GUIDELINES ON SANITATION LEVY AND TRADE EFFLUENT SURCHARGE BY WATER SERVICE PROVIDERS IN KENYA

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TABLE OF CONTENTS

Table of Contents

LIST OF FIGURES

FOREWORD

Sustainable sanitation financing is a key requirement for the realization of the constitutional right to reasonable standards of sanitation and a clean and healthy environment, and for the attainment of universal access to safely managed sanitation. The overarching policy goal of these Guidelines is to ensure access to safe sanitation for all, reduce the proportion of untreated wastewater and substantially increase recycling and safe reuse by 2030. The primary purpose of the Guidelines is to ensure sustainable financing of non-sewer sanitation services across the service, and to implement the polluter pays principle to help WSPs control and monitor the volumes and quality of trade effluent discharged into the public sewer system so as to reduce pollution to the environment, harm to human health, and damage to the sewerage system.

The Guidelines are aligned with the Constitution of Kenya 2010, the Kenya Vision 2030, the Sustainable Development Goal 6, the Kenya Environmental Sanitation and Hygiene Policy (KESHP) 2016-2030, the Draft Sessional Paper on National Water Policy (25 February 2019), the National Environment Policy, 2013, the Water Act 2016, the Public Health Act Cap 242, the Environmental Management and Co-ordination Act, 1999, the WASREB Tariff Guideines, the WASREB Drinking Water Quality and Effluent Monitoring Guidelines 2008 and the Environmental Management and Co-Ordination (Water Quality) Regulations, 2006.

The Guidelines provide an enabling framework for the WSPs to establish and manage sanitation levies and trade effluent surcharges within their service areas. The aim is to generate additional revenues for the provision of safe onsite or non-sewer sanitation services across the service chain and to effectively control and monitor the quality of trade effluent discharged into the public sewer system and the environment in accordance the prescribed effluent discharge and quality standards, guidelines and regulations. . The Guidelines articulate the legal and policy framework for the establishment and administration of the sanitation levies and trade effluent surcharges by WSPs service areas including the mandates of key institutions involved. The Guidelines set out the guiding principles for the establishment, administration and application of sanitation levies and trade effluent surcharges by WSPs. The Guidelines outline the requirements and procedures that the WSPs should follow in establishing sanitation levies and trade effluent surcharges as well as the framework for WASREB to consider in approving WSPs applications for the establishment of sanitation levies or trade effluent surcharges. The Guidelines also provide guidance on the administration and application of the approved sanitation levies and trade effluent surcharges by WSPs.

These Guidelines are meant to guide the WSPs in preparing applications to establish sanitation levies and trade effluent surcharges for submission to the Water Services Regulatory Board for approval, and in administering the approved sanitation levies and trade effluent surcharges. The Guidelines also seek to guide the Regulatory Board in considering WSPs applications for the establishment of sanitation levies and trade effluent surcharges and in monitoring and regulating the implementation of the approved sanitation levies and trade effluent surcharges. The Guidelines have been developed by WASREB with the technical assistance from the Water and Sanitation for the Urban Poor (WSUP) and World Bank 2030 Water Resources Group.

Finally, it is envisaged that these Guidelines will catalyze and fast track the WSPs efforts towards ensuring that all Kenyans fully enjoy their guaranteed constitutional rights to safely managed sanitation and a clean and healthy environment. They also provide an enabling framework for the realization of the *SDG 6 commitment* to increasing access to adequate and equitable sanitation and hygiene for all, improving water quality by reducing pollution, halving the proportion of untreated wastewater, and substantially increasing recycling and safe reuse by 2030.

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GLOSSARY/ DEFINATION OF TERMINOLOGIES.

Activated sludge: This refers to an aqueous suspension of micro-organisms cultivated in a waste treatment process to break down organic matter into carbon dioxide, water, and other inorganic compounds.

Adequate sanitation: This refers to a sanitation facility that provides privacy and separates human excreta from human contact.

Advanced (tertiary) treatment: This is the treatment step added after secondary treatment stage to remove specific pollutants, such as nutrients, suspended solids, organics, heavy metals or dissolved solids (such as salts).

Amortization: Amortization relates to the financing of capital investments and describes the regular payments to providers of finance of interest on the debt and phased repayments of the principal or capital borrowed.

Basic sanitation: This refers to access to and the use of improved sanitation facilities that ensure hygienic separation of human excreta from human contact. They include flush or pour-flush toilet/latrine to a piped sewer system, a septic tank or a pit latrine; ventilated improved pit latrine; pit latrine with slab and composting toilet.

Biogas: Gas consisting mainly of methane produced by anaerobic digestion of organic waste.

Capital expenditure (Capex): Means expenditure on new fixed assets or expenditure on enhancing the quality or service of an existing system of fixed assets.

Capital maintenance charges/ expenditure (CapManex): Means expenditure on asset renewal and replacement, based upon serviceability and risk criteria. Accounting rules may guide or govern what is included under capital maintenance and the extent to which broad equivalence is achieved between charges for depreciation and expenditure on capital maintenance.

Charges: Includes fees, levies, surcharges and premiums of any kind.

Collection: Means the gathering of waste, including the preliminary sorting and storage of waste for the purposes of transport to a waste treatment facility.

Communicable diseases: Mean infectious diseases transmissible by direct contact with an infected individual or the individual's discharges or by indirect means.

Composting latrine/composting toilet: These facilities - also called biological toilets, dry toilets and waterless toilets - contain and control the composting of excreta, toilet paper, carbon additive, and, optionally, food wastes.

Contamination: Means the presence of an infectious or toxic agent or matter on a human or animal body surface, in or on a product prepared for consumption or on other inanimate objects, including conveyances, that may constitute a public health risk;

Conveyance: Means a sewer pipe, vehicle or other means of transportation of sludge, wastewater or other waste to a treatment facility or disposal site;

Cost of capital: Expenditure on the weighted average cost of capital representing interest payments on debt and dividend payments to the equity providers, weighted according to the balance of debt and equity. Note that not all providers of capital will be requiring these returns on their contribution (grant funds for example) but there is then an opportunity cost of that capital which needs to be recognised.

Cost Recovery: Measures the extent that user fees and any other direct contributions, for example voluntary labour, are adequate to meet the cost of providing a service.

Cost reflective charging or pricing: The principle that for economic and allocative efficiency, total direct user fees should reflect the total service costs, that is be approximately equal to the total service costs.

Cost reflective revenue distribution: Revenue (collected under cost reflective charging or pricing) should be distributed/shared out to reflect the costs incurred by the organisations involved in service delivery, both direct and indirect.

County government: Means a county government provided for under Chapter 11 of the Constitution Kenya;

Depreciation: An accounting measure of the extent to which the value of fixed assets have been used up in any particular period in the provision of services. Where fixed assets are required to continue facilitating that service in perpetuity, the depreciation charge should equate to the cost of long-term capital maintenance.

Desludging: Refers to the removal of accumulated sludge from septic tanks, aqua-privies or a treatment facility.

Disability Adjusted Life Years (DALYs): Public health metric of healthy life years lost to disease due to both morbidity and mortality, adjusted for disability.

Disease: Means any condition that causes disruption to the normal functions of a body tissue, organ, or entire organism.

Disinfection: The inactivation of disease-causing organisms using chemicals, radiation (including solar), heat or physical separation processes.

Disposal: Means removal of waste, including its deposits, destruction, treatment, discharge or burial.

Dwelling: means any house, room, shed, hut, cave, tent, vehicle, vessel or boat or any other structure or place whatsoever, any portion whereof is used by any human being for sleeping or in which any human being dwells.

Ecological Sanitation (Ecosan): Sanitation facility the design of which strives to protect ecosystems, and treats excreta as a valuable resource to be recycled. The term is widely understood to reflect this general approach to excreta management, but Ecosan technology often implements the approach through the separation of urine and faeces at the level of the individual toilet.

Economic objectives: The efficient allocation of resources is an important consideration in developing pricing policies for services. Economic theory suggests that optimum allocation of resources is achieved when price equals the marginal cost of supplying the service, which is the increment to total cost of producing and delivering an additional unit of output under specified circumstances. Economic theory also highlights important divergences between economic costs, social costs and, environmental impacts (due for example to external effects) which should be taken into account.

Effluent: Means gaseous waste, liquid or other fluid of domestic, agricultural, trade or industrial origin treated or untreated and discharged directly into a public sewer system, water body or environment.

Enabling Environment: This comprises laws, policies, financial instruments, formal organizations and partnerships which together support provision of sanitation services and promote needed changes in hygiene practices as well as access to technology.

Environmental health: Means the practice of preventing human injury and illness and promoting wellbeing by limiting exposure to hazardous physical, chemical and biological agents in air, water, soil, food and other environmental media or settings that adversely affect human health.

Environmental sanitation: Consists of a wide range of facilities and services required for the safe management of excreta. This includes hygienic containment, collection, conveyance and treatment and disposal of human excreta, wastewater and other waste. It aims to create and maintain an environment conducive to human health, reduce human exposure to diseases, and measures to break the cycle of diseases. Environmental sanitation involves appropriate behaviours as well as the availability of suitable facilities, which work together to form a clean, hygienic, safe and healthy environment.

Excreta: Refers to human faeces and urine.

Faecal sludge: Faecal sludge is the solid or settled contents of pit latrines and septic tanks. Faecal sludge differs from sludge produced in municipal wastewater treatment plants. The physical, chemical and biological qualities of faecal sludge are influenced by the duration of storage, temperature, intrusion of ground water or surface water in septic tanks or pits, performance of septic tanks, and tank emptying technology and pattern.

Faecal-oral transmission: The passage or transfer of disease whereby pathogens in faecal particles pass from one host to another via the mouth.

Financial sustainability: Describes the extent to which an organization contributes in a committed, long-term manner to support services, either through full cost recovery, user fees or a combination of user fees and societal contributions. Full financial sustainability implies that the organization has access to sufficient revenues and societal contributions to cover operating and minor maintenance costs, capital maintenance costs, debt service on loans and dividend payments on equity capital where required. In addition it implies financeability', that is the ability to generate sufficient funds to ensure adequate interest cover on loans, to meet the timing or cash flow requirements for repayments of debt capital and to be able to finance a proportion of capital expenditures from internally generated funds. Where service providers or utilities operate commercially, the rate of return on assets is a useful test of their financial sustainability.

Financial year: Means the period of twelve months ending on the thirtieth June in every year;

Gender: Gender entails the social construction of roles and relationships of women and men, including how they cooperate and share work, make decisions, and exercise control in projects and programmes.

Grey water: Water from the kitchen, bath, laundry and other domestic activities which should not normally contain much excreta.

Ground water: This refers to the water of underground streams, channels, artesian basins, reservoirs, lakes and other bodies of water in the ground, and includes water in interstices below the water table.

Hazardous waste: Means any waste which has been determined by National Environmental Management Authority (NEMA) to be hazardous waste or to belong to any other category of waste provided for in Section 91 of Environmental Management and Coordination Act (EMCA).

Health: Means a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity.

Health risk: Means phenomena or substances that have the potential to cause disruption or damage to human health.

Hygiene: Means a set of conditions and practices that help to maintain good health and prevent the spread of diseases. It consists of behaviors and practices related to preservation of good health and maintenance of healthy living environment including safe containment of human excreta, hand-washing with soap or the safe disposal of excreta. Good hygiene is thus the practice of keeping oneself and one's surroundings clean, especially in order to prevent the spread of disease.

Hygiene education: An element of hygiene promotion concerned with educating people about how diseases spread; for example, through the unsafe disposal of excreta or by not washing hands with soap after defecation.

Hygiene promotion: A planned and systematic approach to preventing sanitation-related diseases through the widespread adoption of safe hygiene practices. It aims to enable people to take action to prevent or mitigate water, sanitation and hygiene related diseases. It begins with and is built on what local people know, do and want. It entails encouraging people to adopt behaviours that embody safe hygiene practices the form the basis of cleanliness and good health.

Improved sanitation: Means the use of sanitation facilities that ensure safe and hygienic separation of human excreta from human contact. They include flush or pour-flush toilet/latrine to a piped sewer system; a septic tank or a pit latrine; ventilated improved pit latrine; pit latrine with slab and composting toilet that complying with at least minimum health and safety standards.

Improved sanitation facility: An improved sanitation facility is one that hygienically separates human excreta from human contact, thus creating barriers to prevent the transmission of diseases. To be effective, the facility must be correctly constructed and properly maintained in a way that confers maximum health benefits to the user.

Infectious disease: Means any disease or condition which can be communicated directly or indirectly by any person suffering therefrom to another person.

Insanitary conditions: Means such conditions or circumstances as might contaminate food or might render the same and the environment injurious to health;

Licence: Means a licence in force under Water Act No. 43 of 2016.

Licensee: Means a water service provider licensed by the Regulatory Board under the Water Act No. 43 of 2016.

Life Cycle costs: Refers to costs that at least maintain the life of an asset and include cost of capital and operation and maintenance over the economic life of the asset.

Marginalized community: Has the meaning assigned to it under Article 260 of the Constitution of Kenya.

Marginalized group: Has the meaning assigned to it under Article 260 of the Constitution;

Networked Sanitation: Refers to piped waste water collection (sewerage), treatment and disposal, combining a number of houses or sources of waste. The waste network might discharge directly to a convenient water course but preferably, if less affordably, the waste will receive some form of treatment, with possible levels including primary (sedimentation), secondary (biological treatment) and most unusually tertiary where there is a demand for immediate re-use. Treatment processes also necessarily include some level of sludge treatment. A networked sanitation system anticipates a customer orientation in the supply of services where cost reflective tariffs are viable.

Night soil: Human excreta transported without flushing water.

Non-Networked Sanitation: Refers to on-plot and on-site sanitation which is widely used in rural and many urban areas. It anticipates a household orientation towards the supply of services where direct household payments for services delivered are more significant than ongoing user fees.

Non-Revenue Water (NRW): Refers to the difference between the amount of water produced for distribution and the amount of water billed to customers. It measures the efficiency of the WSP in delivering the water it produces to the customer take-off point. It captures both technical losses (leakages) and commercial losses (illegal connections/water theft, metering errors and unbilled authorised consumption).

Nuisance: Means any act, omission or thing occasioning or likely to occasion injury, annoyance, offence, harm, danger or damage to the sense of sight, smell or hearing, or which is or is likely to be injurious or dangerous to health.

Offensive trade: Includes the trades of blood-boiler, bone-boiler, fellmonger, soap-boiler, tallow-melter and tripe-boiler, and any other noxious or offensive trade, business or manufacture whatsoever.

Off-site sanitation: This refers to the system of sanitation whereby excreta and wastewater is removed from the place occupied by the dwelling and its immediate surroundings through a network of sewer systems to a treatment site.

On-plot sanitation: Refers to the various types of pit latrine and septic tank which dispose of human wastes within the boundaries of the housing plot.

On-site sanitation: This refers to the system of sanitation whereby the means of human excreta collection, storage and treatment (where this exists) are contained within the place occupied by the dwelling and its immediate surroundings. Examples are the use of pit latrines and septic tank systems with soak away of liquid waste. On-site sanitation might also include a limited network from a small number of households discharging to a communal septic tank or treatment plant on the site. It consists of non-sewer sanitation services across the service chain including the associated containment facilities such as latrines, septic tanks and conservancies, emptying, collection, transportation, storage and treatment, disposal/end-use services.

Operating and minor maintenance expenditures (Opex): Refers to expenditure on labour, fuel, chemicals, materials, plant & equipment, overheads or support costs etc.

Operation and maintenance (O&M) cost coverage: Refers to the extent to which internally generated funds cover the cost of running a WSP. It is the first step towards full cost coverage. It ensures long term financial sustainability.

Organic matter: Includes materials which come from animal or vegetable sources. Organic matter generally can be degraded by micro-organisms.

Owner: As regards immovable property, includes any person receiving the rent or profits of any lands or premises from any tenant or occupier therefore or who would receive such rent or profits if such land or premises were let whether on his/her own account or as an agent for any person entitled thereto or interested therein, and includes any lessee or licensee from the government and any superintendent, overseer or manager of such lessee or licensee residing on the holding;

Pathogens: Mean disease causing organisms. The main organisms that pose a threat to health related to poor sanitation are pathogenic bacteria, viruses, parasitic protozoa and helminths excreted in large numbers from infected individuals. Many of these organisms have low infectious doses (helminths, protozoa and viruses) which means that only small quantities of infectious agents are needed to infect a new host (the infective dose varies between organisms and with respect to the susceptibility of the exposed individual).

Personal hygiene: Keeping the body clean to prevent disease.

Pit latrine: Latrine with a pit for collection and decomposition of excreta and from which liquid infiltrates into the surrounding soil.

Pollutant: Includes any substance whether liquid, solid or gaseous which— may directly or indirectly alter the quality of any element of the receiving environment; is hazardous or potentially hazardous to human health or the environment; and includes objectionable odours, radio-activity, noise, temperature change orphysical, chemical or biological change to any segment or element of the environment.

Polluter-pays principle: Means that the cost of cleaning up any element of the environment damaged by pollution, compensating victims of pollution, cost of beneficial uses lost as a result of an act of pollution and

other costs that are connected with or incidental to the foregoing, is to be paid or borne by the person convicted of pollution under applicable law.

Pollution: Means any direct or indirect alteration of the physical, thermal, chemical, biological, or radioactive properties of any part of the environment by discharging, emitting, or depositing wastes so as to effect any beneficial use adversely, to cause a condition which is hazardous or potentially hazardous to human health, safety or welfare, or to animals, birds, wildlife, fish or aquatic life, or to plants or to cause contravention of any condition, limitation, or restriction which is subject to a license under applicable legislation.

Pour-flush latrine: Latrine that depends for its operation of small quantities of water, poured from a container by hand, to flush away excreta from the point of defecation.

Premises: Include buildings, sites, grounds, properties or tent together with the land in every tenure on which the same is situated and the adjoining land, and machinery, plant, conveyance or vehicle used in connection with any trade carried on at any premises.

Price differentiation: Price differentiation is used to describe tariffs that reflect the potentially lower costs of the service differentiation approach and also describes the use of tariffs that benefit from cross-subsidies within the sub-sector aimed at the particular needs of different segments of the population, for example a lower tariff for low-income users.

Primary treatment: Refers to initial wastewater treatment process to remove solids which settle by sedimentation and floating objects by physical screening and skimming.

Public health: Means the act of preventing disease and promoting human health through organized efforts and informed choices of society, organizations, public and private communities and individuals.

Public latrine: Means any latrine or toilet to which the public are admitted on payment or for free.

Recycling: Includes the reclamation of waste, recovery of materials, reprocessing of wastes, resource recovery and re-use of waste.

Revenue collection efficiency: Measures the effectiveness of the revenue management system of a WSP. Revenue collected, as opposed to amounts billed, is what impacts on a WSP's ability to fund its operations. Collection Efficiency is a proxy indicator on the commitment of management in optimizing the WSP revenue inflow and is, indirectly, a reflection of customers' willingness to pay and, by extension, their satisfaction with services provided.

Safe: Means that any waste will not cause harm to the environment and human health, in terms of infection and disease or that the waste might be safely recovered or re-used.

Safely managed sanitation: Refers to the use of a safe type of sanitation facility that is not shared with other households and from which the excreta and/or wastewater produced are either safely treated and disposed of in situ, or collected, transported, treated off-site and disposed of, recovered or re-used .

Sanitary conditions: Mean state of being clean, without dirt or other impurities that is conducive for human habitation, work and health.

Sanitary convenience: Includes latrines, borehole latrines, water-closets, earth-closets, chemical-closets, pit-closets, aqua-privies and urinals, used for the disposal of human waste.

Sanitation: Means the hygienic and safe means of managing human excreta and safe disposal of effluent sewage whether on or off site. It also refers to the provision of facilities and services for the safe management of human excreta from the toilet to containment and storage and treatment onsite or conveyance, treatment and eventual safe end use or disposal. More broadly sanitation may also include the safe management of solid waste, animal waste, storm water, trade and industrial effluent.

Sanitation control: Means activities to monitor the enforcement of the legislation, standards and regulations concerning ensuring of sanitary conditions.

Sanitation Promotion: Means activities undertaken to stimulate household demand for, and the supply of sanitation services and facilities necessary to maintain a healthy environment.

Sanitation levy: A special charge by a WSP on domestic and non-domestic customers to support provision and improvement of onsite or non-sewer sanitation services across the service chain within a WSP's service area.

Sanitation service provider: Means an entity or person legally mandated to provide sanitation services.

Sanitation services: Mean services rendered across the sanitation service chain associated with containment, emptying, collection, transportation and treatment of excreta and faecal sludge but do not include sewerage services.

Secondary treatment: This is a wastewater treatment step following primary treatment to remove biodegradable dissolved and colloidal organic matter by using biological processes, such as activated sludge, trickling filters, or various kinds of ponds and lagoon systems.

Septage: Faecal sludge removed from septic tanks.

Septic Tank: A disposal system for human excreta where the waste from water closets is disposed in an underground tank that allows settlement of sludge and disposes the liquid waste into a subsurface drain. The underground tank collects and treats wastewater by a combination of solids settling and anaerobic digestion. The effluents may be discharged into soak pits or small-bore sewers, and the solids have to be pumped out periodically.

Service Costs: Includes the range of expenses incurred in providing sanitation services – routine operation and minor maintenance expenditure; capital expenditure (cost of construction and long-term capital maintenance of facilities) plus costs of financing that capital expenditure. Direct support costs, overheads and appropriate levels of regulation may also be included in service costs.

Sewage: Means human excreta or waste water, flushed along a sewer pipe.

Sewage System: Refers to the infrastructure installation for disposal of wastewater from urban households. It does not cover storm drain systems and industrial affluent disposal systems.

Sewerage: Means a system of sewer pipes, manholes, pumps etc. for the transport of sewage.

Sewerage service: Means the development and management of infrastructure for transport, storage and treatment of wastewater originating from centralized and/or decentralized systems but does not include onsite sanitation facilities and services as defined in the Water Act, 2016.

Sewerage services levy: A charge imposed on all water services within the area of a licensee, to cover a reasonable part of the cost of disposing of the water supplied within those limits.

Sludge: Refers to the concentration of solid and precipitated parts of the sewage deposited on the bottom of septic tanks and ponds, including the waste from the treatment processes. The term sewage sludge is generally used to describe residuals from centralised wastewater treatment, while the term septage is used to describe the residuals from septic tanks.

Sullage: Domestic dirty water not containing excreta. Sullage is also called grey water.

Support costs: Expenditure on direct support costs such as environmental and economic regulation including customer involvement costs. These will be detailed for each of the sub-sectors. Indirect support costs such as capacity building at a national scale are not considered.

Suspended solids: Solids that are in suspension in water or other liquids.
The extent to which this criterion is met through user fees varies widely across countries and sectors. In general, the more commercial utilities (telephones, power) come closest to financial sustainability through cost reflective user fees, while other sectors – especially rural water supply, sanitation, and irrigation – have tended to be more dependent on support from government. These Guidelines support the move towards achieving financial sustainability through user fees, recognising that demands on government resources are such that support is not always forthcoming, particularly for the critical component of capital maintenance.

Tariff: Means a price assigned to a service provided to customers by a public utility. Water tariffs are not charged for water itself, but to recover the costs of water treatment, water storage, transporting water to customers, collecting and treating sewage and wastewater as well as billing and collection. The tariffs are set based on a number of formal criteria defined by law and typically include financial criteria (cost recovery), economic criteria (efficiency pricing based on marginal cost and sometimes environmental criteria (incentives for water conservation).

Tariff Structure: The tariff structure is a schedule of charges for e.g. water services of a public utility. It specifies how much each category of users of water services is charged. These categories include residential, industrial, commercial, low income etc. The structure is useful in ensuring fair charges based on usage for more customer categories and helps institute a pro-poor policy by ensuring lower and affordable tariffs are charged to poor customers.

Trade: Means any trade, business or undertaking whether originally carried on at fixed premises or at varying places which may result in the discharge of substances and energy and includes any activity prescribed to be a trade, business or undertaking.

Trade effluent: Means any liquid waste which is produced and discharged from premises used for a business, trade or industry. It does not include wastewater that is considered to be domestic sewage.

Trade effluent surcharge: Means an extra fee charged by a WSP on the actual volume and strength/quality of the trade effluent discharged from a trade or industrial undertaking beyond the prescribed discharge and quality standards.

Treated sludge: Means sludge which has undergone biological, chemical or heat treatment, long-term storage or any other appropriate process so as to significantly reduce its fermentability and the health hazards resulting from its use.

Urine Diverting Dry Toilet (UDDT): A source-separated solution that ensures the safe capture of faecal sludge into sealed cartridges, containers, or holding tanks. A urine-diverting toilet enables easy usage by residents and work well in urban areas with high density populations.

Ventilated Improved Pit latrine (VIP): Means a pit latrine with a slab and a ventilation pipe to remove foul smells from the pit and vent them to the air above the superstructure roof line. A fly screen is added to the top of the ventilation pipe to control flies.

Waste: Includes: (a) any substance which constitutes scrap materials or an effluent or other unwanted surplus substance arising from the application of any process, and also includes any substance or article which requires to be disposed of as being broken, worn out, contaminated or otherwise spoilt; (b) any matter prescribed to be waste and any matter whether liquid, solid, gaseous, microbiological, chemical or radioactive, which is discharged, emitted or deposited in the environment in such volume, composition or manner likely to cause an alteration of the environment; or (c) such substances and any combination thereof which are discarded by any person or are accumulated or stored by any person for the purpose of recycling as undesirable or superfluous by-products; residue or remainders of any process or activity; and any gaseous, liquid or solid matter that is harmful to human health.

Wastewater: Means the spent or used water from industrial plants, trade premises, homes, communities, farms and businesses that contains enough harmful material to damage the water's quality. Wastewater includes both domestic sewage and industrial waste from manufacturing sources.

Wastewater management: Means the collection, transport, storage, treatment and disposal/end-use of wastewater including the supervision of such operations; after care of disposal sites and actions taken as an agent or service provider.

Waste treatment: Means subjecting waste to any process to decontaminate it for safe disposal, recovery, re-use, reprocessing, reclaiming or recycling;

Water service provider: Means a company, public benefits organization or other person providing water and sanitation services under and in accordance with a licence issued by the Regulatory Board for the service areas defined by the licence;

Works: Means any structure, apparatus, contrivance, device or thing for storing, recharging, treating, carrying, conducting, providing or utilizing water or liquid waste, but does not include hand utensils or such other contrivances as may be prescribed by law.

1. INTRODUCTION AND BACKGROUND

1.1 Introduction

Ensuring sustainable sanitation financing is a key constitutional obligation and target for the realization of the right of every person to reasonable standards of sanitation and a clean and healthy environment as well as the attainment of access to safely managed sanitation for all by 2030. To this end, the Water Act 2016 vests in the Water Services Regulatory Board (WASREB) the power to develop and enforce guidelines for the provision of water and sanitation services. These Guidelines for the Water Service Providers (WSPs) aim to first, ensure sustainable sanitation financing across the service chain to ensure sustainable access to safely managed sanitation; and second, to provide incentives based on the polluter pays principle for the reduction of polluting trade effluent discharges into the sewerage system by trade and industrial undertakings in accordance with the prescribed effluent discharge and quality standards.

1.2 Why sanitation levy and trade effluent surcharges by WSPs?

Water services providers have the twin responsibilities of providing safe, efficient, affordable and sustainable water and sanitation services and regulating the discharge of trade effluent into the public sewer systems within their service areas in accordance with the prescribed standards based on the Regulatory Board's approved tariff structure. Broadly, the aim of the WASREB Tariff policy[1] is to:

a) Ensure that WSPs are self-financing, operate on a commercially sustainable basis and that each WSP recovers the full cost of providing water and sanitation services to their customers in the medium to long-term. Full cost recovery means that the total cost of providing service (including operating costs, capital costs, and administrative/regulatory costs) are met;
b) Ensure that the human right of every person to access sufficient, safe, acceptable, physically accessible and affordable water and sanitation services is fulfilled;
c) Ensure that water and sanitation services are provided efficiently and that service levels are improved over time to prescribed standards; and
d) Provide incentives for conservation by ensuring that the tariffs reflect the true cost of water including the economic value of raw water and costs of abstraction, treatment and distribution.

Despite these tariff policy objectives, the WSPs service landscape, however, is characterized by:

a) Low safe sanitation service coverage within all WSPs service areas throughout the country;
b) Inadequate revenue bases among WSPs based on the currently restricted tariffs to effectively and fully execute their service provision and regulatory mandates. For example, in 2019, only one out of four of the 86 publicly owned utilities fell within the sector benchmark for 'operational sustainability'[2] but even so, their revenues were still highly inadequate to meet the required service coverage standards including provision of onsite sanitation services within their license areas. Onsite sanitation programs where they exist among the utilities, they almost entirely depend on donor funding which is unsustainable.; and
c) Insignificant public investment to ensure provision of safe sanitation services for all across the service chain.

[1] The WASREB Tariff Guidelines
[2] WASREB Impact Report No 11 of 2019

These challenges underline the need for additional revenues to ensure sustainable access to safe, efficient and affordable sanitation services and effectively control, monitor and regulate the quality of trade effluent discharged into the sewer systems within their services areas.

Levying a trade effluent surcharge on non-compliant clients of WSPs aims to incentivize adherence to the effluent discharge standards outlined in the Environmental Management Coordination Act (EMCA 1999) by transferring the risk posed by untreated or under treated effluent to the polluter so that they internalize the cost of treating the extra load over and above the acceptable quality limits as stipulated in the guidelines.

Section 108 of the Water Act 2016 provides the framework for the trade effluent charging by WSPs based on the polluter pays principles. The consent for industrial and other commercial entities to discharge effluent into the utility's sewer system may therefore be given subject to conditions, including conditions requiring pre-treatment and payments to the WSP of charges for the discharge depending on the quantity and quality of effluent discharged into the WSP's sewer system. The trade effluent surcharge should hence be for specified discharges determined on the basis of actual volume and strength/quality of the effluent discharged from a trade or industrial undertaking into a public sewer system and should correspond to the cost of treatment of the extra load or concentration of polluting effluent discharged and/or abatement measures as guided by the polluter pays principle.

1.3 What is a trade effluent surcharge and what does it seek to do?

Water Service Providers (WSPs) have the mandate for collection, coveyance, tratement and safe disposal of wastewater including operation and maintenance of the sewer network. The sewer networks and wastewater treatment facilities in Kenya are deisgned to collect, treat and dispose of wastewater of domestic strenghth. The discharge of untreated industrial and commercial effluent which typically contains higher concentrations than domestic sewage introduces significant risks to the sewerage system resulting in blockages, formation of toxic gases which create health and safety hazards, corrosion of the sewerage system and creating upset conditions in the sewage treatment plants.

The WSPs, who are mandated to enforce compliance with effluent discharge regulations and standards set out in the Environmental Management Coordination Act (EMCA 1999), require that Industries and other commercial clients who generate Trade Effluent whose concentrations are higher than the domestic standards, to pre-treat their effluent to meet the minimum discharge standards before discharge into the sewer system.

The Trade Effluent Surcharge is an additional charge above the regular sewerage tariff whose aim is to recover the additional cost of treating trade effluent with pollution strength exceeding that of the domestic sewage as provided for in the effluent discharge regualtiosn and standards.

1.1 What is a sanitation levy and what does it seek to do?

Typically, provision of safe sanitation services across the service chain can be paid through a combination of tariffs, taxes and transfers from development partners. Tariffs are what consumers pay directly for services received from a WSP while taxes are what citizens pay to government to support spending for public good and not directly related to services delivered and transfers are ... WASREB however, recognizes that the provision of safe sewered and non sewered sanitation services across the service chain may practically go

beyond the financial capacity of WSPs to provide based on the regular tariff structure whose basic aim is to ensure full cost recovery for water and sewerage services. To this end, Section 5.8 of the WASREB Tariff Guidelines on sanitation service tariff provides that:

> "WSPs that offer or facilitate the development of on-site sanitation services will be eligible for a special sanitation surcharge reflecting real costs that can be added to the tariff. As part of its Business Plan, the WSP must propose the type of services to be provided and estimate the costs. The WSP may also propose a sanitation surcharge to cover these costs as part of its Tariff Adjustment Proposal. As part of the Business Plan, the WSP must propose performance targets related to on-site sanitation and demonstrate achievement of these targets."[3]

1.2 Purpose of the Guidelines

The purpose of these Guidelines is to provide an enabling framework for WSPs to establish and manage sanitation levies and trade effluent surcharges within their service areas to: (a) generate adequate revenue for the provision of safe onsite sanitation services across the service chain; and (b) implement the polluter pays principle to effectively control and monitor the quality and quantity of trade effluent discharged into the sewer system and the environment. Specifically, the Guidelines aim to enable the WSPs within their service areas to:

a) raise sufficient revenue to increase access to, and provide adequate, equitable and sustainable onsite sanitation services within their service areas; and
b) establish and manage a sustainable trade effluent control, monitoring and charging system to reduce the discharge of polluting trade effluent into the sewer system and the environment in compliance with the prescribed regulations, standards and guidelines.

1.3 Scope of the Guidelines

These Guidelines:

a) Set out the guiding principles for the establishment, administration and application of sanitation levies and trade effluent surcharges by WSPs in Kenya;
b) Set out the requirements and procedures that the WSPs should follow in establishing a sanitation levy and trade effluent surcharge;
c) Set out the framework that WASREB will apply when considering a WSP's application for approval of a sanitation levy and trade effluent surcharge; and
d) Set out the framework for the administration and application of the approved sanitation levy and trade effluent surcharge.

[3] WASREB Tariff Guidelines pg.

1.4 Application of the Guidelines

The Water Services Regulatory Board will apply these Guidelines in considering the applications for establishment of sanitation levies and trade effluent surcharges by WSPs within their service areas; and in monitoring and regulating the implementation of the approved sanitation levies and trade effluent surcharges.

The WSPs shall implement the Guidelines in making their applications to the Regulatory Board and in administering the approved sanitation levies and trade effluent surcharges.

Compliance with these Guidelines shall be a condition of license granted to a WSP for provision of sanitation services and regulation of trade effluent discharges into the public sewer systems by trade and industrial undertakings within a WSP's service area.

2. OVERVIEW OF SAFE SANITATION SYSTEM AND SERVICE CHAIN

Sanitation is defined as access to and use of facilities and services for the safe management of human excreta and wastewater from the point of generation to the point of ultimate disposal or end use.[4] Sanitation services refer to the management of human excreta and wastewater from the facilities used by individuals, trade and industrial undertakings involving various types of infrastructure and processes that pass through capture and containment, conveyance, treatment and eventual end use of by products and/or disposal.[5] The Sustainable Development Goal 6 aims to ensure access to adequate and equitable sanitation and hygiene for all by 2030.

SDG target 6.2 calls for adequate and equitable sanitation for all to be tracked through the indicator of "safely managed sanitation services". Safely managed sanitation entails universal, comprehensive and sustainable coverage with focus on safe management along the sanitation service chain and the entire water cycle in order to protect both public health and the environment. This includes:

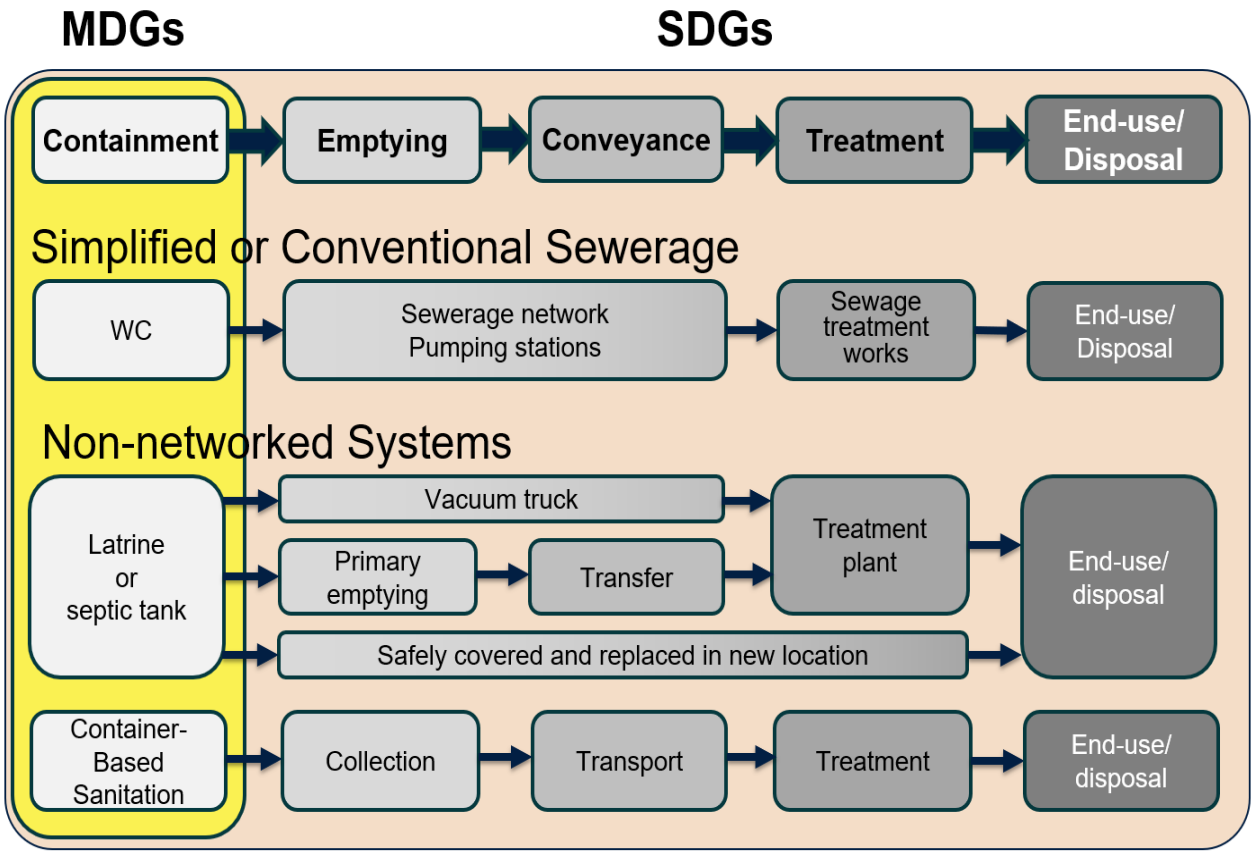
- increasing access to improved and safe water and sanitation services;
- improving water quality by reducing pollution;
- improving performance of wastewater management systems;
- increasing recycling and safe reuse from efficiency of these systems; and
- protecting and restoring water-related ecosystems, including wetlands, rivers, aquifers and lakes.

Achieving safely managed sanitation thus requires an integrated, multi-sectoral and inclusive approach to management and regulation of both sewered and non-sewered sanitation systems and services across the entire service chain based on context specific technology solutions. The Figure 1 shows the sanitation service chain highlighting the shift from MDGs to SDGs approach.

[4] WHO Guidelines on Sanitation and Health, 2018; Regulation Strategy and Framework for Inclusive Urban Sanitation Service Provision Incorporating Non-Sewered Sanitation Services, April 2019, ESAWAS Regulators Association:

[5] Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS) 2020, Guidelines for Inclusive Urban Sanitation Service Provision (Incorporating Non-Sewered Sanitation Services), March 2020

Figure 1: The Sanitation Service Chain

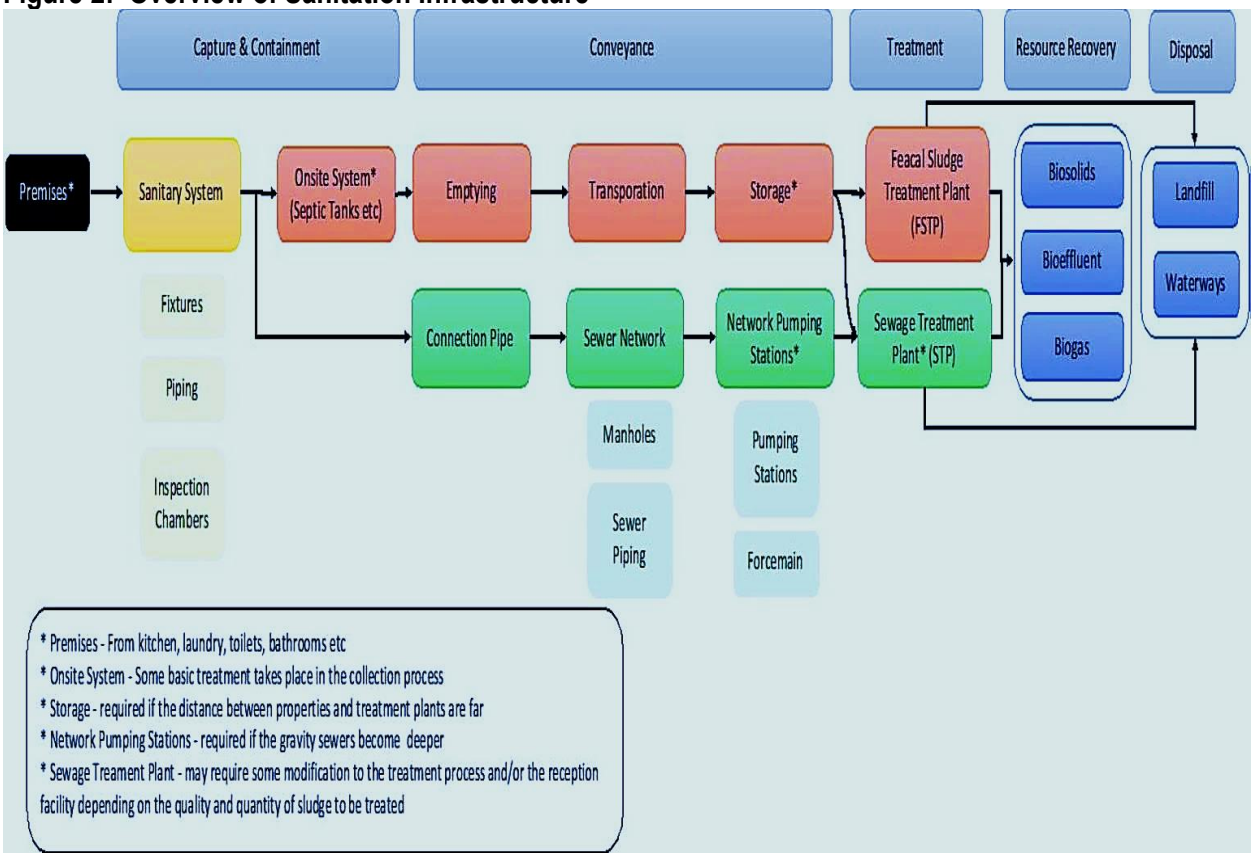


Source: World Bank 2018, The Urban Sanitation SDG: Considering the whole sanitation service chain

A safe sanitation system is thus a system designed and used to manage human excreta and wastewater at all steps of the sanitation service chain from capture and containment through emptying, transport, treatment and eventually final disposal or end use.[6] In these guidelines, a safe sanitation system is a context-specific series of technologies and services for the management of these wastes, i.e. for their containment, collection, transport, treatment, end use and/or disposal.[7] It is important to note that various types of sanitation systems adopt different types of infrastructure/technologies and processes that pass through various functional stages from capture and containment, conveyance, treatment to end use of by products and/or disposal as shown in Figure 2 below.

[6] Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS) 2020, Guidelines for Inclusive Urban Sanitation Service Provision (Incorporating Non-Sewered Sanitation Services), March 2020
[7] Ibid.

Figure 2: Overview of Sanitation Infrastructure



Source: ESAWAS 2020, Guidelines for Inclusive Urban Sanitation Service Provision (Incorporating Non-Sewered Sanitation Services)

2.1 Citywide Inclusive Sanitation

The concept of citywide inclusive sanitation (CWIS) entails the following:

a) everybody benefits from adequate sanitation service delivery outcomes;
b) human waste is safely managed along the whole sanitation service chain;
c) effective resource recovery and re-use are considered;
d) a diversity of technical solutions is embraced for adaptive, mixed and incremental approaches; and
e) onsite and sewerage solutions are combined, in either centralized or decentralized systems, to better respond to the realities found in cities without any contamination to the environment along the entire sanitation value chain.[8]

Citywide inclusive sanitation requires collaboration between many actors, including: national, sub-national and city/municipal governments, utilities and municipal service providers, business and the private sector, civil society including local and international NGOs, donors including bilateral and multilateral agencies and private foundations, the academia and the households. Figure 3 below shows the Citywide Inclusive Sanitation Service Framework.

[8] World Bank, Citywide Inclusive Sanitation: A Call to Action, http://pubdocs.worldbank.org/en/589771503512867370/Citywide-Inclusive-Sanitation.pdf

Figure 3: Citywide Inclusive Sanitation service Framework

Taking into account the devolved structure of decision making and service delivery that vests the management of urban areas in county governments, Kenya has adopted a countywide inclusive sanitation approach incorporating citywide inclusive sanitation approach to sanitation planning at the county level. Countywide inclusive sanitation addresses the entire spectrum of urban and rural sanitation service chain considering administrative mandates and service levels.[9] Box 1 below shows the countywide inclusive sanitation principles.[10]

[9] Nakuru County Government and World Bank 2019, Nakuru CountyWide Inclusive Saniation Investment Plan 2019-2030
[10] Republic of Kenya and World Bank 2019, Kenya Countywide Inclusive Sanitation Strategic Planning: Guidance Note, May 23, 2019

Box 1. Principles of Countywide Inclusive Sanitation

1. ***Everybody benefits*** from adequate sanitation service delivery outcomes
2. Human waste is ***safely managed*** along the whole sanitation service chain
3. Allow for ***integrated planning, design*** and ***service provision***
4. ***Responsibilities*** and service provision mandates are ***clearly defined across*** the rural-to-urban spectrum to address fragmentation and maximize economies of scale while providing customer-oriented services
5. ***Comprehensive approaches*** to sanitation improvements are needed, with long-term planning, technical innovation, institutional reforms and financial mobilization:
   a) A ***diversity of technical solutions*** is embraced, being adaptive, mixed and incremental
   b) ***Effective resource recovery and re-use*** is considered
   c) Combines ***both onsite sanitation*** and ***sewerage solutions***, in either ***centralized or decentralized systems***, to better respond to realities faced in cities
   d) Needs to consider ***complementary services*****: water supply, drainage, greywater, solid waste** and integrate sanitation in other national programs
6. Counties will need to demonstrate ***political will*** and technical and managerial ***leadership***, and to manage ***new and creative ways of funding*** sanitation
7. Emphasize ***changing and sustaining behaviours*** by empowering communities and engaging multiple stakeholders across different sectors affected by sanitation outcomes
8. ***Targeted measures to support the poor and vulnerable*** - financial and non-financial
9. Ensure all ***gaps of the different market segments are filled*** (e.g. rural sanitation and water supply for agglomerated rural communities and for dispersed rural communities)
10. Bolster the robustness of institutions through ***capacity building*** of staff

Source: Republic of Kenya and World Bank 2019, Kenya Countywide Inclusive Sanitation Strategic Planning: Guidance Note, May 23, 2019

2.2 Legal and Policy Framework for the Guidelines

The Government of Kenya has evolved enabling policy and legal frameworks that inform and provide the necessary anchorage for these Guidelines as highlighted below.

2.2.1 Constitutional and Legal Framework

These Guidelines are anchored on the Constitution of Kenya 2010 and informed by several legal instruments. These include Water Act, 2016, Environmental Management and Co-ordination Act 1999, Public Health Act Cap 242, Health Act, 2017, County Governments Act, 2012, Urban Areas and Cities Act, 2011, Standards Act, Intergovernmental relations Act, Physical Planning Act and Public Finance Management Act among others.

The Constitution of Kenya 2010 under Articles 42 and 43 respectively, guarantees the right of every person to a clean and health environment, clean and safe water and to reasonable standards of sanitation. Article 20 (5) (a) (b) specifically requires the State to make available adequate resources for implementation of the rights guaranteed under Article 43 of the Constitution, having regard to prevailing circumstances, including the vulnerability of particular groups or individuals. Articles 22 and 70 of the Constitution provide the basis for enforcement of the constitutional rights to a clean and healthy environment and to reasonable standards of sanitation guaranteed under Articles 42 and 43 of the Constitution and for seeking redress in case of violation of these rights. Article 209 (4) allows both national and county governments to impose charges for the services they provide.

The Water Act 2016 provides the framework for provision and regulation of water and sanitation services including licensing, control and monitoring discharge of trade effluent into sewerage system so as to reduce pollution of the environment; harm to human health; and damage to the sewerage system. Section 109 of the Water Act 2016 gives WASREB the power to impose a service levy on water and sanitation services within the area of a licensee, to cover a reasonable part of the cost of disposing of the water supplied within those limits. A portion of the levy may, with the approval of the Regulatory Board, be set aside by the licensee for use in the expansion of the services within the area of service provision of the licensee. The WASREB Drinking Water Quality and Effluent Monitoring Guidelines 2008 provide the framework for control, monitoring, sampling, sample collection and analysis of effluent and for instituting measures to reduce pollution of the receiving water.

The Environmental Management and Co-Ordination Act (EMCA), CAP 387 provides the framework for water and effluent quality control and monitoring including prohibition of water pollution, licencing of effluents discharge, and monitoring of quality of effluents to be discharged only into sewerage system and for the application of polluter pays principle. The Environmental Management and Co-Ordination (Water Quality) Regulations, 2006 provides the basis for enforcing the effluent discharge regulations and standards including requirement of trade or industrial undertakings with a licence by WSP to: (a) discharge effluent into any existing sewerage system in accordance with the standards set out in the Fifth Schedule to the Regulations; (b) to carry out effluent discharge quality and quantity monitoring in accordance with prescribed methods and procedures of sampling and analysis; and (c) to submit quarterly records of such monitoring in the prescribed form as set out in Sixth Schedule to the Regulations.

Section 72 (2) of EMCA provides that a person found guilty for polluting the environment shall, in addition to any sentence or fine imposed on him or her: (a) pay the cost of the removal of any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants, including the costs of restoration of the damaged environment, which may be incurred by a Government agency or organ in that respect; and (b) pay third parties reparation, cost of restoration, restitution or compensation as may be determined by a court of law on application by such third parties.

The Health Act No. 21 of 2017 under section 68 (2) (a) provides the basis for the national health system to ensure that measures are taken for management of environmental risk by reducing disease burden arising from poor environmental hygiene, sanitation, occupational exposure and environmental pollution.

The Public Health Act Cap 242 provides the framework for taking all lawful, necessary and reasonably practicable measures for maintaining clean and sanitary conditions at all times, and for preventing the occurrence of any nuisance or condition liable to be injurious or dangerous to health. Section 118 of the Public Health Act defines nuisance to include any watercourse, drain, or sewer in such a state that in the opinion of the medical officer of health to be offensive or to be injurious or dangerous to health or any noxious matter, or waste water, flowing or discharged from any premises into any public street, or into any watercourse, irrigation channel not approved for the reception of such discharge.

2.2.2 Policy Framework

The overarching policy goal for these Guidelines is to ensure access to safe sanitation for all, reduce the proportion of untreated wastewater and substantially increase recycling and safe reuse by 2030. The

Guidelines are aligned with the Kenya Vision 2030, the Sustainable Development Goal number 6, The Kenya Environmental Sanitation and Hygiene Policy (KESHP) 2016-2030, the Draft Sessional Paper on National Water Policy (25 February 2019); and the National Environment Policy, 2013. *The Kenya Vision 2030* aims to ensure universal access to water and sanitation by the year 2030 and provides for the application of the right economic incentives and development of enforcement mechanisms targeting pollution management regulations.

The Kenya Environmental Sanitation and Hygiene Policy (KESHP) 2016-2030 envisions a clean, healthy and economically prosperous Kenya free from sanitation and hygiene related diseases and aims to achieve and sustain 100% access to improved rural and urban sanitation; and to increase public investment in sanitation and hygiene from 0.2% to 0.9% of the GDP by 2030. With respect to application of the polluter pays principle, the Policy provides that the polluters, whether individuals or organizations, shall be responsible for all the damages caused by the contamination and pollution resulting from uncontrolled sewage flows, liquid waste disposal, industrial waste discharges and for the required cleanup, treatment or abatement measures. This provides the basis for the operationalization of the Polluter Pays Principle through for example a Trade Effluent Surcharge mechanism.

The Draft Sessional Paper on National Water Policy (25 February 2019) provides a framework for ensuring equitable, efficient, and universal access to water supply and reasonable standards of sanitation, for domestic, economic use and ecosystem sustenance. The Policy also aims to put in place mechanisms and resources to enhance the mainstreaming of affirmative action and gender considerations in water sector planning, decision making and implementation of actions towards progressive attainment of equity and gender equality in the water sector. The National Water Master Plan (NWMP) 2030 aims to ensure that improved water and sanitation are available and accessible to all by 2030. This includes installation of improved on-site treatment facilities for the population not covered by sewerage systems.

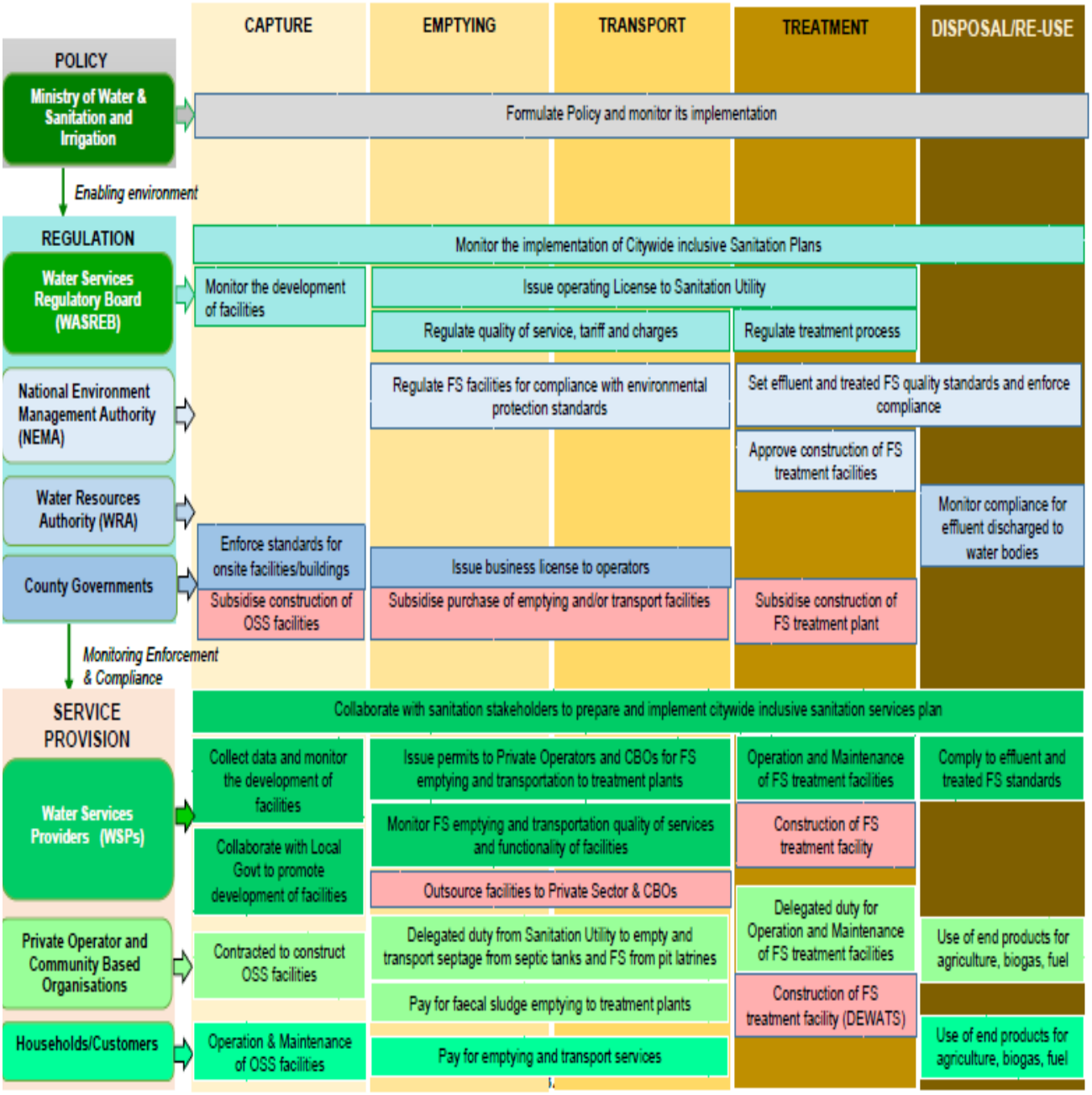
The National Environmental Policy, 2013 aims to improve the management and conservation of water supply sources; promote technologies for efficient and safe water use, especially in respect to wastewater use and recycling; and provide incentives for private sector investment and development of appropriate technologies and infrastructure for wastewater management. In relation to waste management, the policy aims to promote the use of economic incentives to manage waste including waste recovery, recycling and re-use as well as Environmental Health Impact Analysis (EHIA) for all development projects. The Policy in particular provides for the use of Polluter Pays Principle to ensure that polluters bear the full environmental and social costs of their activities. EMCA defines “polluter-pays principle” as the cost of cleaning up any element of the environment damaged by pollution, compensating victims of pollution, cost of beneficial uses lost as a result of an act of pollution and other costs that are connected with or incidental to the foregoing, is to be paid or borne by the person convicted of pollution under the Act or any other applicable law.[11]

2.3 Functional mandates of key sanitation institutions

The implementation and application of these Guidelines is vested in various institutions includng the Water Services Regulatory Board (WASREB), Water and Sanitation Service Providers and the County Governments including urban authorities and any county corporations or agencies with responsibility of providing sanitation services . Figure 4 below shows the roles and responsibilities of stakeholders along the sanitation chain.

[11] Environmental Management and Co-Ordination Act, Chapter 387, Revised Edition 2012 [1999]

Figure 4:: Roles and Responsibilities of Stakeholders along the Sanitation Service Chain



Source: WASREB 2020

2.3.1 Mandate of the Water Services Regulatory Board (WASREB)

Section 70 of the Water Act No. 43 of 2016 establishes the Water Services Regulatory Board to regulate the provision of water and sanitation services throughout the country. This includes the mandate to:

a) Oversee the implementation of national policies and strategies relating to provision of water and sanitation services;
b) Develop and enforce such regulations, rules, standards and guidelines to be adopted by licensees for the protection of interests and rights of consumers, development and management of infrastructure for transport, storage and treatment of wastewater originating from centralized and decentralized systems, and for ensuring access to safe, efficient, affordable and sustainable water and sanitation services.
c) Evaluate and recommend water and sewerage tariffs to the county water services providers and approve the imposition of such tariffs in line with consumer protection standards;
d) Monitor and regulate licensees and enforce licence conditions;
e) Monitor compliance with regulations, standards and guidelines for the provision of water and sanitation services; and
f) Make recommendations on how to provide water and sanitation services to marginalised areas.

2.3.2 Mandate of the County Governments

The Constitution of Kenya under the Fourth Schedule assigns county governments the powers and functions relating to provision of sanitation services including waste management and protection of the environment. The Fourth Schedule Part 2 Articles 3, 10 and 11(b) of the Constitution specifically vests in the county governments the power to respectively, control pollution, implement national policies on environment conservation and natural resources including soil and water conservation, and to provide water and sanitation services. Article 175 (2) of the Constitution specifically provides that county governments shall have reliable sources of revenue to enable them to govern and deliver services assigned to the county governments under the Fourth Schedule effectively.

The county governments may delegate these powers to the extent that is efficient and practicable to do so (Article 176(2)), to lower tiers of county governments (Section 48 of County Government Act), urban authorities (Urban Areas and Cities Act, 2011) or county corporations or agencies and/or to private entities as appropriate. Section 6 (3) of the County Government Act therefore gives the county governments the power to establish such companies, firms or other bodies for the delivery of particular services or carrying on of particular functions such as water and sanitation services, pollution control and/or waste management; or to contract any person, company, firm or other body for the delivery of particular services or carrying on particular functions. To this end, Section 77 of the Water Act No. 43 of 2016 gives the County Governments the power to establish water services providers (WSPs) for purposes of delivery of water and sanitation services within their license areas.[12] The County Governments therefore have the responsibility of supporting and creating enabling environment for the WSPs to carry out their assigned function of delivering water and sanitation services in accordance with law and the prescribed standards and license conditions.

[12] The Water Act 2016 defines "water services" as any services of or incidental to the supply or storage of water and includes the provision of sewerage services. "Sewerage services" means the development and management of infrastructure for transport, storage, treatment of waste water originating from centralized and decentralized systems but not including household sanitation facilities

2.3.3 Mandate of Water Service Providers

Section 77 of the Water Act No. 43 of 2016 gives the County Governments the power to establish water services providers[13] to among other things:

a) Provide safe, efficient, affordable and sustainable water and sanitation services;
b) Prohibit the discharge of polluting trade effluent into the sewer systems that would pose a danger to the safety of maintenance personnel, damage the sewer lines, cause odors, explosive conditions and/or exceed prescribed standards of discharges to the environment;
c) Maintain high operational efficiency of the effluent treatment plants; and
d) Ensure that the effluent water that is discharged into the environment is of acceptable quality.

Section 108 (1) of the Water Act 2016 in particular requires WSPs receiving trade effluent into their sewerage systems to ensure that they have in place measures for the receipt and handling of the effluent without causing- (a) pollution of the environment; (b) harm to human health; (c) damage to the sewerage system; or (d) a contravention of applicable laws or standards set by the Regulatory Board.

[13] The Water Act 2016 defines a water service provider as a company, public benefits organization or other person providing water services under and in accordance with a licence issued by the Regulatory Board for the service areas defined by the licence.

3. GUIDING PRINCIPLES

The formulation, administration and application of the sanitation levies and trade effluent surcharges by WSPs shall be guided by the following principles:

Full cost recovery principle: The sanitation levies and trade effluent surcharges administered shall aim to meet the full cost of providing services to customers and treating the pollutant in the effluent discharged into the sewer system. "Full cost recovery" means that the total cost of providing sanitation services and treating the trade effluent (including operating costs, capital costs, and administrative/regulatory costs, operational and commercial sustainability) are met.

The right to safe sanitation, a clean and healthy environment: The Constitution guarantees the right of every person to reasonable standards of sanitation and to a clean and healthy environment. The administration and application of the sanitation levies and trade effluent surcharges shall therefore support reasonable measures to promote, protect and fulfill these rights.

User pays principle: The users of the sanitation services shall pay the applicable charges to cover the cost of providing the services on an equitable basis.

Equity: The burden of the levies, charges or surcharges shall be shared equitably and fairly.

Social inclusion and affirmative action: The administration and application of the sanitation levies and trade effluent surcharges shall be responsive and sensitive to the needs of vulnerable, marginalized and disadvantaged sections of the community. The vulnerable, marginalized and disadvantaged sections of the community shall be identified and prioritized in planning, programming, resource allocation, implementation and provision of services.

Private sector involvement: The private sector shall be encouraged, facilitated and incentivized for active involvement in the provision of sanitation services across the sanitation value chain. The private sector shall be encouraged to invest in and adopt appropriate and sustainable sanitation and wastewater treatment technologies to ensure pre-treatment of effluent at source before discharge into the sewer systems and the environment. Public-private partnerships and Corporate Social Responsibility initiatives shall be encouraged.

Transparency and accountability: The revenue shall be used in an open, transparent, prudent and responsible manner. The use of the revenues shall be results based and linked to key performance indicators and benchmarks.

Polluter pays principle: The polluters, whether individuals or corporate shall bear the full environmental and social costs of their activities and for the required cleanup, abatement or compensation measures.

Conservation: Recognizing that overflowing pumping stations, illegal fecal sludge dumping, the direct connection of septic tanks to the storm water drainage systems and ineffective fecal sludge and wastewater treatment lead to pollution of water sources and the environment, WSPs will be encouraged to adopt a water cycle approach to provision of water and sanitation services. The levies, charges or surcharges should therefore provide incentives for conservation of water resources and the environment taking into account the

fact that the quantity of water supplied will also directly impact on the amount of wastewater generated thereby influencing the type of sanitation services required and technology to be adopted.

Public/community participation: Participatory approaches shall be enhanced to ensure meaningful public/community and stakeholder participation in planning, implementation and decision-making processes. The ownership of the sanitation and wastewater treatment facilities shall be matched with the responsibility for payment for services rendered and operation and maintenance at various levels. End-user education shall be prioritized in sanitation improvement across the service chain.

Self-regulation, voluntary compliance and precautionary principle: Households, institutions, trade and industrial undertakings shall be encouraged to self-regulate and voluntarily comply with prescribed effluent discharge guidelines, regulations and standards and to take precautionary measures to prevent and control pollution at source through pre-treatment, recycling and re-use.

Risk analysis and communication: The application of the trade effluent surcharge shall be underpinned by risk analysis, which will include a risk assessment through risk identification, quantifying these risks and costing them in order to implement appropriate measures. WSPs shall have the necessary capacity and resources to monitor and enforce sanitation, water and effluent quality control laws, regulations, guidelines and standards.

Multi-sectoral collaboration and coordination: Multi-sectoral and stakeholder engagement, co-ordination and collaboration shall be critical in the administration and application of the levies, charges or surcharges.

4. GUIDELINES ON SANITATION LEVY

4.1 Introduction

For purposes of these Guidelines, sanitation levy is a special charge by a WSP on domestic and non-domestic customers separate from a sewerage levy provided under Section 109 of the Water Act 2016.[14] Sanitation levy is therefore to be charged separately from the regular sewerage service tariff and shall be included in the domestic and non-domestic customers' monthly water bills. The levy may apply to water kiosk consumers as long as its administration will not contribute to denying the vulnerable consumers access to affordable water supply. The purpose of the levy is specifically to support provision and improvement of onsite or non-sewer sanitation services across the service chain within a WSP's service area. In setting the levy, the needs of different customer types/groups including the poor and vulnerable groups shall be recognized, anticipated and addressed. The application of the sanitation levy shall be supported by strong regulatory oversight to ensure transparent and accountable expenditure to achieve the intended purpose of the levy.

4.2 Rationale for the sanitation levy

By and large, the need for the special sanitation levy by WSPs is informed by the following:

a) **Low safe sanitation coverage:** Kenya's access to improved sanitation facilities (now basic sanitation) is at 30%[15] (31% for urban and 30% for rural). Access to safely managed sanitation is much lower estimated at 26%. Sewerage coverage is estimated at 17%[16] with 84% of the population depending on onsite sanitation. The sewerage coverage for the very large utilities stands at 38%, which is 2 percentage points less than the 2015 MDG target of 40%. Due to poor access to safe water, sanitation and hygiene, more than half of the population, are at risk of diseases and death, with over 75% of Kenya's disease burden caused by poor personal hygiene, inadequate sanitation practices and unsafe drinking water. As a result of poor sanitation, the World Bank estimates that Kenya loses US$ 27 million (KES 27 billion) per annum due to reduced productivity, high healthcare costs and premature deaths.[17]

b) **Vulnerable groups in low income and informal urban settlements are disproportionately affected:** Vulnerable groups living in low income areas and informal settlements in urban areas are the most affected by lack of access to safe sanitation services. In poor urban settlements, majority of the population use shallow pit latrines that contribute to pollution of the environment and water sources.

[14] Section 109 of the Water Act 2016 allows the Regulatory Board to impose a sewerage services levy on all water services within the area of a licensee, to cover a reasonable part of the cost of disposing of the water supplied within those limits. A portion of the levy may, with the approval of the Regulatory Board, be set aside by the licensee for use in the expansion of the sewerage system within the area of service of the licensee. Sewerage charge is therefore a payment for services rendered and is for that purpose meant for the recovery of the cost of operating and maintaining the sewerage system.

[15] New JMP SDG sanitation indicators definitions

[16] A Performance Report of Kenya's Water Services Sector 2018/2019 Impact issue No 12. Published in 2020

[17] World Bank Group Water and Sanitation Programme (WSP), (2014), "Economic Impact of Poor Sanitation" in Kenya, updated using 2010 DHS data

c) **Low investment and large financing gaps to achieve the high sector and service targets:** There is currently negligible investment in sanitation in Kenya. According to the National Water Master Plan 2030 to meet the Kenya Vision 2030 targets, about US$5.4 billion will be required.[18] Of this, 96% of the required resources (US$ 5.2 billion) will be directed to new urban sewerage infrastructure development to increase sewerage coverage from 16 percent to at least 80 percent by 2030. The US$ 5.4 billion investment requirement does not include onsite sanitation which if added would bring the investment requirements to even higher levels. Despite the huge investment requirements, the projected available government resources would only cover 6.5 percent (USD 30.9 million) of the required investment, leaving a funding shortfall of 93.5 percent (US$ 445.8 million). Furthermore, the budgetary allocations for sanitation services are negligible amounting to less than 1 percent of the total annual budget.[19] Currently, there is no budget codes assigned to sanitation services except for sewerage, making direct and dedicated budgetary allocations for non-sewer sanitation services even more difficult.

d) **At the WSPs level, the current water and sewerage services tariff structure is limited and inadequate and does not directly provide for provision of non-sewer sanitation services:** While Section 109 of the Water Act 2016 provides for imposition of a service levy to enable WSPs fully operate and maintain water and sewerage services within the area of service provision of the licensee, the current tariff structure is limited and highly inadequate to meet the required service coverage standards including provision of onsite sanitation services within their license areas. Onsite sanitation programs where they exist among the utilities, almost entirely depend on donor funding which is unsustainable. According to the WASREB Impact Report No 11 of 2019, , only 36% of 86 publicly owned utilities (31 WSPs) achieved the minimum 100% O&M cost coverage with the majority 55 (64%) falling below the minimum benchmark. Overally, only 39% of publicly owned utilities fell within the sector benchmark for operational sustainability. As a result, some county governments have been forced to give WSPs subsidies in terms of payment of electricity bills and chemicals for water treatment, extension of water distribution and sewer lines and secondment of staff.

It is against this backdrop that WASREB recognizes the fact that WSPs may consider proposing introduction of a sanitation levy to enable them provide and expand access to safe non-sewer sanitation services within their license areas and to bridge any sanitation funding gaps that may inhibit the realization of safe sanitation services for all.

4.3 Objectives of the Sanitation Levy

The sanitation levy is intended to achieve the following objectives:

a) Contribute to the realization of the guaranteed constitutional right to adequate, safe, acceptable, physically accessible and affordable sanitation services within the WSPs service areas.
b) Expand access to safe sanitation services across the service chain in unsewered and unserved areas with priority focus on low income and marginalized communities.
c) Support investment in the development of onsite sanitation infrastructure across the service chain including decentralized wastewater and fecal sludge treatment systems.

[18] Republic of Kenya (2013), National Water Master Plan 2030, Ministry of Water and Irrigation, 20

[19] Oyaya Charles and Owor Michael (2018), Comparative Study on County Water and Sanitation Budgeting in 11 Counties in Kenya for FY 2014/15 – 2017/18, Water and Sanitation for the Urban Poor (WSUP), Nairobi Kenya.

d) Support training and capacity building for community-based institutions, small and medium sanitation enterprises and technicians across the service chain.
e) Support operation and maintenance activities and ensure that sanitation services are provided efficiently and that service levels are improved over time to prescribed standards
f) Support administrative, governance and coordination activities.
g) Support conservation and protection of water sources.

4.4 Guiding Principles in Establishing Sanitation Levy

In establishing sanitation levy, the WSP shall be guided by the following principles to ensure sustainable and equitable service delivery:

a) **Simplicity:** The determination of the levy should be a simple, have specific objective, understandable as possible, easy to administer and enforce.
b) **Equity:** The burden of the levy shall be shared equitably and fairly. The levy calculation should be based on consumer affordability with due consideration given to low income households. Revenue raised shall be equitably used for provision of sanitation services.
c) **Transparency and accountability:** The levy should be transparent and decision makers should accept responsibility and be accountable on how the funds are utilized. The revenue shall be used in a prudent manner and management of the revenue shall be responsible, and fiscal reporting shall be clear. The public should have access to the accounts.
d) **Efficiency and effectiveness**: The levy should be structured in such a way as to encourage efficiency and effectiveness from the WSP and encourage the correct behavioral pattern among staff. It must be efficient to collect with administrative costs kept to a minimum.
e) **Sustainability:** As far as possible the levy should reflect and cover the true costs of delivering the service within the ambit of socially responsible cost recovery.
f) **Transparent subsidy:** Any subsidy from government to service providers for provision or development of sanitation services in addition to the sanitation levy shall be transparent, targeted and predictable.
g) **Ring fencing:** Both Income and expenditure should be ring fenced and applied to clearly defined purpose for which it is generated.
h) **Social inclusion:** The revenues generated from the levy should be clearly targeted to cater for the needs of the indigent and the vulnerable of society. Expenditure shall make special provision for the poor, vulnerable and marginalized groups and areas.

4.5 Formulation of a Sanitation Levy by WSPs

Formulation of the sanitation levy by WSPs should broadly follow a five step process including the following:

a) Context and situation analysis;
b) Identification of needs and feasibility of service objectives;
c) Determination of revenue requirements;
d) Determination of the design of the sanitation levy system; and
e) Implementation and monitoring.

A detailed description of each step including the relevant issues for consideration is provided in Annex 1 of this guideline.

4.6 Option for calculation of sanitation services levy

There are a number of possible models that a WSP can consider in establishing a sanitation levy. These include:

a) Payment by all of a WSP's customers (domestic and non-domestic);
b) All customers with an individual household connection (i.e. levy may or may not be charged to kiosk and yard tap customers); or
c) Only sewer-connected customers (i.e. levy not charged to customers with water but no sewer connection).[20]

The WSPs are encouraged to explore and analyze different options to determine the most cost effective, affordable and sustainable sanitation levy model that is suitable to the WSP's situation and context.

Based on the principles of adequacy, stability and predictability of revenues, simplicity, ease of administration, enforceability and sustainability there is general consensus that payment of a sanitation levy should be made by all of the utility's customers. If considered appropriate, the system could be designed to vary the amount payable by different customer groups. For example, if the levy or surcharge amount is calculated as a proportion of the water bill amount, then people with high water bills by way of consumption would pay more.

Another option could be for customers with a sewerage connection to pay more (this could be achieved if the levy or surcharge amount were calculated as a proportion of the total water plus sewerage bill amount). Alternatively, large commercial/industrial customers may pay a higher proportional amount. A WSP could also consider charging a simple flat amount across all customers, though this might be considered less equitable, and might raise less money.

The Regulatory Board recommends that the level of the levy or surcharge and amount to be generated should take into account the results of steps 1-3 (*See Annex 1*) including consideration of the current and desired level of access to safe sanitation, policy objectives, the current and future costs, the current and projected financing gaps, the total revenue requirement, affordability and willingness to pay by customers and any potential subsidies.

4.7 Preparation, submission and approval of proposals for the establishment of sanitation levies

A WSP is responsible for preparing and submitting a "Proposal for the Establishment of the Sanitation Levy" to the Regulatory Board for approval. In preparing the proposal, the WSP shall be guided by the WASREB Tariff Guidelines. The WSP must therefore ensure that the procedures and processes followed, and minimum quality requirements of the proposal comply with WASREB Tariff Guidelines (*link to Tariff Guidelines*). Notwithstanding the generality of this sub section (3.7), a WSP undertaking to prepare and submit a proposal to the Regulatory Board shall take due consideration of the following:

[20] WSUP 2012, Discussion Paper Sanitation surcharges collected through water bills: A way forward for financing pro-poor sanitation? Discussion Paper, Dp#004, October 2012

3.7.1 Preparation and submission of proposals

A WSP may initiate a proposal to establish a sanitation levy at any time. A WSP intending to prepare such a proposal should notify the Regulatory Board of its intention in the form of a concept note.

In order to facilitate the preparation and submission of a proposal for the establishment of sanitation levy, the Regulatory Board shall provide standard formats in electronic version which WSPs shall adhere to in preparing and submitting their proposals. A WSP shall submit both hard and soft copies of the proposal.

3.7.2 The procedures and processes of public consultations

A WSP shall undertake public consultations in accordance with the WASREB Guidelines of Public Consultation for Tariff Approval Process and Requirements for Convening and Conducting Virtual Public/ Stakeholder Participation Meetings by Water Service Providers.

3.7.3 Approval of Proposals

All proposals to establish sanitation levies shall require approval by the Regulatory Board. The process of submission and approval of sanitation levy proposals shall follow the WASREB Tariff Guidelines for submission and approval of Tariff Adjustment Proposals.

3.8 Administration and application of the sanitation levy revenues

Upon approval and gazettement of the WSP's sanitation levy by the Regulatory Board, the WSP shall give customers one-month notice prior to implementation of the levy. The notification may be made through various accessible media including newspapers, customers and various locations to which the public has access including, but not limited to pay stations, public affairs offices of the WSP, water kiosks, and other public facilities where public notices are posted. The WSP shall immediately notify the Regulatory Board when the approved levy goes into effect. The WSPs shall make the payment and collection of the levy or surcharge as easy as possible and the system should be customer oriented.

For ease of administration and enforceability, the revenue accrued from the sanitation levy shall be ring fenced and directed to a sanitation fund established by the WSP Board. The fund may be structured as a revolving fund.

The sanitation levy shall be used and applied to provide, expand and improve onsite sanitation services across the service chain within the WSPs service areas. Specifically, the sanitation levy shall be used to, among other things:

a) Implement the constitutional right to safely managed sanitation within the WSPs service areas;
b) Expand access to, and provision of safe sanitation services across the service chain in unsewered areas;
c) Support improvement of service levels according to prescribed regulations, guidelines and standards;
d) Support development of onsite sanitation infrastructure across the service chain including decentralized wastewater and fecal sludge treatment systems;
e) Support training and capacity building for service providers across the service chain;

f) Support operation and maintenance activities;
g) Support sanitation research and development activities;
h) Support administrative, governance and coordination activities; and
i) Support conservation and protection of water sources.

To ensure comprehensive service coverage, WSPs shall be encouraged to adopt a range of implementation strategies including:

a) WSPs providing sanitation services across the service chain
b) Accreditation of private service providers
c) Entering into enforceable service contracts with private service providers
d) Joint ventures
e) Build, own, operate and/or transfer (BOOT) arrangements
f) Public-private partnership
g) Equipment leasing
h) Support and facilitation of community based initiatives

In applying the sanitation levy, the following guidelines shall be observed:

a) The WSPs shall endeavor to ensure provision of safely managed sanitation services across the service chain throughout their WSP's service areas;
b) The WSPs shall target services across the sanitation service chain to the needs of the poor, marginalized, vulnerable and indigent citizens, communities and localities;
c) The WSPs shall recover costs incurred in the delivery of service in an efficient manner;
d) The WSPs shall use the revenue to stimulate investment and incentivize private sector participation including public-private partnerships in onsite sanitation development;
e) Ensuring appropriate remuneration of the capital invested and operation and maintenance costs;
f) The WSPs shall prioritize interventions that safeguard water sources, environment and public health;
g) The WSPs shall ensuring the use of appropriate and efficient technologies, compatible with the required levels of quality, continuity and safety of service providers; and
h) The levy shall be used to improve economic and financial sustainability of the WSPs with regard to provision of onsite sanitation services.

3.9 Monitoring, audits and inspections

The Regulatory Board shall monitor the implementation and application of the approved sanitation levy. In this regard, the Regulatory Board shall from time-to-time conduct audits and inspections of the WSPs to ascertain the proper application and usage of the revenues accrued from sanitation levy. If the Regulatory Board finds that the WSP has applied the approved levy in a manner contrary to these Guidelines or any other applicable law, regulations or guidelines, the Board shall take such action as it deems fit to correct the anomaly. The Regulatory Board may revoke and de-gazette the approved levy as a last resort.

4 GUIDELINES ON TRADE EFFLUENT SURCHARGES BY WSPS

4.1 Introduction

For purposes of these Guidelines, trade effluent surcharge is a pollution risk-based charge based on the polluter pays principle. The aim is to incentivize trade and industrial customers especially industrial customers (discharging large volumes of polluted effluent) into a public sewer system to reduce the discharge of polluting effluent at source by establishing pre-treatment plants. In this regard, a trade effluent surcharge is differentiated from a sewerage charge,[21] which is a payment for sewerage services rendered in collecting, conveying and treating wastewater/effluent to a quality acceptable for releasing into the environment. Trade effluent surcharge is thus levied separately from the approved regular sewerage service tariffs. Its charging is based on the quality and volume of effluent a trade or industrial undertaking discharges into the sewer system. These Guidelines are therefore intended to provide an enabling framework for WSPs to effectively control, monitor and regulate trade effluent discharges by trade and industrial undertakings through a trade effluent surcharging system based on polluter pays principle.

4.2 What is trade effluent?

In simple terms, trade effluent is any liquid waste, other than surface water and domestic sewage that is discharged from premises being used for a business, trade or industry (e.g. manufacturing, launderettes, car washes, food processing, restaurants, hospitals etc.). Section 108 (7) of the Water Act No. 43 of 2016 defines "trade effluent" as any liquid, whether with or without suspended particles, produced as a by-product in the course of any trade or industry. Trade effluent therefore includes commercial and industrial wastewater contaminated with materials such as fats, oils and greases, chemicals, detergents, heavy metal rinses, solids and food waste among others. While trade effluent should not include normal wastewater from domestic kitchen, sinks and showers, toilet waste, domestically derived wastewater from educational establishments and any clean rainwater run-off, realistically effluent from trade premises is often mixed as they do not separate their utility blocks from production. Any size of business can produce trade effluent ranging from laundries and food production to chemical manufacturing and car washes.

The Regulatory Board is cognizant that disposal of untreated or undertreated trade effluents from trade premises into the sewerage systems places undue burden and risks on the sewerage system. This may result in blockages, formation of toxic gases and risk of explosion due to concentration of such gases, corrosion of the sewerage system and upset conditions in the treatment plants leading to high costs of operation, maintenance. The disposal of untreated or undertreated trade effluents also present high risks to public health, water quality and environment.

[21] Section 109 of the Water Act 2016 allows the Regulatory Board to impose a sewerage services levy on all water services within the area of a licensee, to cover a reasonable part of the cost of disposing of the water supplied within those limits. A portion of the levy may, with the approval of the Regulatory Board, be set aside by the licensee for use in the expansion of the sewerage system within the area of service of the licensee. Sewerage charge is therefore a payment for services rendered and is for that purpose meant for the recovery of the cost of operating and maintaining the sewerage system.

4.3 Rationale for the Trade Effluent Surcharge

Section 108 (1) of the Water Act 2016 requires WSPs receiving trade effluent into their sewerage systems to ensure that they have in place measures for the receipt and handling of the effluent without causing - pollution of the environment; harm to human health; damage to the sewerage system; or a contravention of applicable laws or standards set by the Regulatory Board.

The Environmental Management and Co-ordination (Water Quality) Regulations, 2006 and the WASREB Guidelines on Drinking Water Quality and Effluent Monitoring, 2008 set out requirements for trade or industrial undertakings with licence granted by a WSP to discharge effluent into any existing sewerage system in accordance with the prescribed standards. Both the Regulations and Guidelines allow WSPs to carry out effluent discharge quality and quantity monitoring in accordance with prescribed methods and procedures of sampling and analysis.

However, although the existing effluent monitoring regulations and guidelines provide WSPs with a framework for monitoring effluent discharges into the sewer systems, they are inadequate in enabling WSPs to apply the polluter pays principle to ensure that the trade effluent discharged into the sewerage systems does not cause pollution of the environment, harm to human health and damage to the sewerage system. As a result, there are a number of challenges along the trade effluent management value chain as highlighted below that require an enabling mechanism for the WSPs to address.

a) **Uncontrolled disposal of untreated and/or under treated wastewater into sewer systems and the environment:** The wastewater value chain is characterized by illegal effluent dumping, ineffective effluent treatment, direct discharge of untreated and/or under treated wastewater into sewerage systems and the environment. It is estimated that of the wastewater that enters into the sewer network, about 60 percent reaches the treatment plants.[22] The existing wastewater treatment plants which mostly use waste stabilization ponds for treatment[23] operate at only about 16% of their design capacity while only 5% of the wastewater is effectively treated.[24] Disposal of untreated or under treated wastewater into the sewerage system and environment not only create risks and upset conditions in the sewerage system but also result in major public health hazards and impacts.

b) **Inadequate capacity to monitor and control trade effluent among WSPs leading to poor enforcement and compliance record:** Although there exist strict effluent discharge regulations and standards as prescribed by the EMCA (Water Quality) Regulations, 2006 and the WASREB Drinking Water Quality and Effluent Monitoring Guidelines, 2008, the record of enforcement and compliance remains poor in all fronts. Practically, nearly all the WSPs have limited capacity and resources to effectively control and monitor the discharge of trade effluent into the sewerage systems within their service areas. This results in pollution of the environment, harm to public health, damage to the sewerage system, and generally, unabated contravention of prescribed effluent discharge regulations and standards.

[22]Institute of Economic Affairs 2010: A Rapid Assessment of Kenya's Water, Sanitation and Sewerage Framework, June 2007 Retrieved 16 March 2010

[23]H.W. Pearson, S.T. Avery, S.W. Mills, P. Njaggah and P. Odhiambo, Performance of the phase II Dandora waste stabilisation ponds: The case for anaerobic ponds , *Water Science and Technology* Volume 33, Issue 7, 1996, Pages 91–98. Retrieved 16 March 2010

[24] WASREB Impact Report Issue No 10. Published in 2018

c) **Limitation of the existing tariff policy:** Section 109 of the Water Act 2016 gives WASREB the power to impose a service levy within the area of a licensee to cover a reasonable part of the cost of disposing of the water supplied within prescribed limits. While the WASREB tariff policy seeks to encourage water conservation, the current tariff structure does not provide for the application of the polluter pays principle to cater for the cost of treating and abating the damage caused by the trade effluent discharged through the sewerage system that exceed the prescribed effluent quality standards. . Thus, due to this limitation, the Regulatory Board identified the need for an appropriate trade effluent surcharge based on the polluter pays principle to enable WSPs compel trade or industrial undertakings to reduce polluting discharges at source through avoidance and pre-treatment.

4.4 Framework for trade effluent surcharge based on the polluter pays principle

The Environmental Management and Co-Ordination Act (EMCA 1999) as amended in 2015, defines "polluter pays principle" as the cost of cleaning up any element of the environment damaged by pollution, compensating victims of pollution, cost of beneficial uses lost as a result of an act of pollution and other costs that are connected with or incidental to the foregoing, is to be paid or borne by the person convicted of pollution under the Act or any other applicable law.[25] Depending on the scale, pollution can have catastrophic effects on human health, water quality, food chains, and ecosystems. The application of the polluter pays principle is hence about cost recovery, cost of restoration, and liability or the obligation to take compensatory measures in cases of adverse effects on the sewerage system, human health and environment.[26] Under the polluter pays principle, polluters, whether individuals or corporate are therefore responsible for their polluting activities, the damages caused by the contamination and pollution and for the required cleanup measures[27] including measures aimed at preventing and reducing pollution.[28]

Against this background, both EMCA, 1999 and Water Act 2016 prohibit any owner or operator of a trade or industrial undertaking from discharging any effluents or other pollutants originating from the trade or industrial undertaking into existing sewerage system that could pose a danger to the safety of maintenance personnel, damage the sewer lines, cause odors, toxic conditions and/or exceed discharge standards of pollutants to the environment. This includes maintaining high operational efficiency of the effluent treatment plants and ensuring that the effluent that is discharged into the environment is of acceptable quality.

Section 108 (1) of the Water Act 2016 in particular requires WSPs receiving trade effluent into their sewerage systems to ensure that they have in place measures for the receipt and handling of the effluent without causing- (a) pollution of the environment; (b) harm to human health; (c) damage to the sewerage system; or (d) a contravention of applicable laws or standards set by the Regulatory Board. The Water Act thus only obliges a WSP to accept the quality and quantity of industrial effluent or any other substance into a sewerage system that the wastewater treatment plant linked to that system is capable of purifying or treating to ensure that any discharge into water bodies complies with prescribed standards. It should be noted that EMCA

[25] Environmental Management and Co-Ordination Act, Chapter 387, Revised Edition 2012 [1999]

[26] Petra E. Lindhout & Berthy van den Broe, The Polluter Pays Principle: Guidelines for Cost Recovery and Burden Sharing in the Case Law of the European Court of Justice http://www.utrechtlawreview.org | Volume 10, Issue 2 (May) 2014 | URN:NBN:NL:UI:10-1-115822

[27] Petra E. Lindhout & Berthy van den Broe, The Polluter Pays Principle: Guidelines for Cost Recovery and Burden Sharing in the Case Law of the European Court of Justice http://www.utrechtlawreview.org | Volume 10, Issue 2 (May) 2014 | URN:NBN:NL:UI:10-1-115822

[28] M.N. Boeve & G.M. van den Broek, 'The Programmatic Approach; a Flexible and Complex Tool to Achieve Environmental Quality Standards', 2012 Utrecht Law Review 8, no. 3, pp. 80-81.

(Water Quality) Regulations, 2006 prohibit the discharge of the following chemicals into public sewers and water courses: calcium carbide, chloroform, condensing water, degreasing solvents, radioactive residues, inflammable solvents and substances likely to interfere with sewers.[29] This calls for pre-treatment of industrial effluent and regular inspections at source and at the point of treatment and disposal by both the responsible licensee/WSP and the National Environment Management Authority to ensure compliance with the prescribed water and effluent quality standards.

The WASREB Drinking Water Quality and Effluent Monitoring Guidelines 2008 provide the framework for the control, monitoring, sampling, sample collection and analysis of effluent and for instituting measures to reduce pollution of the receiving water body. Specifically, the Guidelines aim to assist WSPs:

a) Determine the effluent quality as it is released into the environment;
b) Check on the operational efficiency of the wastewater treatment system;
c) Monitor compliance to standards of industrial effluent;
d) Verify the actual quality of effluent discharged;
e) Ensure compliance with the established discharge standards; and
f) Prepare for remedial measures to avoid pollution of the receiving water body.

The aim is to ensure that the effluent that is discharged into the sewerage system and ultimately, into water bodies and environment is of acceptable quality according to the prescribed regulations and standards.

In line with the polluter pays principle, Article 70 (1) (2) of the Constitution provides the framework for enforcement of the principle and for seeking redress in case a person alleges that his or her right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be denied, violated, infringed or threatened. In this regard, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter. On application, the court may make any order, or give any directions, it considers appropriate to —

(*a)* Prevent, stop or discontinue any act or omission that is harmful to the environment;
(*b)* Compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or
(*c*) Provide compensation for any victim of a violation of the right to a clean and healthy environment.

Section 72 (2) of EMCA[30] provides that a person found guilty for polluting the environment shall, in addition to any sentence or fine imposed on him or her:

a) pay the cost of the removal of any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants, including the costs of restoration of the damaged environment, which may be incurred by a Government agency or organ in that respect; and
b) pay third parties reparation, cost of restoration, restitution or compensation as may be determined by a court of law on application by such third parties.

[29] Schedule 6 to the WASREB Guidelines on Water Quality and Effluent Monitoring [The Environmental Management and Co-ordination (Water Quality) Regulations, 2006]
[30] Environmental Management and Co-Ordination Act, Chapter 387 Revised Edition 2012 [1999], www.kenyalaw.org

4.5 Objectives of the Trade Effluent Surcharge

These Guidelines aim to assist the WSPs establish and manage a sustainable trade effluent control, monitoring and regulation system within their service areas. The Guidelines are therefore intended to achieve the following objectives:

a) To enable WSPs to systematically assess and monitor the quality and quantity of trade effluent discharged into the sewer system within their areas.
b) To encourage WSP customers to take measures to control and reduce polluting effluent discharges at source through avoidance, pre-treatment and/or recycling and reuse.
c) To raise awareness among WSP customers about the cost of pollution in order to impact on the economic behaviour of polluters.
d) To ensure maximum compliance and adherence to the prescribed trade effluent discharge and/or pollution control guidelines and standards by WSP customers.
e) To enable the WSPs take corrective measures including abatement programmes such as local water source protection initiatives.
f) To contribute to the realization of the constitutional right to a clean and healthy environment within the WSPs service area.

4.6 The process of formulating a trade effluent surcharge

Formulation of the trade effluent surcharge by WSPs should broadly follow a stepwise process including the following:

a) Comprehensive upstream effluent sampling and analysis;
b) Develop the trade effluent surcharge mechanism;
c) Review of the existing trade effluent discharged licensing arrangement to factor in the newly developed trade effluent surcharge;
d) Training and capacity building of WSP staff and customers clients on the new trade effluent surcharge mechanism; and
e) Extensive stakeholder management and communication strategy during the entire process.

A detailed description of each step including the relevant issues for consideration is provided in ***Annex 2*** of these Guidelines.

4.7 Submission and approval of a proposal for the establishment of a trade effluent surcharge

A WSP operating a sewerage system is responsible for preparing and submitting a "proposal for the establishment of the Trade Effluent Surcharge" to the Regulatory Board for approval. In preparing and submitting a proposal to the Regulatory Board for approval, the WSP shall be guided by the WASREB Tariff Guidelines. The WSP must therefore ensure that the procedures and processes followed, and minimum quality requirements of the proposal comply with WASREB Tariff Guidelines (*link to Tariff Guidelines*). Notwithstanding the generality of this sub section (4.7), a WSP undertaking to prepare and submit a proposal to the Regulatory Board shall take due consideration of the following:

4.7.1 Preparation and submission of proposals

A WSP operating a sewerage system may initiate a proposal to establish a trade effluent surcharge at any time taking into account the provisions of the Tariff Guidelines. A WSP intending to prepare such a proposal shall notify the Regulatory Board of its intention in the form of a concept note.

In order to facilitate the preparation and submission of a proposal for the establishment of a trade effluent surcharge, the Regulatory Board shall provide standard formats in electronic version which WSPs shall adhere to in preparing and submitting their proposals. A WSP shall submit both hard and soft copies of the proposal.

4.7.2 The procedures and processes of public consultations

A WSP shall undertake public consultations in accordance with the WASREB Guidelines of Public Consultation for Tariff Approval Process and Requirements for Convening and Conducting Public/ Stakeholder Participation Meetings by Water Service Providers.

4.7.3 Approval of Proposals

All proposals to establish trade effluent surcharges shall require approval by the Regulatory Board. The process of submission and approval of a trade effluent surcharge proposal shall therefore follow the WASREB Tariff Guidelines.

4.8 Establishing effluent monitoring system to support the trade effluent surcharge system

Broadly, effective application and enforcement of the polluter pays principle through a trade effluent or pollution surcharging system requires an effective effluent monitoring and evaluation system. Thus, once a WSP has commissioned a sewerage system, it must establish an effluent monitoring system with a routine monitoring and evaluation programme so that its performance can be verified and the actual quality of its effluent established. This will provide a framework for routine monitoring and enforcement of compliance with the established discharge standards. The results of a monitoring programme could also give early warning on treatment works that have failed to meet their requirements and thus prepare for remedial measures to avoid overwhelming the treatment plant and pollution of the receiving water body and the environment.

Periodic evaluation or audit of wastewater treatment system performance is also useful as it provides information on how under loaded or overloaded the system is, and thus by how much, if any, the loading on the system can be safely increased as the service area expands, or whether expansion of the treatment facilities is required. It also indicates how the design of future installations might be improved to take account of local conditions.

An effective monitoring system for the trade units and/or the wastewater treatment plant will involve both self and WSP monitoring and surveillance mechanisms that would include: self-monitoring, scheduled monitoring, unscheduled monitoring, demand monitoring and monitoring for compliance. The effectiveness of the effluent monitoring system is based on six factors:

a) Adequately trained responsible person to carry out effluent monitoring programmes. The person in charge must be able to understand fully the importance of his or her duties including the

understanding and application of these guidelines, effluent discharge license and permit requirements and the prescribed standards;
b) Inclusion of the costs of effluent monitoring in the WSP's annual budget;
c) Elaboration and application of an appropriate effluent sampling and monitoring plan;
d) Sample collection and preservation;
e) Analysis and recording; and
f) Reporting and record keeping.

Inadequacy or inaction in these areas will lead to an insufficient number of samples, inaccurate results, wrong perception of the situation on the ground, and consequently, inadequate charging based on the polluter pays principle.

4.8.1 Monitoring by WSPs

It is the responsibility of the WSP to ensure that trade effluent or any other substance being discharged into a sewerage system is of acceptable quality and quantity and that the wastewater treatment plant linked to the sewerage system is capable of purifying or treating the effluent to ensure that any discharge into water bodies complies with the prescribed standards. For that purpose, it is the duty of a WSP to monitor trade effluent being discharged into its sewer system and to inspect pre-treatment facilities handling such effluents. The WSP may carry out the inspection in collaboration with the National Environment Management Authority. The WSP shall therefore, from time to time, with or without notice monitor the effluent being discharged by the trade premises into the sewerage system to ensure compliance with the prescribed standards.

Broadly, monitoring of trade effluent by WSPs may involve scheduled monitoring, unscheduled monitoring, demand monitoring and monitoring for compliance.

4.8.1.1 Scheduled Monitoring

Scheduled monitoring involves the systematic sampling and inspection by the WSP in accordance with a pre-determined schedule as agreed with the owner or operator of a trade and industrial undertaking. Scheduled monitoring will serve to check for compliance with the regulations, determine surcharge, user charge, and compliance with Regulatory Board's requirements.

4.8.1.2 Unscheduled Monitoring

Unscheduled monitoring is instituted by the WSP to provide a less formal type of surveillance to check wastewater effluent compliance by the various owners or operators of trade premises. Such unscheduled surveillance can be used to randomly survey the entire system.

4.8.1.3 Demand Monitoring

A WSP may, in collaboration with the regulators including National Environment Management Authority, conduct demand monitoring when an upset or other disruption of system operation occurs. Such occurrences as explosive or corrosive materials in the sewer, operating difficulties (blockages or plugging in the system), and obvious violation of license or pre-treatment requirements would require demand monitoring.

4.8.1.4 Monitoring for compliance

The primary responsibility of WSPs under Section 108 (1) of the Water Act 2016 is to ensure that the owners or operators of trade and industrial undertakings discharging trade effluent into the sewerage system within their jurisdictions fully comply with the prescribed regulations and standards. Operators of trade and industrial undertakings shall also exercise powers of self-monitoring. This is to ensure that the trade effluent discharged into the sewerage system and eventually water bodies do not in any way cause pollution of the environment; harm to human health; damage to the sewerage system; or contravene any applicable laws or standards. To this end, each WSP shall, collect samples, monitor and analyse the results of effluent quality testing in order to ensure compliance with the guideline values/standards for effluent discharge into public sewers and public water courses as set out in Schedules 6 and 7 to the WASREB Guidelines on Water Quality and Effluent Monitoring[31] prepare monthly reports and submit the reports to the WSP on a quarterly basis.

Owners or operators of trade and industrial undertaking not meeting prescribed effluent discharge standards shall be required to put in place appropriate pre-treatment facilities whose functionality shall be regularly monitored by the WSP and NEMA.

4.8.2 Self-Monitoring by owners or operators of a business, trade or industrial undertaking

Since the WSP may not be able to perform all the various trade effluent discharge monitoring functions, it is the responsibility of the owner or operator of trade or industrial undertaking to routinely monitor the quality of their effluent being discharged in accordance with prescribed standards. Section 14 of the EMCA (Water Quality) Regulations[32] specifically requires every person who generates and discharges effluent into the environment under a licence to carry out effluent discharge quality and quantity monitoring in accordance with prescribed methods and procedures of sampling and analysis, and to submit quarterly records of such monitoring to the Authority or its designated representative (WSP). Self-monitoring will be undertaken by the owner or operator of the trade or industrial undertaking in accordance with the requirements of the effluent discharge license.

Each owner or operator of trade or industrial undertaking is therefore required to do its own sampling and analysis. The monitoring frequencies should be listed in the effluent discharge licence as the minimum self-monitoring frequencies that must be performed to meet the requirements of the license. The owner or operator may choose to perform monitoring at a greater frequency than specified in the license, if so desired. The WSP, the Regulatory Board or Authority shall review monitoring records in order to verify compliance with the prescribed regulations, standards and/or guidelines. The WSP may enter into appropriate agreements with the owners or operators of trade or industrial undertakings discharging trade effluents into the sewerage system on the monitoring schedule.

Section 73 of EMCA 1999 also requires all owners or operators of irrigation project schemes, sewerage systems, industrial production workshops or any other undertakings which may discharge effluents or other pollutants to, from time to time, submit on demand, to the Authority accurate information about the quantity and quality of such effluent or other pollutant discharged.

[31] WASREB, March 2008. Guidelines on Drinking Water Quality and Effluent Monitoring

[32] Environmental Management and Co-Ordination (Water Quality) Regulations, Legal Notice No. 120 of 2006, Kenya Gazette supplement No 68, 29th September, 2006

4.9 Effluent sampling, analysis and compliance reporting

The number of samples to be analysed shall be determined by the risk factor drawn from the volume of activity and quality of effluent. The sample analysis shall include a schedule that determines the test based on risk factors to preempt the risk. Compliance will be looked at in terms of: (a) the number of tests conducted against the number of samples planned according to guideline; and (b) the number of samples within the norm against the number of samples tested. If it is deemed necessary, the Regulatory Board may take a sample to carry out an independent analysis of the sample.

4.9.1 Sampling points for both trade units and wastewater treatment plants

Samples will be collected from points depending on the purpose as follows:

a) Operation and maintenance purpose: Influent and effluent from the different stages of the effluent treatment plant depending on size; or
b) Compliance purpose: The ETP effluent point directed to the public sewers.

Samples may be collected at the following points:

- **Influent (raw effluent)** - at a convenient point after screening and detritus removal, but before primary settling, therefore often termed as “screened sewage”;
- **Effluent from primary settling tanks** - a point at the lowest end of the effluent channel to allow thorough mixing;
- **Effluent from trickling filters** - (for settleable solids tests only);
- **Effluent from aeration channels** - in case of an activated sludge plant, where a grab sample of mixed liquor is taken;
- **Effluent of humus tank or final clarifier** - taken from effluent channel if possible;
- **Sand filter effluent** - from effluent channel or sump;
- **Final effluent to stream** - which can be from maturation ponds or from river, from grass plots or from reed-beds; and
- **Receiving stream** - above and below point of discharge, if necessary.

A specific designation for each sampling point should be used and marked clearly on the plant, on the sampling bucket and on the bottle. While a specific plant may not have all the sampling points mentioned, a more sophisticated plant may have even more. The points must be arranged so that a uniform and true picture of the performance of each unit of the plant is obtained.

A WSP may develop an internal sampling plan for the compliance self-monitoring events. A sampling plan should be documented in written form, be user-friendly to the sampling staff. It should include the following items:

a) Monitoring point(s) description;
b) Sampling methods and protocols;
c) Flow monitoring;
d) Equipment calibration and standardization

e) Parameters for analyses; e.g. P.H.E.C
f) Appropriate sample containers, preservatives and storage; and
g) Sample identification and chain unit should develop specification of custody procedures.

4.9.2 Methods of sampling and sample collection

The method of sampling and sample collection, storage shall not introduce contaminants and the sample will need to be representative as much as possible. There are four main methods of sampling as follows:

a) **The grab (or spot) sample:** The grab sample is normally not representative and can only give a rough idea of the effluent quality at the time of sampling.
b) **Composite samples over short periods of time:** The composite sample over a short period is better than the grab sample and is more or less representative of the sewage or effluent quality over that period.
c) **Composite sample over 24 hours:** The composite sample over 24 hours requires that sampling shifts be arranged over the day. The even-sized samples collected hourly or half-hourly and the main sample made up from this after thorough stirring.
d) **Composite samples over 24 hours in relation to flow:** Composite samples in relation to flow can only be collected if the works has a flow meter and recorder. Samples are best collected separately at intervals of one hour over the sampling period.

When sampling, care is taken that the sample is taken from the body of the water (flowing or stagnant) and not just from the surface.

4.9.3 Sample Analysis

All laboratories generating water and effluent data must have a recognized certification. Such certification shall be for the test method and the analyte(s) being measured. The laboratories shall ensure that proficiency tests are performed in each matrix/analyte combination (where available) for which certification is sought. In this regard a WSP is not obliged to install and maintain a laboratory capable of carrying out all the required tests. If certain tests are outsourced, the WSP is required to verify that the chosen laboratory is accredited and maintains a credible quality assurance system. The WSP should indicate in the sampling schedule which laboratories it uses for the analysis of the different parameters.

4.9.4 Reporting by owners or operators of trade premises

The owners or operators of trade premises shall submit the following reports to the WSP with copies submitted to the Regulatory Board and the relevant County Department and/or agency:

a) Sample schedules for self-monitoring;
b) Quarterly and annual reports on effluent; and
c) Any other reports in accordance with conditions of license.

4.9.5 Reporting by WSPs

The WSPs shall submit quarterly and annual reports on effluent monitoring including a summary explanation highlighting the problem areas (non-compliance) and the corrective measures taken to the Regulatory Board

with copies submitted to NEMA as well as the relevant county department and/or agency. For each wastewater treatment plant, a sample schedule shall be required to accompany a WSP's quarterly and annual report on effluent testing for each treatment plant.

4.9.6 Publication of Results

Since the public and stakeholders have a right to be informed about effluent quality, the WSP shall publish the results of the monitoring and evaluation interventions in its annual performance report.

4.10 The basis for calculating a trade effluent surcharge

Section 108 of the Water Act 2016 on control of trade effluent[33] vests in the water service providers the duty to put in place measures for the receipt and handling of trade effluent without causing - (a) pollution of the environment; (b) harm to human health; (c) damage to the sewerage system: or (d) a contravention of applicable laws or standards set by the Regulatory Board. No person is therefore allowed to discharge any trade effluent from any trade premises into the sewer system of a WSP without consent. An application for consent to discharge effluent into the sewer system must state:

a) the nature or composition of the trade effluent;
b) the maximum quantity of the effluent which it proposes to discharge on any one day;
c) the highest rate at which it is proposed to discharge the effluent; and
d) any other information required by the WSP.

The WSP may give the consent subject to conditions, including conditions requiring pre-treatment and payments to the WSP of charges for the discharge. The contravention of the provisions under Section 108 of Water Act 2016 and any other applicable law constitutes an offence.

It is therefore the duty of a WSP to only accept trade effluent of acceptable quality and quantity into its sewerage system that the treatment plant linked to that system is capable of treating in accordance with the prescribed standards. To this end, the WASREB Drinking Water Quality and Effluent Monitoring Guidelines 2008 read together with EMCA (Water Quality) Regulations, 2006 aim to assist WSPs:

a) Ensure and monitor compliance with established trade effluent discharge standards;
b) Verify the actual quality and quantity of effluent discharged into the sewer system;
c) Monitor the operational efficiency of the wastewater treatment system;
d) Determine the treated effluent quality released into the environment; and
e) Take remedial measures to avoid pollution of the receiving water body.

4.10.1 The nature of trade effluent surcharge

The trade effluent surcharges envisaged under Section 108 (4) of the Water Act 2016 thus anticipates the application of the polluter pays principle based on both the volume and quality of trade effluent discharged

[33] Section 108 (7) of the Water Act 2016 defines "trade effluent" as any liquid, whether with or without suspended particles, produced as a by-product in the course of any trade or industry.

into the sewer system in accordance with the prescribed effluent quality standards. The trade effluent surcharge unlike the sewerage levy provided under Section 109 of the Water Act 2016 is not intended for cost recovery from the provision of sewerage services[34] to customers but to help WSPs enforce trade effluent discharge standards so as not cause pollution of the environment; harm to human health or damage to the sewerage system.

The WSPs should hence explain to customers that the trade effluent surcharge based on the polluter pays principle is separate from the sewerage levy and that it shall only apply to owners or operators of trade or industrial undertakings who discharge trade effluent into the sewerage system whose quality and quantity do not meet the prescribed discharge standards. As such, owners or operators of trade or industrial undertakings who fully comply with the effluent discharge standards will not be subject to the trade effluent surcharge. It is assumed that faced with paying higher cost for their discharges, the owners or operators of trade or industrial undertakings will be encouraged to comply with the discharge standards and to adopt pre-treatment technologies and practices.

The structure of the trade effluent surcharge is intended to compel all trades and industries to meet the prescribed discharge standards and encourage pre-treatment of effluent to required effluent quality standards before discharge into sewerage system.

A desirable polluter pays based trade effluent surcharge system should:

a) be simple, practical and cost effective taking into account the pollution level and the type of treatment system in place;
b) reflect the treatment and environmental costs of effluent pollution;
c) bear some relation to marginal abatement costs
d) generate significant revenue for treating the polluting effluent to prescribed quality standard for release into a water course, the environment and/or for end use;
e) be prohibitive enough to encourage businesses and industries to invest sufficient money on pre-treatment to meet the prescribed discharge standards.

4.10.2 Guiding principles

a) Trade effluent surcharge is payable by all business, trade or industrial undertakings or entities discharging effluent into the public sewer system for effluent that does not meet the required effluent discharge standards;
b) The trade effluent surcharge follows the polluter pays principle. The surcharge rate will depend on (i) volume of trade effluent discharged; and (ii) quality of effluent discharged from any business, trade or industrial undertaking; and
c) The sum of trade effluent surcharge collected must meet the cost of treating the polluting effluent discharged to a quality acceptable for release into a water course, the environment and/or for end use.

[34] The Water Act 2016 defines "sewerage services" as "the development and management of infrastructure for transport, storage, treatment of waste water originating from centralized and decentralized systems but shall not include household sanitation facilities."

4.10.3 Approaches to calculating trade effluent surcharge

The Regulator encourages the WSPs to adopt any available method to calculate trade effluent surcharge. The method adopted should be simple, practical and cost effective taking into account the pollution level and the type of treatment system in place. It should be noted that not all biological treatment systems are the same while tertiary systems are more prone to upsets than stabilization ponds. Some of the available approaches are highlighted below.

4.3.10.1 Mogden Formula for calculating trade effluent surcharge

The Mogden Formula can be used by a WSP to calculate the trade effluent surcharge that a business, trade or industry will incur when it discharges trade effluent into a public sewer system. The calculation of trade effluent surcharges will produce a cost per cubic metre, and take into account a range of variables including the levels of contamination and strength of the effluent.[35] The formula uses the following data to calculate how much it will cost to collect, control, deliver to and treat effluent at the waste water treatment works and therefore determine the size of the bill to be charged:

a) the maximum volume of effluent that the owner or operator of trade premises has consented to discharge per day (Availability Charge);
b) the load of settled Biochemical Oxygen Demand (BOD) and total suspended solids in the effluent that the owner or operator of trade premises has consented to discharge (Availability Charge);
c) the actual volume of effluent that the owner or operator of trade premises discharge into the public sewer (Operating Charge); and
d) the actual level of settled Chemical oxygen demand (COD) and total suspended solids in the effluent that the owner or operator of trade premises discharge into the public sewer (Operating Charge).

4.3.10.2 Calculating trade effluent surcharge based on quality of effluent

Section 108 (3) (a) of the Water Act 2016 provides that an application for consent to discharge trade effluent by a trade or industrial undertaking must state the nature or composition (quality) of the trade effluent to be discharged into the public sewerage system. An effluent quality or pollution level charging system is based on the notion that the existence of a pollution surcharge, even at a low level, provides some incentive for good practice and may be helpful in raising awareness of the costs of pollution. The surcharge can be levied on specified pollutant discharges on the basis of load and/or concentration and should reflect sewerage system damage imposed by the polluting effluent discharged into the system. The rate will therefore depend on the quality and volume of trade effluent discharged from any business, trade or industrial undertaking into the sewer system. In this regard, establishing the effluent quality values should follow a conservative approach assuming that units do not have any pre-treatment / treatment facility. The general guideline values for effluent discharge into public sewer system are presented in ***Annex 3.***

4.3.10.3 Calculating trade effluent surcharge based on the volume of effluent discharged

Section 108 (3) (b) (c) of the Water Act 2016 provides that an application for consent to discharge trade effluent by a trade or industrial undertaking into a public sewerage system must state the maximum quantity of the effluent which the trade or industrial undertaking proposes to discharge on any one day and the highest

[35] Business Stream, Scottish Water Company, Trade Effluent Tool Kit 2- Charges in Scotland

rate at which it proposes to discharge the effluent. Thus in addition to quality of effluent, the volume of trade effluent discharged should be considered to establish a strategy for reducing pollutant levels. The volume of trade effluent may be calculated based on either trade effluent meter or water use less domestic and non-return water to sewer allowances.

a) **Calculating the volume of trade effluent based on trade effluent meter:** The volume of trade effluent should be calculated based on trade effluent meter which measures the actual amount of trade effluent leaving a premise or site. In this regard, the WSP shall require an owner or operator of a trade or industrial undertaking to install a trade effluent meter which shall form the basis for calculating trade effluent volumes and the surcharge. Installing a trade effluent meter shall therefore be a condition for grant of trade effluent discharge consent. It shall also be a condition of consent that the meter is routinely repaired or replaced if it is found to be faulty to ensure the continued accurate assessment of volume.

   The WSP shall inform the owner or operator of trade premises by Standard Notification of the requirement to fit a meter(s) so that primary trade effluent volumes and surcharges can be calculated. This will follow the grant or issuance or variation of Consent to discharge trade effluent. Consequently, the WSPP shall set up an account for the Discharger. The WSP shall require the Discharger to install the meter(s) within two months of the Notification being sent. Nevertheless, there may be cases where the WSP may require a shorter timescale due to grossly inaccurate data or it may be extended where further work is required to enable installation. If the meter is not fitted within two months:

   i) a solution is applied to the account which will allow the WSP to estimate the volumes in the best way possible without compromising the revenue; o**r**
   ii) if a solution cannot be easily applied and the WSP is potentially losing revenue, a 'Meter Enforcement Notice' will be sent to the owner or operator of a trade or industrial undertaking giving notice of a deadline by which time a meter must be installed. This deadline will shall be one month.

   Failure to respond to the enforcement notice (and to install a meter as required) will result in the matter being referred to the Regulatory Board.

   If the photographic evidence of the meter details is of insufficient quality and after a subsequent inspection visit the meter is deemed to be inadequate in any respect, then a Standard Notification will be sent with a two-month deadline for installation of a new meter.

   The WSP shall require owners or operators of trade or industrial undertakings to test, repair or replace their trade effluent meters and to provide the WSP with the details of the test, repair or replacement including sufficient photographic evidence. The owner or operator of a trade or industrial undertakings shall also notify the WSP of its intention to exchange meters and shall provide sufficient photographic evidence on the exchange as agreed.

b) **Calculating the volume of trade effluent based on water use:** As the meter measures the actual amount of trade effluent discharged, any allowances may be only applied where the industry, business or trade does not have an effluent meter but have sub-meters that are dedicated to each water using activity that generates trade effluent. In this case the WSP shall take assess and determine the volumes of effluent taking into account water use less any domestic and non-return water to sewer allowances.

The non-return water allowances include losses from e.g. non-recovered steam, evaporative losses from cooling towers and water used as a product ingredient.

All allowances should be agreed between the owners or operators of trade and industrial undertakings and the WSP. In the absence of an agreement the owners or operators are required to justify their allowance claims with verifiable data. Supporting data may include, production run data for items produced containing water, waste transfer notes, readings from sub meters installed to measure evaporation loss or manufacturers specification for evaporation loss.

It should be emphasized that assessing and determining the volumes without a meter is not accurate, which may be reflected in less accurate trade effluent surcharges leading to either revenue losses or over-charging. All the owners or operators of trade and industrial undertakings should therefore be required to install trade effluent meter.

4.3.10.4 Pollution risk based approach

The WSPs may adopt a pollution risk based approach that takes into account the likelihood factor. The pollution approach also takes into account a customer's history whereby customers with good performance history can be incentivized by considering the likelihood factor. In this regard, the rate charged would depend on the volume and quality of effluent discharged from any trade or industrial undertaking. The quality of effluent is determined based on COD. In order to establish the quality (pollution level) of effluent for any trade or industry, each trade or industry segment is assigned a COD value that is representative for effluent from that trade or industry segment. The effluent COD values for effluent discharge should hence – (a) reflect the typical concentration of COD in effluent from the segment; and (b) follow a conservative approach assuming that units do not have any pre-treatment/treatment facility.

In addition to quality of effluent, the volume of effluent discharged is considered to establish a strategy to reduce pollutant levels. For this purpose, trades and industries should be categorized based on the analysis of volumes of their discharge. The large and medium discharging entities should be targeted to develop and implement in-house pre-treatment and treatment facilities, which will greatly help reduce pollution. Most of the large dischargers are also highly polluting industry segments. The structure of the pollution risk surcharge is thus intended to incentivize big polluters (discharging large volumes of very polluted effluent) to establish their own effluent treatment plants. The small and some medium trade units may not be required to take any measures to control the volume and quality of effluent discharged.

The pollution surcharge rate may hence be established according to the volume and quality of effluent discharged with the various categories or segments of trades and industries paying different rates according to the volume and quality of effluent discharged into the central network. The pollution risk surcharge can also be payable by all discharging wastewater into the central network (except dwellings) for effluent that meets the sewer standards. In this case, the sum of the surcharge collected must meet the Operations and Maintenance (O&M) cost of the sewer network and all Wastewater Treatment Plants (WWTPs) operated by the WSP.

4.4 Encouraging customers to reduce their trade effluent surcharges and costs

WSPs shall encourage trades or industries to take all measures necessary to control and reduce the amount of water they use and trade effluent they discharge. Some of the measures they can take include:

a) reducing the overall amount of wastewater/trade effluent they discharge.;
b) introducing pre-treatment processes to improve the quality of their effluent before it enters the public sewer systems;
c) reducing the discharge into the sewer system; and
d) recycling or reuse of treated wastewater wherever possible to reduce water bills.

4.5 Administration and application of trade effluent surcharge

One of the key principles of an effective and successful trade effluent charging system is simplicity, ease of administration and enforceability. Success factors for the implementation of a trade effluent charging system include:

a) a competent WSP to monitor, and enforce the surcharge;
b) a functioning administrative system to collect and enforce the surcharge; and
c) presence of a well-developed trade effluent quality and discharge monitoring, measurement, inspection, and enforcement system.

The management of the trade effluent charging system shall be guided by the following principles of public finance management:

a) revenue raised shall be equitably used stimulating investment in pollution reduction; strengthening the monitoring, measurement and inspection systems; strengthening wastewater treatment capacity; supporting abatement and conservation activities; capacity building and training etc.;
b) the revenue shall be used in a prudent, transparent and responsible manner; and
c) management of the revenue shall be responsible, and fiscal reporting shall be clear.

For ease of administration and enforceability, the revenues accrued from the trade effluent charges may be ring fenced and earmarked for improving wastewater treatment capacity, build monitoring and enforcement capacity and support conservation and pollution abatement programmes including cleanup activities.

4.6 Regulatory and monitoring framework

The Regulatory Board shall regulate and monitor the implementation and application of the approved trade effluent surcharge. The Regulatory Board may from time to time conduct inspections of the WSPs trade effluent management systems and to ascertain the proper application and usage of the approved trade effluent surcharge. If the Regulatory Board finds that the WSP applies the approved trade effluent surcharge in a manner contrary to these Guidelines, the Regulatory Board shall take such appropriate action to correct the anomaly. On their part, the WSPs shall establish a dedicated trade effluent monitoring and enforcement unit.

5 IMPLEMENTATION AND MONITORING FRAMEWORK

Sanitation and Trade Effluent levy or surcharge systems are most likely to be implemented successfully in contexts with clear institutional responsibility for the implementation, management and governance of the levies and surcharges. The WSP shall be required to also clearly outline the organization structure for implementation as well as the roles and responsibilities of different stakeholders including the utility

departments, the county government departments, NGOs and private sector players, WASREB, national government agencies, development partners, consumers etc. The Regulatory Board shall exercise oversight powers over the implementation of the sanitation services and trade effluent levies or surcharges.

5.3 Monitoring and Evaluation Framework

The WSPs shall establish a sound monitoring and evaluation framework for the sanitation service and trade effluent levy or surcharge systems. The levy or surcharge monitoring framework shall have clear performance targets, input, output and outcome indicators.

5.4 Review of guidelines

These guidelines shall be reviewed after a period of five (5) years from the effective date. The review process shall involve input from utilities, consumers and all other relevant stakeholders. The Regulatory Board shall provide the guidelines and procedures for undertaking the review of these Guidelines.

ANNEX 1: STEPS AND ISSUES TO BE ADDRESSED IN THE FORMULATION OF SANITATION LEVY

Step	Description	Relevant issues
STEP 1: CONTEXT AND SITUATION ANALYSIS	This step should involve a comprehensive situation analysis and definition of the context in which the rules and procedures for setting sanitation charges, levies or surcharges are determined and should provide guidance on the principles to be followed. The analysis shall focus on the following key aspects: a) Policy and legislative environment b) Economic environment c) Population and demographic trends d) Sanitation situation e) Sanitation financing situation f) Institutional environment	• What is the political environment? What is likelihood of political support for accelerated move towards sanitation levies or surcharges? • What is the economic environment including the average household income levels within the service area? Does the economic and income situation justify the proposed sanitation levy? • • What are the population and demographic characteristics of the WSP service area? What are the trends in population and urban growth rates? • What is the policy and legislative environment, the laws and formal statements of policy by relevant authorities and other government ministries which govern the specification of sanitation services and levies or surcharges? Is there a need for these to be reviewed? • What is the coverage and situation of access to basic and safe sanitation (sewerage and onsite) services within the service area? • Are the onsite sanitation services well defined? What is the cost of delivering safe onsite sanitation service? Is there any system of comparative competition between service providers within the service area to promote efficiency? • What is the situation of institutional sanitation services within the service area? Describe performance status in relation to sanitation services indicators • What are the sanitation financing and expenditure situation, trends, gaps and future financial requirements (projections)? • What is the WSP's governance profile including the strengths and weaknesses of governance arrangements • What is the existing institutional arrangement and stakeholder landscape for sanitation? Who are the key stakeholders? Are the roles and responsibilities clearly defined? Is there likelihood of support/opposition for sanitation charge, levy or surcharge;
STEP 2: STEP 2: REVIEWING EXISTING SANITATION TARIFFS AND SETTING SERVICE OBJECTIVE	This step should involve a review of the existing policy on sanitation tariffs and gaps in order to set the service objectives. The review should focus on the following: a) The existing policy on sanitation tariffs b) Potential for generation of revenues for provision of non-sewer sanitation services through the proposed levies, charges or surcharges; segmentation of customers; c) Assessment of the willingness to pay if applicable or necessary;	• What is the current policy on sanitation financing and tariffs? • Is the tariff structure adequate for full cost recovery and provide services to the informal and low income areas? • What is the current sanitation services coverage? What are the existing levels of service provision – water, sewerage and onsite sanitation across the service chain? • What levels of service are being accessed by the poorest? Is there a need for social mapping? • What, if any, are the restrictions on serving informal or illegal settlements? • What quality and quantity of services are desired by users and consumers, both present and potential? • Can services be delivered through alternative, differentiated, modes of provision? • What is the affordability of the services at various levels of provision particularly in the poor and low income areas?

	d) Assessment of performance imperatives and setting of service objectives; and e) Identifying present and potential sanitation services desired.	• What are the primary objectives of service delivery in this context – social, economic, financial, environmental? • How costly is access to safe sanitation within the service area? • What are the existing levels of efficiency of the WSP? • What is the financial situation of the WSP? • Is there need for cross subsidies through the introduction of a sanitation levy or surcharge to provide safe sanitation to the poor and low income areas? Does the WSP need to introduce concepts of service and pricing differentiation? • Are there any existing government subsidies for sanitation? What is the existing level of subsidies to average customers of sanitation services (sewerage and onsite sanitation)?
STEP 3: DETERMINING REVENUE REQUIREMENTS	This step should involve determining the revenue requirements for sustainable delivery of the present and desired safe non-sewer sanitation services within the WSP service area. This should include estimation of future costs required to ensure operational and service sustainability. The results of the analysis at this stage should provide the justification for the WSP's proposed sanitation services levy, charge or surcharge as well as any subsidies that may be needed to fill any gaps that may remain to ensure universal access to safe sanitation especially in poor and low income areas.	• What are the total revenue requirements for sustainable delivery of the present and desired safe sanitation services within the WSP service area? • What are the future costs required to ensure sustainability? • Is there a justifiable need for a sanitation charge, levy or surcharge and extra subsidies for provision of safe onsite sanitation services within the WSP's service area? • What are the present operating and capital expenditures, capital maintenance expenditures, costs of capital at present service levels? What should they be at proposed service levels? • Have these costs incorporated direct support costs? • What is the average inflation rate? • What are the other potential revenue streams to augment the proposed sanitation levy, or surcharge?
STEP 4: DESIGNING AND STRUCTURING SANITATION SERVICES LEVY OR SURCHARGE SYSTEM	Having determined the context and situation, the desired services and revenue requirements for financially sustainable services, this step involves designing and establishing the levy system. At this stage, the WSP should therefore determine the following: a) The nature and design of the levy or surcharge system; b) The guiding principles; c) Purpose and objectives of the levy or surcharge system; d) Options for determining the levy or surcharge; e) How the levy or surcharge shall be managed and regulated; and	• What will be the basis for setting the level of the levy or surcharge and for sharing the total revenue burden between different consumer segments? • What are the guiding principles for the levy or surcharge system? To what extent does the proposed system reflect the principle of revenue adequacy, social fairness, simplicity and enforceability? • What is the character of the levy or surcharge? • What does the levy or surcharge system want to achieve? • Which option for charging the levy or surcharge can best achieve the objectives of the system? • Are there any other potential revenue streams that the WSP can leverage to achieve universal coverage? • Is there sufficient willingness and ability to pay the proposed levy or surcharge? If not, reconsider service objectives and methods of provision. • How simple is the charging system to aid customers understanding and responsiveness? • Are there effective payment and revenue collection mechanism in place? • How will the levy or surcharge applied and who will benefit? Is there an appropriate balance in sharing the total revenue

	f) How the levy or surcharge shall be applied and who it will benefit.	burden between different consumer segments? Have the poorest and the most disadvantaged and vulnerable clearly targeted? If not, reconsider service objectives and methods of provision Step 2. • How will the system be regulated and managed? • How will the system be sustained?
STEP 5: IMPLEMENTATION AND MONITORING	Sanitation levy or surcharge systems are most likely to be implemented successfully in contexts of clear institutional responsibility for sanitation, and strong regulatory oversight. This step therefore involves designing an enabling implementation, regulatory and monitoring framework for non-sewer sanitation services that is consumers focused and will ensure prudent application of the revenue accrued to meet the intended objectives and outcomes of the levy system.	• Are the institutional frameworks, roles and responsibilities for implementation the levy or surcharge system well defined? • What will be the roles of different stakeholders in the implementation of the system? • Is there a defined implementation strategy and business plan for the system? • What sanctions will apply for WSP's non-compliance with the regulations governing the levy or surcharge system? • What can the county governments do in support of the system? • What are the mechanisms for monitoring and evaluating the system? • Is there an adequate strategy to communicate to customers about the implementation of the levy or surcharge? • What customer involvement mechanisms are planned? • Is there any need for adaptation of existing regulations, rules of local by-laws o enforce compliance? • Is there a system of financial control, monitoring and evaluation of the levy or surcharge?

ANNEX 2 – TECHNICAL PROCEDURES AND PROCESSES FOR THE FORMULATION OF TRADE EFFLUENT SURCHARGE (TES)

Procedure	Description and relevant issues to consider in formulating TES
Undertake Comprehensive Upstream Trade effluent sampling and Analysis	To design the appropriate charging mechanism, an assessment will be conducted to evaluate and use the existing information to structure a possible trade effluent management system. The WSP shall take on-site samples (either through sampling or composite sampling) from high-risk trade clients (industries, commercial clients etc.) to establish the detailed characteristics of the effluent they are discharging into the utility's sewer including quality and quantities. The WSPs shall be guided by the following priority Industry categorization of Trade premises during the sampling process: • Leather and tanneries • Textiles factories • Soap and detergents manufacturer • Bakeries and confectioners • Edible oils and fats manufacturers • Dairy industries • Food & beverage manufacturers • Breweries and distilleries • Petrol stations • Hotels and fast food restaurants • Laundries • Hospitals,clinics and morgues • Shopping malls • Garages/motor vehicle service centers • Slaughterhouses • Paint manufacturers
Development of the Trade Effluent surcharge	Based on the Identification of the most critical risks to the utility staff and sewer networks from the results of the upstream sample analysis, The Utility shall then propose a Trade Effluent Surcharge to be imposed on clients who do not comply with the discharge standards. The Regulatory board encourages the WSPs to adopt any available method to calculate trade effluent surcharge. However, whichever method a WSP adopts to calculate the trade effluent surcharge, it should be simple, practical and cost effective considering the pollution level and the risk posed to WSP staff, sewer network and wastewater treatment plant. Several technical approaches to developing the Trade Effluent Surcharge are available for adoption by the WSPs. These include but not limited to – (1) The "*Mogden Formula*", (2) Risk Based Approach which is a method to account for the risks from industrial discharges applying the formulae: **Risk =Severity x Likelihood** Whichever method the WSPs chooses to formulate or calculate the Trade Effluent Surcharge, the WSP shall communicate this clearly to all its relevant stakeholders and the regulator
Review of the existing Trade effluent discharge Licensing arrangement to factor in the	Under this process, the WSP will undertake the following activities: • Review of the existing Discharge License system and redraft it to reflect the Trade Effluent surcharge proposed renewals. • Develop and adapt a Trade Effluent Surcharge operation manual

newly developed trade effluent surcharge	• Integrate the proposed trade effluent surcharge with the WSP's mainframe customer billing system.
Training and capacity building of utility staff and utility clients on the new trade effluent surcharge mechanism	The WSP to facilitate targeted trainings and capacity for their staff, clients and other relevant stakeholders on understanding and implementation of Trade Effluent Surcharge. Training, at a minimum, will cover the following broad areas: • Pretreatment equipment and technologies in wastewater; • Occupational health and safety; • Operational integrity of the sewer network; • Operation the Trade Effluent Surcharge • Effluent sampling, testing, quality assurance and control, data management and reporting.
Stakeholder management and communication strategy during the entire process	The WSP carrying out public or stakeholder consultations is a key element of developing the Trade Effluent Surcharge. The objective of the consultations is to get relevant stakeholders' buy-in and concurrence on the relevance and benefits of the proposed Trade Effluent Surcharge. The awareness creation and stakeholder engagement shall be centered on promoting the five main objectives of the surcharge: • Safety of people; • Protection of assets (pipes, plant and equipment); • Protection of treatment processes and ensuring that NEMA discharge conditions of STP outlets are met; • Facilitation of legal and license requirements; • Facilitation of investment in wastewater treatment and reuse; and • Conservation of water sources and protection of the environment.

ANNEX 3: GUIDELINE VALUES FOR EFFLUENT DISCHARGE INTO PUBLIC SEWERS

Parameter	Unit	Guideline value
P^H	P^H	6.0-9.0
BOD (5 days at 20℃) max	mgO $_2$/l	500
COD, max	mgO_2/l	1000
Colour	Hazen units	<40
Temperature, max	℃	20-35
Total suspended solids	mg/l	250
Total non-volatile solids, max	mg/l	2000
Phenols, max	mg/l	10
Detergents	mg/l	15
Oils/Grease, max – where conventional treatment shall be used	mg/l	10
Oils/Grease, max – where ponds is the final treatment	mg/l	5
Ammonia Nitrogen	mg/l	20
Substances that will be obnoxious to smell		Shall not be discharged into the sewer
Arsenic (As), max	mg/l	0.02
Cadmium (Cd), max	mg/l	0.5
Cyanide, max	mg/l	2.0
Total Cyanide, max	mg/l	2.0
Cobalt (Co), max	mg/l	1.0
Chromium VI (Cr^{6+}), max	mg/l	0.05
Total Chromium (Cr), max	mg/l	2.0
Copper (Cu), max	mg/l	1.0
Mercury (Hg), max	mg/l	0.05
Alkyl Mercury	mg/l	Not Detectable
Phosphates	mg/l	30
Free and saline Ammonia as Nitrogen ($N\text{-}N_4/NH_4$), max	mg/l	4.0
Nickel (Ni), max	mg/l	3.0
Nitrates (NO_3), max	mg/l	20
Lead (Pb), max	mg/l	1.0
Sulphide (S^{2-}), max	mg/l	2.0
Phenols	mg/l	10
Selenium (Se), max	mg/l	0.2
Zinc (Zn), max	mg/l	5.0
Total non ferrous metal, max	mg/l	10
Chlorides (Cl^-), max	mg/l	1000

Source: Schedule 6 to the WASREB Guidelines on Water Quality and Effluent Monitoring [The Environmental Management and Co-ordination (Water Quality) Regulations, 2006]