage environmentally responsible development and staging of events, and raise awareness among stakeholders, contractors and staff to carry out their work at the stadium in a sustainable manner.

“Greener. On and off the pitch” focuses on:

- Maintaining our position as one of the most sustainable sports venues in the



Photo: Croke Park

A full-capacity crowd awaits the start of an Irish National League football match between Dublin and Tyrone, one of many events run sustainably at Croke Park.

world by a collaborative approach with key stakeholders

- Increasing recycling at Croke Park with a focus to achieving zero landfill by 2014
- Reducing electricity, gas and water consumption
- Developing effective and consistent tools to communicate the sustainability message to staff, stakeholders, patrons and the public

ISO 20121 allows you to standardize initiatives under the three key pillars of sustainability.

ISO Focus+: *Could you confirm the full scope of application of ISO 20121?*

Alan Gallagher: ISO 20121 is embedded into all stadium operations and is a policy requirement for both internal and external stakeholders associated with events run within Croke Park. We recognize that the stadium and its events and activities have an impact on the environment, the economy and the community, and it is our policy to do all that is reasonable to ensure that key sustainability impacts relating to the life cycle impact of events, procurement, utilities, construction, transport, employees, visitors, customers and the community in general are assessed and reviewed financially, socially and environmentally.

ISO Focus+: *What type of events have you organized using an ISO 20121-based event sustainability management system?*

Tracy Bunyan: Since achieving ISO 20121 certification, approximately 750 000 patrons have attended sporting events, conferences,



Photo : Croke Park

This sell-out U2 rock concert is one of many events hosted at Croke Park Stadium in conformity with its ISO 20121 event sustainability management system.

and concerts at Croke Park, all based on the sustainability management system.

ISO Focus+: *Can you comment on the benefits of running events in conformity with the standard?*

Alan Gallagher: Croke Park takes a partnership approach involving all staff and stakeholders in achieving sustainability objectives and outcomes at the stadium. Involving and communicating with staff and contractors has been key to the strides we have made in increasing recycling rates, reducing utility consumption and developing community initiatives. I have found that ISO 20121 allows you to standardize initiatives under the three key pillars of sustainability: environment, society, and economics, scaled depending on the size of the event being run.

ISO Focus+: *Can you describe some of the initiatives and measures you have already taken in doing so?*

Alan Gallagher: Croke Park began its environmental journey in 2008 by retrofitting an energy management system (EMS) and building management system (BMS) as part of a wider state-of-the-art environmental improvement programme

covering central management of the stadium's electricity, waste and water management systems.

Results since initiatives were rolled out:

- A 31% reduction in electricity usage by using the BMS to control lighting, electrical heating and air handling units, and Passive Infrared (PIR) lights to detect motion that switch on and off when required
- A 29% reduction in gas usage

ISO 20121 allows you to standardize initiatives under the three key pillars of sustainability.

- A 28% reduction in water usage by installing solenoid valves on public levels, saving 370 000 litres of water per day
- 62% of stadium waste is now recycled or composted

A number of sports camp and community fund projects, and local contractor recruitment and resident meeting programmes have been implemented with the local community.

ISO Focus+: *Is there any advice you would give to other organizations contemplating ISO 20121 implementation and certification?*

Tracy Bunyan: The key lessons learnt regarding sustainability is that simple initiatives can have really positive results. However, there needs to be a framework that pulls all of these initiatives together. Croke Park has gone down the formal route of ISO 14001 (environmental) and ISO 20121 (sustainability) implementation which suits our needs, but the framework can be less formal for smaller organizations. Certainly ISO 14001 is a good stepping stone to ISO 20121 certification. ■



Photo : Croke Park

Alan Gallagher, Head of Stadium Operations, Croke Park Stadium.



Photo : Croke Park

Tracy Bunyan, Sustainability Manager, Croke Park Stadium.

Sustainable Events Ltd.



ISO Focus+ interviewed Charlie Banks, Business Development Manager for Sustainable Events Ltd., based in Manchester, United Kingdom, providing support, advice and guidance on implementing sustainability to companies within the events industry. Its Managing Director, Fiona Pelham, is Chair of the ISO committee that developed ISO 20121.

ISO Focus+: *When did you begin implementing an event sustainability management system following ISO 20121 requirements and guidance?*

Charlie Banks: We implemented the BS 8901 system when it was launched and made the official transition to ISO 20121 in July 2012, when we were awarded ISO 20121 by third-party certification. Our company culture is sustainability – it's the way that we work so we were pleased to be certified.

ISO Focus+: *What type of events have you organized using the standard?*

Charlie Banks: We help our clients – from event organizers to venues and

destinations – to implement the management system. We also run events through our event company, Organise This. As the management system is our way of working, all the events that we organize are run in conformity with ISO 20121, ranging from business conferences to staff education workshops.

ISO Focus+: *Can you comment on the benefits of running events in conformity with the standard?*

Charlie Banks: Implementing ISO 20121 at your event will help you identify ways of becoming more efficient and thereby making cost savings, being more transparent in communicating with your stakeholders, and in aligning with your client's or sponsor's values. Also, by engaging with your staff on innovative solutions, you can encourage creativity and motivation.



Photo : Sustainable Events Ltd.

Charlie Banks, Business Development Manager for Sustainable Events Ltd.

ISO Focus+: *Can you describe some of the initiatives and measures you have already taken in doing so?*

Charlie Banks: We are working with a number of venues and event management companies to help them implement and measure sustainability at their events using the online tool EventSustainability.com.

Implementing ISO 20121 will help you identify ways of becoming more efficient and making cost savings.

ISO Focus+: *Do you think the standard is suitable for small businesses?*

Charlie Banks: Absolutely, we are a small company and we have implemented it successfully!

ISO Focus+: *Is there any advice you would give to organizations contemplating ISO 20121 implementation and certification?*

Charlie Banks: Think about your drivers for doing it and then make a start – any small step you take is the right one. You can do it in your own time frame at your own pace, but you must get buy-in from senior management – you will need their support to be able to implement change. ■

Garry Lambert is a British freelance journalist based in Geneva, Switzerland.



Photo : Sustainable Events Ltd.

At the 2011 Exhibition for the Incentive Business Travel and Meetings industry (EIBTM) in Barcelona, Spain, Positive Impact, a not-for-profit sister company to Sustainable Events, ran a three-day programme on sustainability. The stand and all chairs were constructed with recyclable cardboard.

Partnerships with a purpose



The Irish energy management story will do

Photo: SEAI

by Declan Meally

Ireland embraced the benefits of standards for energy management in 2005 with the development of the Irish Energy Management Standard (EnMS) I.S.393. This was one of the fastest standards developed in Ireland and was primarily due to the successful collaboration between the Sustainable Energy Authority of Ireland (SEAI), the National Standards Authority of Ireland (NSAI) and industry stakeholders.

This national standard was designed around a Plan-Do-Check-Act methodology (PDCA) so that it could be easily incorporated into existing management system activities. I.S.393 was one of the first EnMS standards of its type in the world. It led the way in providing the blueprint for a new European EnMS standard EN 16001 (published in August 2009), which further supported ISO in the development of the International Standard, ISO 50001:2011, *Energy management systems – Requirements with guidance for use*. Currently a suite of guidance standards is being developed by ISO technical committee ISO/TC 242, *Energy management*, to further support the implementation of ISO 50001. Within

this project, Ireland has a pivotal role in the development of a guidance standard for implementation, maintenance, and improvement of an EnMS.

The starting point for setting any standard is commitment at the top. The commitment given by the government in this area and the lead taken by industry in Ireland in the development of a national standard for energy management are now reaping concrete enterprise rewards. The sustainable energy agenda is already creating jobs in Ireland, and one of the central pillars of the country's next phase of economic development is energy efficiency.

As more and more organizations seek to take control of energy expenditure and

carbon emissions, the increasing demand to use more cost-effective or renewable forms of energy supply ensures a continuous improvement process. To support this growing demand, we can see the emergence of an energy services market, both in Ireland and internationally.

Immediate benefits for industry

Following the launch of I.S.393 in 2005, SEAI immediately identified a step change in the energy-efficiency benefits that accompanied the implementation of the standard with savings up to 20% in some cases. EnMS is a systematic process for continually improving energy performance. It is suitable for all organizations, whatever the size or sector, but is particularly beneficial if you operate energy-intensive processes.

Its success is generally attributed to taking energy management from the boiler room to the boardroom.

The main reason for its success is generally attributed to taking energy management from the boiler room to the boardroom. Senior management commitment and total organizational engagement are crucial to a successful outcome and, since the launch, SEAI has succeeded in achieving coverage for the EnMS in industries that are collectively responsible for over 60% of Irish industrial energy consumption. In the five years after the introduction of the I.S.393 standard in Ireland, savings of up to EUR 150 million in energy costs have been achieved through a wide range of energy-efficiency measures.

The nature of new clean energy solutions is exactly where Ireland sees that its enterprise strengths lie: innovation, technology and knowledge-led services. International companies based in Ireland have recognized the leadership role that Ireland is playing in the development of energy management systems and supporting standards. Irish experts are also leading energy management programmes globally, while many Irish-based multinationals are transferring knowledge developed in Ireland to their global counterparts.

It has become apparent as the energy management systems story has unfolded

that these have become a common link, tying together all aspects of the energy sector. Energy management is not only pivotal to driving down overhead costs, but is also driving innovation and market needs. With its energy experts and highly skilled workforce, the country is leading the way in continued energy management systems development and deployment. It has become a test-bed location for project and prototype development in relation to energy technology and this is acknowledged worldwide.

Wider benefits of EnMS in other sectors

Industry in Ireland has led the way. SEAI, however, soon recognized that the process that underpinned the EnMs was also applicable across all other sectors and set about adapting the process for SMEs and the public sector. The Energy Management Action Programme (Energy MAP) was the outcome; this is a 20-step programme that mirrors the EnMS process, but is aimed at less energy-intensive and less process-driven organizations. It is also the lead programme that SEAI currently promotes for the public sector with a view to ultimately moving these organizations into ISO 50001.

Energy MAP is a simplified or “lite” version of the standard and suits organizations that are not familiar with management standards. The benefit, however, of following the same process is that it delivers the same

level of savings to the end user. To date, SEAI has trained 112 small businesses in Energy MAP and these businesses make average energy-efficiency savings of 11%. Under the small-business energy-efficiency programme, SEAI has assisted 2 300 businesses through on-site audits and mentoring and delivered savings of EUR 50.6 million at the end of 2011.

Community benefits of sustainability

Dundalk 2020 – a case study

In parallel to the rollout of the national EnMs programme in 2006, SEAI, in partnership with local and international stakeholders, started a project to develop a sustainable energy community management process in a sizeable town in Ireland – Dundalk, with a population of approximately 25 000 inhabitants. The vision of SEAI was to stimulate a national move towards sustainable energy practice through demonstration in an exemplar community. The structured community approach developed in Dundalk has not only been highly successful, it is replicable and is now helping to create more Sustainable Energy Communities (SECs) across Ireland.

An SEC establishes links between:

- Long-term challenges such as climate change
- Medium-term opportunities such as policy targets



Photo: SEAI
Aerial view of Dundalk sustainable energy community.

- Short-term actions such as integrating sustainable energy infrastructure or trialling new techniques and technologies

Energy management is also driving innovation and market needs.

SEAI has created the SEC toolkit based on the lessons learned from the Dundalk project. Louth local authorities were the first local authority to partner with SEAI for the Dundalk 2020 project. Louth is now partnering with other local authorities to support the development of an exemplar SEC in their county.

In Dundalk, people across all sectors were encouraged to get involved and the achievements were based on translating



Photo: SEAI
Wind turbine in an urban location – an iconic symbol to generate energy.



Initial zone of Dundalk acted as a test bed.

best-practice energy management into a language that everyone from the mayor to school children could understand. Examples of success: a residents' group with 200 homes collectively saved EUR 50 000 (an average EUR 250 each) on their heating and electricity bills; a school was able to improve their energy efficiency by 60% through retrofitting and the local authority has saved over EUR 300 000 in one year.

Industry in Ireland has led the way.

The impact of the Dundalk 2020 model has clearly shown the great benefits of an SEC-structured EnMS. It increases the supply of renewable energy, improves the energy performance of the built environment, intelligently manages the energy supply and demand balance, and ensures greater energy autonomy for the community. The project has already led to savings of more than 5 000 tonnes of CO₂ per annum, while organizations together have saved up to EUR 500 000 each year since 2007. One successful initiative involved SEAI training 12 unemployed technical graduates in Energy MAP and placing them in 45 local businesses on a temporary basis to help them with their energy management. These graduates helped the businesses to

make actual savings of EUR 250 000 in three months and identified further savings of EUR 750 000.

The SEAI SEC guidelines are based on ISO 50001 and they will help public and private stakeholders to understand the process involved in creating an SEC. In understanding the process, all stakeholders will better understand the role they have to play in making their community more sustainable. The benefits enjoyed by the Dundalk 2020 community can be enjoyed by all SECs, leading to a greater sense of local awareness and engagement in the development of sustainable energy projects.

The SEC programme did not set out to transform the whole town of Dundalk into an SEC, but focused on a zone of approximately four square kilometres within the town that became the training ground for all of the stakeholders to develop best practice. The lessons learned then, over time, started spreading out to the wider town and region. The Dundalk 2020 model can help all interested communities to reap the great benefits of living in a sustainable energy community.

Sustainable energy communities and smart cities

Creating smart cities and regions will require new initiatives by all sectors. Smart city/region development plans must have an integrated vision which can demonstrate a transition to a low-carbon

and more knowledge-intensive economy. The development of a smart city and region must build on existing infrastructure, and this infrastructure must be made smarter and be intelligently connected through smart communications.

SEAI has delivered savings of EUR 50.6 million.

The difficulty, however, in seeking to transform a city to a smart city is deciding where to start and who is going to be responsible for the transformation. From the lessons learned in Dundalk, SEAI have realized that starting with energy and focusing efforts on developing a smart-energy city is the logical place to begin. The key benefit is that targets can be easily set and progress measured against these targets. If the local authority embraces ISO 50001 to manage the energy they use, then, with them acting as the local champion to encourage other key energy users to use the EnMS tools (ISO 50001 where appropriate), the local authority can infuse sustainable energy best practices into the city. When these sound foundations are in place, it is then much more efficient to adopt smart communications technologies and combine them with the EnMS to make cities and communities truly smart and sustainable.



Smart city/region concepts and initiatives are being promoted internationally by the European Commission, the Organisation for Economic Co-operation and Development, and a growing number of cities

and businesses. Through ISO 50001 and sustainable energy community management in partnership with ICT industry expertise, Ireland is well placed to lead the smart city/region debate within Europe and can leverage knowledge, experience and support from existing EU and Irish policy and programmes.

The reward of a smart city is a smart economy.

Ireland is also home to many of the world's top 500 companies, including ABB, General Electric, Honey, IBM, Intel and Siemens to name but a few. Internationally, these companies are innovating and developing new technology for smart communications and smart cities.

Ireland is uniquely positioned to test this smart technology in our cities and regions. Organizations such as SEAI are creating living laboratories through their sustainable energy communities programmes, where such technology and solutions can be trialled.

The reward of a smart city is a smart economy, and we have the opportunity to be the architects of this smart economy.

The successful collaboration in 2005 between the SEAI and the NSA that led to the Irish Energy Management Standard I.S.393 is continuing today with the development of new sustainable energy standards. This partnership is a model for inter-agency collaboration. ■

About the author



Declan Meally has worked at SEAI since 2004. He is Head of Department with responsibility for non-domestic energy efficiency in the Sustainable Energy

Authority of Ireland, Ireland's national body for sustainable energy policy and programmes. Mr. Meally holds a Bachelor's degree in Mechanical Engineering.



"Out of little acorns great oaks grow" – residents in Dundalk SEC participated in a pilot trial.

ISO 26000

International forum revisits the road travelled

by Maria Lazarte

As the ISO 26000 guidance standard on social responsibility (SR) reached its second anniversary, ISO Secretary-General Rob Steele challenged participants at a two-day open forum in Geneva, Switzerland, to consider what has been done so far, and where the road should take us next, by asking, “So what?”

The ISO 26000 forum, organized by ISO in November 2012, was an opportunity to share experience, best practice and lessons learned, as well as highlight areas for improvement.

Listening to what society is doing is key to taking sustainable actions in the future.

“I get to see a lot of interesting people who are trying to change the world,” exclaimed ISO Deputy Secretary-General Kevin McKinley, as he welcomed some 300 participants and more than 50 speakers from the private and public sectors, including national standards bodies.

Mr. McKinley explained that the forum’s objective was to provide ideas to ISO on the use and possible future of ISO 26000. It would not decide amendments to the standard, or add new projects to ISO’s



Kevin McKinley, ISO Deputy Secretary-General.

work programme. But participants’ ideas could be shared with the former joint secretariat of the ISO Working Group on Social Responsibility, comprising ISO members SIS (Sweden) and ABNT (Brazil), and through them to the ISO 26000 Post Publication Organization (PPO) for advice.

Transparency and impartiality

Opening the event, Rob Steele declared: “All ISO standards are developed following the principles of transparency, openness, impartiality and consensus, effectiveness and relevance, coherence, and following the development dimension. ISO 26000 is no exception.”

ISO 26000 can result in business development and good economic results.

Mr. Steele invited participants to join in a constructive dialogue, and encouraged everyone to “ensure that facts and real-life experience support our discussions on ISO 26000 and its future.”

Changing world

Resulting from the efforts of over 400 experts and 200 observers from 99 countries and 42 international organizations, ISO 26000 was developed with a wide stakeholder, regional, and gender balance. The guidance standard is not a management system, or intended for third-party certification, but “It’s good enough to help meet the economic, environmental and societal challenges of a changing world,” said Jorge Cajazeira, Chair of the ISO 26000 PPO, as he described how many documents and initiatives are now based on the standard.

Keynote speaker, Carlos Alberto Griner, Chief Human Resources Officer, Suzano Pulp and Paper, explained why the company uses ISO 26000: “We operate in a complex environment, in multiple cities, in a diverse context, and believe that the best way to keep our business running is to balance the three aspects of the triple bottom line [economic, environmental and social sustainability].”

When constructing one of the world’s most modern eucalyptus market pulp mills



Rob Steele, ISO Secretary-General.

in the poorest state in Brazil, the company opted for working with the local community, rather than bringing a workforce and talent from outside. The result was that 60 % of the people involved were from the region, and more than 5 600 professionals were trained.

“Listening to what society is doing is key to taking sustainable actions in the future,” he said, “and ISO 26000 helped us do just that.”

Growing popularity

A Google search of ISO 26000 today returns over two million results.

Kristina Sandberg, ISO 26000 PPO Secretary, highlighted the growing interest

of ISO 26000 around the world. A survey conducted by the PPO showed that at least 60 countries have adopted the standard, and 20 more are in the process of reviewing for adoption. In addition, the text is now available in 22 languages. Other aspects of ISO 26000’s global use were highlighted, including the issue of certification which has generated a lot of debate. On this point, the survey showed a mix of responses for and against the idea.

Developing countries

During a workshop for developing countries (see **Box page 50**), participants agreed that use of the standard could bring several benefits, including :

- Common understanding of social responsibility
- Influence on public policy
- Engagement of stakeholders
- Regional networking
- Stepping stone for sustainable development

The biggest challenges for implementation were lack of awareness, resources and understanding. Initiatives are underway to address these issues.

Huge opportunity

Staffan Söderberg, Vice-Chair of ISO 26000 PPO, drew attention to how consultants, National Standards Bodies



University experience

Strategic Advisor to the ISO Secretary-General, Dr. Daniele Gerundino (left, **photo** above), and Coordinator of the University of Geneva Masters Programme, Prof. Lucio Baccaro, introduced the Master in Standardization, Social Regulation and Sustainable Development. The rich programme brings together sustainable development, participatory governance, and standardization. The programme was launched in 2011 and carried forward to 2012. The line-up of programme lecturers includes more than 20 external experts and teachers.

(NSBs), policy makers and various organizations are using ISO 26000 in activities, policy guidance and numerous documents promoting SR. In academic circles, 3 000 articles and 50 books, as well as many doctorates, are based on the standard.



The forum brought together people from business, government, consumer organizations, academia, NGOs and other stakeholders.

Developing countries exchange ISO 26000 experience

by Sandrine Tranchard

Some 120 participants from about 70 countries exchanged experience on ISO 26000:2010, *Guidance on social responsibility*, at a workshop for developing countries organized by ISO's Development and Training Services (DEVT) in November 2012, in Geneva, Switzerland.

ISO Secretary-General Rob Steele said: "This is the first time ISO has organized such an event on one specific standard and it shows the importance and relevance of the standard to developing countries."

He underlined that during the ISO 26000 development process, the involvement of developing countries was very important, with over 40% of experts.

Beer Budoo, Director of ISO DEVT, declared: "The objectives of the workshop are to share the experience, discuss the way forward for NSBs, and equip them with ideas, information and tools to develop action plans to ensure the further uptake of ISO 26000. This is a dynamic situation in which NSBs have a central role to play in the way forward."

He quoted some activities linked to ISO 26000, such as the project within the Middle East-North Africa region with the objective of creating a pool of national experts on social responsibility in eight pilot countries to support its implementation.

Dr. Jochen Weikert, Senior Manager for private sector cooperation at the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), on behalf of Germany's Federal Ministry for Economic Cooperation and Development (BMZ), said: "We have supported ISO 26000 for the last two years because of its importance. With ISO 26000, there is a global consensus and we believe this consensus has to be maintained."

This workshop was sponsored by GIZ and the Swedish International Development Cooperation Agency (Sida).

Sandrine Tranchard is a Communication Officer at ISO.



Participants at the ISO 26000 workshop for developing countries.

But Mr. Söderberg stressed, "Tools supporting ISO 26000 must be stakeholder-based, comprehensive and transparent."

Various companies have already implemented the standard such as Maersk, Novo-Nordisk, TeliaSonera, HSB, HM, Suzano, Petrobras, Veolia, Air France, Toshiba, AB Volvo, Takeda, Panasonic, British Telecom, TRS, and Toyota.

We have to improve recognition of ISO 26000 before we take on other issues.

However, Mr. Söderberg warned that there were also "bad examples" where organizations claimed to be "certified" or used other conformity assessments terms.

Good for business

During the conference, panellists from around the world, representing industry, international and non-governmental organizations, NSBs, consumers, academia and other stakeholders, discussed their experiences with ISO 26000, highlighting the biggest challenges as well as future opportunities.

Contributors agreed that use of ISO 26000 promoted transparency and communication, and helped build trust with stakeholders. For example, following the standard, the Swedish housing cooperation (HSB) trained all employees on human rights, and

engaged in dialogue with local stakeholders. Cecilia Löf, PR manager at HSB's Göteborg-Division, said that the latter actually helped complete projects faster, concluding that, "Working with ISO 26000 can also result in business development and good economic results."

Like any other good idea, however, people first need to know that it exists. AFNOR, ISO member for France, has a dedicated Website among other awareness-building initiatives. In a similar spirit, Indonesia has launched a corporate social responsibility award for companies. The Global Reporting Initiative (GRI) has developed a linkage document stressing the many similarities between its own guidelines and ISO 26000.

Participants concluded that to improve global use of ISO 26000, it was necessary to harmonize and increase communication, as well as develop useful guides and case studies to make the standard more accessible.

The good, the bad and the ugly

Participants agreed that ISO 26000 brings many important benefits. Notably, it represents consensus on what we mean by social responsibility. Dwight Justice, Policy Advisor at the International Trade Union Confederation, said that the standard was the "most comprehensive and concise guidance of what an organization should do – for that reason I think it's extremely useful." It constitutes a "very concise agreement of what responsible behaviour is for organizations".

Panelists demonstrated how ISO 26000 had helped organizations protect biological diversity, promote non-discrimination, train workforces, shape public policy and much more, but they also identified some challenges.

On the one hand, NORMAPME (European Office of Crafts, Trades and SMEs) argued that from the perspective of SMEs, the document might be too long and complex. On the other hand, Dante Pesce, Executive Director of Vincular, explained that ISO 26000 provides a comprehensive overview from which organizations can select what is relevant to them. “Most people that read it for the first time think they have to comply with everything, and that frightens them. After you break that barrier, my experience is that it is extremely practical,” he said.

A difficulty expressed by various panelists was that organizations need to show results from their SR activities, and called for guidance on self-assessment, statements and reports. NEN, ISO member for the Netherlands, presented its national initiative on self-declaration recommendations.

Bridal make-ups

Prof. Sri Ram Khanna, Department of Commerce from the University of Delhi, emphasized the challenges that Indian consumers face when the primary goal of companies is making profits.

“Most company SR reports are like bridal make-up,” he said, meaning that they hide or “dress up” the real picture. If the goal is to have a verification system for

ISO 26000, this should involve transparent multi-stakeholder engagement.

Another argument was that ISO 26000 can only take us so far, and that public policy and regulations are necessary for SR enforcement.

Sadie Homer, Senior Policy Advisor, Consumers International (CI), appreciated how consumers were respected and recognized as key stakeholders in the development of ISO 26000. Regarding the challenges, she said, “We have to improve recognition of ISO 26000 before we take on other issues”.

Road ahead

As participants were asked to picture the future, many saw a role for ISO 26000.

“We are starting to realize the importance of SR for due diligence in mergers and acquisitions,” said Anthony Miller, Economic Affairs Officer, UN Conference on Trade and Development. “Organizations must be aware of what they are really getting.”

*So much passion
and so much hope!*

Osama Elmeligy, Chairman of TOTAL Consulting, Egypt, highlighted the rapid and unpredictable challenges faced by his country, and the potential for ISO 26000 in helping to cope with change.

Red Puentes, a Latin American network of over 40 NGOs was also hopeful of the positive role the standard can have in shaping the future.



Interviewing participants as part of ISO's social media and Web coverage of the event.

The new government of Denmark, as well as the Nordic Council of Ministers, have both recommended the use of ISO 26000 as part of their SR strategies.

Passion and hope

“So much passion and so much hope!” concluded Staffan Söderberg, Vice-Chair of the ISO 26000 PPO, “It will be fun to work with ISO 26000 in the coming year.”

Clearly, there is a trend towards increasing national adoption and interest, but perhaps the biggest challenge we face is that of expectations: do all organizations really want a sustainable world?

Kevin McKinley recognized that the past two days had been exciting and intense. Whether an NGO, business, government or consumer, it was clear that ISO 26000 was important enough to raise passionate debate. ■

Maria Lazarte is Assistant Editor, *ISO Focus+*.

For more information, including presentations, see: www.iso.org/ISO26000workshop.



Participants expressed their views in an interactive workshop. Here Kevin McKinley throws a ball to the next speaker.

ISO standards

State of the art for the construction industry

by Sandrine Tranchard

ISO has just published a new brochure – *ISO & construction* – giving a concise overview of its substantial portfolio of International Standards for the construction sector.

The construction industry is a key sector in many national economies, and often the largest employer. In addition to the construction of buildings and infrastructure, it provides services and products for export worldwide. ISO standards provide the sector with solutions for all aspects of its activity, from the traditional to the innovative, and they include tools to tackle new challenges such as pollution and energy performance.

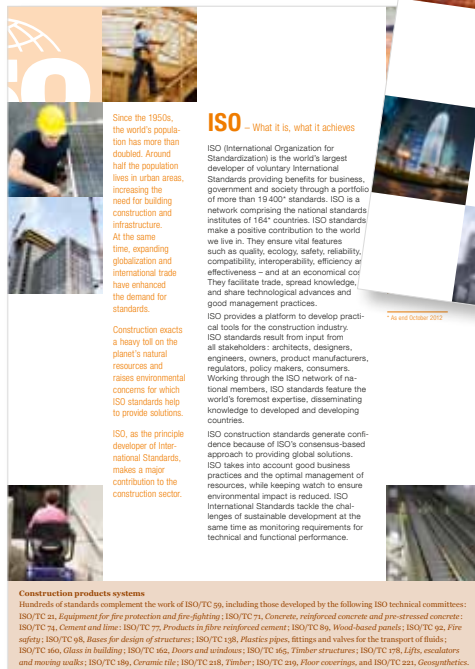
The new brochure underlines how ISO standards tackle the challenges of sustainable development at the same time as providing requirements for technical and functional performance.

Implementing International Standards in construction not only provides technical advantages, but also social, economic and environmental gains for industry, regulators and consumers.

The brochure underlines the benefits of ISO's consensus-based approach, and outlines ISO's solutions for good business practice, optimal management of resources and limiting impacts on the environment.

Out of 19 500 standards from almost all sectors of business and technology, more than a hundred come from ISO technical committee ISO/TC 59, *Buildings and civil engineering works*. In addition, many other ISO technical committees have developed standards and related technical documents on construction products.

The brochure highlights the wide range of topics addressed by ISO's construction standards, including: terminology; requirements for joints, tolerances and fit;



ISO – What it is, what it achieves

ISO (International Organization for Standardization) is the world's largest developer of voluntary International Standards providing benefits for business, government and society through a portfolio of more than 19 400* standards. ISO is a network comprising the national standards institutes of 154 countries. ISO standards make a positive contribution to the world we live in. They ensure vital features such as quality, ecology, safety, reliability, compatibility, interoperability, efficiency and effectiveness – and at an economical cost. They facilitate trade, spread knowledge, and share technological advances and good management practices. ISO provides a platform to develop practical tools for the construction industry. ISO standards result from input from all stakeholders: architects, designers, engineers, owners, product manufacturers, regulators, policy makers, consumers. Working through the ISO network of national members, ISO standards feature the world's foremost expertise, disseminating knowledge to developed and developing countries.

ISO construction standards generate confidence because of ISO's consensus-based approach to providing global solutions. ISO takes into account good business, environmental and the optimal management of resources, while keeping watch to ensure environmental impact is reduced. ISO International Standards tackle the challenges of sustainable development at the same time as monitoring requirements for technical and functional performance.

Construction products systems
Hundreds of standards complement the work of ISO/TC 59, including those developed by the following ISO technical committees:
ISO/TC 21, *Equipment for fire protection and fire-fighting*; ISO/TC 70, *Concrete, reinforced concrete and pre-stressed concrete*; ISO/TC 74, *Cement and lime*; ISO/TC 77, *Products in fibre reinforced cement*; ISO/TC 89, *Wood-based panels*; ISO/TC 92, *Fire safety*; ISO/TC 98, *Roofs for design of structures*; ISO/TC 108, *Plastic pipes, fittings and valves for the transport of fluids*; ISO/TC 160, *Glass in building*; ISO/TC 162, *Doors and windows*; ISO/TC 165, *Timber structures*; ISO/TC 178, *Lifts, escalators and moving walks*; ISO/TC 189, *Ceramic tiles*; ISO/TC 218, *Timber*; ISO/TC 219, *Floor coverings*, and ISO/TC 221, *Geosynthetics*.

ISO & construction

From traditional foundations to innovative technologies

ISO standards make the construction industry more efficient and effective

ISO standards solve problems and provide solutions in all stages of the construction development process

ISO standards provide construction industry stakeholders with the information they need to compete on global markets

ISO standards provide a state-of-the-art technical base for regulators and help to drive down costs for producers, customers and consumers

Who do ISO standards benefit?

Implementing ISO standards in construction not only provides technical advantages, but also social, economic and environmental gains. International Standards benefit:

Industry: Design and manufacturing specifications are of major importance to all stakeholders. ISO sets standards on construction, based on international consensus, providing comprehensive solutions that facilitate international trade and exchange. ISO's International Standards reflect the state of the art, serving as a vehicle to disseminate new technologies and innovative practices.

Regulators: ISO standards are systematically reviewed and improved. They provide technical foundations for legislation and serve as the basis for national regulations which do not create unnecessary technical barriers to trade. Regulators can apply International Standards to extend building codes.

Consumers: ISO standards give consumers confidence in the construction industry. The same level of consumer protection is applicable whether a country's economy is mature or evolving.

The impact of a building, whether extraordinary economic and environmental costs, is essential. TC 59's subcommittee ISO/TC 59/SC 14, Design life, covers standardization for fields such as terminology, life-cycle costs, durability, maintenance; the members of SC 14 also bring their focus to bear on performance audits, data requirements and procedures.

Accessibility and usability
The increase in an aging population in developed countries adds their needs to those of people with disabilities, with repercussions on issues of building accessibility and usability. The planning, design and construction of buildings and other facilities must make provisions for a sufficient degree of accessibility and usability. ISO/TC 59/SC 16, Accessibility and usability of the built environment, delivers standards responding to the UN's Universal Declaration on Human Rights which states that everyone has the right to equal access to public services in his or her country.

Construction and IT is important task for ISO/TC 59 has been to establish common terms of reference and terminology, to make it possible for construction documentation to be easily understood whatever the language, wherever the border. The standardization of products and services demands, in turn, that the digital exchange of documentation and data be standardized and fair for all parties. The standardization of digital bases, which allows progress in this field, is being developed by ISO/TC 59/SC 13, Organization of information about construction works.

information technology in building and civil engineering processes; geometric requirements for buildings, building elements and components including modular construction, and performance requirements.

In the future, the construction sector will have to deal with issues such as climate change.

ISO standards also address vital and topical issues such as accessibility, responding to the UN's Universal Declaration on Human Rights which states that everyone has the right to equal access to public services in his or her country.

When developing standards, ISO involves all stakeholders, from architects to designers, engineers, owners, product manufacturers, regulators, policy makers and consumers. Working through its network of national members, its standards are based on the

foremost expertise in the world and disseminate it to both developed and developing countries.

In the future, the construction sector will have to deal with issues such as climate change and its impact on buildings, as well as the energy efficiency of buildings, thus requiring standards for accurate measurement methods for the thermal properties of buildings and building products. The development of standards related to the delivery process of buildings and civil engineering works is also one of the next steps.

ISO & construction, published in English and French, is available free of charge from the ISO Central Secretariat through the ISO Store (www.iso.org) or by contacting the Marketing, Communication & Information department (sales@iso.org). It can also be obtained from ISO national member institutes. The brochure can also be downloaded as a PDF file free of charge from the ISO Website. ■

Sandrine Tranchard is a Communication Officer, ISO Central Secretariat.



Big benefits for small business

Today small and medium-sized enterprises (SMEs) are by far the most numerous in the economy, and consequently vital to economic wealth and environmental health by stimulating innovation and developing entrepreneurial skills.

SMEs generate the majority of jobs, promote diversification of economic activities, support sustainable development, and make a significant contribution to exports and trade. In the global marketplace, SME customers and consumers are increasingly concerned with their environmental performance, and investors scrutinize how well they manage economic, social and environmental risks. Their flexibility, however, enables them to match quick changes in market demands.

The February 2013 *ISO Focus+* issue looks at how ISO International Standards help SMEs of all shapes and sizes to work more efficiently, increase productivity and access new markets. These benefits can

make a significant difference to annual turnover, and sometimes the difference between success and failure.

To an SME, some of the benefits of using International Standards include:

- The opening up of export markets as products will be compatible on a global scale
- Increased efficiency
- Increased credibility and confidence as customers from all over the world recognize ISO International Standards

The issue brings together a portfolio of case studies from several countries as well as articles covering the application of software engineering or environmental management standards in smaller settings, or the benefits of standards and participation in standardization for SMEs. Some of the barriers and challenges for SMEs and possible solutions to overcome these are also highlighted. ■



Guest Interview

In an exclusive interview in the February 2013 issue of *ISO Focus+*, Denis Tremblay, General Manager of the Energy Unit of Tetra Tech in Canada, and a member of the board of directors of BPR, a Tetra Tech subsidiary, highlights the importance of International Standards to the company:

“International Standards act like a footbridge and are tools for the company, allowing it to cross some of the barriers to entry. When we cross these barriers, new markets become accessible. The greater the worldwide level of standardization, the greater the competitiveness between companies, which in the end gives the ultimate client a big payoff through cost savings.” ■



ISO Focus+

The electronic edition (PDF file) of *ISO Focus+* is accessible free of charge on the ISO Website www.iso.org/iso/focus+. In addition, the entire collection of previous issues of *ISO Focus+* editions, plus *ISO Focus* (2004-2009), plus *ISO Management Systems* magazine (2001-2009) is also available free of charge as electronic files.




ISO Update

The *ISO Update*, a monthly supplement to *ISO Focus+* is available electronically (PDF) in both English www.iso.org/isoupdate and French www.iso.org/fr/isoupdate.



The *ISO Update* informs readers about the latest developments in the ISO world, including ISO member bodies' CEO and address changes, draft standards under circulation, as well as newly published, confirmed or withdrawn standards. It also includes a list of upcoming technical committee plenary meetings.





Manage your energy well
and you've more
to devote to your customers

ISO 50001 for energy management.

The kangaroo is very energy efficient. It can reach speeds of more than 50 km/h while using less energy than any other mammal. So mother kangaroos have more energy for looking after junior! Translate that into business terms. If your organization can reduce the energy it needs to operate, it can devote more resources to value-adding processes.



ISO 50001 users are reporting that the standard helps them to increase energy efficiency and cut costs. Improve your organization's energy management and you can concentrate more on ensuring the satisfaction of your customers.

Who'd have thought that the kangaroo had something to teach CEOs?

ISO 50001:2011, *Energy management systems*, is available from ISO national member institutes (listed with contact details on the ISO Website at www.iso.org) and ISO Central Secretariat Web store at www.iso.org or e-mail to sales@iso.org.

International Organization for Standardization – www.iso.org

Central Secretariat
1, ch. de la Voie-Creuse
Case postale 56
CH-1211 Genève 20

