

ISO Guidelines for the Management of Drinking Water Utilities and Services

有關飲用水設施及服務管理的ISO 指引

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We do not always realise how valuable water, and in particular clean, potable water, really is - until we do not have it, or our access to it is somehow threatened! Its management is a classic example of the old saying "Think globally; act locally". We all have a role to play. Water is a worldwide challenge for the 21st century, and is addressed as an important component of the 17 UN Sustainable Development Goals for 2030, recently approved by all Heads of State at the end of 2015. Goal 6 includes targets aimed at ensuring the availability and sustainable management of water and sanitation for all; to improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, reducing significantly the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally. At the local level, Goal 6 foresees the support and strengthening of the participation of local communities in improving water and sanitation management.

The Overall Role of ISO Standards

Over the years, ISO has developed and published a large number of standards that can be used to bring safe water to millions. For example, long-established standards for pipes and valves increase the efficiency of water distribution services and reduce leakages, preventing unnecessary water losses. Metering and hydrometry standards help monitor and measure water conservation, and testing standards address topics such as the physical, chemical, biochemical, biological, and microbiological properties of water. These technical standards are of course important, but over recent years the international community has also committed to improving the overall governance and management of drinking water and wastewater services and, to this effect, has made it a priority to build capacity with local governments.

ISO has therefore been developing standards that provide guidelines for service activities relating to drinking water supply systems and wastewater sewerage systems. These standards are designed to help water authorities and their operators to achieve a level of quality that best meets the expectations of consumers and the principles of sustainable development.

在一般情況下，我們都不會意識到水的珍貴，尤其是潔淨的飲用水。直到我們不再擁有，或用水受到威脅時，才會意識到要珍惜此資源。誠然，水的管理是需要「環球思維，地方實踐」，我們全都從中擔當一定角色。水資源是21世紀的全球挑戰，也是聯合國成員於2015年末通過，期望在2030年達成的17個可持續發展目標項目的重要元素之一。當中第六目標包括確保供水和衛生環境的可持續管理；以及透過減少污染、廢物傾倒、有害化學品和物料排放，以及未經處理的廢水比例，同時實質地提高全球廢物回收和安全再用的表現，以改善水的質素。於地區層面上，該目標預視了社區對水和環境衛生管理的支持及更大參與度。

ISO 標準的整體角色

過去多年，ISO 制定並出版了大量有關供水安全的標準，例如針對水管及水閥的標準，以加強配水服務的效率和減少漏水，避免造成不必要的浪費；計量和水文測量標準則協助監察和量度貯水量；而測試水的標準則涵蓋物理、化學、生物化學、生物學和微生物學等範疇。這些技術標準固然重要，惟近年國際社會亦著重提升飲用水和廢水服務的整體管治與管理，並與各地政府合作，以加強水管理為首要工作。

ISO 亦因此推出不同標準，為飲用水供應系統和廢水處理系統的相關服務提供指引。這些標準旨在協助水務機構和其經營者達到一定質素，以符合消費者的期望及可持續發展的原則。

ISO Guidelines for Drinking Water and Wastewater Services

Three specific standards provide guidelines for the various activities relating to drinking water and wastewater management:

ISO 24510 — “Guidelines for the assessment and for the improvement of the service to users”, which addresses the following topics:

- a brief description of the components of the service relating to the users;
- core objectives for the service, with respect to users’ needs and expectations;
- guidelines for satisfying users’ needs and expectations;
- assessment criteria for service to users in accordance with the provided guidelines;
- examples of performance indicators linked to the assessment criteria that can be used for assessing the performance of the service.

ISO 24511 — “Guidelines for the management of wastewater utilities and for the assessment of wastewater services”, which covers:

- a brief description of the physical/infrastructural and managerial/institutional components of water utilities;
- core objectives for water utilities, considered to be globally relevant at the broadest level;
- guidelines for the management of the water utilities;
- guidelines for the assessment of the water services with service assessment criteria related to the objectives, and performance indicators linked to these criteria.

ISO 24512 — “Guidelines for the management of drinking water utilities and for the assessment of drinking water services”

The objective of ISO 24512 is to provide the relevant stakeholders with guidelines for assessing and improving the provision of drinking water services to users, with guidance for managing water utilities, consistent with the overarching goals set by the relevant authorities. It is intended to facilitate dialogue between the stakeholders, enabling them to develop a mutual understanding of the functions and tasks that fall within the scope of water utilities.

Examples of such stakeholders include:

- governments or public agencies (international, national, regional or local) acting with legal or legislative authority;
- associations of the utilities themselves (e.g. international, regional/multinational and national drinking water or wastewater associations);
- autonomous bodies seeking to play an overview role (e.g. non-governmental organisations);
- users and associations of water users.

The aim of water utility companies is to offer services to everybody and to provide users with a continuous supply of drinking water under economic and social conditions that are acceptable to the users and to the utility. As water is considered a “social good”, it is expected that the management of water utilities be transparent to and inclusive of all stakeholders identified in accordance with the local context.

有關飲用水及廢水服務的ISO指引

為飲用水及廢水管理活動而提供指引的三項特定標準如下：

ISO 24510 — 《評估及改善使用者服務的指引》，包括以下議題：

- 簡介與使用者有關的服務組成部分
- 服務的核心目標，須把使用者的需求和期望都加入考慮之中
- 達到使用者需求和期望的指引
- 依據指引的使用者服務評估準則
- 提供與評估相關，可用作評估服務表現的表現指標例子

ISO 24511 — 《廢水設施管理及廢水服務評估的指引》，包括：

- 有關水設施的物理/基礎建設及管理/機構組成的簡介
- 將水設施核心目標廣泛定為與全球相關
- 水設施管理的指引
- 水服務評估指引，並附有與目標、表現指標相關的評估準則

ISO 24512 — 《飲用水設施管理及飲用水服務評估的指引》

ISO 24512 旨在為持份者提供飲用水服務評估與改善指引，以及水設施管理的指引，並與相關機構所定的總體目標保持一致，以促進和持份者的溝通，讓他們就水設施的功能及工作範圍建立共識。

持份者包括：

- 政府或與法律或立法機關相關的公共機構（國際、國家、地區和本地）
- 設施組織（例如：國際、地區/跨國及國家的飲用水或廢水協會組織）
- 擔任監察角色的獨立機構（例如：非政府機構）
- 使用者及使用者協會組織

水設施公司的目標是為大眾提供服務，在使用者及機構都接受的經濟和社區條件下，提供持續的飲用水供應。由於水被視為社會產品，其設施的管理應根據當地環境保持透明度，並讓所有已識別的持份者參與。

In a context of scarcity of resources, including financial resources, ISO 24512 recommends that water tariffs generally aim at meeting cost-recovery principles and at promoting efficiency in the use of the resources, while striving to maintain affordable basic access to water services. Consistent with this principle, it suggests that appropriate investments need to be made in installations and that necessary attention be paid to proper maintenance and effective use of the installations. Another ISO management system standard (ISO 55001 Asset Management) can be very useful in this respect.

ISO 24512 uses the principle of the “plan-do-check-act” (PDCA) cycle: it proposes a step-by-step process, from identifying the components and defining the objectives of the water utility, to establishing performance indicators, with a loop back to the objectives and to the management, after having assessed the performance. Although the implementation of ISO 24512 does not require a water utilities organisation to have a quality or environmental management system that meets ISO 9001 or ISO 14001, such systems can facilitate the implementation of the ISO 24512 guidelines and conversely, the ISO 24512 guidelines can help to achieve the technical provisions of ISO 9001 and ISO 14001 for organisations choosing to implement them.

ISO 24512 addresses drinking water systems in their entirety and is applicable to systems at any level of development (e.g. on-site systems, distribution networks, treatment facilities), and includes:

- definition of a language common to different stakeholders;
- definition of the components of drinking water supply systems;
- guidelines for the management of drinking water utilities;
- guidelines for objectives, service assessment criteria and related performance indicators, appropriate for the assessment of drinking water services.

Other Relevant ISO Standards

The recently-published **ISO 24518:2015** addresses the crisis management of water utilities, for example in situations where the normal supply of potable water or collection and treatment of wastewater are interrupted because of a crisis situation. It suggests steps that should be taken in preparing for a crisis situation (the pre-crisis phase), how a crisis should be dealt with (the crisis phase), guidelines on re-establishing services (post-crisis phase) and on drawing conclusions and revising procedures for the future. It emphasises the need for effective communications with the public to mitigate or prevent panic and to establish trust by disclosing important information appropriately in the area affected by a crisis or in neighbouring areas.

Another important standard in the ISO portfolio is **ISO 14046**, for calculating water footprints, promoting efficient measurement and management of this scarce resource, helping organisations to harmonize reporting, and setting an international benchmark for water use.

A further standard (**ISO 24526**) “**Water efficiency management systems — Requirements with guidance for use**” is under development, and scheduled for publication in 2017.

These various ISO technical and management system standards, taken together, can be applied in the developed and developing economies; in big cities or small towns, and irrespective of whether the utility operator is public or private. They can help to promote better dialogue among stakeholders (including consumers, local or national water authorities, public or private water utilities, laboratories etc), a mutual understanding of responsibilities and tasks, provide methods and tools to define objectives and specifications at a local level, and assess performance.

在資源匱乏的環境下，包括財政資源，ISO 24512 建議收取水費時，一般應以達到收支平衡為原則，以及在提供基本實惠的水服務之同時，亦能促進有效善用資源。在這原則下，此標準建議在設備上投放合適資源，並注意正確保養和有效使用設備。另一個 ISO 管理體系標準 (ISO 55001 資產管理) 非常適用於此範疇。

ISO 24512 使用「策劃—實施—檢查—處置」(PDCA) 循環的原則，提倡使用循序漸進的過程，由識別各部分及定義水設施目標，到建立表現指標，在完成表現評估後，再檢視目標和管理。雖然執行 ISO 24512 的水設施機構不一定要實行 ISO 9001 質量管理體系或 ISO 14001 環境管理體系，但這些標準可有助實施 ISO 24512 的指引；相反地，ISO 24512 指引可協助一些實行 ISO 9001 和 ISO 14001 的機構，達到其技術規定。

ISO 24512 針對整個飲用水系統，可應用在不同的發展程度 (例如現場系統、配水網絡、處理設施)，並包括：

- 為不同持份者定義共同語言
- 定義飲用水供應系統的組成部分
- 飲用水設施管理的指引
- 適用於飲用水服務評估的指引，包括目標、服務評估準則及相關表現指標

其他相關的 ISO 標準

最近推出的 **ISO 24518 : 2015** 標準針對水設施的危機管理，例如應對一般食水或廢水收集及處理系統，因緊急情況而受到干擾的事件。這標準建議了預防危機時應採取的步驟 (危機前期階段)，如何處理危機 (危機階段)，重新建立服務的指引 (危機後期階段)，以及作出總結和修改程序，以應對將來發展。為減輕或避免恐慌，標準強調與公眾有效溝通的需要，在受危機影響的地方或鄰近地區，正確地提供重要資訊，以建立誠信。

ISO 系列中另一個重要的標準 **ISO 14046**，旨在計算水足跡，以推廣有效量度和管理此珍貴資源，協助機構統一化報告，為用水建立國際基準。

另一個標準 **ISO 24526《水效率管理體系—要求及使用指引》**正在籌備當中，預計於2017年推出。

這些不同的 ISO 技術及管理體系標準，均可應用於已發展或發展中的經濟環境，大城市或小市鎮，公營或私營設施營運商。這些體系能促進持份者之間的溝通 (包括消費者、本地或國家的水管理機構、公營或私營的水設施、實驗室等)，了解互相的責任和工作，並提供方法和工具，以定義本地層面的目標和規格，以及評估表現。