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पेयजल आपूर्ति, अपशिष्ट जल और तूफानी जल प्रणालियों से संबंधित सेवा गतिविधियाँ — शब्दावली

Service Activities Relating to Drinking Water Supply, Wastewater and Stormwater Systems — Vocabulary

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BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

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Drinking Water Supply, Wastewater and Stormwater Systems and Services Sectional Committee, SSD 14

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Drinking Water Supply, Wastewater and Stormwater Systems and Services Sectional Committee had been approved by the Service Sector Division Council.

This standard is intended to:

a) help stakeholders understand the fundamental concepts and vocabulary of water services provision, in order to effectively and efficiently influence such provision; and
b) facilitate dialogue between the stakeholders, enabling their mutual understanding of the functions and tasks that fall within the scope of water utilities.

This standard contains a vocabulary of management concepts for water services provision and applicable to all such organizations, regardless of size, complexity or business model. As there are several technical terms in use in the field of drinking water supply, wastewater and stormwater system, the standardization of terminology would be useful to water utilities such as Jal Boards of State and Union Territory, Municipal Corporation and Public Health Engineering Departments in India.

In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

This standard is generic and is compiled to encompass the terms related to types and volumes of water, water usage, assets and asset systems, processes, requirement, and performance in context to the drinking water supply, wastewater and stormwater services.

While preparing this standard, assistance has been taken from ISO 24513 : 2019 on ‘Service Activities Relating to Drinking Water Supply, Wastewater and Stormwater Systems — Vocabulary’.

The composition of the committee responsible for the formulation of this standard is listed in Annex A.

Indian Standard

SERVICE ACTIVITIES RELATING TO DRINKING WATER SUPPLY,WASTEWATER AND STORMWATER SYSTEMS — VOCABULARY

1 SCOPE

This standard defines terms common to the different stakeholders of the water utility with regards to,

a) key elements and characteristics of the service to users; and
b) the components of drinking water supply, wastewater and stormwater management systems.

2 REFERENCES

The standard listed below contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the listed edition was valid. The standard is subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard listed below:

IS No.	*Title*
IS/ISO 19011 : 2018	Guidelines for auditing management systems (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, the following terms and definitions shall apply.

3.1 Terms with Context to Organization

3.1.1 *Business Activity* — Umbrella term covering all the functions, processes, activities and transactions of an organization and its employees.

NOTE — Includes public administration as well as commercial business.

3.1.2 *Business Activity Indicator (BAI)* — Measure of business activity that considers core business operations specific to the application site.

NOTE — Depending on the BAI, water use (including any water consumed) vary with need and requirement of end users.

3.1.3 *Capability* — Quality of being able to perform a given activity.

NOTE — The terms competency and capability are often used synonymously. Competence is defined as the ability to apply knowledge and skills to achieve intended results. In the context of either an organization or an individual the 'ability to apply' indicates the existence of the necessary resources, (the capacity to apply) such knowledge and skills.

3.1.4 *Community* — One or more natural or legal persons and, in accordance with national legislation or practice, their associations, organizations or groups, with interests in the area where the service is provided.

3.1.5 *Competence* — Ability to apply knowledge and skills to achieve intended results.

NOTE — Demonstrated competence is sometimes referred to as qualification.

3.1.6 *Customer/End User* — Person, group or organization that benefits from drinking water delivery and related services, wastewater, stormwater service activities or from reclaimed water delivery and related services.

NOTES

1 End users are a category of stakeholder.
2 End users can belong to various economic sectors like domestic, commercial, industrial, tertiary activities, agricultural etc.

3.1.7 *Documented Information* — Information required to be controlled and maintained by an organization and the medium on which it is contained.

NOTES

1 Documented information can be in any format and media, and from any source.

2 Documented information can refer to:
a) the management system, including related processes;
b) information created in order, for the organization to operate (documentation); and
c) evidence of results achieved (records).

3.1.8 *Environment* — Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.

NOTES

1 Surroundings can extend from within an organization to the local, regional and global system.
2 Surroundings can be described in terms of biodiversity, ecosystems, climate or other characteristics.
3 For the application of this document, environment is considered as a specific stakeholder. The interests of this specific stakeholder can be represented by relevant authorities, by the communities or by other groups, such as non-governmental organizations (NGOs).

3.1.9 *Full-Time Equivalent* — Ratio of the total number of personnel hours spent in the facility divided by the standard working hours per day.

NOTE — The ratio provides an estimation of actual facility occupancy in terms of hours occupied per day and is used to determine the number of occupants for the facility.

3.1.10 *Infrastructure* — System of facilities, structures, installations, equipment and services needed for the operation and management of the piped water supply constructed and managed by the water utility.

3.1.11 *Information* — Knowledge concerning objects, such as facts, events, things, processes, or ideas, including concepts, that within a certain context has a particular meaning.

NOTE — Information can be data, indicators or estimations.

3.1.12 *Management* — Coordinated activities to direct and control a water utility.

NOTE — Management here includes establishing policies and objectives, and process guidelines to achieve the aims and objectives.

3.1.13 *Management System* — Set of interrelated or interacting elements of a water utility to establish policies and objectives, and processes to achieve those objectives.

NOTE — The management system elements establish the organization's structure, roles and responsibilities, planning, operation, policies, practices, rules, beliefs, objectives and processes to achieve those objectives.

3.1.14 *Objective* — The end points of the defined set goals with intended results.

NOTES

1 An objective can be strategic, tactical or operational.
2 Objectives can relate to different disciplines (such as financial, health and safety, quality and environmental) and can apply at different levels such as strategic, within organization, product and processes.
3 In the context of a management systems, the objectives are set by the organization, consistent with the policy, to achieve specific results.

3.1.15 *Operator/Service Provider* — Person or organization performing day-to-day processes and activities necessary for the provision of the service.

NOTE — There can be one or several operators for operation activities like billing, recovering services etc., in a water utility.

3.1.16 *Operational Plan* — Documented collection of procedures and information that is developed, compiled and maintained in readiness for the conduct of operations.

3.1.17 *Organization* — Person or group of people that has its defined functions with responsibilities, authorities and relationships to achieve its aims and objectives.

NOTES

1 The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.
2 For the purposes of this document the organization will usually be a water utility.

3.1.18 *Outsource* — An arrangement where an external organization performs part of an organization's function or process.

NOTE — An external organization is outside the scope of the management system, although the outsourced function or process is within the scope.

3.1.19 *Policy* — Intentions and directives of organization/regulatory body as formally expressed by its top management to meet the regulatory/statutory requirement and customer satisfaction.

3.1.20 *Registered User* — Users registered for service from whom relevant information is recorded by the responsible body or operator.

NOTE — The term ‘customer’ can be considered as a synonym, given that a customer has a commercial relationship, for example a service agreement, with the water utility. The term ‘customer’ is currently used in such expressions as customer relations.

3.1.21 *Relevant Authority* — Public body at national, regional or local levels empowered to set general acts, or rules, or policies, or plans or guidelines or to check compliance with the rules, to assist in response plan of water utilities that are located under their area of jurisdiction.

3.1.22 *Reliability of Information* — Degree of confidence in the information for representing or for qualifying the relevant subject matter.

3.1.23 *Responsible Body* — A society or an organization or a public body that has the overall legal responsibility for providing drinking water services for a given geographic area.

3.1.24 *Risk* — Combination of the likelihood of a hazardous event and the severity of consequences.

NOTES

1 Here risk deals with the hazard occurs in the drinking water supply, wastewater or stormwater management systems.
2 Risk is often characterized by reference to potential events and consequences or a combination of these.
3 The English term ‘likelihood’ does not have a direct equivalent in some languages; instead, the equivalent of the term ‘probability’ is often used.
4 Risk can also be defined as the effect of socio-economy of the water utility, uncertainty of objectives, where uncertainty is the state, even partial, of deficiency of information, related to understanding or knowledge of an event, its consequence or likelihood or can affect human health.

3.1.25 *Stakeholder/Interested Party* — A person or a group or a society or an organization having an interest and concerns and involved in the services or performance of water utility.

3.1.26 *Strategic Plan* — Document identifying goals and objectives to be pursued by an organization over a long-term period in support of its mission and being consistent with its values.

3.1.27 *Sustainable Development* — Development that meets the environmental, social and economic

needs of the present generation without compromising the ability of future generations to meet their own needs.

3.1.28 *Tactical Plan* — Document identifying objectives to be pursued by an organization over the medium term, on the basis of priorities derived from influencing factors/indicators on performance, costs, risk and failure probability and scale of failure.

3.1.29 *Technology* — Application of specific knowledge for practical purposes, machinery, advance equipment and methods developed to cater utility services.

3.1.30 *Top Management* — Person or group of people who directs and overall controls of an organization at the highest level and has the decision-making capacity.

NOTES

1 Top management has the power to delegate authority and provide resources within the organization.
2 If the scope of the management system covers only part of an organization, then top management refers to those who direct and control that part of the organization.

3.2 Terms Related to Types and Volumes of Water

3.2.1 *Black Water* — Water discharged from water closet and urinals.

3.2.2 *Coastal Flood/Storm Surge* — Coastal flooding is the inundation of land areas along the coast by seawater.

NOTE — Common causes of coastal flooding are intense windstorm events occurring at the same time as high tide (storm surge), and tsunamis.

3.2.3 *Drinking Water* — Water intended for human consumption for drinking, cooking or domestic purposes from any safe and secure source including treated water supplied for human consumption.

3.2.4 *Excreta* — Waste products of human metabolism, in solid or liquid form, generally urine and/or faeces.

3.2.5 *Flooding* — Condition where water flows onto a surface or enters a structure or area where it is not intended (crosses the HFV) and logged into low lying areas.

3.2.6 *Flushable Product* — Materials considered suitable for disposal through sewer networks, wastewater collection and treatment systems.

3.2.7 *Grey Water* — Wastewater from bathtubs and showers, hand basins, kitchen sinks, clothes washing andlaundry tubs but excluding excreta and trade effluent.

NOTES

1 It excludes used water from urinals or toilet bowls.
2 Wastewater from kitchen sinks, food waste grinders or dishwashers can be excluded, subject to local requirements.

3.2.8 *High Flood Volume (HFV)* — Volume of runoff to be captured safely within the catchment to prevent the high flow conveyance system capacity being exceeded in extreme rainfall events**.**

3.2.9 *Integrated River Basin/Watershed Management* — Process of coordinating conservation, management and development of rainwater, land and related resources across sectors within a river basin.

3.2.10 *Rainwater* — The water arising from atmospheric precipitation, which has not yet contacted the surface.

3.2.11 *Reclaimed Water* — Wastewater that has been treated to meet specific water quality requirements to reuse or recycle or other purposes for intended beneficial use.

NOTE — Examples of treatment technologies include microfiltration, reverse osmosis and/or ultraviolet disinfection or any other advance treatment technology.

3.2.12 *Residuals* — Byproduct resulting from the different processes applied for treatment of water and wastewater.

NOTE — Residues can be liquid, solid, gaseous or mixtures such as sludge, septage, sand or grit, grease, debris.

3.2.13 *Surface Runoff* — Rainwater that flows off a surface to reach a drain, sewer or receiving water.

NOTE — Examples of a receiving water include an aquifer, a sustainable drainage system, a pond, a stream, a river, a lake, an estuary or a sea.

3.2.14 *Sewage* — Wastewater emanating from domestic consumption which comprising of grey and/or black water.

3.2.15 *Stormwater* — Surface water arising through any mode of precipitation like rain, snowmelt etc.

NOTES

1 Depending on volumes, stormwater can be stored, routed or conveyed into a collection system or used (for irrigation or fire-fighting purposes) resulting in it ultimately finding its way back into the environment (adsorbed by soil, absorbed into subsurface, discharged to a natural water body).
2 Stormwater may be contaminated.

3.2.16 *Trade Effluent* — Liquid, including particles of matter and other substances in suspension in the

liquid, which is the outflow from any trade, business or manufacture or of any works of engineering or building construction.

NOTE — Trade effluent is also referred to as trade waste.

3.2.17 *Wastewater* **—** Used water arising from any combination of domestic, institutional, commercial, industrial activities that discharged to the environment or sewer.

NOTES

1 Wastewater can flow in separate or combined sewer systems.
2 The definition of wastewater in this document also includes sanitary waste in undiluted form.

3.2.18 *Wetland* — Area of land such as bog, pond, fen, estuary, or marsh naturally covered with shallow water or constructed, lined and media-filled bed which contains suitable flora and fauna.

3.3 Terms Related to Water Utility

3.3.1 *Affordability* — Ability to be economically bearable for the users.

NOTE — The affordability can be estimated through the degree to which charges for services can be paid by targeted social groups of users without significant adverse economic or social impact, considering allowances for subsidies and payment assistance programs for low-income users.

3.3.2 *Availability of Resources* — Extent to which the infrastructure, assets and employees of a water utility enable effective provision of services to users according to specified performances.

3.3.3 *Alternative Drinking Water Service (ADWS)* — Drinking water provided to users by means other than through the normal piped drinking water system.

3.3.4 *Alternative Wastewater Service (AWWS)* — Wastewater service provided to users by means other than through the normal collection or treatment system.

NOTE — AWWS can be required due to damage to components of the collection system or the treatment plant that would result in impairment to the environment or a risk to public health and safety.

3.3.5 *Consequence* **—** Outcome of an event affecting objectives.

NOTES

1 An event can lead to a range of consequences.
2 A consequence can be certain or uncertain and can have positive or negative effects on objectives.
3 Consequences can be expressed qualitatively or quantitatively.

3.3.6 *Coverage* **—** Extent to which the assets of a water utility provide services to users, within its defined area of responsibility.

3.3.7 *Connection* — Set of physical components ensuring the link between a consumer point of distribution and the local water main in case of drinking water and the point-of-discharge and the point of collection in case of wastewater.

3.3.8 *Classification* — Categorization of the relevant parameters.

3.3.9 *Containerized Drinking Water* — Packaged drinking water deployed in containers for alternative drinking water service provision.

Examples:

1 Bottled water, pre-prepared and hygienically sealed, with a predetermined shelf-life.
2 Water tankers containing drinking water.

3.3.10 *Customer Point of Distribution* **—** The point where water utility supplies the piped water to the individual/individual household/gated community/ institutions/organizations after water meter in piped water supply network.

NOTES

1 The customer point of distribution is generally defined in the service agreement.
2 In general, water utility employees have no legal empowerment for obtaining direct physical access to the installations downstream of the customer point of distribution.
3 Customer point of distribution can also be referred to as the point-of-supply or the point-of-connection.

3.3.11 *Crisis* **—** Event or situation which adversely affects the organization and impact its services which requires more than the usual means of operation and/or organizational structure to deal with it.

3.3.12 *Emergency Operation Plan* — Document specifying the procedures and associated resources to be applied by whom and where during a particular type of emergency.

3.3.13 *Effectiveness* — Extent to which planned activities/level of services are realized and achieved.

3.3.14 *Efficiency* — Relationship between the results achieved and the resources used.

3.3.15 *Event/Incident* — Situation when a behaviour deviates from the normal.

NOTES

1 An event can be one or more occurrences and can have several causes.
2 An event can sometimes be referred to as an ‘incident’ or ‘accident’.
3 An event without consequences can also be referred to as a ‘near miss’, ‘incident’, ‘near hit’ or ‘close call’.
4 For the purposes of this document, ‘normal’ refers to what is expected.

3.3.16 *Event Detection* — Recognition of event indicator and/or information about a new situation.

NOTE — New situations can be sorted into one of the following:
a) event indicator and/or situation are considered known and non-hazardous;
b) event indicator and/or situation are considered hazardous, but a procedure to handle them already exists with the water utility; and
c) event indicator and situation are considered unknown, and a procedure for them does not yet exist with the water utility.

3.3.17 *Event Identification Table* — Table containing historical data on the past events and their causes.

3.3.18 *Event Indicator* — Signal to the water utility or one or more stakeholders that an event can have occurred with the potential to cause a significant deviation from the users' expectations of service performance.

3.3.19 *Hazard* — Source of potential harm.

NOTES

1 Harm in the context of a water utility can include injury to stakeholders, compromising of public health, degradation of the environment, a deterioration in service quality, reputational and/or socio-economic damage that can be natural or anthropogenic.
2 Capacity for harm can also arise from compromised service provision. In this context a hazard can be considered to be a biological, chemical, physical or radiological agent in, or condition of, water with the potential to cause harm to public health or the environment.
3 Other sources of potential harm exist within the water utility's organizational context. These hazards can be internal or external to the organization. Internal hazards could be a toxic chemical store; potential energy stored behind a dam perched on a hillside above a town; a chamber potentially containing a hazardous atmosphere, poorly documented procedures; inadequate training; an inappropriate organizational culture). External hazards could be earthquake; flooding; forest fire such as cybercrime.

3.3.20 *Hazardous Event* — Event that can cause harm to the water utility.

3.3.21 *Influence Matrix Table* — Tabulated chart developed by the water utility that contains relationship between event indicators and performance measurements based on scientific knowledge and past experiences.

3.3.22 *Interruption* — Situation where the service is not available or only partially available.

NOTE — Interruptions can be planned or unplanned.

3.3.23 *Level of Service* — Parameter, or group of parameters, which reflect social, political, environmental and economic outcomes regarding the service to end users that the water utility delivers.

NOTES

1 The service to users can include any of the following parameters: health, safety, user satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost and availability.
2 A defined level of service can include any combination of the aforementioned parameters deemed important by the asset owner, users or relevant stakeholders.

3.3.24 *Measurement* — Process to determine a value of any tangible or intangible parameters.

3.3.25 *Point-of-Use* — Physically fixed interface to draw water for the intended use such as a tap, a public drinking fountain, public stand post, fire hydrants etc.

NOTES

1 The point-of-use can be in private or public property.
2 The point-of-use can be the same as the customer point of distribution, for example in the case of a public drinking fountain, public stand post, fire hydrants etc.

3.3.26 *Point-of-Collection* — Physically fixed interface, upstream of which the water utility does not have the overall legal responsibility for the wastewater service or infrastructure such as the limit boundary between private and public property.

NOTES

1 The point-of-collection is generally defined in the service agreement.
2 In general, the water utility employees have no responsibility to the installations upstream of the point-of-collection.

3.3.27 *Point-of-Discharge* — Physically fixed interface where the user discharges wastewater for its collection and disposal such as a sink, toilet, septic tank, gully trap etc.

NOTE — For drinking water systems, the term ‘service pipe’ is currently used, but the connection can include components other than the service pipe, such as valves and meters

3.3.28 *Price* — Counterpart in cash or kind (monetary or non-monetary) for the supply or provision of a product or service.

3.3.29 *Quality* — Degree to which a set of inherent characteristics fulfils requirements.

NOTES

1 The term ‘quality’ can be used with adjectives such as poor, good or excellent.
2 ‘Inherent’, as opposed to ‘assigned’, means existing in the object.
3 There is a clear distinction between quality of the product and quality of the service. This document does not give technical specifications for product quality.

3.3.30 *Recovery Plan* — Provision of policies, procedures and processes that are necessary to restore operations critical to the resumption of service.

NOTE — Recovery represents the last stage to be carried out during the crisis phase and the post- crisis phase prior to the changeover to routine operations.

3.3.31 *Restriction* — Situation where the service does not meet the availability conditions specified in the service agreement.

NOTE — ADWS can be required due to the loss of supply or due to the fact that the water currently being supplied is believed unfit for the intended use.

3.3.32 *Service* — Output of water utility in terms of an activity or set of activities necessarily performed between the water utility and the end users.

NOTES

1 The dominant elements of a service are generally intangible.
2 Service involves activities and processes within an organization (water utility), at the interface with the user, to establish user requirements as well as upon delivery of the service and can involve a continuing relationship.
3 Provision of a service can involve, for example:
a) an activity performed on a user-supplied tangible product such as wastewater;
b) an activity performed on a user-supplied intangible product like processing new connection requests;
c) delivery of an intangible product like the delivery of information in the context of knowledge transmission; and
d) the creation of ambience for the user in reception offices.
4 A service is generally experienced by the user and can be monitored by one or more stakeholders.

3.3.33 *Service Area* — Local geographic area where a water utility has the legal or contractual responsibility to provide a service.

NOTE — The service area can be established, for example, by political boundaries (citywide utility); by legislative action (formation of a utility district); or by inter-jurisdictional agreements (intercity agreements to provide water or wastewater services).

3.3.34 *Service Agreement* — Establishment of an accord between the user and the service provider on the conditions of service provision such as a contract.

NOTE — It can be implicit or explicit.

3.3.35 *Tariff* — Price to be charged for a product or service.

NOTES

1 The tariff structure can contain fixed and variable elements.
2 The tariff's period of applicability should be defined.

3.3.36 *Water Utility* — Whole set of society, or a body or an organization dealing with water and has processes, activities, means and resources necessarily for abstracting, treating, distributing or supplying drinking water; or for collecting, conveying, treating, disposing of or reusing wastewater; or for the control, collection, storage, transport and use or disposal of stormwater, and for providing the associated services.

NOTES

1 Some key features for a water utility are:
a) its mission, to provide drinking water services or wastewater services or the control, collection, storage, transport and use of stormwater services, or a combination thereof;
b) its physical area of responsibility and the population within this area;
c) its responsible body;
d) the general organization with the function of operator being carried out by the responsible body, or by legally distinct operators; and
e) the type of physical systems used to provide the services, with various degrees of centralization.
2 Drinking water utility addresses a utility dealing only with drinking water; wastewater utility addresses a utility dealing only with wastewater; stormwater utility addresses a utility dealing only with stormwater.

3.3.37 *Water Utility (Drinking)* — Whole set of a society or a body or an organization dealing with drinking water and has processes, activities, means and resources necessarily for abstracting, transporting, treating, distributing the drinking water and providing the associated services including risk and disaster management.

NOTES

1 Some key features for a drinking water utility are:
a) its mission, to provide drinking water services;
b) its physical area of responsibility and the population within this area;
c) its responsible body;
d) the general organization with the function of operator being carried out by the responsible body, or by legally distinct operators; and
e) the type of physical systems used to provide the services, with various degrees of centralization.
2 The term drinking water utility addresses a utility dealing only with drinking water.

3.3.38 *Water Utility (Stormwater)* — Whole set of society, or a body or an organization dealing with stormwater and has processes, activities, means and resources necessarily for the control, collection, storage, transport and use or disposal of stormwater, and for providing the associated services.

NOTES

1 Some key features for a stormwater utility are:
a) its mission, to provide stormwater services;
b) its physical area of responsibility and the population within this area;
c) its responsible body;
d) the general organization with the function of operator being carried out by the responsible body, or by legally distinct operators; and
e) the type of physical systems used to provide the services, with various degrees of centralization.
2 The term stormwater utility addresses a utility dealing only with stormwater.

3.3.39 *Water Utility (Wastewater)* — Whole set of society, or a body or an organization dealing with

wastewater and has processes, activities, means and resources necessarily for collecting, conveying, treating, disposing of or reusing wastewater and for providing the associated services.

NOTES

1 Some key features for a wastewater utility are:
a) its mission, to provide wastewater services;
b) its physical area of responsibility and the population within this area;
c) its responsible body;
d) the general organization with the function of operator being carried out by the responsible body, or by legally distinct operators; and
e) the type of physical systems used to provide the services, with various degrees of centralization.

2 The term wastewater utility addresses a utility dealing only with wastewater.

3.4 Terms Related to Water Usage

3.4.1 *Baseline Water Efficiency Indicator* — Reference level of water used per BAI.

NOTES

1 'Used' in the context of this indicator means the net amount of water used (including any water consumed) in the course of the business activity.
2 The indicator can be established in the initial water use review considering a data period suitable to the organization's water use (including any water consumed).

3.4.2 *Non-revenue Water* **—** It is the difference between the volumes of water supplied and billed authorized use.

NOTE — Non-revenue water includes not only the direct and apparent water loss, but also the unbilled authorized use.

3.4.3 *Water Consumption* **—** The portion of water use that is withdrawn for different business activities.

3.4.4 *Water Efficiency* — Accomplishment of a function, task, process, service or result, with the minimum amount of water loss.

3.4.5 *Water Efficiency Indicator* — Actual amount of water used per unit of BAI.

3.4.6 *Water Efficiency Management Plan* — Document specifying the means of identifying the potential scope, measures, actions and priorities for achieving efficiencies in the organization's current water use

3.4.7 *Water Efficiency Management System (WEMS)* — Part of the water utility management system used to manage water efficiency aspects, fulfil requirements and address risks and opportunities.

3.4.8 *Water Efficiency Performance* — Measurable result related to water efficiency or water use.

NOTES

1 In the context of WEMS, results can be measured inline with the organization's water efficiency policy, objectives, targets and other water efficiency performance requirements.
2 Water efficiency performance is one of the components of the performance of the WEMS.

3.4.9 *Water Efficiency Policy* — Intentions and direction of an organization related to its water efficiency performance as formally expressed by top management.

NOTE — The water efficiency policy provides a framework for action and for the setting of water efficiency performance objectives and targets.

3.4.10 *Water Meter* — Instrument to measure continuously and display the volume of water passing through the measurement transducer at metering conditions.

NOTE — A transducer could be a sensor or an actuator.

3.4.11 *Water Used* — Amount of water used by the end users.

NOTE — The amount of water used can be described and quantified by one or more business activity indicator(s), for example m^3 of water/kg of product; liters/person supplied; m^3 of water/guestroom.

3.4.12 *Water Use Review* — Determination of the organization's water efficiency performance based on data and other information, leading to identification of opportunities for improvement.

3.5 Terms Related to Assets and Asset Systems

3.5.1 *Asset* **—** Any entity that has potential or actual value to a water utility.

NOTES

1 Assets are used in a water utility for the provision of the service.
2 Value can be tangible or intangible, financial or non-financial, and includes consideration of risks and liabilities. It can be positive or negative at different stages of the asset life.
3 Physical assets usually refer to equipment, inventory and properties for examples land, buildings, pipes, valves, wells, tanks, treatment plants, equipment, water meter, hardware etc. Intangible assets are the non-physical assets such as leases, brands, digital assets, use rights, licenses, intellectual property rights, water rights, software, databases, reputation or agreements.
4 Contrary to consumables, assets can be depreciated in accounting systems.

3.5.2 *Asset System* — Set of assets that interact or are interrelated.

NOTE — A grouping of assets referred to as an asset system, could also be considered as an asset.

3.5.3 *Asset Type* — Grouping of assets having common characteristics that distinguish those assets

as a group or class.

NOTES

1 Examples of asset types include, but are not limited to, physical assets, information assets,intangible assets, critical assets, enabling assets, linear assets, information and communications technology (ICT) assets, infrastructure assets and moveable assets.
2 Examples of physical asset types in the water sector are pipes, valves, pumping stations and reservoirs/tanks of the same type, size, materials etc.

3.5.4 *Analysis* — Systematic examination in which the physical, chemical or biological parameters are monitored and evaluated using standard methods.

NOTE — Analysis also includes operations carried out after sample preparation to determine the amount of concentration of the analyte(s) of interest present in the sample.

3.5.5 *Combined Sewer System* — Collecting and conveying sewage and stormwater in the same system.

3.5.6 *Drinking Water Distribution Network* — Asset systems for distributing drinking water.

NOTE — Drinking water distribution network can include pipes, valves, hydrants, washouts, pumping stations and storage reservoirs, and other metering and ancillary infrastructure and components.

3.5.7 *Drinking Water Supply System* — System providing the functions of abstraction, transportation, treatment, storage, distribution and supply of drinking water.

3.5.8 *Failure* — Local inadmissible impairment of the operability of an asset within an asset system at a certain point in time.

3.5.9 *Failure Data* — Data describing the characteristics of the failure caused at a certain point in time on a certain asset.

3.5.10 *Failure Rate* — Ratio of the number of failures of a given category to a given unit of measure such as failures per unit of assets and time, failures per number of actions.

NOTE — The entity to define failure rate for different category of assets could be different such as:
a) for pipelines, expressed as failure per kilometer within a year;
b) for pumps it is number of times pump fails per year;
c) for connections and valves in relation to drinking water distribution networks, expressed as failure per thousand per year;
d) for treatment plants, pumping stations and similar facilities, expressed instances per year; and
e) for wastewater systems in the case of connections, expressed as failure per kilometer within a year.

3.5.11 *Inspection* — Determination of conformity to specified requirements by observation/investigation and judgement accompanied by visual control, handling, measurement, testing or gauging.

3.5.12 *Investigation* — Gathering of all necessary information and process for decision-makers.

NOTE — This include both qualitative and quantitative information.

3.5.13 *Life Cycle Cost* — Total cost of an asset as a whole or its parts throughout its life cycle.

NOTES

1 Total cost can include planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2 Total cost excludes any residual value obtained during disposal.

3.5.14 *Low-flow Conveyance System* — Stormwater conveyance system where flow is confined within the system.

3.5.15 *Management of Asset* — Processes during the life cycle of an asset necessary to derive value from existing assets while ensuring an agreed level of service and function of the system.

NOTE —Processes include:
a) all necessary activities for planning, design, procurement, construction/installation, commissioning, operation, maintenance, rehabilitation and disposal of assets of drinking water systems, wastewater systems and stormwater systems as a functional activity, including their review;
b) setting objectives and functional and performance requirements:
c) establishing strategic plans, tactical plans and operational plans; and
d) undertaking investigations, including establishing necessary databases, to assess the actual condition of assets during the lifecycle of the asset system.

3.5.16 *Maintenance* — Combination of all technical, administrative and managerial actions during the life cycle of an asset intended to retain it in, or restore it to, a state in which it can perform the required function.

3.5.17 *On-site System* — Set of physical assets necessary for supplying drinking water or collecting, treating, disposing and reusing wastewater. In case of wastewater, treatment system located on or near the site where the wastewater is generated such as Septic tank etc.

NOTE — It a standalone system and not connected to a centralized water utility.

3.5.18 *Operation* — Activities undertaken to maintain the normal functioning of the system.

3.5.19 *Overflow Conveyance System* — Stormwater conveyance system where exceedance of flows from the system within defined pathways, including overland flows.

3.5.20 *Quality Assurance* — Assurance of quality in relation to stated references to ensure that specified requirements are being met.

3.5.21 *Quality Control* — Processes carried out at a technical level for the purpose of maintaining and documenting quality of water and wastewater.

3.5.22 *Quality Surveillance* — The continuous monitoring and verification of procedures, methods, conditions, processes, products, and services, and analysis of records.

3.5.23 *Rate of Return* — Percentage measure of project profitability, equal to project income divided by project investment.

NOTE — The time period of measurement can be annual or design period or over the lifetime of the investment.

3.5.24 *Rehabilitation* — Measures for restoring or upgrading the performance of existing assets, including renovation, repair and replacement.

3.5.25 *Reliability of Asset/Process* — Probability that a device, system, or process will perform its prescribed function without failure for a given time when operated correctly in a specified environment.

3.5.26 *Repair* — Rectification of a breakdown or damage and action taken to prevent breakdown.

NOTE — Repair can be planned like preventive maintenance or unplanned in the case of damage.

3.5.27 *Replacement* — Installation of a new asset in place of existing asset, which incorporates the function of the existing asset.

3.5.28 *Service Life* — Period of time after installation during which an asset or an asset system meets the expected technical and functional requirements.

3.5.29 *Stormwater Management* — Co-ordinated activities to achieve the objectives of stormwater systems in a catchment area.

NOTE — Storm water systems are not designed for the calamities like cloud burst, dam break, tsunami etc.

3.5.30 *Stormwater System* — System for the collection, storage and conveyance of stormwater including sustainable drainage systems.

NOTES

1 A stormwater system can include combined sewer systems or separate sewer systems, which can incorporate green infrastructure or source controls.
2 A catchment can contain more than one stormwater system.
3 A stormwater system does not include separate sewers, river basins or receiving waters.
4 Interactions can exist between the stormwater system and sewers, river basins or receiving waters.

3.5.31 *Sustainable Stormwater System* — Solution(s) to manage stormwater which mimic(s) natural hydrological processes such as wetland, pond, infiltration trench, swale, rain water harvesting structures etc.

NOTE — Sustainable drainage systems are a type of green infrastructure and a drainage management approach included within integrated planning strategies such as water-sensitive design and low- impact design.

3.5.32 *Transmission Main* — Asset system for transportation of water from a source to an area where the water is treated, stored, or distributed.

3.5.33 *Wastewater Collection System* — Systems that collect, transport the wastewater from the source to the wastewater facilities.

3.5.34 *Wastewater Conveyance System/Wastewater Transport System* — Wastewater network system of conduits including pumping station used to transport wastewater.

NOTES

1 A system typically begins with connecting pipes from buildings to one or more levels of larger sewer pipes, which terminate at a wastewater treatment plant.
2 Flow in sewer pipes can be by gravity flow, pumped flow or a combination of the two.

3.5.35 *Wastewater System* — Systems providing the functions of collection, transportation, treatment of wastewater and discharge of treated effluent and safe disposal of waste residues.

3.5.36 *Wastewater Treatment Plant* — Asset systems to treat wastewater upto specified level by physical, biological and/or chemical means.

NOTE — The wastewater treatment plant can contain primary, secondary, tertiary facilities like, screens, sedimentation tanks, aeration tanks, filters, lagoons, sludge treatment facilities, chemical facilities, odour control and outflow facilities.

3.5.37 *Waterworks* — Asset system for collection, treatment, pumping, transportation, storage, and distribution of drinking water.

NOTE — Water works for public water supply include a lake, river, spring, well, pump with or without motor and accessories, impounding reservoir, cistern tank, filters, tanks, dosing equipment, conveyance systems whether covered or open sluice, water main, pipe, culvert, engine and any machinery, land, building etc. for supply or used for storing, treating and supplying water.

3.6 Terms Related to Process

3.6.1 *Accuracy* — Closeness of agreement between a measured and the accepted reference value.

NOTE — The term accuracy, when applied to a set of measures, involves a combination of random components and a common systematic error or bias component.

3.6.2 *Assessment* — Process, or result of this process, comparing a specified subject matter under specified scope with relevant references.

3.6.3 *Audit* — Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent

to which the audit criteria are fulfilled.

NOTES

1 An audit can be an internal audit (first party) or an external audit (second party or third party), and it can be a combined audit (combining two or more disciplines).
2 An internal audit is conducted by the organization itself, or by an external party on its behalf.
3 'Audit evidence' and 'audit criteria' are defined in IS/ISO 19011.

3.6.4 *Basic Technology* — Basic equipment or processes required to treat water and wastewater to meet the quality requirements as per the specified standards.

3.6.5 *Benchmark* **—** Single value, representing an accepted reference value derived either from comparisons among participants or from literature, used for orientation.

NOTES

1 The benchmark can be determined collaboratively or individually.
2 By clustering, different benchmarks can occur for different peer groups.

3.6.6 *Benchmarking* — Systematic and continual process for the identification of, becoming acquainted with and adoption of successful practices to be attained or performed.

NOTE — Benchmarking at utility level means that the object of benchmarking is the water utility and the main tasks are, for example, drinking water and wastewater services.

3.6.7 *Benchmarking Object* — Public or private utilities, utility sectors, functions, processes, tasks, services or other products, which are the subject of benchmarking and, with clear-cut interfaces, are dissociated from each other and from non-investigated objects such as Sewer construction, pipe network operation etc.

3.6.8 *Biodegradation* — Degradation of organic matter (either natural or synthetic) into elements like water, carbon dioxide, biomass etc., as a result of enzymatic action of micro-organisms (aerobic and anaerobic).

3.6.9 *Clustering* — Grouping of benchmarking objects according to different kinds of criteria (context information or explanatory factors) in order to create rather homogenous sets of peers. Such as Clustering by performance indicators, utility size, delivered volume, served population, network delivery rate (m^3/ km/year).

3.6.10 *Confidence Grade* — Assessment of the quality in terms of accuracy, repeatability and reliability.

3.6.11 *Deviation from Benchmark* — Result of the comparison of performance indicators, as the difference of an observed value from the benchmark applied.

3.6.12 *Disintegration* — Physical breakdown of a material into simpler fragments.

3.6.13 *Dispersion* — Distribution of organic/inorganic matter in the environmental matrices after disintegration.

3.6.14 *Event Detection Process* — Detection of set of interrelated or interacting activities which transforms inputs such as data or information on an actual or catastrophic event into outputs (to rectify the operational activities).

3.6.15 *Land Treatment* — Process in which the organic waste/digested sludge is applied onto a land surface for bacterial breakdown under natural conditions in the environment.

3.6.16 *Monitoring* — Determining the status of a system, a process or an activity.

3.6.17 *Process* — Set of interrelated or interacting and continuous activities that use inputs to deliver an intended result.

NOTES
1 Whether the 'intended result' of a process is called an output, product or service depends on the context of the reference.
2 Inputs to a process may be the outputs of other processes and outputs of a process may be the inputs to other processes.
3 Two or more interrelated and interacting processes in series can also be referred to as a process.
4 Processes in an organization are generally planned and carried out under controlled conditions to add value.
5 A process where the conformity of the resulting output cannot be readily or economically validated is frequently referred to as a 'special process'.
6 In benchmarking, organizational and technical processes and combinations of both of them are considered. A process within the meaning of benchmarking comprises a combination of one task with one plant/one object (operate sewer network, treat wastewater, treat drinking water, provide domestic connection, further train staff, purchase material).
7 In service standards the term 'process' can have a broader meaning than its narrower interpretation in management system standards. For example, an asset system (a water/wastewater treatment system) can contain a set of assets that interact or are interrelated and can be called a 'process'. So, in service standards the term 'process' can be interpreted more widely than simply meaning 'activities'.

3.6.18 *Procedure* — Specified way to carry out an activity or a process.

3.6.19 *Settling* — Process by which discharged dispersed material gets deposited at lower levels of water column (still and flowing) under gravity.

3.7 Terms Related to Requirement

3.7.1 *Corrective Action* **—** Action such as rework or repair to eliminate a detected nonconformity and to

prevent its recurrence.

NOTE — Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence.

3.7.2 *Compliance Obligation* — Legal or other requirement that an organization has to or chooses to comply with.

3.7.3 *Conformity* — Fulfilment of a requirement under a specified scope.

3.7.4 *Nonconformity* — Non-fulfilment of a requirement under a specified scope.

3.7.5 *Requirement* — Need or expectation that is stated and implied.

3.7.6 *Specification* — Document defining requirements for performance of a product.

3.8 Terms Related to Performance

3.8.1 *Continual Improvement* — Recurring activity to enhance performance through the use of audit findings, analysis of data, management reviews or other means.

NOTES

1 Process includes finding opportunities and measures for enhancement of performance.

2 The nature of the activity can differ between cycles of recurrence.

3.8.2 *Data Variable* — Technical or economic parameter for the description of benchmarking objects as a basis for thecalculation of performance indicators such as Energy in (kWh/year), Biochemical Oxygen Demand (BOD)/Chemical Oxygen Demand (COD) in (mg/litre or ppm) or any other relevant water quality parameter, costs in (Rs/year) or treated water quantities in (m^3/year).

NOTES

1 The basis for resilient performance indicators is a clear definition of the parameters within a structured data model considering the data confidence like reliability, accuracy.

2 Each variable should:

a) fit the definition of the performance indicator or context information it is used for,

b) refer to the same geographical area and the same period or reference date as the performance indicator or context information it will be used for, and

c) be as reliable and accurate as the decisions based on it require.

3.8.3 *Explanatory Factor* — Reason for deviations of performance indicators.

NOTE — Explanatory factors can be differentiated into modifiable components (energy consumption) and non- or only long-term modifiable components (water source). Non- or only long-term modifiable components result from the context information of the water utilities. For the interpretationof performance indicator results, explanatory factors are essential.

3.8.4 *Improvement Potential* — Deviation of a performance indicator from the benchmark.

3.8.5 *Indicator* — Parameter, or a value derived from parameters, which provides information about a subject matter with a significance extending beyond that directly associated with a parameter value.

NOTE — Indicators can refer to context, conditions, means, activities or performances.

3.8.6 *Performance* — Measurable result of qualitative or quantitative findings.

NOTE — Performance can relate to the management of activities, processes, products including services, systems or organizations.

3.8.7 *Performance Category* — Classification of the general objectives of processes/activities of drinking water, wastewater and stormwater services.

NOTES

1 The main categories are reliability, quality, customer service, sustainability, and economic efficiency.

2 Assessment criteria can be grouped by performance categories.

3.8.8 *Performance Indicator* — Process parameters with set and prescribed goals of water utility to achieve accuracy.

NOTE — Performance indicators are means to measure the efficiency and effectiveness of process.

3.8.9 *Performance Indicator Comparison* — Comparison of values of performance indicators against a target value; previous values of the same indicator; or values of the same indicator from other utilities.

3.8.10 *Performance Indicator System* — Controlled compilation of performance indicators, which are related to each other either logically or mathematically and which, overall, are aimed at a common, superior objective or benchmarking object.

3.8.11 *Reference Parameter* — Data variable used in the denominator of a performance indicator.

NOTES

1 The reference parameter is aligned with the specific benchmarking object described by the specific performance indicator (treated (waste)water quantity, influent loading, influent or connected inhabitants plus population equivalents).

2 In the case of benchmarking of the whole drinking water, wastewater or stormwater service, the denominator should represent one dimension of the system (number of service connections, total water main length, annual costs). This allows for comparisons through time, or between systems.

3.8.12 *Service Assessment Criteria* — Relationship between objectives and performance indicators.

ANNEX A
(*Foreword*)

COMMITTEE COMPOSITION

Drinking Supply, Wastewater and Stormwater Systems and Services Sectional Committee, SSD 14

Organization	*Representative(s)*
Military Engineer Services, New Delhi	SHRI SUNEEL KUMAR ARORA **(*Chairperson*)**
Central Pollution Control Board, New Delhi	SHRI VISHAL GANDHI SHRI DANISH MEENA (*Alternate*)
Central Public Health and Environmental Engineering Organization, New Delhi	DR RAMAKANT
Central Public Works Department, New Delhi	SHRI DIVAKAR AGRAWAL SHRI CHANDRA SHEKHAR AZAD (*Alternate*)
Centre for Science and Environment, New Delhi	DR SUMITA SINGHAL
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Indian Institute of Toxicology Research, Lucknow	DR PREETI CHATURVEDI BHARGAVA DR SATYAKAM PATNAIK (*Alternate*)
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Military Engineer Services, Bengaluru	SHRI PADMANABH MANIYAR

Organization	*Representative(s)*
Ministry of Environment Forest and Climate Change, New Delhi	DR DHARMENDRA KUMAR GUPTA MS BHAWNA SINGH (*Alternate*)
Ministry of Jal Shakti, Department of Drinking Water and Sanitation, New Delhi	SHRI SAMIR KUMAR
National Environmental Engineering Research Institute (NEERI), Nagpur	DR PRANAV NAGARNAIK DR P. K. LABHASETWAR (*Alternate*)
National Institute of Disaster Management, New Delhi	PROF CHANDAN GHOSH PROF AMIR ALI KHAN (*Alternate* I) PROF AJINDER WALIA (*Alternate* II)
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Public Health Engineering Department, West Bengal	SHRI HEMANTA KOLEY SHRI SOUMITRA CHAKRABORTY (*Alternate*)
Quality Council of India, New Delhi	MS ANUJA ANAND
Saviram Engineering Consultants Private Limited, Civil Engineering Department, Noida	SHRI GIRISH CHANDRA MISHRA
The Energy and Resources Institute, New Delhi	DR SONIA GROVER MS NIYATI SETH (*Alternate*)
Voluntary Organisation in Interest of Consumer Education (VOICE), New Delhi	SHRI B. K. MUKHOPADHYAY SHRI K. C. CHAUDHARY (*Alternate*)
Water and Power Consultancy Services Limited, Gurugram	SHRI RAJAT JAIN
In personal capacity (*House no 7 Northex Model Town Extension, New Delhi*)	SHRI R. S. TYAGI
In personal capacity (*C/o 'A' Mess, Near Div Chowk, Durpin Dhara, Kalimpong, West Bengal*)	COL A. K. CHAUBEY
In personal capacity (*Flat No 103, H. No.3-3-108/Kr/103, Sv Enclave, New Friends Colony-2, Attapur, Hyderabad*)	SHRI RAJESHWAR RAO BANDARI
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Member Secretary
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SCIENTIST 'B'/ASSISTANT DIRECTOR
(SERVICE SECTOR DEPARTMENT), BIS

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Organization	*Representative(s)*
Central Public Health and Environmental Engineering Organization, Ministry of Housing and Urban Affairs, New Delhi	DR RAMAKANT **(*Convener*)**
CSIR - Indian Institute of Toxicology Research, Lucknow	DR PREETI CHATURVEDI BHARGAVA
Military Engineer Services, Bengaluru	SHRI PADMANABH MANIYAR
National Institute of Hydrology, Roorkee	DR RAJESH SINGH
The Institution of Engineers, New Delhi	SHRI J. C. SINGHAL
Water and Power Consultancy Services Limited, Gurugram	SHRI RAJAT JAIN
In Personal Capacity, (*House No. 7 Northex, Model Town Extension, New Delhi*)	SHRI R. S. TYAGI

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