

## Technical report on the results of the Baseline Analysis of the legislative, institutional and content aspects related to 20 target areas of the Protocol on Water and Health for revision of the National Targets of Ukraine

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## I. Introduction

Ukraine ratified the Protocol on Water and Health by the relevant Law of Ukraine in July 2003. In accordance with the Law on Ratification and on the Order of the Cabinet of Ministers of Ukraine the Plan of measures for the implementation of this Law was developed.

In fulfilling its obligations under Article 6.2 of the Protocol, in 2011, due to the help of the Ukrainian-Norwegian Project of International Aid, Ukraine set 15 National Targets to the Protocol, which was approved by the Order of the Ministry of Ecology and Natural Resources of Ukraine in September 2011.

According to the conclusions of the Summary Report of Ukraine in 2016 about progress on implementation of the Protocol the National Targets set in 2011 have to be revised taking into account actual conditions and tasks in the Protocol areas. At the 4-th session of the Meeting of the Parties to the Protocol in Geneva in November 2016, the Ukrainian delegation asked for international assistance to review its National Targets and Action Plan to achieve them. In response to this request, the National Working plan for Ukraine to the Project “EU Water Initiative Plus” (“EU WI+”) funded by EU was agreed. It includes the relevant activities on baseline analysis preparation, revision of National Targets and development of Plan of measures to achieve the Targets. To implement these activities within the framework and as part of process of the National Policy Dialogue (NPD) on Integrated Water Resources Management (IWRM) and water supply and sanitation a grant support has being provided.

Since 2008, the United Nations Economic Commission for Europe (UNECE) is a strategic partner of Ukraine to organize the NPD as a multi-sectoral platform to discuss water policy reforms and make important decisions during the Steering Committee meetings. The issues of the Protocol implementation were always on the agenda of the NPD on integrated water resources management (IWRM) in 2009-2011 and now they are included in the agenda of ongoing second wave of the National Dialogue on Water Policy, which has begun in March 2017.

The project on revision of National Targets has being implemented in close cooperation of the Ministry of Ecology and Natural Resources and the Ministry of Health of Ukraine and other authorities – members of the Interdepartmental Working Group (IWG) on coordination of implementation of the Protocol on Water and Health. Ukrainian National Environmental NGO (UNENGO) “MAMA-86” coordinated the experts’ work and the stakeholders’ involvement into the process of the National Targets revision through public consultations.

Project implementation was leaded by regular IWG meetings and meetings of the Steering Committee of the NPD in Ukraine supported by “EU WI+” Project and chaired by the Deputy Minister on European Integration of the Ministry of Ecology and Natural Resources of Ukraine. The project was launched at the extended meeting of IWG on September 28, 2017. According to this IWG meeting decision the expert group for preparation of the baseline analysis in all target areas of the Protocol was established and as baseline year for analysis was considered 2015 year.

The expert group included national experts, having knowledge and experience in the areas covered by the Protocol, as well as international advisers appointed by the UNECE and its representatives. This group collected material and drafted the baseline analysis and other documents for further consideration by the IWG and the Steering Committee of the NPD.

In December 2017, the work on the baseline analysis in the 20 areas of the Protocol was completed taking into due account the comments obtained during the stakeholders discussion of the results of the baseline analysis at the extended meeting of the IWG on November 7 within the framework of the Forum “AQUA-Ukraine-2017” and the Steering Committee meeting of the NPD on November 28, 2017. This technical report is based on the results of the baseline analysis of legislation, institutional frameworks and essential aspects of all 20 target areas of the Protocol and was prepared by the expert group.

## II. Baseline analysis

### A. Methodology

This Technical Report presents the results of the baseline analysis by 2015 in Ukraine related to the legislative, institutional and content aspects in the 20 target areas covered by the Protocol on Water and Health. The report will serve as the basis for revision of the National Targets and working on Action plan for their achievement.

The team of experts collected data and information in the following format:

#### Template for baseline analysis and expert evaluation

##### Target area: <sup>1</sup>

##### I. Existing frameworks

##### A. **Strategies, legal/regulatory framework, and international commitments**

*National strategies (title, date of submission/adoption)*

*Main legal/regulatory act(s) concerning the subject area (title, date of enactment)*

*Main applicable international commitments (other than obligations under UNECE Conventions and Protocols) <sup>2</sup>*

##### B. **Institutional frameworks**

*Authorities responsible for enforcement and implementation*

*Involvement of private sector organization(s)*

*Involvement of NGOs and civil society*

##### C. **Financial frameworks**

*Main relevant financial instruments*

<sup>1</sup> For example: Quality of the drinking water supplied (art. 6, paragraph 2 (a))

<sup>2</sup> For example: WHO Drinking Water Guidelines, EU Water Framework Directive, EU Wastewater Treatment Directive, EU Nitrates Directive

## **II. Environmental and/or health situation – the current status and prospects**

### **A. Monitoring programmes and indicators**

*Data availability, their completeness and reliability, data providers*

### **B. Main issues related to the subject area**

*Impacts on human health and/or the environment (measured and/or estimated)*

*Causes of the problems (e.g. improper protection of wells, missing water management plans, missing water safety plans, insufficient wastewater treatment capacity, improper infrastructure)*

### **III. Relevant ongoing and planned activities to address the main issues**

*Main purpose of the activity<sup>3</sup>, assessment of its results and lessons learned*

### **IV. Expert evaluation**

*Overall assessment of the situation in the subject area*

*Prioritization (ranking) of the problems*

*Suggestions for improvement (e.g. the possible way forward)*

*Suggestions for possible targets that can be set in this subject area*

## **B. Legal framework**

A significant impulse to the development of the national legal framework on water quality and water resources management was done by signing and ratification of the Association Agreement between Ukraine as one party, and the European Union and its member states, as the other party (hereinafter referred to as “the Agreement”). At present, the main work is to approximate (by transposition) the Ukrainian water legislation to 6 EU Water Directives: Directive 2000/60/EC of the European Parliament and the Council, dated October 20, 2000, establishing a framework for Community action in the area of water policy; Council Directive 98/83/EC of November 3, 1998, on the quality of water intended for human consumption (Drinking Water Directive); Council Directive 91/271/EEC of May 21, 1991, on urban waste-water treatment; Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (Nitrate Directive); Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks; Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the area of marine environmental policy.

<sup>3</sup> This may also include research and capacity building/development



The main legislative acts regulating the water sector are the following:

**The Constitution of Ukraine**, adopted on June 28, 1996 (applies to all 20 target areas of the Protocol)

According to Article 50: "Everybody has the right to an environment safe for life and health, and compensation for the damage caused by the violation of this right. Everyone has the right to free access to information on the environment state, the quality of food and household goods, as well as the right to disseminate it. Such information should not be identifying as secret by anyone".

**The Law of Ukraine "Basic Principles (Strategy) of the State Environmental Policy of Ukraine until 2020"** of December 21, 2010, № 2818-VI (target areas: IV, VI, VIII, IX-XII, XIV-XIX), among strategic goals and objectives defines Goal 2: "To improve the environmental situation and increase the environmental security level", and Target related to water resources protection, including:

"...implementation of integrated water resources management (IWRM) based on the basin principle; reconstruction of existing and construction of new urban wastewater treatment plants in order to reach by 2020 a 15 % reduction of the water pollution level of by pollutants (primarily, organic substances, nitrogen and phosphorous compounds) and a 20% decrease (to the baseline year) of under-treated wastewater discharges";

as well also in relation to the geological environment and subsoil resources:

- introduction, by 2020, of mandatory reclamation and environmental rehabilitation of territories degraded as a result of activities of enterprises of the chemical, mining -extractive and oil refining industries,
- decreasing of radiation exposure levels and rehabilitation of areas contaminated by radionuclides after Chernobyl disaster, by ensuring the radiation protection of population and environment...»

Section 4. Environmental Policy Implementation Tools, paragraph 4.8 envisages:

“In order to improve the environment protection activity of enterprises, it is necessary to implement a sustainable policy aimed at increasing the requirements to and responsibilities of economic entities for polluting the environment, and at encouraging implementation of nature conservation measures..”

**The Water Code of Ukraine (WCU)** was approved on 06.06.1995, № 213/95-VR (applicable for areas I, IV, VI, IX-XI, XIII-XX).

It regulates relations in areas of conservation, evidence-based rational use of water for the needs of population and various sectors of economy; protection of water against pollution; regeneration of water resources; prevention of littering, harmful impacts of water and elimination of their consequences; improvement of water bodies status, as well as protection the rights to water of citizens, institutions and enterprises.

The Preamble paragraph 1 says "All water (water bodies) on the territory of Ukraine is the national asset of the Ukrainian people, and one of natural bases of economic development and social well-being».

The WCU develops the concept of IWRM and the basin principle as a result of approximation of the EU Water Framework Directive requirements under the Association Agreement between Ukraine and EU. The respective amendments, approved by the Parliament of Ukraine in October 2016, include definition of river basin, basin bodies, in particular basin councils; management tools: river basin management plan, schemes of use, protection and restoration of water resources, water-sector balances of water re-allocation, water monitoring, water body classification, etc.

The WCU contents the following main concepts: the maximum permissible concentration of substances in water; the maximum permissible discharge of substances into water; ecological water discharges, the ecological status of surface water bodies; quantitative and qualitative potential of groundwater and highly modified and artificial water bodies; sanitary protection zones, costal protection strips; water use and abstraction limits.

Article 6 of the WCU stipulates that "Water (water bodies) are property of the Ukrainian people exclusively and are provided for use only". This provision is ensured by the Verkhovna Rada of Ukraine, the Supreme Council of the Autonomous Republic of Crimea and local councils"; several competences on water (water bodies) management are belong to the respective executive bodies and the Council of Ministers of the Autonomous Republic of Crimea.

**Articles 7 to 10** define the competences of various relevant legislative and executive bodies in the area of regulation of water relations.

The key provisions formalised in the Water Code are the following:

**Article 11** stipulates the rights of citizens and their associations, other citizens' organisations, in particular:

- to take part in the consideration by local councils and state authorities of water resources management issues;
- to carry out measures on use, protection and restoration of water resources at their own expenses and voluntary contribution of citizens' associations members;
- to take part in inspections running by central executive bodies (CEBs) on implementation of water protection rules and measures by water users and submit proposals on these matters;
- to carry out public control over the use, protection, and restoration of water resources;
- to obtain information on water bodies status, sources of water and its pollution, plans and measures on water use, protection and restoration of water resources;
- to file lawsuits to court for damages caused to the state and citizens as a result of pollution, littering and depletion of water resources;
- to take part in the development of river basin management plans (RBMP) and flood risk management plans, and to support their implementation.

**Article 13<sup>3</sup>** formalises **Basin Councils** in Ukraine as advisory bodies within the river basin, established to the State Agency of Water Resources to develop proposals and to achieve a consensus of stakeholders on water resources management within the basin. Decisions of Basin Councils shall be taken into account in the RBMPs development and implementation of measures ...

The state water resources management is carried out following the basin principle based on the state, target, inter-governmental and regional programmes on water use and protection and restoration of water resources, as well as river basin management plans.



In Ukraine, **9 river basin districts** are established in accordance with **Article 13-1**. Also, water management areas are established within the river basins, taking into account the basin management principle, administrative-territorial units, physical and geographical conditions and economic activities.

**Article 14 of WCU** defines the **competence of state bodies in the area** of management and control over the use, protection and restoration of water resources.

The state ensures control over the compliance of water legislation requirements by all legal entities and private individuals (Article 18 -20).

WCU introduces the concept of the **state monitoring of water** (Article 21-22), the components of which are biological, hydromorphological, chemical and physico-chemical monitorings. Based on these indicators the environmental status/potential of surface water bodies are identified and classification of those water bodies is carried out. The chemical status of surface or groundwater body is determined by separate groups of pollutants and, based on the ecological quality standard the water body is classified as “good” or “at risk not achieving good” status (Article 21.1). The list of pollutants to determine the chemical status of surface and groundwater bodies is approved by the Ministry of Ecology and Natural Resources.

**Article 22. Environmental Impact Assessment (EIA)**. The law requires that EIA is carried out in the following cases: in the course of allocation, designing and construction of new, and reconstruction of existing utilities, facilities and other assets related to water use.

The state maintains a **state register of waters (Article 24)** to collect data on the quantity and quality of water, water usage based on which the water distribution between water users is making, and measures of water resources management are working out.

Also, **State registration of water use** (collection of data on water abstraction and use, the discharge of return water and pollutants, the availability of circulating water supply systems and their capacity, as well as wastewater treatment systems in operation and their efficiency) is conducted in Ukraine (**Article 25**), by providing water use reports by waterusers. WCU requires the maintenance of the **State Water Cadastre (Article 28)**.

The state introduces **economic regulation** of the rational water resources use as well as a number of organizational and economic measures:

- issuance of permits for special water use;
- establishment of fees rates for special water use;
- providing water users with tax, credit and other privileges in case of implementation of low-waste, waste-free, energy- and resource-saving technologies and of other measures to mitigate the negative impact on water in accordance with the legislation;
- compensation, in accordance with the established procedures, of losses affected of water bodies in case of violation of legal requirements.

**Articles 33-41** establish **standardization and regulation** in the sector...to ensure environmental and sanitary - hygienic security of water by setting a range of interconnected regulations:

- standards of environmental security of water use;
- environmental standard of water quality of surface and ground water;
- standards for the maximum permissible discharge of pollutants;
- sectoral technological standards for the production of substances discharged into water bodies;
- technological standards for water use.

**Environmental security standards (Article 35)** are developed for

- water bodies, the water of which is used for drinking, household and other public needs (maximum permissible concentrations (MPCs) + permissible concentrations of radioactive substances in water);
- water bodies for fishery purposes (MPC);
- water bodies used for medical, spa, recreational, health rehabilitation and other purposes (more strict standards of environmental security of water use are set).

**Article 47.** The right to general water use. "General water use is carried out by citizens to meet their needs (swimming, boating, amateur and sports fishing, animal watering, water intake from water bodies without use of systems or technical devices and from wells) **free of charge**, without the water bodies being registered with any persons and without providing of respective permits".

"Local councils are obligated to inform the public about the established rules that restrict general water use."

"A water user that rent a water body on lease terms shall inform the public about the water use conditions, as well as about the general water use prohibition on the water body in lease".

**Article 58. Requirements of water quality** for drinking and household needs of the population.

Water resources of qualitative properties meeting the established state standards, environmental security norms for water use and sanitary standards, are used.

Water users have the right to demand information from the water owner (water supplier) about drinking water quality.

In case of the incompliance of qualitative properties of water resources with the established standards, norms of ecological security for water use and sanitary standards, their use shall be discontinued by a decision of the CEB that implements the state policy in the area of sanitary and epidemiological well-being of the population.

**Article 59. Centralized water supply for the population**

In the course of special water use for...centralized water supply utilities, institutions and organizations in charge of drinking and household water supply systems, carry out water abstraction directly from water bodies in accordance with water intake structures designs, approved in accordance with the established procedures, water quality standards and special water use permits.

These utilities, institutions and organizations are obligated to carry out permanent monitoring of water quality in water sources, maintain proper condition of the water source sanitary protection

zone, and notify the respective CEB and local councils about incompliances with the established water quality standards and norms.

For groundwater sources of centralized water supply within their aquaferes and in adjacent territories, water users must establish a local network of monitoring wells.

#### **Article 60. Decentralized water supply for the population**

For decentralized water supply for drinking and household needs of the population, legal entities and individuals carry out water abstraction directly from surface or ground water bodies, following the procedure of general and special water use.

Regular water quality control for decentralized water supply for the population has to be carried out by the CEB responsible for implementations of the state policy in public sanitary and epidemiological well-being, at the expense of water users.

#### **Article 61. Use of groundwater of drinking quality**

Groundwater of drinking quality must be used primarily to meet the population's needs in drinking and household water, as well as needs of food industry and animal farming.

#### **Article 64. The procedure for water use for health-rehabilitation, recreation and sports purposes**

Such water shall be used in accordance with the procedures of general and special water use.

Places of water use of water for health-rehabilitation, recreational and sports purposes shall be established by respective councils in accordance with the procedures stipulated by the legislation.

The use of such water bodies in accordance with the general water use procedures may be prohibited or restricted in cases stipulated by law (Article 45 of the WCU).

#### **Article 65. Specifics of special water use and use of water bodies for the needs of agriculture and forestry**

The quality of water used for irrigation of agricultural lands must comply with the established norms.

Irrigation of agricultural land with wastewater should be permitted by Oblast, Kyiv, Sevastopol City State Administrations, the executive body of the Autonomous Republic of Crimea on matters of protection of the natural environment, upon consent of the CEB responsible for implementation of state policy in the area of sanitary and epidemiological well-being of the population, and the CEB implementing the state policy in the area of veterinary medicine.

Irrigation of agricultural land and drainage water discharging into water bodies shall be carried out based on a permit for special water use, granted to the owner of irrigated lands in accordance with the procedure established by this Code.

The drainage of agricultural land drainage has to be accompanied by measures to prevent degradation of water body status.

#### **Article 66. Specifics of special water use and use of water bodies for industrial and hydropower needs**

In the course of using water bodies for industrial needs, water users are obligated to comply the established conditions of special water use, environmental requirements, to take measures to reduce water consumption (especially drinking water) and to stop discharging of polluted return wastewater by improving of production technologies, water supply schemes and wastewater treatment.

**Article 68. Specifics of special water use and use of water bodies for fishery and hunting needs**

For water bodies (or their parts) used for commercial fishing and other aquaculturs or that are important for the reproduction purpose, water users' rights may be restricted in the interests of fishery and aquaculture.

Water users, who were granted the right to use water bodies (their parts) for fishery purposes, are obligated to carry out measures ensuring improvement of the ecological status of water bodies and conditions for reproduction of fish resources, as well as to maintain the proper sanitary condition of shoreline protection strips in fishing locations.

**Article 70. Conditions of wastewater discharging into water bodies**

The wastewater discharging into water bodies shall only be permissible if MPC norms and the MPD standards for pollutants are set.

Water users are obligated to take measures to prevent the discharge of wastewater or to stop it, if wastewater:

- 1) can be used in water recycling, re-use and successive water supply;
- 2) contain valuable waste that can be extracted;
- 3) contain industrial raw materials, reagents, semiproducts and final products of enterprises in quantities that exceed the established standards of technological wastes;
- 4) contain substances for which the MPCs have not been defined;
- 5) exceed the MPCs of toxic substances and contain infectious disease agents;
- 6) exceed the MPC by the volume of pollutants discharge;
- 7) cause the increasing of water temperature of the water body by more than 3 degrees Celsius, compared to its natural temperature in summer time;
- 8) are stillage residues, sludges generated as a result of their purification and decontamination.

It is forbidden to dump wastewater using the terrain specific features (hollows, lower reaches, quarries, etc.).

**Article 81. The complex of measures to preserve the water amount of rivers and protecting them from pollution** includes:

- establishment of shoreline protection stripes;
- establishment of specialized services for management of rivers, shoreline protection stripes, hydrotechnical structures and their maintenance in proper status;
- implementation of soil protection system in agriculture with contour-amelioration arrangement of the water catchment area;
- implementation of agrotechnical, agro-forestry ameliorative and hydrotechnical antierosion measures, construction of systems (gutters, passes, aqueducts, etc.) to drainage of surface runoff during construction and operation of roads, railways and other engineering infrastructures;
- prevention of eutrophication and nitrate pollution of water bodies;
- introduction of water-saving technologies, as well as implementation of water protection measures at enterprises, institutions and organizations located in the river basin;

- establishment of hydrological natural monuments.

#### **Article 85. Use of the water fund lands**

The water fund lands are granted for permanent use to specialized water management organizations, other enterprises, institutions and organizations that have established specialized services for the management of water bodies, shoreline protection strips, drainage strips, coastal strips of waterways, hydrotechnical structures, and maintenance of their proper state.

#### **Article 87. Water protection zones**

A water protection zone is a nature conservation area for economic activity, where it is prohibited to:

- use persistent and highly toxic pesticides;
- allocate cemeteries, animal burial sites, dumps, filtration fields;
- dump untreated wastewater in the relief specifics of territory, as well as in streams.

#### **Article 88. Shoreline protection strips**

In order to protect surface water bodies from pollution and littering, and to preserve their water flow quantity, along rivers, seas and around lakes, reservoirs and other water bodies within water protection strips, land plots are identified as shoreline protection zones along rivers banks and around reservoirs along the water edge (in the low-flow period), with the width of:

for small rivers, creeks and streams, as well as ponds with the area of less than 3 hectares – 25 meters;

for medium-size rivers, reservoirs on them and ponds with the area of more than 3 hectares – 50 meters;

for large rivers, reservoirs on them and lakes – 100 meters.

In shoreline protection zones along rivers, around reservoirs and on islands it is forbidden to:

- plough the land (except for the preparation of the ground for meadow formation and afforestation), as well as to carry out horticulture and gardening;
- store and use pesticides and fertilizers;
- arrange summer camps for livestock;
- build any constructs (except hydrotechnical, navigational, hydrometric and line), including recreation centres, seasonal cottages, garages and parking lots;
- wash and maintenance of vehicles and equipment;
- arrange landfills, manure storage, storage facilities for liquid and solid wastes, cemeteries, animal burial site, filtration fields, etc.

#### **Article 93. Sanitary protection zones**

...in areas of water abstraction for centralized water supply of population, medical and health rehabilitation needs, the sanitary protection zones shall be established, they divided in special regime belts.

The boundaries of water body sanitary protection zones are defined by local councils in their territories, upon agreement with the CEB that implements the state policy in the area of development of water management, the CEB that implements the state policy in the area of geological research and rational use of subsoil resources; the CEB that implements the state policy in the area of sanitary and epidemiological well-being of the population, Oblast, Kyiv, Sevastopol City State Administrations, the executive body of the Autonomous Republic of Crimea on matters of protection of the natural environment.



To implement the Water Code of Ukraine, a significant number of legal acts and statutory instruments have been developed that elaborate on the concepts and principles, tools and standards for water quality and water resources management of the state.

**The Land Code of Ukraine** went in force in 2002. (Target area: XVIII)

It regulates land relations in order to ensure the right to land for citizens, legal entities, territorial communities and the state; rational use and protection of land (Article 4).

Water Fund Land resources include lands occupied by water bodies (rivers, lakes, reservoirs, seas), swamps, shoreline protection zones; hydrotechnical and other water management facilities and canals, allocated for the use and protection of water bodies (Article 58);

Water Fund Lands may be in the state, municipal and private ownership, and granted for permanent use (to the state water management organizations for management of water bodies, shoreline protection strips, hydrotechnical structures, as well as for aquaculture; to the state fishery organizations for aquaculture).

Citizens and legal entities can rent on the lease terms water fund land plots (shoreline protection zones, lakes, reservoirs and other water bodies, wetlands and islands, etc.) for hay mowing, fishery needs (fish farming, aquaculture), cultural and health-rehabilitation, recreational, sport and tourism purposes, carrying out research; maintenance, building and maintenance of hydraulic constructions, etc.

Shoreline protection strips (SPSs) are established along rivers, seas and around lakes, reservoirs and other water bodies in order to protect surface water bodies from pollution and littering, and preservation of their water flow amount (Article 60). SPS is a protected area with the restricted economic activity mode (Article 61).

**The Code of Ukraine on the Subsoil Resources**, approved on July 27, 1994, № 132/94-VR (I, IV, VI, XIV, XVIII)

The Code regulates relations in the abstraction of groundwater, in particular:

- Subsoil use for groundwater (exclusion of mineral water) abstraction is provided without the granting mining claim on the basis of special permits, except in cases according to Article 21,
- Provision of subsoil resources for disposal of industrial waste and other harmful substances, wastewater discharge is allowed in exceptional cases, and has to comply the standards, rules and requirements stipulated in the legislation of Ukraine (Article 22),
- Land owners and users, within the limits of the land plots provided to them, shall have the right to abstract groundwater ( exclude mineral water) without special permits and mining claims for any purpose other than for bottled drinking water production if the volume of groundwater abstraction from each of the water source does not exceed 300 cubic meters per day,
- Land owners and users who are agricultural goods producers, whose share of agricultural production for the preceding tax (reporting) year is equal to, or exceeds 75%, ... within the limits of the land plots allocated to them, shall have the right to abstract without special permits and mining allotment, groundwater (other than mineral) for agricultural, industrial, as well as their own household needs.

Subsoil use shall be payable.



The fee for subsoil use shall be collected in form of rent payment for the use of subsoil for the extraction of minerals. A respective fee is charged for granting special permits for subsoil use.

Fee shall not be charged for granting special permits to state-owned children specialized sanatorium and resort facilities for the mineral water abstraction which is used for treatment in their territory (Article 34).

The main requirements in the area of the subsoil protection include compliance with the requirements stipulated by the legislation on protection of the natural environment (Article 56).

**The Law of Ukraine "On Protection of the Natural Environment"**, approved on June 25, 1991 (I, IV, VI, IX, X, XI, XIII, XIV, XV, XVI, XIX)

It sets the key principles of protection of the natural environment (Article 3), in particular:

- a) priority of environmental security requirements, mandatory compliance with environmental standards, norms and quotas on the use of natural resources;
- b) ensuring safe environment for people's life and health;
- c) the precaution principle;
- d) "greening" of production and introduction of the latest technologies;
- e) preservation of biodiversity and integrity of natural objects and complexes;
- f) harmonizing ecological, economic and social interests of the society and forecasting the natural environment condition;
- g) mandatory nature of environmental impact assessments;
- h) publicity and democracy in decision making on environment matter, public awareness raising on environment;
- i) regulation of human activity impacts on the environment;
- j) general nature resources use is free of charge, and special use of natural resources is payable;
- k) compensation for damage caused by violations of legislation on nature protection;
- l) setting of environmental tax, rent fees for special use of water...

To protect natural environment, to ensure ecological security, to use rationally and to restore natural resources, the state, inter-governmental, local targeted programmes are developed and approved. The development of these programmes has to be done with public participation (Article 6), publication of draft environmental programmes, preparation of public comments and proposals, holding public hearings.

**Article 21. Rights of non-governmental organizations** in the area of environment protection

- to take part in the development of plans, programmes related to natural environment protection, to develop and promote own environmental programmes;
- to create non-governmental nature conservation funds;
- to participate in inspections, conducted by CEBs, to check implementation of nature protection plans and measures by enterprises, institutions and organizations;
- free access to ecological information;
- to initiate nation-wide and local referendums on nature-protection issues, use of natural resources and ensuring environmental security;
- to file lawsuits on compensation for damage resulting from violations of nature protection legislation, including citizens' health;
- to be engaged in drafting legal acts and norms on environmental issues.

## Article 25. Ecological Information

This information is about:

- the condition the natural environment or its objects - land, water, subsoil and the levels of their pollution;
  - sources, factors, materials, substances, products, energy, physical factors that affect or may affect the status of the environment and human health;
  - the threat of emergence and causes of emergency ecological situations, the results of their elimination, recommendations on measures aimed to mitigate their negative impacts on natural objects and human health;
  - ecological forecasts, plans and programmes, measures, state environmental policy, nature protection legislation;
  - expences of implementation of nature protection measures from the state and other sources of financing; economic analysis conducted in the course of decision-making on environmental issues.
- The authorities at all levels shall be obligated to ensure free public access to ecological information.

This Law (Articles 20-22) envisages establishment of the state environmental monitoring system (SEMS) and monitoring of the environment status and the levels of its pollution. Performing those functions is assigned to the Ministry of Ecology and the Natural Resources and other CEBs: Ministry of Emergency Situations, Ministry of Health, Ministry of Agrarian Policy, Ministry of Housing and Public Utilities, the State Committee of Water Management, the State Forestry Committee, and the State Committee for Land Resources.

Each of the SEMS entities monitors the environmental objects according to the Provisions on the state system of environmental monitoring and the Procedures and Regulations for state monitoring of certain environmental components that are subjects of the state environmental monitoring system, as well as enterprises, institutions and organizations, whose activity causes or may cause deterioration of the environment.

## Article 32. Environmental standards

The state standards in the area of the natural environment protection are mandatory for implementation and define the concepts and terms, the mode of use and protection of natural resources, methods to control the natural environment state, requirements for pollution prevention of the environment.

## Article 33. Environmental standards

Environmental standards set the maximum permissible emissions and discharges of pollutants into the environment, the levels of permissible harmful impacts on it by physical and biological factors.

Environmental standards must be established with account to the requirements of sanitary-hygienic and sanitary-anti-epidemic rules and norms, hygiene standards.

If necessary, more strict norms of MPCs for pollutants and other harmful impacts on the environment can be established for resort, health-rehabilitation, recreation and other individual areas.

State control is extended over the use and protection of land, subsoil resources, surface and ground water.

The use of natural resources in Ukraine is carried out in accordance with the procedures for general and special use of natural resources.

According to the Ukrainian legislation citizens have the right to general use of natural resources to meet their vital needs (aesthetic, health-rehabilitation, recreation, material, etc.) free of charge, without assigning those resources to any persons and granting respective permits.

In accordance with the procedures of special use of natural resources, natural resources are provided for ownership, use or lease to citizens, enterprises, institutions and organizations on the basis of special permits and fees for industrial and other activities, and in cases stipulated by the legislation of Ukraine – on preferential terms.

### **Article 39. Natural resources of the national and local significance**

Natural resources of the national importance are the following:

- a) inland sea water and territorial sea;
- b) natural resources of the continental shelf and exclusive (marine) economic zone;
- d) groundwater;
- e) surface waters that are located or used in more than one Oblast.

**Article 41. Economic measures to ensure protection** of the natural environment include:

- a) rational use of natural resources and the effectiveness of protection of the natural environment measures based on economic tools;
- b) determining sources of financing of environmental measures;
- c) establishment of limits on use of natural resources, discharges of pollutants into the natural environment;
- d) setting environmental tax rates;
- e) supporting enterprises, institutions and organizations, as well as citizens by taxation, crediting and other privileges for implementation of low-waste, energy- and resource-saving technologies and non-conventional types of energy, other effective measures for the protection of the natural environment;
- f) compensation, in accordance with the established procedure, of losses caused by violation of the environmental legislation.

**The Law of Ukraine "On ensuring the sanitary and epidemiological well-being of the population"**, approved on February 24, 1994, № 4004-XII (I, II, IV, VI, XIV)

The Law regulates social relations in the area of sanitary and epidemiological well-being, defines the respective rights and duties of state bodies, enterprises, institutions, organizations and citizens; sets the procedure for establishment of the state sanitary and epidemiological service and the implementation of the state sanitary - epidemiological surveillance in Ukraine.

The law introduces the following definitions: the state sanitary standards and rules., the state sanitary and epidemiological norms, sanitary regulations (hereinafter referred to as “the sanitary standards”) - the regulatory acts of the Ministry of Health of Ukraine mandatory for the implementation, that establish medical requirements of security regarding the inhabitate environment and its individual factors, non-compliance of which threatens health and life of nowsday and future generations, as well as creates the threat of outbreak and spread of infectious

diseases and mass non-infectious diseases (poisoning) among the population. The concept of "mass non-communicable diseases (poisoning)" is defined as mass diseases, caused by the impact of biological, physical, chemical or social factors of the inhabitable environment, including impacts of economic and other activities, products, works, services.

Also, the state sanitary-and-epidemiological expertise is introduced as the comprehensive study of objects of expertise by the state executive body (sanitary and epidemiological service) to identify possible hazardous factors of these objects, to check compliance of the objects of expertise with the sanitary legislation requirements, and in case of lack of the relevant sanitary standards to provide a basis for medical requirements to the safety of the object for human health and life.

#### **Article 4. Citizens' rights**

Citizens have the right to:

- ✓ **safe** food, drinking water and safe conditions for work, training, education, everyday life, recreation and safe natural environment;
- ✓ participate in the development, discussion and public assessment of programmes and plans to ensure sanitary - epidemiological well-being of the population.;
- ✓ compensation for damage to their health caused by violation of sanitary legislation;
- ✓ access to reliable and timely information on their own or public health status, as well as on the existing and possible health risk factors and their level.

#### **Article 10. State Sanitary and Epidemiological Expertise**

The state sanitary and epidemiological expertise is the comprehensive check in of the documents (projects, technological regulations, investment programmes, etc.), as well as operating facilities and hazardous factors related to them for compliance with the requirements of sanitary standards. It includes:

- defining the security of economic and other activities, as well as conditions for work, training, education, everyday life, which have direct or indirect impacts on public health;
- checking compliance of objects of expertise with the requirements of sanitary norms;
- assessment of completeness and substantiation of sanitary and anti-epidemic (prevention) measures;
- assessment of possible negative impact of hazardous factors associated with the activities of the objects examined, assessment of public health risks caused by these objects.

#### **Article 18. Requirements for household drinking water supply and places of water use**

Executive Bodies and local self-government are obligated to provide residents of cities and other residential areas with drinking water, in quantities and with the quality that must meet the requirements of sanitary norms. Production control of drinking water quality during abstraction, processing stages and in distribution networks has to be done by water supply companies.

Water of water bodies used for commercial drinking water supply, swimming, sports, recreation, medical purposes, as well as water of water bodies within the settlements areas, must comply with sanitary norms.

Enterprises, institutions, organizations that use water bodies (including seas) for discharging of wastewater, drainage, irrigation and other polluted waters, have to ensure that water quality in the places of water use complies with the requirements of sanitary norms.

For drinking water supply pipelines and for water sources the sanitary protection zones with special regulations shall be established. The procedures of establishment and the special regulation in those areas are determined by the legislation of Ukraine.

**The Law of Ukraine "On the protection of population against infectious diseases"**, approved on April 6, 2000, № 1645-III (target areas I, II, XIV, XV) defines the legal, organizational and financial principles of the activity of executive bodies, local self-government, enterprises, institutions and organizations, aimed to prevent the outbreak and spread of human infectious diseases, localize and eliminate their outbreaks and epidemics; establishes the rights, duties and responsibilities of legal entities and individuals in the area of protection of the population from infectious diseases.

The law introduces the concept of "*an infectious disease outbreak* – a number of infectious disease cases linked by a common source and (or) the infection transmission factor; *infectious diseases* – human health disorders caused by living pathogens (viruses, bacteria, rickettsiae, protozoa, fungi, worms, ticks, other pathogenic parasites), products of their life (toxins), pathogenic proteins (prions), transmitted from infected persons to healthy ones and prone to mass spread; *dangerous infectious diseases* - infectious diseases characterized by severe and (or) persistent health disorders in individual patients that endanger their lives and health; *especially dangerous infectious diseases* - infectious diseases (including quarantine ones: plague, cholera, yellow fever), characterized by severe and (or) persistent health disorders in a large number of patients, high mortality, and rapid spread of those diseases among the population. The Law also defines as one of transmission factors of infectious disease pathogens water contaminated by pathogens of infectious diseases among other objects of the human environment: air, soil, food, raw food materials, blood and other biological materials, medical tools, household items, etc.). The law also introduces and develops the following concepts: *sanitary anti-epidemic rules and norms*; *anti-epidemic measures* (complexes of organizational, medical and sanitary, veterinary, engineering and technological, administrative and other measures aimed at prevention of infectious disease spread, containment and elimination of their focus spots, outbreaks and epidemics); *preventive vaccinations, sanitary protection of the territory of Ukraine*.

**The Law of Ukraine "On Drinking Water, Drinking Water Supply and Wastewater Disposal"**,

Approved on January 10, 2002 № 2918-III, with amendments under the Law № 2047-VIII (2047-19), dated May 18, 2017 (target areas I, III, IV, X, XIV, XX)

This is the main sectoral law that defines the legal, economic and organizational principles for the functioning of drinking water supply systems (centralized and decentralized), as well as certain elements of centralized wastewater disposal. It introduces the standards of the European legislation, in particular, the Council Directive 98/83/EC of November 3, 1998 on the quality of water intended for human consumption (Drinking Water Directive) and the Council Directive 91/271/EEC of May 21, 1991, on urban waste water treatment (Urban Wastewater Directive).



## Article 1. Definitions

- drinking water - water intended for human consumption (tap water, packaged, from pump rooms, bottling points, shallow wells and springs), use by consumers to meet physiological, sanitary, hygienic, and everyday household needs, as well as for the production of goods that requires usage of water that meets organoleptic, microbiological, parasitological, chemical, physical and radiation standards according to hygienic requirements. Drinking water is not defined as a food product in the drinking water supply system and in points of compliance of drinking water quality...
- ecological limit of drinking water supply – the minimal level of drinking water use by consumers (except the population) necessary to prevent the occurrence of technogenic or natural emergency situations;
- drinking water supply quotas - estimated amounts of drinking water necessary for maintenance of drinking, physiological, sanitary and hygienic, and daily needs of one person per day in a definite residential area, at a specific site or transport mean in the condition of regular functioning of drinking water supply systems, in case of their disruption and natural or technogenic emergency.
- Population equivalent of a residential area - the burden of wastewater with organic substances subject to biological decomposition, with the five-day biochemical oxygen consumption of 60 grams of oxygen per person per day;
- point of drinking water quality compliance - a place where samples of water are taken to establish the conformity of water quality with hygienic requirements for drinking water,
- technical specifications - a set of conditions and requirements to engineering support of water supply and wastewater disposal systems that must meet its calculated parameters/rated conditions.

## Article 6. Principles of the state policy in the area of drinking water, drinking water supply and wastewater disposal:

- public administration and regulation of relations...;
- priority of drinking water supply over other types of special water use;
- guaranteed priority-based supply of drinking water to the population...;
- rational use of drinking water;
- research-substantiated standardization of drinking water quality, consumption norms and tariff setting for centralized water supply and wastewater disposal services;
- approximation of the requirements of the national standards for drinking water, drinking water supply and wastewater disposal, drinking water technologies, wastewater treatment standards, as well as measuring tools and methods of assessment, to the respective EU standards, norms, technologies, means and methods;
- preventive measures to protect drinking water sources and water supply systems;
- achieving the optimal balance between surface and groundwater use for drinking water supply;



- obligatory state expertise and assessment of operational reserves of groundwater for drinking water supply;
- obligatory state environmental and sanitary and epidemiological expertise of projects on economic, investment and other activities that can have a negative impact on the status of sources and systems of drinking water supply;
- economic incentives for the rational use of drinking water by consumers;
- inevitability of liability in case of violation of legislation...;
- compensation of losses caused by violation of legislation...;
- ensuring free access to information about drinking water quality, the status of sources and systems of drinking water supply and wastewater disposal, the procedures for formation of drinking water supply standards and setting the tariffs for centralized water supply and wastewater disposal services;
- compliance of common rules, norms and standards by all actors in this sector;
- licensing of economic activities for centralized water supply and wastewater disposal;
- ban on disconnection of drinking water supply and centralized sewer assets, as assets of life support of strategic importance, from energy, gas and heat supply systems.

#### **Article 7. Guarantees of consumer rights in the area of drinking water**

The state shall guarantee:

- provision of everyone with drinking water of standard quality within the limits of scientifically substantiated norms of drinking water supply depending on the living area and conditions;
- implementation of organizational, research and development, sanitary-epidemiological, nature-protection, economic, legal measures, aimed at improvement of drinking water quality, development of drinking water supply, protection of drinking water sources and supply systems, replenishment of drinking water resources;
- meeting people's needs in drinking water through priority development of centralized drinking water supply and wastewater collection systems, creation of backup drinking water supply systems;
- exercising legislation compliance control..., carrying out state monitoring of the state of water and drinking water supply and wastewater disposal systems, environmental and sanitary-epidemiological expertises of economic and other activities related to use of drinking water supply sources;
- restriction, temporary termination (suspension) ...of operation of drinking water supply systems that do not ensure the safe drinking water supply, as well as any activities that have a negative impact on drinking water quality, disrupt operation of drinking water supply and sewer systems;
- establishment of ecological limits for drinking water supply.

**Article 8. State support** shall be provided in accordance with the amounts of funds allocated by the Law of Ukraine on the State Budget of Ukraine for the respective year, to finance measures in the area of construction and modernization of systems for drinking water supply, sewer and wastewater

treatment and disposal, and to carry out researches on improvement of the drinking water supply and resource saving.

#### **Article 9. Information about drinking water quality**

The state guarantees the right to free access to information on drinking water quality to every consumer of drinking water. For that purpose, the CEB implementing the state policy in the area of housing and public utilities, shall prepare and publish annually the National report on drinking water quality and the state of drinking water supply in Ukraine; provide the concerned governmental and non-governmental organizations, enterprises, institutions, other organizations and public with information about cases and causes of drinking water pollution, the order of tariffs calculation for centralized water supply and wastewater disposal services.

When drinking water quality has deviations from the state standard, the local self-government bodies shall inform consumers, through media, about water quality, and take measures against threats to human health.

#### **Article 14. Forms of ownership**

Activities in the area of drinking water supply and wastewater disposal can be carried out by enterprises of any form of ownership.

Networks, facilities, equipment of centralized drinking water supply and wastewater disposal in residential areas, being important life support assets shall not be subject for privatization.

Any change of the ownership form or transfer of ownership on drinking water supply systems and/or wastewater disposal systems (excepting assets of centralized drinking water supply and centralized wastewater disposal systems) shall be carried out according to the procedure stipulated by law and ensuring that doing so will not disrupt operation of the systems or parts thereof, or deteriorate the drinking water quality and the terms and conditions of service provision to consumers, including tariffs increase for centralized water supply and wastewater disposal services.

The law envisages monitoring in the area of drinking water and drinking water supply, the aim of the monitoring is to check the conformity of drinking water quality with established standards. The subjects of control are drinking water at all stages of its production and transportation to consumers, and facilities of centralized and non-centralized drinking water supply. The following type of control are introduced in the area:

- *state control* of water quality at sources of drinking water supply, safety and quality of drinking water, technical condition of centralized drinking water supply systems, which is carried out by central authorities;
- *production control* exercised by drinking water supply utilities;
- *public control* exercised by public environment inspectors by: receiving, in accordance with the established procedures, from bodies of executive power, local self-government, enterprises and other institutions, of complete, accurate, timely information on the quality of water in sources of drinking water supply, quality of drinking water, volume of its sales and delivery regulations, on the tariff setting procedures, etc.; carrying out public environmental expertise; public representatives engagement in inspections; filing lawsuits for damages caused by violation of the legislation in the area of drinking water and drinking water supply.

The law defines the responsibilities of executive bodies of all levels, local authorities, and enterprises and other institutions working in the area of drinking water and drinking water supply.

The law envisages (Article 28) the approval by the Ministry of Health the safety indicators and specific indicators of drinking water quality, a list of reference methods to measure the content (levels) of pollutants in drinking water in accordance with international standards, guidelines or recommendations of relevant international organizations or legislative requirements of the EU; revision of those national indicators every five years.

Also, the relevant authorities establish (Article 29.) standards, namely:

- norms for drinking water supply;
- environmental standards of water quality at sources of drinking water supply;
- technological norms of drinking water use;
- technical specifications in the area of drinking water and drinking water supply.

The main economic tool in the area of water supply and wastewater disposal (Article 32) is payment by the norms and tariffs that are regulated in accordance with the procedures stipulated by the legislation.

Tariffs for drinking water services are calculated on the basis of sectoral standard costs and must fully reimburse operational costs and ensure the stable operation of centralized drinking water supply and wastewater disposal facilities.

The law develops (Article 33-38) the concept of sanitary protection of all sources and assets of centralized drinking water supply, introduces the norm of establishing zones of sanitary protection and separate belts with special regulation within those zones, introduction of restrictions on economic and other activities in sanitary protection zones.

### **Article 39. State monitoring in the area of drinking water and drinking water supply**

It is introduced with the aim to collect, process, storage and analyse information on drinking water quality, status of centralized drinking water supply assets, prepare forecast of its changes and to develop scientific evidence-based recommendations for making relevant decisions in this sector.

Four CEBs are engaged in the monitoring: the State Agency of Water Resources is dealing with quality (radiological and chemical parameters) of water bodies at water intake locations for centralized drinking water supply; Ministry of health (MoH) – sanitary standards compliance (chemical, bacteriological, radiological indicators) of water bodies intended for drinking water supply, and drinking water in water supply systems; Ministry of Regional Development and Construction - quality of drinking water (by chemical and bacteriological indicators) after water treatment facilities, as well as technical condition of centralized drinking water supply facilities; the CEB, implementing the state policy in the area of environmental security – forecasts of changes in the qualitative and quantitative status of surface and groundwater sources of centralized drinking water supply in water intake locations.

**Article 45** defines **public control** in the area of drinking water and drinking water supply, carried on by public environmental inspectors. Public control objects are:

- water quality at drinking water supply sources outside the first belt of sanitary protection zone;
- drinking water quality, water consumption norms and substantiation of centralized water supply and wastewater disposal services tariffs;
- draft laws and other regulation acts in this area;
- provision of population with the necessary volumes of drinking water;
- regime of water supply to consumers.

The main tools of public control are:

- *receiving, in accordance with the established procedures, of complete, accurate, timely information on water quality at sources of drinking water supply, drinking water quality, volume of its sales and delivery regime, and on the procedure of setting tariffs for centralized water supply and wastewater disposal services;*
- *conducting public environmental expertise;*
- engagement of public representatives in inspections carried out by authorities;
- filing lawsuits for damages caused by violation of the legislation in that area.

In general, the Law of Ukraine "On Drinking Water, drinking water supply and wastewater disposal" is to a greater degree dedicated to water supply, and the sanitation matters are considered indirectly and insufficiently, and require further development of the framework. There is a plan to develop a separate Law of Ukraine "On Wastewater Disposal", with account to the European standards and regulations.

**The Law of Ukraine "On Commercial Metering of Heating Energy and Water Supply"**, № 2119-19, of June 22, 2017, (target areas III, IV, V, VI, VII) defines the bases for commercial metering of services, including distribution, of hot water supply and centralized water supply, and providing consumers of these services with the respective information. The Law regulates relations pertaining to the commercial accounting of those public utilities; allocation between consumers of the volume of consumed communal services; installation, maintenance, replacement of metering devices – heating energy distributing equipment; bills formation and delivering to consumers for payment of utility services; metering information provision to consumers.

The law obligates water utility to equip all buildings connected to water distribution network with building metering equipment for hot and cold-water, and prohibits connecting to supplying networks new buildings without metering equipment installed. The law stipulates that after the meters have been installed, all calculations of the consumed services must be based exclusively on these meters data, mandatory instrumental commercial metering of communal services (at the entrance to the building), as well as distribution accounting (per apartment). The law sets the terms for commercial water metering – within two years, and distribution metering – within three years from the date of the Law went into force.

The law defines the payment mechanisms for the installation, replacement and maintenance of metering equipment (defined for each house individually); a list of mandatory information to form utility bills and access to such information; common procedure of access to metering units; responsibility for failure to comply with the requirements of the law, etc.

**The Law of Ukraine "On Housing and Communal Services"**, № 1875-15, approved on June 11, 2002 (target areas III, IV, V, VI) regulates legal relationship between producers, providers, consumers in the process of production, provision and consumption of housing and communal services, including production and transportation of drinking water in centralized water supply systems.

**The Law of Ukraine "On Environmental Impact Assessment"**, from May 23, 2017, № 2059-VIII (target areas IX, XI, XIII, XV, XVI, XIX)

The law establishes legal and organizational principles for environmental impact assessment (EIA) aimed to prevent environmental damage, ensure environmental safety and protection of the natural environment, use rationally and restore natural resources. EIA is used for decision-making on economic activities that can have a significant impact on the environment, with taking into account the state, public and private interests.

### **Article 3. The Scope of Application of Environmental Impact Assessments**

EIAs shall be mandatory in the decision-making process on the implementation of the planned activity. The law defines two categories of activities that must be evaluated.

The first category of planned activities and assets that may have a significant environmental impact and are subject to EIA includes the following types of activities in the water sector:

- ground water abstraction or artificial recharging of groundwater with an annual volume of water abstraction or water recharging of 10 million cubic meters or more;
- inter-basin transport of river flow, except of the drinking water transport by pipelines;
- dams, reservoirs and other assets intended for holding and permanent storage of water, when new or additional volume of caught water exceed 10 million cubic meters;
- wastewater treatment plants with the capacity exceeding the equivalent of a population of 150 thousand people.

The second group of types of planned activities and assets subject to EIA includes, in particular, those that produce an impact on water resources:

- drilling for water supply purposes;
- land reclamation and amelioration, construction of amelioration systems and individual assets of the engineering infrastructure at those systems;
- poultry- and animal-farms;
- intensive aquaculture with the annual capacity of 10 tons or more;
- hydropower plants on rivers, regardless of capacity; and pump storage plants (PSPs);
- infrastructure projects, including the construction of residential quarters (complexes of multi-apartment buildings) and shopping and entertainment complexes outside of residential areas, with the area of 1.5 hectares or more, or within the residential area boundaries, in case their connection to centralized water supply and/or wastewater disposal systems is not envisaged; construction of dams and installation of other equipment to retain or accumulate water for long periods of time;
- carrying out works on cleaning and dredging of the river course and bottom, bank revetment, changing and stabilizing river course condition;
- construction of aqueducts and pipelines for long-distance transport of water;



- installations for wastewater treatment with water disposal of 10 thousand cubic meters per day or more;
- stockpiling sediments, sediment storage fields of 0.5 hectares or more, or at a distance of at least 100 meters to shoreline protection areas;
- economic activity that causes discharge of pollutants into water bodies, and water abstraction from water bodies, when the water abstraction from groundwater exceeds 300 cubic meters per day.

The law defines the EIA procedure, including (Articles 7, 8 and 14) the procedures of public information, consultations, and taking their results into account.

**The Law of Ukraine "On Information"**, from October 2, 1992 N 2657-XII (areas I-XX) defines information the access to which may not be restricted: (Article 13. Information about environment status (ecological information), its components, driving forces (impact factors); on the health and safety of people and Article 14. Information about goods (work, service).

**The Law of Ukraine "On Access to Public Information"**, from January 13, 2011, № 2939-VI, (areas I-XX) defines the procedure for exercising and ensuring the right of everyone to have access to information held by bodies and other public information managers identified by this Law, and information of public interest.

Access to information (Article 5) is ensured by: 1) regular and immediate publication of information: in official printed publications; on official web sites in the Internet; on the special state web portal of open data; on information stands; any other way; 2) provision information on information requests.

The information administrators (Article 13) are the economic entities responsible for gathering of information on state of environment, quality of food products, or about incidents, catastrophes, severe natural phenomena and other extreme weather events which happened or can happen and threaten on health and security of the citizens, or other community needed information, are obligated to publish and provide information upon request.

Information administrators shall be obligated (Article 14): inter alia, to provide and publish reliable, accurate and complete information and, as may be necessary, to verify the accuracy and objectivity of the information provided, and update the information published.

**The Law of Ukraine "On Approval of the State Target Programme for the Development of Water Management and Environmental Restoration of the Dnieper River Basin until 2021"**, from May 24, 2012, № 4836-VI (target areas I, IX, XI, XIII, XIV, XV, XVII, XIX)

The programme consolidated the previous individual programmes that addressed different areas of development of the water sector management, and identified 4 main directions for 2012 - 2021, namely:

- 1) ensuring development of land amelioration and improvement of the environmental condition of irrigated and drained lands, water resources management,
- 2) top-priority provision of centralized water supply to rural settlements that use transported water;
- 3) protection of rural residential areas and agricultural lands from harmful impacts of water and



integrated flood protection in the basins of the Dniester, Prut and Siret rivers, as well as in the Tisa river basin in the Transcarpathian region,

- 4) environmental restoration of the Dnieper river basin and improvement of drinking water quality.

The programme sets tasks on improvement of access to drinking water in rural areas (construction of group water pipelines and ensuring centralized water supply for rural areas using transported water, as well as development of wastewater disposal systems) and restoration of the Dnieper river basin (its water is used to meet drinking water needs of 70% of Ukraine's population), including measures for:

- improvement of wastewater disposal facilities at assets of communal and public utilities, economic assets and in urban areas;
- ensuring environmentally safe operation of the Dnieper reservoirs;
- prevention of groundwater contamination;
- development of clean production facilities, water recycling (wastewater-free) systems for industrial water supply, introduction of low or no water technologies and reuse of wastewaters;
- decrease of the radioactive contamination impacts on water bodies in the exclusion zone and in the areas of unconditional (mandatory) resettlement;
- restoration and maintenance of favourable hydrological conditions of rivers and the elimination of consequences of harmful effects of water.

The programme also includes development of the legal and regulatory frameworks, and the organizational structure of the water management complex to ensure water resources management and monitoring, ensuring water supply and wastewater disposal in water scared and polluted regions, and ensuring protection of territories from harmful effects of water.

The programme activities were planned to be funded from state and local budgets, as well as from other sources permitted by law. The financing is determined annually, in the course of the law on the State Budget of Ukraine for the respective year being drafted, with account to the realistic capacities of the state budget.

The estimated total amount of the programme financing equals to UAH 46478.46 million, including UAH 21029.03 million from State budget, and UAH 9294.23 million - from the local budgets. UAH 1668.6 million are planned for measures to ensure the provision of centralized water supply to rural settlements, using transported water, and UAH 6086 million – for the environmental restoration of the Dnieper river basin and improvement of drinking water quality.

The programme implementation period began in 2013, but in 2013-2015, no funding for the programme in both areas was provided.

**The Law of Ukraine on the State Target Program "Drinking Water of Ukraine" for 2011-2020** was approved on October 20, 2011, No. 3933-VI (target areas I, III-V, VII, XI, XX)

The program is aimed at ensuring citizens' rights to adequate living standards and environmental safety by providing drinking water in the required volumes and in accordance with established standards.

The main objectives of the Programme are as follows:

- arrangement of sanitary protection zones of drinking water supply sources;
- construction and reconstruction of water intake structures with the use of the latest technologies and equipment, in particular, in the regions with the biggest uncompliances of water quality with the established standards (Dnipropetrovsk, Donetsk, Kyiv, Luhansk, Mykolayiv, Odessa and Cherkasy Oblasts);
- introduction of drinking water purification systems (equipments) at centralized water supply systems, especially for water supply of kindergartens, schools and health care facilities, in particular in rural areas, and the installation of drinking water bottling points, with delivery by special motor vehicles;
- inventory of wastewater treatment plants;
- construction and reconstruction of water and wastewater treatment facilities with the use of the latest innovative technologies and equipment, in particular in rural areas (primarily in the Autonomous Republic of Crimea, Dnipropetrovsk, Transcarpathian, Zaporizhyya, Kirovograd, Odessa, Kherson Oblasts and other regions);
- development of schemes for optimization of operation of centralized water supply and wastewater disposal systems;
- upgrading of laboratories controlling quality of water and wastewater by modern control and analytical equipment;
- harmonization of the national legal and regulatory frameworks of drinking water supply and wastewater disposal sector with the European Union standards, including, in terms of strengthening liability for violation of environmental pollution regulations, particularly for discharges of industrial wastewater into water bodies;
- development and implementation of research and innovations based on use of the latest materials, technologies, equipment and devices.

The programme measures are financing by the State and local budgets (including financing activities of other programmes and projects), water sanitation utilities, loans, grants of international organizations, funds of international programmes, charitable contributions. The budget allocations amounts for the Programme are specified during the State and local budgets preparation for the respective year. The State budget funds for Programme activities implementation are allocated taking into account co-financing available from other sources.

The estimated amount of the programme financing is UAH 9,471.7 million, including UAH 3004.3 million from the State budget, and UAH 6467.4 million from other sources.

A large number of statutory instruments have been developed to implement the laws related to drinking water and other areas of the Protocol: Orders of the Cabinet of Ministers of Ukraine, Resolutions and Orders of the CEBs, and other acts.

Sustainable water resource management is identified by the Government as a priority according to:

**CMU Resolution "On Approval of the Medium-Term Plan for Priority Actions of the Government by 2020 and the Plan of Priority Actions of the Government for 2017"**, dated April 3, 2017, № 275-p (rely to all Protocol areas):

Para 9. Sustainable water resource management

The existing system of the state management in the area of water protection and rational use of water resources needs to be reformed by transition from an administrative-territorial management model to an integrated water resource management (IWRM) at river basin level and implementation of the EU Water Framework Directive (WFD) norms.

Reforms are focused on the development of legislation regarding the implementation of IWRM and the basin principle, identification of hydrographic units taking into account the water-management zoning of the territory of Ukraine, definition of basin bodies, and the review and sharing responsibilities among the state authorities and local self-government bodies, etc.

At the institutional level, IWRM implementation requires the following:

- optimization (including by decentralization) of the functions and competences of the central and local authorities and local self-government bodies, with respect to water resource governance and management;
- improvement of the existing structure of basin and regional departments for water resources of the State Agency of Water Resources;
- assessment of the current environmental status of the main river basins of Ukraine and the development of components of the river basin management plans (RBMP).

The main target is reforming the state governance system in the area of waters (surface, underground, marine) protection, rational use of water resources, setting the following progress indicators:

by the end of 2017 to define the boundaries of nine river basins,

by the end of 2020 to develop nine drafts RBMPs, establish boundaries between the Azov and Black Seas (Ukrainian part).

**Resolution of the Cabinet of Ministers of Ukraine (CMU) ["On Approval of the Regulation on the State Environmental Monitoring System"](#), dated March 30, 1998, № 391**, as last amended (CMU Resolution № 797 (797-2017-П), dated October 18, 2013 (IX, IX, XI, XIII, XV, XVI)

Monitoring of water as a component of environmental monitoring shall be carried out by (Article 8):

- Ministry of Agrarian Policy on surface water for agricultural purposes (toxicological and radiological parameters, residual amount of pesticides, agrochemicals and heavy metals);
- Ministry of Regional Development - drinking water in centralized water supply systems (pollutants, volumes of consumption); wastewater in urban sewer and treatment facilities (content of pollutants, volumes of inflow); waterlogging of cities and towns areas (dangerous rise of groundwater level).

According to Article 12, general monitoring is carried out to identify the actual status of water bodies, to develop and take decisions on the effective use, protection and restoration of water resources.

To determine the availability of water suitable for use, the State Agency of Water Resources monitors the water quality in water bodies: in the main sources of water abstraction for complex purposes, in water supply systems of inter-sectoral and agricultural purposes (radiological and chemical parameters).

Monitoring of compliance with the sanitary standards on chemical, bacteriological and radiological indicators of water bodies used for drinking and cultural and communal needs, is carried out by the State Sanitary and Epidemiological Service.

According to Article 24, bodies of the State Agency for Water Resources provide all interested entities engaged in the monitoring with information on the state registration of water use and wastewater discharges by water users.

**Resolution of the Cabinet of Ministers of Ukraine "[On Approval of the Procedure for the Implementation of State Water Monitoring](#)"**, dated July 20, 1996, № 815 (target areas IX, XI, XIII, XV, XVI, XIX) was developed in accordance with Article 21 of the Water Code of Ukraine and formalises the Procedure for State Water Monitoring (SWM) and the establishment of the Interdepartmental Commission for resolution of current issues in its implementation.

The Procedure sets the main requirements for organization of the state monitoring of water, interaction between ministries and state agencies during of its implementation, and provision of SEBs with information for decision-making related to the state of water resources in Ukraine.

The SWM is carried out to ensure the collection, processing, storage and analysis of information on the state of waters, forecasting changes in it, and development of scientifically substantiated recommendations for decision-making in the area of water use and protection and regeneration of water resources.

The SWM is an integral part of the state environmental monitoring system in Ukraine. It is carried out by water quantitative and qualitative parameters.

The SWM target objects are:

- surface water: natural water bodies (lakes), watercourses (rivers, streams); artificial water bodies (reservoirs, ponds), canals and other water bodies;
- groundwater aquifers and sources;
- inland seawater and the territorial sea; the exclusive (maritime) economic zone of Ukraine;
- sources of water pollution (reverse water, emergency discharge of liquid products and wastewater), loss of products and materials during of mining /extraction of minerals within the aquatory boundaries of surface water, inland sea waters, the territorial sea and the exclusive (marine) economic zone of Ukraine, and dumping of waste, agricultural surface runoffs, filtration of pollutants from technological water reservoirs and storage facilities, massive growth of blue-green algae;
- the influx of harmful substances from sediments (secondary contamination) and other sources of pollution, which may be monitored.

The Provision defines the SWM actors, monitoring results. By purpose, the SWM is divided into:

- background monitoring carried out on water bodies in the places of minimal indirect anthropogenic impact;
- general monitoring that consists of monitoring on the state network of observation points, monitoring of anthropogenic impact on water bodies, monitoring of water bodies at places of use and special types of monitoring;
- crisis monitoring, carried out in areas of high risk and areas of impact of accidents and emergency situations.

Also, the Provision defines the scientific, methodological, metrological, logistical and financial support of the SWM.

**Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Rules of Sanitary Protection of the Territory of Ukraine"**, approved by the Resolution of the CMU, № 893, dated August 22, 2011 (target area II)

**Resolution of the Cabinet of Ministers of Ukraine "On Approval of Rules for the Protection of Surface Waters from Pollution by Reverse Waters"**, dated March 25, 1999, № 465 (target areas I, VI, IX, XI, XIV)

The Resolution introduces the terms: "sanitary and hygienic water quality standards" (scientifically substantiated concentration of pollutants and water quality parameters: general physical, biological, chemical, radioactive ones, that do not affect directly or indirectly on people's life and health), and fishery standards for water quality - scientifically proved values of pollutants concentrations and water quality parameters that do not affect the life and reproduction of industrially valuable fish species.

In accordance with these Rules, measures for the surface water protection are planned, protection and the standardization of the levels of waterwater treatment are controlled; norms of maximum permissible discharges (MPDs) of pollutants are introduced to gradually improve the water quality and ensure compliance with sanitary and hygienic standards in the locations of water abstraction sources, and with fishery standards - in water bodies of complex use. The threshold amounts of pollutants discharge into water bodies shall be set in the permit for special water use.

For municipal facilities of complete biological wastewater treatment, the maximum permissible concentrations (MPC)of pollutants (mg/l) are introduced:

- biochemical oxygen demand (BOD<sub>5</sub>) – not to exceed 15;
- chemical oxygen demand - not to exceed 80;
- suspended matter - not to exceed 15.

The MPCs for other pollutants in water bodies are regulated by the bodies authorized to issue permit for special water use, provided that the achieved category of water quality does not deteriorate.

The Rules determine the general requirements for the composition and properties of water in rivers and lakes in the places of water use for drinking and other economic purposes (Annex, № 1to the



Rules) and requirements for concentrations of standardized substances in the water use point (Annex № 2 to the Rules).

**The Concept of reforming the system of state surveillance (control) in the area of protection of the natural environment** was approved by the CMU Order, dated May 31, 2017, № 616-p.

The document envisages fulfilment of provisions of the programme documents regarding the reform of the state surveillance (control) system, establishment of joint body of environmental surveillance (control) and elimination of duplication of functions in that area, reforming the surveillance (control) system to reduce the number of inspections and increase their efficiency, implementation of the "Polluter pays" principle, as well as creation an effective system of prosecution and compensation for damage to the environment.

**The Order of the Ministry of Ecology and Natural Resources of Ukraine**, dated June 23, 2017, № 234 (registered with the Ministry of Justice of Ukraine on July 21, 2017, № 888/30756), **"On approval of the form of the special water use permit, and form of standardized calculation of water use and wastewater disposal"** (target areas I, III-XII, XI, XIII, XIV, XIX)

In case of the discharge of reverse water (wastewater) in water bodies, standardised estimates of the maximum permissible discharges (MPDs) of pollutants with reverse water shall be added (accompanied by an explanatory note) separately for each discharge (dumping).

The yearly maximum amount, with account to the seasonal operation mode, must include environment protection measures aimed at water protecting, decreasing pollution and ensuring the rational use of water and other natural resources, and must have measurable performance indicators and timelines.

**Order of the Ministry of Health DSanPiN 2.2.4-171-10 "Hygienic requirements to drinking water intended for human consumption"**, dated May 12, 2010, № 400 (target areas: I, III, V, XIV, XVII, XVIII)

The State Sanitary Rules and Standards develop terminology on the drinking water quality, introducing following definitions:

- limiting harmful characteristic - an indicator by which the hygienic norm of a harmful chemical in water is set, and which is determined by the lowest concentration that directly affects the human organism (sanitary-toxicological harm characteristic), organoleptic properties of water (organoleptic harmful characteristic) and processes of self-purification of water bodies (general sanitary harmful characteristic);
- drinking water safety parameters: microbiological, organoleptic, parasitological, radiation, sanitary-toxicological, physico-chemical;
- treated - drinking water produced from water of surface or groundwater sources of drinking water supply by purification or additional mineralization;
- untreated (natural) - water obtained directly from groundwater sources of drinking water supply, which by all parameters meets the requirements of Sanitary norms.

This document regulates the quality of drinking water in Ukraine by establishing maximum permissible concentrations of substances harmless to human health, as well as it sets the main

principles of compliance control. It sets requirements for 76 parameters of safety and quality of drinking water intended for human consumption, as well as rules of production control and the state sanitary and epidemiological surveillance in the area of drinking water supply for the people. The document contains a list and permissible values of chemical and biological parameters that determine the epidemiological and radiological safety of drinking water, ensure high organoleptic (aesthetic) properties and can be technically achievable under current economic conditions. The document envisages step-by-step introduction of the requirements and ensuring the control of drinking water quality: since July 2010, monitoring by 53 parameters is envisaged; from January 1, 2015 - by 64 parameters and since January 1, 2020 – by all 76 parameters. The document also includes provisions regarding the arrangement of sources of decentralized water supply and monitoring of water quality in those.

The sanitary standards specified in that document shall be mandatory for executive bodies, local self-government, enterprises, institutions, organizations, regardless of their form of ownership and subordination, whose activities are related to designing, construction and operation of drinking water supply systems, production and transport of drinking water, surveillance and control in the area of drinking water supply for the population; and citizens.

SanPiN 2.2.4-171-10 establishes the requirement that the production of drinking water must be carried out in accordance with the Operation Procedures or another document that describes the entire technological process of drinking water production. Those Operation Procedures must pass the state sanitary and epidemiological expertise and obtain the positive conclusion.

The document was developed with account to the requirements of the Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.

**Legal regulations of sanitary protection zones of water bodies"**, approved by the Resolution of the Cabinet of Ministers of Ukraine, dated December 18, 1998, № 2024 (as amended in 2003, 2012 and 2015) (related to target areas: I, III, IV, VI, IX, XI, XIV) establish the legal regulations for sanitary protection zones (SPZs) of water supply facilities.

Besides, the requirements for the organization and operation of the SPZs are set out in:

- **Sanitary norms and rules of planning and development of residential areas**, approved by the Order of the Chief State Sanitarian of Ukraine, from June 19, 1996, № 173 (as amended in 2007 and 2009);
- **SCS 360-92 "Urban Development. Planning and construction of urban and rural residential areas"** (as amended);
- **SCS B.2.5 - 74:2013 "Water supply. Outside networks and buildings. Main provisions of designing"** (Section 15. Sanitary protection zones);
- **"Provisions on the procedure for designing and operation of sanitary protection zones for water supply sources and pipelines for economic and drinking purposes"**, approved by the Resolution of the USSR Chief Sanitary Physician, dated December 18, 1982, № 2640-82).

**Order of the Ministry of housing and communal services of Ukraine "On approval of the Rules for the use of centralized communal water supply and wastewater disposal systems in settlements of Ukraine"**, dated June 27, 2008, № 190 (III, IV, VI, IX, XI)

The Rules regulate the relations between all agents acting in the area of water supply and wastewater disposal, determine the legal framework for their interaction and effective tools to

provide consumers with guaranteed-quality drinking water and reliable wastewater disposal and treatment services. The Rules determine the procedure of using the centralized communal water supply and wastewater systems in settlements of Ukraine.

The document is largely obsolete, despite a number of amendments made to it, and does not fully comply with the current legislation by terminology and formulas that do not correspond to real data obtained in practice, and do not relate to the content of the document. The Rules do not take into account the requirements of the European Directives on water quality and water resources management: the Water Framework Directive, Council Directive 91/271/EEC of 21 May 1991 on urban wastewater treatment, Council Directive 98/83/EC of 3 November 1998 Council on the quality of water intended for human consumption, Council Directive 91/676/EEC of 12 December 1991 on the protection of waters against pollution caused by nitrates from agricultural sources.

**Order of the State Committee of Ukraine On Housing and Public Utility Services "On approval of Rules for technical operation of water supply and wastewater disposal systems in settlements of Ukraine"**, dated 05.07.95, № 30 (III, IX, X, XI)

Operation of water supply and wastewater disposal systems in cities and other residential areas of Ukraine is carried out in accordance with the Rules. They are mandatory for all economic agents, including legal entities, engaged in technical operation of those systems, regardless of the organizational and legal form and form of ownership.

The Rules regulate the conditions of operation of water supply and wastewater disposal systems for provision of consumers with guaranteed-quality water (being one of the most important factors of sanitary and epidemiological well-being); increasing the effectiveness, reliability and technical level of systems operation, upgrading management and safety systems, ensuring energy and resource saving, etc.

The Rules also include the rights and duties of operational personnel, requirements for ensuring rational working modes, acceptance and commissioning of assets, control and accounting, supervision over repairs and elimination of damage and accidents at units, equipment, devices and systems of water supply and wastewater disposal, as well as provisions for fulfilling the requirements to ensure proper sanitary and access control in protected areas. The Rules cover certain matters of storm-water drainage. The Rules count about 100 pages of standardized printed text and are significantly overloaded with information without a clear system, which complicates reading and understanding and does not make it possible to fulfil its requirements precisely.

**State Construction Codes of the State Committee of Ukraine for Urban Development and Architecture SCS, № 360-92 "Urban Development. Planning and development of urban and rural residential areas"**, dated April 17, 1992, № 44 (IV, VI, VII, X)

Mandatory for bodies of state administration, local and regional self-government, enterprises and institutions, regardless of their form of ownership and departmental subordination, public associations and citizens engaged in designing, construction and improvement in urban and rural residential areas.

The standards are intended for a transition period - until a general concept of Ukraine's regulatory framework in the area of urban development and capital construction is ready.

They contain issues related to design and regulation of centralized wastewater disposal systems, requirements for the arrangement of the boundaries of sanitary protection zones, but do not consider issues of their operation.

## International obligations of Ukraine

Ukraine is a party to more than 40 global and regional international environmental acts, including on protection and use of water resources. Annex 1 contains a list of the main Conventions, Agreements and Protocols ratified by Ukraine and went in force.

Since 2003, Ukraine has been a party to the **Protocol on Water and Health to the 1992 Convention on Protection and Use of Transboundary Watercourses and International Lakes**. The Cabinet of Ministers of Ukraine approved the Action Plan for the implementation of the Law of Ukraine "On the Ratification of the Protocol on Water and Health to the Convention on Protection and Use of Transboundary Watercourses and International Lakes in 1992", which had been developed by the Ministry of Ecology and Natural Resources in 2003 upon instructions by the CMU, dated October 6, 2003, № 46963. Within the scope of fulfilment of the obligations of the Protocol, in 2011 Ukraine had set 15 national targets to 10 target areas of the Protocol (**Order of the Ministry of Ecology and Natural Resources of Ukraine "On Approval of National Targets to the Protocol on Water and Health»**, dated September 14, 2011, № 324), as well as prepared a **test report (2010)** and two mandatory **Summary Reports (2013 and 2016) in accordance with Article 7 of the Protocol**. According to the conclusions of the 2016 Summary Report, Ukraine needs to revise both the National Targets and the Action Plan 2003 taking into account the **National Sustainable Development Goal (SDG) № 6 (to ensure the availability and sustainable management of water and sanitation for all) and its targets and relevant indicators for SDG 6.1 and 6.2**.

**Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)** (target areas: I, III, IV, XI, XIV, XVIII, XX).

**Association Agreement between Ukraine, as one party, and the European Union, the European Atomic Energy Community and other member states, as the other party**, № 1678-VII, dated September 16, 2014, (target areas I, III-XIV, XVI, XIX, XX)

In accordance with this Agreement (Section V. Economic and Sectoral Cooperation, Chapter 6. Environment), Ukraine has approximate gradually national legislation to the EU law and policy in the area of the natural environment protection, in particular, in the area of water quality and water resources management (Article 363), and to develop sectoral strategies, in particular, in the area of water quality improvement and water resources management, including the marine environment (Article 365).

Ukraine has committed to harmonize legislation in the area of water quality and water resources management to achieve the goals of the Six EU Water Directives:

- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (WFD),



- Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (Drinking Water Directive),
- Council Directive 91/271/EEC of 21 May 1991 on urban waste-water treatment,
- Council Directive 91/676/EEC of 12 December 1991 on the protection of waters against pollution caused by nitrates from agricultural sources (Nitrate Directive),
- Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (Flood Directive),
- Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the area of environmental policy relating to the marine environment.

Within the scope of fulfilment of tasks related to adaptation of the national legislation, Ukraine has taken the following steps:

A) for the purpose of approximation of WFD norms:

- **Amendments have been made in the Water Code of Ukraine (WCU) in accordance with the Law of Ukraine "On amendments to certain legislative acts of Ukraine on implementation of integrated approaches in the water resources management by the basin principle"**, dated October 4, 2016, № 1641-VIII, which defined and developed the main definitions (Article 1) and the IWRM norms by the basin principle; 9 river basin districts and hydrographical zoning have been legally defined (Article 13-1), river basin management plans and their main elements (Article 13-2) have been established; provisions on Basin Councils as advisory bodies within the territory of a river basin established under the State Agency of Water have been introduced (Article 13-3). The standards for the classification of surface and groundwater bodies according to the WFD requirements have been formalised, based on the determination of the environmental status/potential for surface water bodies (Article 21-1) and the quantitative and chemical status of groundwater bodies (Article 21-2) on the basis of ecological water quality standards for surface and groundwater bodies (Article 37).

In addition a number of **statutory instruments** have been developed, in particular:

- 1) **Resolution of the Cabinet of Ministers of Ukraine "On the Procedure for the development and approval of river basin management plans"**, dated May 18, 2017, № 336, in accordance with Article 13-2 of the WCU;
- 2) **Order of the Ministry of Ecology and Natural Resources of Ukraine (Minpryrody) "On the delimitation of sub-basins and water management territories within established boundaries of river basins"**, dated January 26, 2017, № 25 (registered with the Ministry of Justice of Ukraine on February 14, 2017, № 208/30076) in accordance with Articles 13-1 and 15 of the WCU;
- 3) **Order of the Minpryrody "On approval of the boundaries of river basin districts"**, dated March 3, 2017, № 103 (Registered with the Ministry of Justice on March 29, 2017, № 421/30289)
- 4) **Order of the Minpryrody "On Approval of the Standard Provisions on Basin Councils"**, dated January 26, 2017, № 23 (Registered with the Ministry of Justice on February 17, 2017, № 231/30099);



- 5) **Order of the Minprirody "On approval of the procedure for the development of water management balances"**, dated January 26, 2017, № 26. Registered with the Ministry of Justice on February 17, 2017, № 232/30100;
- 6) **Order of the Minprirody "On Approval of the List of pollutants for the establishment of the chemical status of surface and groundwater bodies and the environmental potential of an artificial or highly modified surface water body"**, dated February 6, 2017, № 45, registered with the Ministry of Justice on February 20, 2017, № 235/30103.

B) for the purpose of transposition of the requirements of the Flood Risks Directive: the Water Code of Ukraine stipulates the provision for the development of Flood risk management plans (Article 107-1), defined by the CEBs responsible for their preparation and approval. The Procedure for developing a Flood risk management plan must be prepared and approved by the Cabinet of Ministers of Ukraine.

C) to adapt the Drinking Water Directive and the Urban Wastewater Treatment Directive:

amendments have been made in the Law of Ukraine "On drinking water, drinking water supply and wastewater disposal", № 2047-VIII (2047-19), dated May 18, 2017, which cancels the previous definition of drinking water as a "food product", and restores a definition that takes into account the European approach; also, "wastewater disposal – activities for collection, transportation and treatment of wastewater with the use of centralised drainage systems or other wastewater drainage and/or treatment facilities" is introduced; "population equivalent of a residential area – the organic biodegradable load having a five-day biochemical oxygen demand (BOD<sub>5</sub>) of 60 g of oxygen per person per day, with a five-day biochemical oxygen consumption of 60 grams of oxygen per person per day"; " Point of compliance of drinking water quality - a place where water samples are taken, and which establishes the conformity of water quality with the hygienic requirements for drinking water, namely: determining..."

Further plans regarding fulfilment of Ukraine's obligations for the implementation of the selected EU Water Directives include the following measures:

#### Implementation of the **Water Framework Directive**:

1. Consideration and approval of statutory instruments to formalise the WFD requirements (2017 was set as the year of completion), particularly:
  - Provisions on the basin administration with the respective functions,
  - Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for the implementation of the state water monitoring"
  - Order of the Ministry of Ecology and Natural Resources "On approval of the methodology for the determination of surface and groundwater bodies",
  - Order of the Ministry of Ecology and Natural Resources "On approval of the method of assigning a surface water body to one of the classes of environmental and chemical statuses of surface water body, as well as the assigning an artificial or highly modified surface water body to one of the classes of environmental potential of an artificial or highly modified surface water body";
  - Order of the Ministry of Ecology and Natural Resources "On Approval of the Procedure for the development and approval of environmental quality standards for surface and groundwater bodies".

2. Development of management tools for transboundary rivers, coastal waters; analysis of characteristics of river basins, implementation of water quality monitoring programmes (completion period: by 2020)

3. Preparation of river basin management plans (completion period: 2024).

#### Implementation of the **Floods Directive**:

1. Approximation of the Directive requirements in legislation and statutory instruments (completion period: 2016)
2. Carrying out preliminary flood risk assessment (completion period: 2018);
3. Preparation of maps of flood threats and risks (completion period: 2020);
4. Development of Flood risk management plans (completion period: 2022).

#### Implementation of the **Drinking Water Directive**:

By 2019, the following tasks are planned to be accomplished:

1. development of statutory instruments
2. improvement/revision of drinking water quality standards,
3. development of the system to monitor drinking water and sources of drinking water supply,
4. development / improvement of mechanisms for consumers access to information.

#### Implementation of the **Urban Wastewater Treatment Directive**:

1. development of the national wastewater management legislation with the integration of the Directive requirements (completion period: 2017);
2. carrying out an assessment of the state of wastewater management and urban wastewater treatment (completion period: 2019);
3. identification of sensitive areas and agglomerations (completion period: 2020);
4. preparation of programmes to implement the wastewater treatment requirements (completion period: 2022).

#### Implementation of the **Nitrate Directive**:

1. legislative formalisation of the Directive requirements/ establishment of codes of good practice for agriculture (completion period: 2017),
2. identification of vulnerable zones of water bodies to accumulation of nitrates/phosphates (completion period: 2017),
3. development of action plans for zones vulnerable to accumulation of nitrates/phosphates (completion period: 2018);
4. establishment of monitoring programmes (completion period: 2018);

#### Implementation of the **Marine Strategy Directive**:

1. legal approximation of the Directive requirements (completion period: 2016);
2. development of a marine strategy, jointly with the EU member states (completion period: 2018);
3. carrying out a baseline assessment of seawater, determining the good environmental status and setting environmental targets and indicators (completion period: 2018);

4. implementation of monitoring programmes for ongoing target evaluation and revision (completion period: 2020);
5. development of a programme of measures to achieve a good environmental status (completion period: 2021).

### C. Institutional frameworks

In accordance with the [Water Code of Ukraine](#) in the field of management and monitoring of water use and protection and water resources reproduction, the following structures are involved:

**The Cabinet of Ministers of Ukraine (CMU)** - in accordance with Article 14 of the WCU, its competences are:

- 1) realization of state policy in the field of water use and protection and water resources reproduction;
- 2) governance of inland seawater, territorial sea, as well as seaport water area;
- 3) execution of state monitoring of the water use and protection and the water resources reproduction;
- 4) determination of water consumption priorities;
- 5) ensuring the development of state, targeted and international programs for use and protection of water and the reproduction of water resources
- 6) establishment of the procedure of activity for executive bodies in this sector, coordination of their activity;
- 7) establishment of procedure on issuing permits for special water use, dredging, laying of cables, pipelines and other communications on the lands of water fund, as well as procedure for developing standards of the maximum permissible discharge of pollutants into water bodies and the list of pollutants, the discharge of which in water bodies is normalized; development and approval of criteria for assessment of pollution of groundwater aquifers of water bodies;
- 8) in case of emergencies, making decisions on wastewater discharges from wastewater storage in water bodies, if they lead to exceeding the maximum permissible concentrations of pollutants in these water bodies;
- 9) organization and coordination of work related to the prevention and liquidation of the consequences of accidents, natural disasters and harmful impacts of water or deterioration of the quality of water resources;
- 10) making decisions on restrictions, temporary prohibitions (stoppage) of activities of enterprises, institutions, organizations and objects in case of their violation of water legislation requirements;
- 11) approval of design of sanitary protection zones for drinking water sources, which provide water supply to more than one region of Ukraine;
- 12) approval of the RBMPs and the procedure of their development;
- 13) approval of flood risk management plans and the order of their development;
- 14) leadership of external relations of Ukraine in the field of water resources management; withdrawal water areas for sea ports;
- 15) solving other issues related to the use and protection of water and the reproduction of water resources.

Also, the CMU (Article 10 of the Law of Ukraine "On Drinking Water, Drinking Water Supply and Water Disposal") in the sphere of drinking water, drinking water supply and drainage:

- implements state sectoral policy;
- organizes the development of relevant state, international and regional programs;
- coordinates the activities of executive bodies in this sphere;
- organizes the implementation of state control and accounting in this sphere;
- approves design of sanitary protection zones for centralized drinking water supply facilities, located in the territory of more than one region of Ukraine;
- establishes the mode of sanitary protection zones for water sources and facilities of centralized drinking water supply;
- determines the mechanisms on access to information about the quality of drinking water and the state of drinking water supply and solves other issues in this sphere.

**Ministry of Ecology and Natural Resources (MofE)** (Article 15 of the WCU) is the central executive body (CEB), which ensures the development of state policy in the sphere of environmental protection, including management and monitoring of the use and protection of waters and the reproduction of water resources.

Its responsibilities include:

- 1) ensuring the development of state policy in the sphere of protection and reproduction of (surface, ground, sea) waters, rational consumption of water resources;
- 2) development of state, targeted and international programs of measures in this field;
- 3) development and approval of norms and rules, participation in the development of standards for water management regulation (use and protection of waters and reproduction of water resource)s within its competence;
- 4) implementation of international cooperation on water resource management;
- 5) approval of the boundaries of river basin districts, areas of sub-basins and water economies;
- 6) approval of the procedure for the development of water economies balances;
- 7) identification of sub-basins and water economies areas within river basin districts;
- 8) approval of the typical status of basin councils;
- 9) approval of the classification technique of surface water bodies;
- 10) approval of the classification technique of groundwater bodies;
- 11) approval of the list of pollutants for the classification purposes of surface water and groundwater bodies;
- 12) approval of the methodology for determining the surface water and groundwater bodies;
- 13) solving other issues in the field of water use and protection and reproduction of water resources.

Ministry of Ecology and Natural Resources is a CEB responsible for the state water monitoring and ensuring the organizational integration of the agents of monitoring system on the basis of:

- national and regional (local) environmental monitoring programs consisting of programs for the respective levels submitted by the agents of the monitoring system;
- agreements on cooperation during environmental monitoring at the appropriate level, signed by all agents of the monitoring system

**State Ecological Inspection (SEI) of Ukraine** – CEB, whose activities are directed and coordinated by the Cabinet of Ministers of Ukraine through the Minister of Ecology and Natural Resources of Ukraine. State Ecological Inspection of Ukraine ensures the implementation of state policy on state supervision (control) in the field of environmental protection, rational consumption, reproduction and protection of natural resources.

The main tasks of the State Ecological Inspection of Ukraine are:

- submission to the Minister of proposals on the development of a state policy on implementation of the state supervision (control) in this field;
- implementation of state supervision (control) in compliance with the requirements of the legislation in the field of environmental protection, rational consumption, reproduction and protection of natural resources; compliance with the order for territories and objects of the natural reserve fund; for environmental and radiological safety ... ; biological and genetic safety ..; management of wastes (other than radioactive waste) and dangerous chemicals, pesticides and agrochemicals.

State Ecological Inspection of Ukraine in accordance with the Regulation (approved by the Decree of the President of Ukraine of 13 April 2011 N 454/2011):

- 1) summarizes the legislation usage practice on matters within its competence; develops proposals to improve legislation;
- 2) exercise state supervision (control) of compliance by all actors of requirements of:
  - a) legislation on ecological and radiation safety .. on compliance with the requirements of the conclusions of the state ecological expertise;
  - b) legislation on land use and protection, including:
    - conservation of wetlands;
    - implementation of measures to prevent the land pollution by chemical and radioactive substances, waste, wastewater;
    - establishment and use of water protection zones and coastal protective strips, as well as compliance with the regime of using their territories;
    - construction, dredging, sand and gravel mining, laying cables, pipelines and other communications on the lands of the water fund;
  - c) legislation on protection and rational use of water and the reproduction of water resources in relation to:
    - implementation of state, targeted, international and regional programs on restoration, use and protection of water, reproduction of water resources;
    - availability and compliance with the conditions of issued permits, established norms of MPCs for pollutants, the limits of water abstraction and use and pollutants discharge;
    - state ownership right to water;
    - compliance of the rules of water management by water users of primary metering of the amount of water abstracted from water bodies and discharged to them, and water quality analyse;
    - compliance of the established regime of economic activity in sanitary protection zones of water supply sources for drinking and other economic purposes, water protective zones, coastal protective strips, redirection bands and coastal strips of waterways;
    - implementation by water users of measures to prevent pollution of water bodies by runoff (rain, snow) collected from their territory;
    - implementation of water saving measures;
    - use of water (water bodies) in accordance with the targets and conditions of their granting;
    - implementation of approved technological, forest-meliorative, hydrotechnical and other measures in accordance with the established procedure to protect waters from depletion, improve their status, and also to terminate discharging of contaminated return water (wastewater, mining water, quarry water, drainage water), ballast and flailing waters;
    - implementation of actions to eliminate the consequences of accidents, which may lead to deterioration of water quality;



- compliance of ecological requirements during design, allocation, construction, reconstruction and acceptance into operation of enterprises, buildings and other objects;
- implementation of measures to prevent harmful impact of water and to eliminate its consequences;
- compliance with regulations on discharging of industrial polluted wastewater or mine and quarry water from storages-reservoirs, operating norms and rules for technological reservoirs (cooling ponds of thermal and nuclear power plants, fish breeding ponds, settling ponds, etc.);
- compliance of quality and quantity of return water and pollutants discharged into water bodies;
- use, restoration and protection of the marine environment and natural resources of inland sea waters, the territorial sea, the exclusive (marine) economic zone of Ukraine and the continental shelf of Ukraine, compliance of the environmental safety standards;
- compliance by boats, ships and other water-borne vehicles of international conventions on the marine environment pollution prevention;
- fulfilment of volumes of water use, water use accounting and trustworthiness of reporting data...;
- legislation on protection, use and reproduction of fishes and other aquatic bio-resources.

**The State Agency of Water Resources of Ukraine (SAWR)** (Article 16 of the Water Code of Ukraine) is the Central Executive Body, implementing state policy in the field of development of the water economy, management and monitoring of the consumption, protection and reproduction of surface water resources. Its functions include:

- 1) implementation of the state policy in the field of development of the water economy and land melioration, management, use and reproduction of surface water resources;
- 2) development and setting of operation regimes for reservoirs of multi-purposes using, water economy systems and channels, approval of their operation rules;
- 3) development and participation in the implementation of state, targeted, interstate programs on water use and protection and water resources reproduction;
- 4) ensuring the population and economic sectors needs in water resources and providing inter-basin water transport;
- 5) maintenance of the state monitoring system (radiological and hydrochemical parameters observations) on water bodies of complex using, transboundary watercourses, systems of water economy of inter-sectoral and agricultural water supply, in zones of nuclear power plants impacts;
- 6) planning, construction and operation of water economy systems and objects of multi-targeted using;
- 7) implementation of measures for ecological rehabilitation and maintenance of surface waters;
- 8) fulfilment of the state accounting of water use (Article 25) and state water cadastre;
- 9) issuing special water use permits;
- 10) issuing, cancellation, re-registration and issuing duplicates of permits for works on lands of water fund (except for ...the boundary of coastal protective strips along the sea coast, sea bays and estuaries, in inland marine waters, estuaries and territorial sea);
- 11) issuing permits for special water use of water bodies in the exclusion zone and the zone of unconditional (mandatory) resettlement of the territory contaminated by radionuclides as a result of the Chernobyl disaster;
- 12) implementation of international cooperation in the field of the boundary waters resources management;
- 13) implementation of measures to prevent the harmful impact of water and to eliminate its consequences, including flood protection of rural settlements and agricultural lands;
- 14) control of compliance of operation regimes of reservoirs and systems of water economy;

- 15) collection and analysis of water users' reports on the use of water resources;
- 16) approval of water supply norms;
- 17) carrying on the water quality monitoring in control stations, main water resources intakes for multi-purposes using, systems of water economy of inter-sectoral and agricultural water supply;
- 18) carrying on the monitoring of water bodies by radiological parameters in territories contaminated radioactively;
- 19) development, together with other executive bodies, a joint set of measures for preventing emergencies, reducing the destructive effects of floods, ensuring the safe passage of flood waters and icefalls;
- 20) organization of work for minimization of the consequences of harmful effects of water, including protection against waterlogging, flood protection of rural settlements and agricultural lands;
- 21) development of schemes for complex use and protection of water resources, formation of long-term forecasts of water economy balances, approval of water economy balances, participation in solving issues related to interstate distribution of river runoffs and border waters use;
- 22) passportization of rivers and sources of drinking water supplies;
- 23) development of measures to provide centralized water supply to rural settlements using transported water;
- 24) approval of documentation on land management in the cases and in accordance with the procedure specified by the Land Code of Ukraine and the Law of Ukraine "On Land Management" on compliance of this documentation with water legislation;
- 25) solving other issues in this sphere.

In accordance with the Regulation on the SAWR of Ukraine (Resolution of the CMU of 20 August 2014 No 393, amended by the Resolution of the CMU of 31 May 2017 No 372) in addition to the implementation of state policy, the SAWR is responsible for development and submission of proposals to formation of state policy in the field of development of water economy and hydrotechnical land melioration, surface water resources management, use and reproduction. Also in the Regulation the list of responsibilities of the SAWR is substantially expanded to 52 tasks. In particular, it is determined that the State Agency of Water Resources also:

- generalizes the practice of legislation applying on matters within its competence, develops proposals for the improvement of legal acts, acts of the President of Ukraine and the Cabinet of Ministers of Ukraine, regulations of ministries and, in the established order submits them to the Minister of Ecology and Natural Resources;
- carries on monitoring of river bank alterations/reformation;
- leads crisis monitoring of water bodies;
- carries on the state surface water register, particularly the surface water bodies register;
- establishes Basin Councils;
- approves water economy balance;
- fulfils the State Water Cadastre on chapters: "Surface water bodies" and "Water use" and others..

Currently, **9 Basin Departments of Water Resources** operate in the structure of the State Agency of Water Resources:

Basin Department of Water Resources (BDWR) of the Ros River – Ros BDWR,  
Tisza BDWR,  
Desnyansky BDWR,  
Dniprovsky BDWR,  
Dnestr-Prutsky BDWR,

Danube BDWR,  
West Bug BDWR,  
South Bug BDWR,  
SiverskyDonets BDWR;

**and 19 regional/oblast departments of water resources:**

Volyn Oblast Department of Water Resources (ODWR),  
Dnipropetrovsk ODWR,  
Donetsk ODWR,  
Zhytomyr ODWR,  
Zaporizhzhya ODWR,  
Ivano-Frankivsk ODWR,  
Kirovograd ODWR,  
Lugansk ODWR,  
Lviv ODWR,  
Odessa ODWR,  
Poltava ODWR,  
Rivne ODWR,  
Sumy ODWR,  
Ternopil ODWR,  
Department of Water Resources in Kyiv and Kyiv Oblast,  
Kharkiv ODWR,  
Kherson ODWR,  
Khmelnysky ODWR,  
Cherkasy ODWR.

Introduction of the basin principle and harmonization of the national water legislation with the requirements of the EU relevant legislation lead to the structural reforming of the State Agency of Water Resources and sharing responsibilities. Until now the Regulations on Basin and Administrative (Oblast/Regional) Departments of Water Resources are not updated.

At the same time, **21 sectors** were created - **territorial bodies of the State Agency of Water Resources** (Order of the SAWR of 6 June No 73 On Approval of the Regulation on the sector in Vinnitsa (or Volyn, Dnipropetrovsk, Donetsk, Luhansk and Kharkiv, Zhytomyr, Zakarpattia, Zaporizhzhia, Ivano-Frankivsk, Kirovograd, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Kherson and Sevastopol, Khmelnytsky, Cherkassy, Chernivtsi; Chernihiv) Region/Oblast of the State Agency of Water Resources"). The main tasks of the sector are the implementation of the functions of the SAWR related to issuing the permits, executing administrative services and other functions in the sphere of management, use and restoration of surface water resources at regional/oblast level.

Sector of SAWR in the region/oblast:

- issues, cancels, reissues the permits for special water use,
- approves water supply standards,
- sets operation schedules of reservoirs, water transportation systems and channels (except those that are set in accordance with the **Procedure of development and setting of operation schedules of multi-purpose reservoirs, water transportation systems and channels, approved by the**

**Order of the Ministry of Ecology and Natural Resources of Ukraine of 7 February 2017 No 46),**

- establishes operating schedules for leased water objects,
- approves lease contracts for water objects;
- approves projects for conducting activities on water fund lands (except activities on lands occupied by seas) related to construction of hydrotechnical, linear and hydrometric structures, laying cables, pipelines, other communications, as well as performing drilling and exploration works,
- approves projects on establishing the size of the strips of drainage and their using regime,
- approves the boundaries of sanitary protection zones of water bodies,
- approves construction of artificial reservoirs and water retaining walls on rivers and their basins;
- approves documentation on land management in cases and in accordance with the procedure established by the Land Code of Ukraine and the Law of Ukraine "About Land Management" regarding the compliance of that documentation with water legislation (except documentation on land management for seas, sea bays and estuaries, and their coastal protection strips).

**Basin Council** is a consultative and advisory body within the territory of the river basin, established to the State Agency of Water Resources ([Order of the Ministry of Ecology and Natural Resources "On Approval of the standard regulation on Basin Councils" of 26 January 2017 # 23](#)). The first Basin Councils were established in 2008-2009 for several river basins: the Dnipro, Dniester, Seversky Donets and others, now the process of establishment and / or reestablishment of the Basin Councils has not yet begun.

The main tasks of the Basin Council are:

- development of proposals and taking into account the stakeholders interests in the field of protection and use of water resources within the basin;
- promotion of IWRM implementation;
- ensuring consideration of stakeholders' interests and coordination of actions of water management within the river basin
- support of cooperation of stakeholders to achieve environmental goals for the surface and ground water bodies of the river basin;
- submitting proposals to the Draft RBMP;
- support of the implementation of the RBMP and state, targeted, sectoral, interstate, regional and local environmental programs and projects related to the river basin;
- facilitating the development and implementation of technical assistance programs and projects, fundrising and attracting investments for ... improvement of the ecological status of the river basin;
- assessment of the RBMP implementation.

**State Service of Geology and Mineral Resources of Ukraine** (Derzhgeonadra) is the Central Executive Body, acting under leadership and coordination of the Cabinet of Ministers of Ukraine through the Minister of Ecology and Natural Resources. It implements state policy in the field of geological research and rational use of subsoil ([Resolution of the CMU of 30 December 2015 No 1174 "On Approval of the Regulation on the State Service of Geology and Mineral Resources of Ukraine"](#)).

The Derzhgeonadra conducts the State Register of Groundwater and Water Cadastre and organizes and coordinates Groundwater monitoring.

In the field of *drinking water, drinking water supply and wastewater disposal* in accordance with the Law of Ukraine “About drinking water, drinking water supply and water disposal” there are tasks and functions shared between a number of the state authorities and local self-government, responsible for the management of drinking water supply and sewage facilities, as well as enterprises/operators of drinking water supply and centralized wastewater disposal systems.

**Ministry of Regional Development, Building, Housing and Communal Services of Ukraine (Minregion)** (*Article 11 of the Law*) is the Central Executive Body, ensuring the development and implementation of state policy in the sphere of housing and communal services. Its responsibilities are:

- development of a unified technical, social and economic policy in the sphere of drinking water, drinking water supply and wastewater disposal;
- establishment of the monitoring procedure and carrying on the monitoring of the drinking water quality and the technical conditions of the centralized drinking water supply and sanitation facilities;
- approval of the rules of wastewater discharging to centralized sewer systems and the procedure for determining the amount of payment for over-discharge sewage to centralized canalization systems;
- approval of the procedure of reuse of treated wastewater and sediment in condition of compliance with the MPC of the pollutants;
- coordination of activities of executive bodies, enterprises, institutions, organizations of all form of ownership in this sphere;
- provision of scientific research in the field of drinking water, drinking water supply and wastewater disposal;
- implementation of measures for protection and concervation of the centralized drinking water supply and sanitation facilities;
- preparation and publication of the National Report on the quality of drinking water and the state of drinking water supply in Ukraine, provision of interested state authorities, non-governmental organizations, enterprises, institutions, organizations and citizens with information on the cases and causes of drinking water pollution, the procedure of tariff setting for centralized water supply and wastewater disposal services.

In accordance with the Regulation (approved by [Resolution of the CMU of 30 April 2014 No 197](#)) The Minregion affirms:

- orders, norms and rules in the sphere of housing and communal services, housing policy, settlements welfare, municipal solid waste management ...; the procedure for development and approval of technical specifications in the field of drinking water and drinking water supply; instruction on technical inventory of real estate property objects; the form of standard contracts in the sphere of housing and communal services in cases determined by law;
  - the procedure of monitoring of the drinking water quality and the technical conditions of the facilities of centralized drinking water supply, methodical recommendations for monitoring the processes of waterlogging in cities and townships;
- agrees.. the conditions of the tender for the transfer to the lease or concession of water and heat supply and wastewater disposal systems of communal ownership; the regional programs in the sphere of housing and communal services;
- prepares and publishes the National report on drinking water quality and status of drinking water supply in Ukraine.



**The National Commission for State Regulation of Energy and Public Utilities of Ukraine (NCSREPU)**, including in the area of centralized water supply and wastewater disposal, is the state collegial body subordinated to the President of Ukraine and accountable to the Parliament of Ukraine.

The main tasks of the NCSRECS (Decree of the President of Ukraine of 9 October 2014 No 715/2014 "On Approval of the Regulation on NCSRECS") are:

- 1) state regulation of activity of natural monopoly operators and economic entities conducting activities in adjacent markets, in the spheres of ... centralized water supply and wastewater disposal., as well as the recycling and disposal of solid municipal wastes;
- 3) ensuring transparency and openness of activities in the markets of natural monopolies and adjacent markets in the spheres of ... centralized water supply and wastewater disposal;
- 5) ensuring the implementation of price and tariff policy in the spheres of ... centralized water supply and wastewater disposal, ... support of introduction of incentive methods for price regulation;
- 8) protection of the rights of consumers of goods (services) .. of centralized water supply and wastewater disposal.

NCSRECS:

- 1) participates in the formation and implementation of the unified state policy in the spheres of functioning of the markets of natural monopolies, including centralized water supply and wastewater disposal;
- 4) performs licensing of economic activity in the spheres of natural monopolies, including centralized water supply and wastewater disposal;
- 5) develops and approves the procedures (methods) of the setting prices and tariffs of goods (services) of centralized water supply and wastewater disposal; the rules of connection to heat and water supply networks and the standard contracts which are foreseen by such rules;
- 6) participates in the regulation of payment operations in the sphere of centralized water supply and wastewater disposal;
- 9) implements measures to restrict monopolies, regulate the conditions for conducting business activities, promotes the creation of conditions for the withdrawal of commodity markets in the sphere of centralized water supply and wastewater disposal from the status of a natural monopoly and measures for development of the competition in adjacent markets;
- 20) determines the compliance of liquidation, reorganization in the form of merger, accession, participation in associations, as well as the acquisition or disposal of more than 25 percent of the shares of assets of economic entities in the sphere of centralized water supply and wastewater disposal with licensing conditions for the conduct of economic activities;
- 22) conducts regular monitoring and analysis of the situation on the markets of natural monopolies, in particular in the sphere of centralized water supply and wastewater disposal and forecasting the state of development of such markets.

Tariffs for water supply / wastewater disposal services are set by NCSRECS for 54 large water utilities (Annex 2), which are their licensees; for other enterprises the tariffs are set by the local self-government bodies.

In the sphere of drinking water, drinking water supply and wastewater disposal, the Council of Ministers of the Autonomous Republic of Crimea, regional state administrations, and the Kyiv and Sevastopol city state administrations are responsible for (Article 13):

- development and implementation of local, state and regional programs;
- supervision of the implementation of the rules and regulations established in this sphere;
- taking decisions on restrictions, temporary prohibition (suspension) of activities of enterprises, institutions, organizations in case of violation of the requirements of the relevant legislation;
- ensuring compliance with the rules and norms of using systems of drinking water supply and centralized wastewater disposal, compliance with the regime of sanitary protection zones of sources and facilities of centralized drinking water supply and sanitary protection zones of centralized wastewater disposal facilities;
- ensuring compliance with the rules of use of water intake structures to meet the needs of consumers in drinking water, restricting or prohibiting the use of drinking water for industrial needs, responsibility for the proper provision of residents of cities and other settlements with drinking water, the quantity and quality of which must comply with regulatory requirements, responsibility for due providing population with wastewater disposal systems;
- drawing up protocols on administrative violations, taking decisions on imposing fines or other sanctions on drinking water supply companies and / or centralized wastewater disposal in case of violation by them of legislation in this sphere;
- development and implementation of projects of sanitary protection zones of sources and objects of centralized drinking water supply, and sanitary protection zones of objects of centralized wastewater disposal;
- licensing of economic activity in this field, the capacity of which is determined by licensing conditions and other issues in this field.

**Local self-government bodies** (Article 13) in the field of drinking water, drinking water supply and wastewater disposal:

- approve, according to the legal requirements, projects of city-planning programs, general plans of settlement development, other city-planning documentation;
- approve and implement local programs in the field of drinking water, drinking water supply and wastewater disposal, participate in the development and implementation of relevant state and local programs;
- provide consent for the placement of new or reconstruction of operating facilities which activities may harm the sources and systems of drinking water supply and / or sewage systems;
- approve local rules for wastewater discharging to centralized canalization of the corresponding settlements;
- implement centralized wastewater disposal in settlements, the population equivalent of which is 2 thousand and more;
- identify the population equivalent of the settlement, vulnerable and less vulnerable zones in accordance with the procedure for determining the population equivalent of the settlement and the criteria for identifying vulnerable and less vulnerable zones approved by the Ministry of Ecology and Natural Resources;
- make decisions on conducting state ecological and sanitary-epidemiological expertise of projects of economic activity that can negatively impact the quality of drinking water and drinking water supply system;
- monitor the quality of drinking water, use and protection of sources and systems of drinking water supply and wastewater disposal;
- provide information to the public about the quality of drinking water and the status of drinking water supply and wastewater disposal;

- set tariffs for centralized water supply and sewage services (except the tariffs for services, which are established by the national commission that carries out state regulation in the fields of energy and utilities);
- restrict, temporarily prohibit the activity of enterprises in case of violation of the legal requirements in this sphere within the limits of their competences;
- establish rules for the use of water intake equipment to meet the drinking water needs of consumers;
- establish zones of sanitary protection of sources and objects of centralized drinking water supply and sanitary protection zones of objects of centralized wastewater disposal;
- restrict or prohibit the use of drinking water by enterprises for industrial purposes;
- approve investment programs for water supply and sewage facilities in communal ownership;
- accept the implementation of investment activities in the field of centralized water supply and wastewater disposal; solve other issues in this sphere.

According to Article 2 of the Law of Ukraine ["On Local Self-Government in Ukraine" of 21 May 1997 No 280/97-BP](#) local self-government is carried out by the territorial communities of villages, settlements, cities as directly by rural, settlement, city councils and their executive bodies, as well as by rayon and oblast councils representing the common interests of territorial communities of villages, settlements, cities.

The responsibilities of the executive bodies of village, settlement and city councils (Article 28 item 5) include (self-governing) own responsibility to *engage*, on a contractual basis, *the funds* of enterprises, institutions and organizations of all forms of ownership located on the territory, and funds of the population as well as budget funds *for construction, enlargement, repair and maintenance* on a parcel of *objects of social and industrial infrastructure and on measures for environment protection*.

According to Article 30, the responsibilities of the executive bodies of village, settlement and city councils include:

a) own (self-governing) responsibilities:

- 1) management of objects of housing and communal economy ... that are in communal ownership of the appropriate territorial communities, ensuring their proper maintenance and effective operation, at necessary level and quality of services for population;
- 4) decision-making on the organization of public toilets, control over their activities ..;
- 5) solution of water supply, wastewater collection and treatment problems; control over the quality of drinking water;
- 7) organization of settlements wellbeing, raising financing, labor and material resources for this purpose; control of the settlement wellbeing conditions, protection of water bodies, creation of recreation places;
- 15) approval of schemes of sanitary cleaning of settlements and implementation of separate collection systems for household waste ...;

b) delegated responsibilities:

- 2) control over the proper operation and service provision to population by enterprises of housing and communal services, control of the relevant, safe and healthy working conditions for staff at these enterprises and objects; making decisions on the cancellation of their permission on operation of facilities in case of violation of regulatory acts and other legal requirements.

Article 43.1 The following issues shall be resolved exclusively at plenary sessions of the rayon, regional councils:

22) on provision / cancellation of the permit for the special use of natural resources, respectively, at rayon, regional levels;

23) establishment of rules for using water intakes designed to meet the drinking, domestic and other needs of the population, zones of sanitary protection of water supply sources, restriction or prohibition of using drinking water for industrial purposes;

37) the setting of tariffs for housing and communal services provided by enterprises that are jointly owned by territorial communities, whose representation is carried out by the respective rayon or regional council, as well as by economic entities that manage (operate) the common property complexes of such enterprises.

Article 44. 1. Rayon, regional councils delegate to the appropriate local state administrations the following responsibilities:

3) ensuring sustainable economic and social development of the respective territory, effective use of natural, labor and financial resources;

Also regional councils delegate to regional state administrations, in particular, responsibilities:

5) determination of the use of recreation areas in accordance with the legislation;

6) approval for the enterprises, establishments and organizations located in the respective territory limits of emissions and discharges of pollutants into the environment and the limits for the disposal of waste in cases defined by law.

**Local state administration** – (in accordance with the [Law of Ukraine "On Local State Administrations" of 9 April 1999 No586-XIV](#), Article 1) is the local executive body of the relevant administrative-territorial unit and also implements the responsibilities delegated to it by the relevant council. In particular, they carry out in the respective territories state control over (3) the use and protection of land, forests, subsoil, water ... and other natural resources.

According to Article 18, p. 5, the local state administration in the common interests of territorial communities *unite* on a contractual basis *budget funds with the funds of enterprises, institutions, organizations and the population for construction, enlargement, reconstruction, repair and maintenance* of production facilities, transport, heating, water, gas and energy supply, roads, communication, *services served population and health care facilities* ....

According to Article 21, p. 9, the local state administration develops and ensures compliance with the rules of using i) water abstraction facilities designed to meet the drinking, domestic and other needs of population, ii) sanitary protection zones of water supply sources; restricts or prohibits the use of drinking water by enterprises for industrial purposes.

**Participants of the State Water Monitoring** in accordance with the Decree of the CMU of 30 March 1998 # 391 ["On Approval of the Regulation on the State Environmental Monitoring System" with the latest changes in accordance with the Decrees of the Cabinet of Ministers of Ukraine of 18 October 2017 No797 \(797-2017-п\)](#) (IX, IX, XI, XIII, XV, XVI) are defined:

MofE, Minregion, the State Agency of Exclusion Zone Management (in the zone of alienation and resettlement part of the zone of unconditional (mandatory) resettlement), as well the State Service of emergency situation, the State Sanitary and Epidemiology Service, SAWR and their territorial bodies, enterprises, institutions and organizations belonging to the sphere of their leadership,

regional state administrations, Kyiv and Sevastopol city state administrations, executive bodies of the Autonomous Republic of Crimea on issues of environment protection and water economy.

#### Monitoring of Surface Water status

*State Hydrometeorological Service (Ministry of entire affairs)* monitors the hydrochemical state of water in 151 water bodies, and also performs hydrobiological monitoring on 45 water bodies. Data are obtained by 46 parameters that provides possibility to estimate the chemical composition of waters, biogenic parameters, the presence of suspended particles and organic matter, main pollutants, heavy metals and pesticides. The chronic water toxicity is monitored on 8 water bodies. The indicators of radioactive contamination of surface water are determined.

*The State Environmental Inspection (MofE)* collects water samples and obtains data by 60 measurable parameters.

*The State Agency of Water Resources* monitors rivers, reservoirs, canals, irrigation systems, water bodies within boundaries of water economy systems of complex use, water supply systems, transboundary watercourses and water bodies in zones of Nuclear Power Plants (NPPs) impacts. Water quality control by physical and chemical parameters is carried out on 72 reservoirs, 164 rivers, 14 irrigation systems, 1 liman and 5 channels of complex use. In addition, in the framework of radiation monitoring of water, water management organizations monitor the content of radionuclides in surface waters.

*The Sanitary and Epidemiological Service (Ministry of health protection)* ensures supervision of sources of centralized and decentralized supply of drinking water, including chemical analysis of groundwater intended for drinking purposes, as well as places for recreation along rivers and reservoirs.

*State Service of Geology and Mineral Resources of Ukraine (MofE)* is responsible for monitoring of groundwater status, estimation of groundwater deposition level (availability) and natural geochemical composition. The analysis by 22 parameters, including the concentration of heavy metals and pesticides, is carried out.

**Ministry of Economic Development and Trade of Ukraine (MofED&T)**, according to the [Regulation approved by the Resolution of the CMU of 20 August 2014 No 459](#), is the main CEB, which provides:

- formation and implementation of the state policy of economic and social development and trade, the state industrial policy, the state investment policy, the state foreign economic policy, the state policy in the field of technical regulation, standardization, metrology and metrological activity, management of state-owned facilities, development of entrepreneurship, public- private partnership, intellectual property, tourism and resorts (except for the implementation of state supervision (control) in the field of tourism and resorts), state and public procurement, as well as state orders on capacity building of specialists, scientific, pedagogical and working personnel; training and retraining of personnel;

- formation and implementation of the state statistics policy..;

- formation of the state policy on consumer rights protection, the state policy on price control, the state regulatory policy and the state policy on licensing, permission system, supervision (control) in the field of economic activity;



- implementation of the state policy in the field of organization and control over the production of securities, documents of strict accountability.

Mof ED&T is responsible for the adaptation of the Sustainable Development Goals (SDGs), including SDG-6 on water and sanitation, and the preparation of the national report "SDGs: Ukraine" 2017.

**Ministry of Health Protection of Ukraine (MofH)** according to the Regulation ([the Resolution of the CMU of 25 March 2015 No267](#)) is the main CEB that provides formation and implementation of the state policy in the field of healthcare, protection of the population from infectious diseases, the fight against HIV / AIDS and other socially dangerous diseases; development and implementation of the state policy on epidemiological surveillance (monitoring) and the state policy on sanitarian and epidemiological wellbeing of population.

MofH according to the tasks assigned to it:

*-defines the prospects and priority directions of the health care development, including the sanitarian and epidemiological welfare of the population;*  
*-provides legal regulation in the fields of health protection, sanitarian and epidemiological welfare.*

In the field of sanitary and epidemiology well-being the MofH:

- approves:
  - the state *sanitary norms and rules*, sanitarian - epidemiological and sanitary-antiepidemical rules and norms, sanitary-epidemiological rules and norms, anti-epidemic rules and norms, hygienic and anti-epidemic rules and norms, state sanitary and epidemiological standards, sanitary regulations,
    - *drinking water quality parameters*,
    - *regulations on use of dangerous factors*, level of their *maximum permissible concentration* and approximately safe levels of chemical and biological factors in materials and products, water, air, soil,
    - sanitary rules and norms for labor protection;
- approves lists of:
  - institutions and organizations that working on the hygienic regulation of dangerous factors,
  - indicators for operational control of drinking water and drinking water supply;
- approves procedures of:
  - implementation of operational control in the area of drinking water and drinking water supply and its frequency,
  - preparation and submission of state, sectoral and operational reports on the sanitarian and epidemiological situation,
  - maintenance of the state records of infectious and occupational diseases, poisoning,
  - conducting all types of testing, research, specialized assessment in the framework of state sanitarian and epidemiological expertise, hygienic regulation and state registration of dangerous factors in non-food products, disinfectants, as well as carrying out the analysis of factors dangerous for human health at all stages of production and sale of non-food products;
- organizes the state registration of infectious and occupational diseases and poisonings;
- ensures *state social and hygienic monitoring*;
- coordinates measures implemented by healthcare facilities, research institutes belonging to the sphere of its management, and aimed at sanitary protection of the territory of Ukraine;

- analyzes and forecasts the epidemiological situation and indicators of health in Ukraine and in selected regions, develops and ensures the implementation of measures aimed at prevention and reduction of infectious diseases level, and improvement of the epidemiological situation;
- ensures monitoring of the implementation of sanitary and anti-epidemic measures, programs for the prevention of diseases and public health protection;
- provides the organization of investigations of the causes and conditions of the occurrence of infectious diseases, poisoning, radiation accidents and submission of materials on these issues to the relevant state bodies.

**Public Health Center to the Ministry of Health of Ukraine** is the scientific-practical institution of medical profile, which realizes functions of preservation and strengthening of people health, social-hygienic monitoring of diseases, epidemiological supervision and biological safety, implementation of group and population morbidity prevention, the fight against epidemics, and strategic management of public health. It was established in 2016, in accordance with the Order of the MofH of 13 April 2016 No357. Among its functions are the following:

- ensuring implementation of the epidemiological risks assessment, epidemiological surveillance, disease monitoring, measures to ensure bio-security and bio-protection; conducting laboratory research in the field of sanitary and epidemiological welfare of the population and taking special measures to prevent, localize and eliminate outbreaks of infectious diseases and epidemics, including those related to dangerous, especially dangerous and new infectious diseases;
- collection and analysis of strategic information necessary for the state policy making and strategic management of public health, implementation of interregional coordination of their implementation.

**State institution "Center of medical statistics of the MofH of Ukraine"** was established by the order of the MofH in 1992. The Center is the main institution that coordinates the activities of the territorial information - analytical centers of medical statistics and medical- preventive institutions in relation to the collection, processing and analysis of statistical information. The main tasks of the Center are:

- centralized collection, processing and analysis of statistical information on health status, provision of medical care to the population, health care resources and their usage;
- development and implementation of statistical methodology, which is based on the results of scientific researches, international standards and recommendations;
- ensuring the reliability, objectivity, operativity and completeness of statistical information, its adequacy to the objectives of sector reforms.

**Ministry of Agrarian Policy and Food of Ukraine** provides:

- formation and implementation of state agrarian policy, state policy in the sphere of agriculture and on food security;
- formation and implementation of the state policy on fish farming and fishing industry, protection, use and reproduction of water bioresources, regulation of fisheries ..., food safety and separate indicators of food quality ... ([The Resolution of the Cabinet of Ministers of Ukraine of 25 November 2015 No1119 "On Approval of the Regulation on the Ministry of Agrarian Policy and Food of Ukraine"](#)).

**State Service for Food Safety and Consumer Protection of Ukraine (SSFS&CRP)** and its territorial bodies are the main departments in the regions and the city of Kyiv (according to the Regulation approved by the Resolution of the Cabinet of Ministers of Ukraine of 2 September 1997

№667), responsible for implementation of the state policy, in particular, in the sphere of state supervision of compliance with sanitary legislation:

- carries out the state sanitary and epidemiological control over:
  - compliance with sanitary legislation;
  - compliance by enterprises, institutions, organizations of all forms of ownership and citizens of state sanitary norms and regulations, hygienic norms and regulations for safe production, transportation, storage, use of pesticides and agrochemicals, the content of residual quantity of pesticides and chemicals in imported herbs, water bodies, water used for commercial supply, swimming, sports, organized recreation and therapeutic purposes; mud used for therapeutic purposes, soil, in land of settlements, of health care and recreation places;
- provides the state sanitary and epidemiological expertise;
- participates in conducting sanitary and epidemiological investigations ...of causes and conditions that lead to the emergence and spread of infectious diseases, group and individual food poisoning, mass non-infectious diseases (poisoning) and radiation injury, cases of violations of radiation safety and implementation of measures to eliminate them.

**State Agency on Exclusion Zone Management (SAEZM)** ([Provision on the agency approved by the Resolution of the Cabinet of Ministers of Ukraine of 22 October 2014 #564](#) (XVIII, XX) is a central executive body whose activities are directed and coordinated by the Cabinet of Ministers of Ukraine through the Minister of Ecology and Natural Resources. SAEZM implements the state policy in the sphere of the exclusion zone and zone of unconditional resettlement, overcoming the Consequences of the Chernobyl Disaster, decommissioning the Chernobyl NPP and transforming "Shelter" into an ecologically safe system, and performs state governance in the field of radioactive waste management at the stage of long-term storage and disposal.

SAEZM in accordance with its tasks:

- 1) in the area of management of the exclusion zone and the zone of unconditional (mandatory) resettlement:
  - ensures monitoring of the state of the environment;
  - approves projects of land management to organize and establish the boundaries of territories of the nature-reserve fund and other purposes, lands of the water fund and water protection zones; restrictions on land use and their regimens in accordance with the law;
- 2) in the area of overcoming the consequences of the Chernobyl disaster:
  - conducts a general assessment of the radiation situation in the territories of radioactive contamination, the radioecological monitoring in this territory, conducts methodological guidance and coordinates the actions on identification of the radiation situation, including the survey of radioactive contaminated territories and the justification of a list of criteria for classification of zones of radioactively contaminated territories;
  - informs citizens living on the territories contaminated as a result of the Chernobyl catastrophe on issues of safety residence and formation of a healthy lifestyle.

**Chernobyl Center on Nuclear Safety, Radioactive Waste and Radioecology** ([According to the Resolution of the CMU of 28 September 1996 No1177 "Question of the Chernobyl Center on nuclear safety, radioactive waste and radioecology"](#) with changes (XVIII) is a research institution subordinated to the Cabinet of Ministers of Ukraine.

The Center participates in the organization, coordination and execution of research and development of nuclear and radiological security issues, including following:

- management of radioactive waste and spent fuel;
- ecological rehabilitation of radioactively polluted environment;
- mitigation and elimination of ecological and radiological consequences of the Chernobyl accident;
- analysis and assessment of the impact on the environment of operating facilities of nuclear energy production.

**The State Service of Emergencies of Ukraine (SSE)**, is the CEB, whose activities are directed and coordinated by the Cabinet of Ministers of Ukraine through the Minister of Internal Affairs. It implements the state policy on civil protection, protection of population and territories from emergency situations and prevention of their emergence, emergency response, rescue, fire suppression, fire and technogenic security, the operation of emergency rescue services, as well as hydrometeorological activities

The SSE of Ukraine provides forecasting of weather, hydrological regime of water bodies, dangerous and natural hydrometeorological phenomena, productivity of agricultural crops. (The Resolution of the CMU of [16 December 2015 No1052 "On Approval of the Regulation on the State Service of Ukraine for Emergencies"](#)).

**Ukrainian Hydrometeorological Center (UkrHydroMet)** was established on July 26, 2011 by liquidation of the State Hydrometeorological Service (the Order of the Ministry of Emergencies of Ukraine of 26 July 2011 #759 (as amended by the order of the State Emergency Service of Ukraine of 8 November 2016 # 577) "On Approval of the Regulation on the Ukrainian Hydrometeorological Center of the Ministry of Emergency Situations of Ukraine").

Under the jurisdiction of Ukrainian Hydrometeorological Center there are: Central Geophysical Observatory, Regional Center for Hydrometeorology in the Autonomous Republic of Crimea, Hydrometeorological Center of the Black and Azov Seas, Dnipropetrovsk, Donetsk, Lviv, Kharkiv regional centers for hydrometeorology, Vinnitsa, Volyn, Zhytomyr, Zakarpattia, Zaporizhzhya, Ivano-Frankivsk, Kirovograd, Lugansk, Mykolayiv, Poltava, Rivne, Sumy, Ternopil, Khmelnytsky, Kherson, Cherkassy, Chernihiv, Chernivtsi Regional Hydrometeorological Centers, Danube Hydrometeorological Observatory.

Among the main tasks of the UkrHydroMet determined:

- participation in implementation of the state policy of hydrometeorological activity;
- analysis and prediction of weather conditions, analysis of the hydrological regime of rivers and reservoirs;
- provision and servicing of all authorities, local governments, enterprises, institutions and organizations of all forms of ownership, population (through the mass media) with hydrometeorological information, warnings on the threat of occurrence of dangerous and natural hydrometeorological phenomena.
- collecting, processing, transmitting hydrometeorological information and information on level of the environment pollution, the databases and banks of hydrometeorological data collection.

**Ministry of Defence of Ukraine** according to [the Resolution of the CMU of 26 November 2014 #671](#) is the main CEB, which ensures the formation and implementation of the state policy on national security in the military sphere, defense and military construction in the peacetime and special period.

Ministry of Defence of Ukraine organizes the provision of sanitary and epidemiological welfare of servicemen in the Armed Forces and carries out state sanitary and epidemiological supervision in subordinate territories, objects, military units and divisions.

## D. Detailed analysis under twenty target areas in accordance with Article 6.2 of the Protocol

### Target area I

#### Article 6, 2(a) Quality of drinking water supplied

According to para 2(a) of Article 6 of the Protocol, 2 national targets were set for quality of drinking water supplied: improvement of drinking water safety and quality in terms of i) microbiological, and ii) chemical indicators (see Table 1.)

Table 1. National targets and indicators set for target area I

#	Targets in the Baseline Report	# till 2018	National targets up to 2018	Indicators and indicator values to be reached by 2015
1.	Quality of drinking water supplied (Article 6, 2a)	1.	Improving drinking water safety in terms of microbiological parameters	Reduction of shares of samples failing to meet state sanitary norms and rules in terms of microbiological parameters (E.coli and enterococcus) from centralised water supply networks
				for urban water supply - to 2%
				for rural water supply - to 3%
		2.	Improving drinking water safety and quality in terms of chemical content	Decentralised water supply
				Reduction of shares of samples failing to meet state sanitary norms and rules by chemical parameters
				for urban water supply - to 7%
for rural water supply - to 15%				
Decentralised water supply				

### I. Existing frameworks

#### A. Strategies, legal/regulatory framework and international commitments

The legal framework in the sphere of ensuring safe drinking water and water supply incorporates:

The Water Code of Ukraine, the Code of Ukraine on Mineral Resources,

Laws of Ukraine: Law on Drinking Water, Drinking Water Supply and Sanitation, Law on the Natural Environment Protection,

Law on Ensuring Sanitary and Epidemiological Wellbeing of Population;

Law on Temporary Specific Arrangements for State Supervision (Control) in the Sphere of Economic Activities (Law # 1728-VIII of November 3, 2016);



Sectoral state programs with relevant measures:

the State Target Program "Drinking Water of Ukraine" for 2011-2020;  
the State Program of Reforms and Development of Housing and Utilities Sector for 2009-2014, as a follow-up of the relevant program for 2004-2010 (Law of Ukraine # 1869-IV of 24.06.2004 as amended by Law # 1511-VI of 11.06.2009);  
the Program of Development of the Water Supply and Sanitation Sector (Decree # 1269 of the CMU of 17.11.1997, as amended);  
the State Target Program of Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021, that incorporates measures of the State Target Social Program of Priority Water Supply in Rural Settlements Supplied by Truck Water up to 2010 (Decree # 741 of the CMU of 27.08.2008);  
the State Program of Environmental Protection and Recovery of the Sea of Azov and the Black Sea (Law of Ukraine # 2333-III of 22.03.2001);

International legal acts:

The Protocol on Water and Health to the Convention on Protection and Use of Transboundary Watercourses and International Lakes of 1992 (Law of Ukraine # 1066-IV of 09.07.2003);  
EU Council Directive 98/83/EC on the Quality of Water Intended for Human Consumption of November 3, 1998.

Ukraine does not have legislatively set requirements on application of WHO recommendations and guidelines for introduction of approaches based on assessment of risks to drinking water safety, and to application of Water Safety Plans;

Regulations with sector-specific norms, standards and procedures according to the due sanitary legislation, including in particular:

*Sanitary rules and hygiene norms:*

DSanPiN 2.2.4-171-10 "Hygiene Requirements to Drinking Water Intended for Human Consumption", approved by MofH of Ukraine Order # 400 of May 12, 2010, registered by the Ministry of Justice of Ukraine on July 1, 2010, reg. # 452/1774,  
that stipulated approximation to EU standards and phased introduction of drinking water quality standards. In particular, in 2010, quality of drinking water in water supply networks was assessed by 33-42 parameters (in 2015, the range included 40-51 parameters, and 46-65 parameters - since 2020). In the case of pump room water, relevant figures reached - 39 parameters in 2010, 46 parameters in 2015 and 52 parameters in 2020. In 2010, quality of water in wells/springs was controlled by 31 parameters (the latter number was not changed after enactment of the DSanPiN.

SanPiN 4330-88 "Sanitary Norms and Rules of Protection of Surface Waters from Pollution"<sup>4</sup>

*Legal regime of sanitary protection zones of water bodies* (CMU Decree # 2024 of 18.12.1998, as amended);

*Procedures for setting areas and boundaries of water protection zones and regimes of economic activities in the zones* (CMU Decree # 486 of 08.05.1996, CMU Decree # 2024 of 18.12.1998 on Legal Regime of Sanitary Protection Zones of Water Bodies, etc.

<sup>4</sup> Revoked since 01.01.2017 according to CMU Decree # 94-r of January 20, 2016 on Declaring Some Sanitary Legislation Acts Revoked and Non-applicable at the Territory of Ukraine

*Rules of protection of surface waters from pollution by return water* (CMU Decree # 465 of 25.03.1999), etc.

Regulations, aiming to address specific problems of drinking water quality, including in particular:

- Procedures for Drafting and Publication of Annual National Reports on Drinking Water Quality and the State of Drinking Water Supply in Ukraine (approved by CMU Decree # 576 of 29.04.2004),
- Order # 16 of the Chief Sanitarian of Ukraine of 17.05.2010 on Prevention of Water-Nitrate Methemoglobinemia in Children, related to examination of non-centralized water supply sources (individual wells and springs, particularly the ones used for drinking water needs of children under 3 years old);
- CMU Decree # 408 of 13.08.2014 on Issues of Introducing Restrictions for Inspections by State Inspectorates and other Supervisory Bodies;
- CMU Decree # 23-r of 17.01.2018 on Discharge of Surplus Return Water into the Ingulets River, that allows 4 enterprises of Kryvbas to discharge their return water into the Ingulets river; etc.

### **Institutional frameworks**

Central executive bodies are responsible for the state monitoring and control of drinking water quality:

- the Ministry of Health Protection of Ukraine (state institutions - laboratory centres) - ensuring laboratory and instrumental research and tests in the sphere of sanitary and epidemiological well-being of the population, investigation of causes and conditions of emerging infections including monitoring of quality of drinking water that is supplied to users;
- the State Service of Ukraine for Food Safety and Consumer Protection under the Ministry of Agrarian Policy of Ukraine - state control (supervision), including control of compliance of economic actors with requirements of the due sanitary legislation,
- the Mof E of Ukraine, the State Agency of Water Resources of Ukraine, the State Service of Geology and Mineral Resources of Ukraine - environmental monitoring of status of surface water and groundwater bodies, that are used as sources of drinking water supply;
- the State Emergency Response Service (SERS) - prevention, response to and mitigation of emergencies/accidents and their effects at water supply and sanitation facilities.

Some other ministries (the Ministry of Defence, the Ministry of Infrastructure, the Ministry of Energy and Coal Industry) address issues of functioning of their sector-specific water supply systems.

Since 2011, the state monitoring and control/supervision in the sphere of drinking water safety underwent major institutional changes and weakening due to: 1) reorganisation of the State Sanitary and Epidemiological Service (SES) of the MofH of Ukraine from 2011 with reduction of numbers of territorial bodies of the Service, 2) reduction of personnel capacity of the SES medical staff and, 3) imposition of limitations on fulfilment of supervisory functions of the service and prohibition (moratorium) on regular inspections of facilities under control (according to CMU Decree # 408 of 13.08.2014 on Issues of Introducing Restrictions for Inspections by State Inspectorates and other Supervisory Bodies, and Law of Ukraine on Temporary Specific Arrangements for State Supervision (Control) in the Sphere of Economic Activities and; 4) the situation at the territory

under control of Ukraine, with the exception of territorial units located in territories controlled by terrorist groups and the annexed territory of the AR Crimea.

In 2012, the State SES was transformed into the SES Directorate General (DG SES), in 2016, DG SES was liquidated and its responsibilities on state control (supervision), including control of compliance of economic actors (including water utilities) with the sanitary legislation, were transferred to the State Service of Ukraine for Food Safety and Consumer Protection.

Since 2012, Laboratory Centres (LCs) of the State SES were established, and since 2016 these centres were subordinated to the MofH of Ukraine. The Competences of LCs of the MofH include observations (monitoring) of water supply, ensuring laboratory and instrumental research studies and testing in the sphere of sanitary and epidemiological well-being of the population, implementation of sanitary protection measures at the state border of Ukraine, conducting investigations of causes and circumstances of infections and poisonings. In the case of detecting water quality deviations from the due standards, LCs cannot apply timely administrative measures to address the situation (as their powers are restricted by the moratorium on inspections). LCs may apply available mechanisms against violators of the sanitary legislation only in emergencies and only through courts of law. Now, such mechanisms should be used by the State Service of Ukraine for Food Safety and Consumer Protection under the Ministry of Agrarian Policy (earlier it was a part of former State SES of Ukraine).

The Ministry of Regional Development, local state administrations, local authorities and water utilities are responsible for monitoring of drinking water quality and modernisation of water supply systems to ensure the due quality of drinking water in compliance with the relevant legislation, DSanPiN and EU standards.

## **Economic capacity**

### *i) Finance capacity for interventions*

According to the legislation the sources for financing measures related to development of water supply systems and improvement of drinking water quality are:

- the State Budget of Ukraine;
- local budgets (oblast, city, township level, etc.);
- revenues of water utilities from the services provided;
- other sources of financing, including international finance institutions (IFIs).

From 2013 the state budget funds were not allocated to support actions under "Drinking Water of Ukraine" State Target Program and other sectoral programs, including the ones for water management development. Relevant local and regional sectoral programs are implemented only partly and only due to co-financing by water utilities and local/oblast-level budgets. Besides that, separate projects are implemented with finance support of: investors (IFIs loans), grants (projects of NGOs, international development agencies or international organisations (IOs)). UNICEF and other IOs provide humanitarian aid for addressing drinking water supply problems of residents affected by the military conflict in the Eastern Ukraine.

Problems of drinking water quality remain the secondary priority ones in comparison with ensuring basic access of Ukrainians to water, and depend on addressing problems related to tariff policies, affordability and right to water in Ukraine.

### **Awareness raising, education and training:**

#### *i) Public awareness raising campaigns on water quality*

Annual National Reports on Drinking Water Quality and the State of Drinking Water Supply in Ukraine serve as the key national source of information on drinking water quality in Ukraine.

In addition, water utilities regularly post information on drinking water quality supplied to users on their web-sites.

However, in general, awareness of the general public in these matters remains low. Public Health Centres of the MofH and NGOs raise public awareness on drinking water quality issues.

#### *ii) Enforcement of compliance (e.g. ability of competent bodies to control and monitor municipal water supply):*

According to Art. 39 of Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation, the state monitoring shall be conducted by 28 LCs of the MofH at the level of oblasts, in Kyiv and Sevastopol and by three transport LCs (by modes of transport), as well as by 285 facilities (affiliates) of LCs at city, rayon/district and inter-rayon levels throughout Ukraine. On the base of them, 293 sanitary and hygiene laboratories, 297 bacteriological and 27 virological laboratories operate, as well as 26 laboratories on particularly hazardous infections, 26 parasitological and 15 bacteriological laboratories with parasitological units. Besides that, the Ukrainian Centre for Disease Monitoring and Control of the MofH operates 5 reference laboratories (bacteriological, virological, parasitological ones, a laboratory on particularly hazardous infections, and a sanitary and hygiene laboratory).

In 2017, the LCs of the MofH analysed 5,908,278 samples in the framework of the social hygienic monitoring, including almost 600 thousand laboratory analysis of drinking water quality.

30 main territorial bodies operate under the State Service of Ukraine for Food Safety and Consumer Protection.

#### *iii) Capacity for interventions (available social/public mechanisms for interventions to improve the situation)*

According to Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation (articles 12 and 13), local state administrations and local self-governance authorities are responsible for: ensuring enforcement of rules and norms of operation of drinking water supply and wastewater disposal systems, due drinking water supply to residents of cities and other settlements, control of quantity and quality of drinking water in compliance with regulatory requirements, monitoring of drinking water quality, use and protection of water sources and drinking water supply systems. In addition, according to articles 46 and 47, liability is stipulated for non-compliance with the due legislation in the sphere of drinking water and drinking water supply, as well as terms of

compensations for damages incurred, while Article 48 provides the procedure for consideration of disputed issues in court.

Before 2015, control authorities mainly applied administrative measures (prescriptions, fines, orders for the temporary termination of facilities' operation) against violators of sanitary norms. However, in 2016, due to the liquidation of the State SES, no real picture was available for application of administrative measures/sanctions against violators of the sanitary legislation in the sphere of drinking water supply.

## B. Availability and reliability of information on water quality in collective water supply systems

### *i) Supervision of water utilities*

DSanPiN 2.2.4-171-10 establishes sanitary norms for drinking water safety and quality, as well as rules of operational control and state sanitary and epidemiological supervision in the area of drinking water supply of the population. It contains the list of parameters (see Table 2) with limits for chemical and biological parameters that define epidemiological and radiological safety of drinking water, organoleptic properties that can be technically feasible under contemporary economic conditions.

Table 2. Groups and numbers of drinking water safety parameters (DSanPiN 2.2.4-171-10)

Groups of parameters	sub-groups	Numbers of parameters
epidemiological safety		11
	microbiological	9
	parasitological	2
sanitary and chemicals		25
	organoleptic	4
	physical-chemical	21
	<i>inorganic components</i>	18
	<i>organic components</i>	3
sanitary and toxicological		39
	<i>inorganic components</i>	25
	<i>organic components</i>	12
	<i>integral indices</i>	2
radiation		8
physiological value		9

In 2016, laboratory centres of the MofH (subordinated to the State SES of Ukraine up to July 2017)<sup>5</sup> (see Table 3) controlled and supervised 10 522 sources of centralised residential water supply, including 1154 municipal, 3256 agency-specific, and 3757 rural water supply networks; as well as 118 110 sources of decentralised water supply.

**Table 3.** Numbers of sources of centralised and decentralised water supply under control of MPH laboratory centres in 2013-2016.

Control objects	Numbers of sources by years			
	2013	2014	2015	2016

<sup>5</sup> The National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine - 2016 <http://www.minregion.gov.ua/wp-content/uploads/2017/12/Proekt-Nats.-dop.-za-2016-rik.pdf>



Centralised water supply sources, including:	<b>18455</b>	<b>16967</b>	<b>16215</b>	<b>10522</b>
municipal water supply networks	1569	1336	1741	1154
agency-specific water supply networks	4818	4474	4641	3256
rural water supply networks	7447	6566	6684	3757
Decentralised water supply sources	<b>162642</b>	<b>160225</b>	<b>160343</b>	<b>118110</b>

Preventive and current/operational supervision modes are stipulated. Operational supervision is conducted by means of random inspections of residential water supply facilities, including regular and extraordinary inspections depending on a sanitary-epidemic situation, in response to citizens' complaints, etc., in water intakes, before entry to and directly in water distribution network, at stages of water treatment and supply of drinking water to users).

Water utilities have to maintain operational control and to submit information on the control results (drinking water safety and quality), as well as information on possible contamination of sources of drinking water supply to the state institutions - LCs of the MofH of Ukraine.

*a. Laboratory capacity (e.g. resources and personnel)*

Laboratory centres of the MofH (state institutions) have now sufficient laboratory capacity for continuous monitoring of water quality in their spheres of competence. The laboratories are equipped with standard samples for calibration of measuring equipment, and for quality/accuracy control of measurement results. However, to ensure proper and full implementation of DSanPiN 2.2.4-171-10 and EU drinking water quality standards, the laboratories need to strengthen the material and technical base and to replace their old equipment by new modern one. LCs of the MofH are budgetary entities and do not have earmarked state funding for upgrading their laboratory and computer equipment.

Operational control in water utilities is conducted by chemical and bacteriological laboratories according to the Technological Regulations, that contain the following operational control programs: a list of control parameters, methods for their determination, sampling points, number of samples and calendar timetables of water sampling for laboratory tests, etc. Capacities of laboratories of water utilities (in terms of analytical instruments and availability of specialists) vary considerably depending on their locations (oblast or rayon centres, cities, townships). Only water utilities in several major cities, such as Kyiv, Kharkiv and Odessa maintain strong facility-level laboratories. However, they also face difficulties in acquiring modern analytical hardware and associated software. A significant problem is the lack of specialists in the sphere of analytical chemistry and maintenance of complex analytical and computer equipment.

Facility-level laboratories of medium-sized and small water utilities can usually analyse only a few simplest chemical parameters (temperature, colour, turbidity, pH, ammonium, nitrates, chlorides, total hardness, total alkalinity, residual chlorine (free and bonded chlorine), COD, dry residue, total iron) and bacteriological parameters (total microbial count, total coliforms, E.coli, Enterococci). To determine other water quality parameters, they can apply to other water utilities or contract such services to laboratories of the MofH or to other certified laboratories.

In recent years, the Ministry of Regional Development of Ukraine considered the concept of organisation of inter-territorial comprehensive laboratories, capable to serve all water utilities at a rayon/oblast level in order to perform complex water quality analyses. Most simple water quality analyses in the process of water treatment can be performed directly at water treatment plants. Such arrangements would increase reliability, completeness and efficiency of operational control.

*b. Systems of laboratory quality control*

According to Art. 6 of Law of Ukraine on Accreditation of Conformity Assessment Bodies (enacted in 2001, as amended in 2009, 2012, 2014, 2015), accreditation is performed by a national body - the National Accreditation Agency of Ukraine (NAAU) - the Agency conducts accreditation according to the national legislation, accounting for requirements of international and European standards. NAAU issues documents that certify competences of a legal entity or a relevant conformity assessment body (CAB) to perform certain types of works (testing, calibration, certification, control).

In addition, in Ukraine there is a state system of certification of products and quality management systems in the framework of UkrSEPRO system and in line with series of standards of this system. For accreditation of laboratories, specially developed criteria and procedures for assessment of technical competences are used, as well as a comprehensive expert assessment of all factors influencing generation of calibration or test data (based on ISO/IEC 17025 international standard).

Besides that, in Ukraine, "Ukrmetrteststandard" state entity performs certification of measuring laboratories of the state metrological system, that perform measurements to be applied in the sphere of state metrological supervision.

Since 2016, when amendments to Law of Ukraine on Metrology and Metrological Activities went into force, no certification of measuring laboratories is stipulated. However, Art. 7 of the Law states that "competences of CEBs, other governmental bodies to authorise facilities and organisations, their separate subsidiaries and individual businesses to conduct certain measurements that are not related to the assessment of conformity of products, processes and services in the sphere of legislatively regulated metrology, shall be determined by law". For the time being, relevant authorised bodies are not defined, as the majority of laws do not provide for such competences of the CEBs and other governmental bodies (except in the sphere of state control of food products).

However, all interested entities and organisations can voluntarily assess measuring laboratories, as a recognised measurement capacity serves as documentary proof of technical competence for making measurements, providing thus a good argument in relations with customers.

*ii) monitoring (e.g. ability of a competent body to get a clear understanding of drinking water quality)*

*a. availability of data*

*b. data processing (computer capacity)*

*c. data transfer from the local level to the national level and vice versa*

*d. data analysis at national level*

State monitoring of drinking water and drinking water supply is conducted with involvement of various ministries and agencies, each of them monitors individual water bodies/facilities, collects

data and prepares relevant information, namely:

the MofH of Ukraine monitors status of drinking water supply sources and systems, quality of drinking water; it collects data on water quality by sanitary-chemical, biological, radiological and organoleptic indicators;

the Ministry of Regional Development of Ukraine collects and analyses local data on current state and conditions of operation of water supply systems, drinking water quality, etc.;

The MofE, the State Water Agency and the State Service of Geology and Mineral Resources of Ukraine maintain monitoring and collect data on water quality in areas of surface water and groundwater intakes, including information on chemical and radiation indicators of water quality;

- the State Emergency Service controls emergencies at drinking water supply sources/facilities;
- the National Commission for Regulation of Energy and Public Utilities maintains licensing and sets tariff rates for centralised water supply services of natural monopolies.

Results of laboratory monitoring studies of LCs of the MofH are submitted to the state facility “Ukrainian Centre for Disease Monitoring and Control of MofH” and to the MofH of Ukraine (from local to national level). Permanent data/information exchange is maintained in information flows on various matters, data analysis and development of information materials are conducted for use in development of documents at different levels and publications in the web, in mass media outlets, etc. Besides that, all stakeholders maintain information exchange at all levels.

The Ukrainian Centre for Disease Monitoring and Control of the MPH of Ukraine does not receive all data on drinking water quality from different partners involved into relevant works. However, information exchanges take place at the level of preparation of National Reports on Drinking Water Quality and the State of Drinking Water Supply in Ukraine, development of national information reports, etc.

Data on the actual situation "on the ground" are collected by the relevant territorial bodies (in oblasts or rayons) and submitted to the central authorities for processing, generalisation and analysis at national level.

No online monitoring of drinking water quality is maintained in the country. Besides that, no national database as a common information system is available, but databases of individual ministries and departments are in operation. Various formats of data processing are used at different levels and in different agencies, and high-capacity computing techniques and relevant software are not available to process large amounts of information.

Information obtained on the base of official monitoring data of various CEBs, oblast-level and Kyiv city state administrations is used for preparation of annual National Reports on Drinking Water Quality and the State of Drinking Water Supply in Ukraine. The Reports are published on the website of the Ministry of Regional Development. The national reports contain relevant information on individual regions (oblasts), as well as on the whole Ukraine for each year starting from 2004.

## **II. Environmental and/or health situation – the current status and prospects**

### **A. Monitoring programs and indicators**

Institutional reforms in the sphere of sanitary and hygiene well-being and the ban on inspections resulted in reduction of logistical and human capacity of laboratories and monitoring programs of the MofH, including reduction of numbers of monitoring objects, analyses and the range of water quality parameters analysed.

Laboratory centres of the MofH of Ukraine (earlier the State SES of the MofH until July 2016) continuously conduct research studies in the framework of monitoring of drinking water quality from sources of centralised and decentralised water supply, water pipelines (municipal, rural, agency-specific, etc.), water distribution networks by microbiological parameters (including *E. coli* and enterococci) and more than 70 sanitary-chemical parameters (including in particular: nitrates (as NO<sub>3</sub>), lead, total iron, manganese, cadmium, other metals, arsenic, carbon tetrachloride, chloroform). Currently, no information is provided on levels of fluorides, nitrites, hardness, dry residue, sulphates, chlorides in water due to lack of disaggregated data in the statistical reporting forms in Ukraine in general.

LCs of the MofH monitored content of nitrates in water of non-centralised water supply sources, including water from wells and springs, used for consumption by children under 3 years.

## ***B) Issues of quality of the water supplied***

### ***i) Quality by microbiological indicators***

In the system of centralised water supply in Ukraine, both surface water and groundwater sources are used, however, the share of surface water is much higher than the groundwater one and it reaches about 80%.

According to results of sanitary and epidemiological supervision<sup>6</sup>, in Ukraine, practically all surface water bodies (and groundwater in some regions), in terms of pollution levels, did not meet requirements of sanitary legislation to water supply sources. The share of water samples from water bodies of category I, that did not meet the due sanitary norms for sanitary and bacteriological indicators, reached 9.3%, while in the case of category II water bodies the relevant share reached 12.3%.

According to data of the MofH, in 2015, in terms of bacteriological indicators, the largest share of understandard samples taken in centralised water supply systems was found in drinking water from rural water pipelines (7.6%) and from sources of decentralised water supply (18%) (see Table 4.).

Table 4. Results of drinking water quality monitoring according to WatSan\_S2 official statistic reporting form: bacteriological indicators in 2009-2015.

<sup>6</sup> The National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine - 2015.

WatSan_S2	Baseline values	Interim values		Current values
E.coli	no separate entry in the reporting form			
Enterococci	no separate entry in the reporting form			
	2009	2011	2012	2015
<b>Numbers of samples taken for determination of bacteriological indicators from:</b>				
centralised water supply systems	290784	298661	233158	144649
including:				
municipal water supply pipelines	166281	166683	127865	78967
rural water supply pipelines	63899	67123	51059	28807
water distribution networks	256407	264107	204397	125236
decentralised water supply sources	70563	82603	59133	50677
<b>Shares of understandard samples in terms of bacteriological indicators, taken from:</b>				
centralised water supply systems, %	3.1	2.9	2.8	4.6
including:				
municipal water supply pipelines, %	2.1	2.0	2.0	3.1
rural water supply pipelines, %	5.0	4.7	4.7	7.6
water distribution networks, %	3.2	3.0	2.8	4.4
decentralised water supply sources, %	16.8	16.4	16.2	18.0

According to monitoring results of LCs of the MofH, due to lack of or unsatisfactory status of sanitary protection zones of water supply sources, 46.7% of municipal sources and 84.1% of rural water supply sources do not meet sanitary norms.

*a. Problems that should be addressed at water supply sources (e.g. resource protection, source protection):*

Problems of protection of water supply sources: lack of sanitary protection zones, non-compliance with the regime of restrictions on economic activity within them; faecal contamination of the environment, including water resources, due to lack of access to proper sanitation (no connections to sewers, lack of sewers and/or wastewater treatment facilities, discharges of untreated wastewater into the environment).

First of all, in order to prevent pollution of water supply sources, it is necessary:

- to strengthen control of wastewater discharges, particularly in areas of location of drinking water supply intakes,
- to construct, reconstruct, overhaul or modernise wastewater treatment plants;
- to introduce modern effective technologies of wastewater treatment, tertiary treatment and disinfection, allowing to reach the due quality of wastewater before discharge into natural water bodies;
- to construct and manage sanitary protection zones, ensuring strict compliance with the rules of their functioning.

*b. Problems that should be addressed at the level of water treatment (e.g. water treatment and disinfection capacity)*

- outdated and inefficient water treatment technologies,
- inefficient disinfection technologies (chlorination and hyper-chlorination).

In Ukraine, primary disinfection (before water is delivered to water treatment plants) and secondary disinfection (at the final stage of water treatment, before it enters the distribution network) are used



with application of chlorination (there are examples of ozonation in Kyiv). Depending on the quality of the source water (at the source), doses of disinfectants may be fairly high.

Main problems that need to be addressed at the stage of water treatment:

- introduction of a reliable and efficient system for water disinfection, accounting for both a high bacteriostatic water effect and reduction of contents of disinfection by-products, in particular trihalomethanes;
- application of other, safer disinfectant reagents or combinations of them;
- potential use of an additional stage of water pre-treatment (installation of micro-filters in water intakes at surface water bodies).

*c. Problems that should be addressed at the level of distribution (e.g. branching and maintenance of water distribution networks)*

- maintenance of the due microbiological safety of drinking water in distribution networks according to requirements of DSanPiN 2.2.4-171-10, related to residual content of disinfectants in treated water at the exit from clean water tanks before water entry to distribution networks.
- additional water disinfection points for heavily branched networks or long drinking water mains;
- seriously outdated and worn-out pipelines; lack of their reliable anti-corrosion protection;
- deviations from due regimes and schedules of pipe flushing and disinfection of pipes, lack of their regular inspections and application of necessary prevention measures;
- high accident rates at pipeline systems, etc.;
- problems of formation of various biological deposits/fouling and periphiton on internal surfaces of pipes and secondary microbiological contamination of drinking water in distribution networks.

*i) Water quality by chemical parameters:*

*a. Issues of natural (geological) drinking water contamination that should be addresses at the stage of water treatment*

*b. Issues of anthropogenic pollution of water sources*

In Ukraine, surface water sources are predominantly used for drinking water supply (up to 80%), including water from rivers: the Dnieper (with tributaries), the Dniester, the Southern Bug, the Siversky Donets, the Ingul, etc. and sometimes water from lakes. The rest of water supply for drinking purposes relies on groundwater sources.

The range of main problems of *natural water contamination of surface water sources* includes:

- high water turbidity (sometimes for short periods of time) - up to 1000-1500 mg/dm<sup>3</sup>, due to weather phenomena (rainfall, floods, snow melting) - it is characteristic for water of mountainous rivers (the Carpathians, Crimea);
- high colour due to presence of humus substances of natural origin: in some years or seasons it reaches 120-150 degrees, causing increased permanganate COD values of water - it is characteristic for water of marsh origin (upper and middle parts of the Dnieper basin).

Among problems of *anthropogenic water contamination of surface drinking water sources* the following ones should be mentioned:

- high contents of organic matter due to eutrophication, causing intensive growth of phytoplankton - "algae blooms", that seriously affects water quality and makes water treatment rather difficult - it is characteristic for water of marsh origin (in upper and middle flow sections of the Dnieper basin);
- elevated epidemic risks (faecal contamination) - it is characteristic for such rivers as the Dniester, the Siversky Donets, and the Southern Bug,
- high levels of pollutants due to wastewater discharges of industrial facilities and food processing enterprises in basins of the Siverskiy Donets and the Southern Bug rivers;
- high mineral contents in water (hardness, chlorides, sulphates, etc.) are typical for overregulated rivers: lower reaches of the Dnieper river, channels in Donbas and Crimea), often accompanied by industrial pollution as well.

The range of *common problems of natural contamination of groundwater* sources of drinking water supply includes:

- high levels of iron compounds - from 1 to 20 mg/l (most often - 1-5 mg/l), sometimes drinking water is enriched by iron due to high corrosion activity of water and lack of anti-corrosion protection of water intake equipment and water mains;
- manganese levels (almost always manganese is a concomitant component of iron), usually in low concentrations of 0.2-1.5 mg/l, only in individual wells its levels might reach 2-3 mg/l;
- high water hardness is characteristic for groundwater in southern and central parts of Ukraine, it varies from 8-12 to 20-22 mg-eq/l;
- chlorides, sulphates, total mineral contents - elevated or high values are characteristic for the same regions as elevated hardness;
- high fluoride contents (up to 2-6 mg/l or 10-12 mg/l in some cases) - it is characteristic for groundwater of Poltavska, some parts of Chernigivska and Cherkaska oblasts.

In the case of groundwater, main water treatment problems are associated with the need of iron and manganese removal, while in the northern and eastern regions they are associated with adjustment of mineral composition (reduction of levels of hardness salts, sulphates, chlorides).

As pertains to problems of anthropogenic pollution of water by untreated and low treated wastewater, leachate of landfills of solid household waste or by other pollutants, they manifest themselves in higher levels of organic substances, nitrogen and phosphorus compounds, elevated microbial contamination, foul odours, etc. To address these problems, it is necessary to strengthen control over wastewater discharges to water bodies, especially at sites of drinking water intakes, to follow strictly rules of operation and regimes of sanitary protection zones, and to take all the necessary measures for prevention of pollution of water bodies.

According to monitoring results of 2015<sup>7</sup>, water quality in main sources of centralised water supply was understandard: in more than 80% of samples in control areas excess levels of pollutants or physical-chemical parameters were found, most often including COD (chemical oxygen demand), BOD (biological oxygen demand), colour, total iron, manganese; as well as dry residue, hardness, sulphates, oil products, phenols. In general, shares of water samples from water bodies of category I that did not meet the sanitary norms for sanitary-chemical indicators reached 10.8% (and 19.4% in the case of water bodies of category II).

<sup>7</sup> The National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine - 2015

In 2015, 311 water samples were collected in the Dnieper river basin (providing almost 70% of the country's water supply) in places of drinking water intakes (32 observation points), 311 water samples and about 9.5 thousand analytical determinations were made. In 90% of the samples analysed, due limits for pollutants or physical-chemical indicators were exceeded: including organic matter, iron and manganese. Factors that influenced hydrochemical status of waters of the Dnieper basin were both natural (adverse weather conditions, a record decline in water levels due to drought) and anthropogenic nature. High water temperatures in the summer, massive algae blooms resulted in a decrease of dissolved oxygen down to critical values (4.0-5.0 mgO<sub>2</sub>/dm<sup>3</sup>) and an increase in levels of organic pollutants.

According to the MofH, in 2015, in terms of sanitary-chemical indicators, the largest share of non-standard samples taken in centralised water supply systems was found for drinking water from rural water supply pipelines (22.5%) and sources of decentralized water supply (37.2%) - see tables 5 and 6).

**Table 5.** Results of drinking water quality monitoring according to WatSan\_S2 official statistic reporting form: sanitary-chemical parameters in 2009-2015

WatSan_S2	Baseline values	Interim values		Current values
	2009	2011	2012	2015
Numbers of samples taken for determination of sanitary-hygiene indicators from:				
<i>centralised water supply systems</i>	201139	214629	175167	117755
including:				
municipal water supply pipelines	109574	115081	95087	58898
rural water supply pipeline	44688	49373	38335	25924
water distribution networks	170212	183669	148569	95458
<i>decentralised water supply sources</i>	65130	102423	75587	78305
Shares of understandard samples in terms of sanitary-chemical indicators, taken from:				
<i>centralised water supply systems, %</i>	12.9	14.7	12.9	15.7
including:				
municipal water supply pipelines, %	9.2	11.8	9.8	12.4
rural water supply pipelines, %	18.0	18.3	17.6	22.5
water distribution networks, %	10.8	12.1	10.7	13.5
<i>decentralised water supply sources, %</i>	28.6	32.0	29.3	32.7

**Table 6.** Results of drinking water quality monitoring for community and individual wells/springs: sanitary-chemical parameters in 2009-2015.

Substances	Baseline values	Interim values		Current values
	2009	2011	2012	2015
Fluorides	no separate entry in the official reporting form			
Nitrates and nitrites	no separate entry in the official reporting form			
Nitrates (decentralised water supply):				
Community wells/springs	–	12.2/6.3	16.7/4.6	18.7/8.5
Individual wells/springs	–	33.2/14.5	19.1/0.7	25.7/0.9
Arsenic	no separate entry in the official reporting form			
Lead	0.5	0.9	0.5	0.8
Iron	5.0	2.9	2.8	5.5
Additional physical-chemical parameter 1: <u>manganese</u>	2.7	1.5	1.4	2.1

Additional physical-chemical parameter 2: <u>cadmium</u>	2.2	1.1	0.9	1.1
Additional physical-chemical parameter 3: <u>carbon tetrachloride</u>	1.8	0.4	0	0
Additional physical-chemical parameter 4: <u>chloroform</u>	23.6	21.6	1.1	36.4
Samples analysed for:				
Lead	4275	3624	3588	2447
Iron	5948	4128	4272	2275
Manganese	4368	3993	4215	2626
Cadmium	2990	2975	2686	2083
Carbon tetrachloride	2449	2478	1500	679
Chloroform	5556	8737	4384	3353
Community wells/springs	–	13806/441	29298/1094	19172/473
Individual wells/springs	–	34644/256	61197/292	50422/531

*c. Issues of water treatment for removal of pollutants;*

It is necessary to address the following issues at the stage of water treatment:

- reconstruction and modernisation of water treatment plants accounting for available quality of raw water and with use of modern technologies, materials and equipment;
- removal of phytoplankton: introduction of an additional stage of water pre-treatment - i.e. installation of microfilters;
- reduction of organic matter contents and permanganate COD - application of activated carbon;
- introduction of a reliable and effective system for disinfection of water at all stages of water treatment and transportation to users: reduction of levels of toxic disinfection by-products, such as dibromochloromethane, total trihalomethanes and chloroform.

*d. Issues, emerging in distribution networks;*

The main problem at the stage of drinking water transportation is prevention of secondary water pollution in distribution networks, pipelines, including water mains and with ensuring due sanitary and technical state of distribution systems. To this end it is necessary:

- to maintain continuous monitoring of conditions of the distribution system, to conduct regular (planned and additional if necessary) washing and disinfection operations;
- to organise special laboratories for detection of damages in networks, equipped with appropriate modern technologies and software;
- to reduce accident rates substantially through continuous renovation works with application of modern trenchless technologies;
- to apply - in the course of upgrading/replacing water transportation systems (water pipes, indoor and outdoor networks) - only high-tech brands of pipes made of modern materials, etc.

*e. Issues, emerging at the level of household systems;*

In Ukraine, such systems may be used for:

- additional tap water purification - in apartment blocks or individual apartments;
- treatment of water from individual water sources - in suburban or rural areas, in cottage

settlements, in summer houses, etc.

Composition, sizes and capacity of such units depend on raw water quality and the number of water users. However, some problems emerge in the course of their operation.

According to Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation (Art. 25), collective water treatment systems should be installed in public institutions: kindergartens, schools and hospitals. However, as a rule, due to financial difficulties, collective systems for additional water purification in public institutions are practically non-existent.

Critical issues of operating such installations are associated with meeting requirements to:

- regular monitoring of water quality and operational efficiency of installations;
- specialised knowledge/technical staff to operate installations according to operation manuals;
- financing for replacement of consumables and reagents.

Many diverse types of water purification appliances are available at the Ukrainian market, posing an additional problem of choice of optimal installations.

In some cities, wells and pumphouse systems are used for water supply. The most developed network of pumphouses operates in Kyiv (state of the pumphouses and water quality are controlled by Kyiv water utility - "Kyivvodokanal").

### **C) Main problems associated with the target area**

#### *a. Problems that should be addressed at water supply sources:*

protection of water resources (strengthening control over wastewater discharges, reduction of discharges of untreated wastewater; construction, reconstruction, capital repairs or modernisation of wastewater treatment plants; introduction of efficient technologies for wastewater treatment, tertiary treatment and disinfection);

protection of water sources (construction and equipment of sanitary protection zones, compliance with rules of their functioning).

#### *b. Problems that should be addressed at the level of water treatment:*

reduction of microbiological contamination: introduction of reliable and effective traditional (chlorination, ozonation) and alternative water disinfection systems, additional stages of water pre-treatment (microfiltration at water intakes of surface waters).

#### *c. Problems that should be addressed at the level of distribution networks:*

compliance with the requirements of microbiological safety (disinfectant levels in water at entry to distribution networks, additional disinfection within the networks); replacement of obsolete pipes, introduction of reliable anti-corrosion protection; control of technical state of water pipes and application of prevention measures (washing and disinfection of water pipes).

#### *d. Issues, emerging at the level of household units*



Well-informed choice of installations, maintenance and control of efficient operation (technical staff), financing for proper operation of installations.

### III. Relevant on-going or planned actions seeking to address the main problems

#### *c. Issues of water treatment for removal of pollutants:*

- reconstruction and modernisation of water treatment plants, accounting for available quality of the source water;
- application of modern technologies, materials and equipment;
- introduction of an additional stage of water treatment - microfiltration to remove phytoplankton;
- use of activated carbon to reduce contents of organic substances and permanganate COD values;
- introduction of a reliable and efficient system for disinfection of water and reduction of levels of disinfection by-products (dibromochloromethane, trihalomethanes, chloroform).

#### *d. Issues that emerge in distribution networks:*

In order to maintain due sanitary and technical state of distribution networks, pipes, including water mains to prevent secondary contamination of drinking water, it is necessary:

- to maintain continuous monitoring of conditions of the water distribution system,
- to conduct regular (and additional if necessary) pipe washing and disinfection operations;
- to organise special laboratories for detection of damages in networks, equipped with appropriate modern technologies and software;
- to reduce accident rates substantially through continuous renovation works with application of modern trenchless technologies and modern materials, etc.

### IV. Expert assessment

1. The existing legal framework on drinking water quality in Ukraine is sufficiently well developed, but it is not yet fully compliant with the requirements of the EU Directives. However, in practice, issues of drinking water quality and safety are not priorities in comparison to access to water. Ukraine does not have legislatively fixed requirements for application of WHO recommendations and guidelines on implementation of proactive approaches to ensuring safety of drinking water based on assessment of drinking-water safety risks "from water source to user's tap" and implementation of Water Safety Plans according to recommendations of WHO and the Meeting of the Parties of the Protocol on Water and Health.
2. DSanPiN 2.2.4-171-10 "Hygiene Requirements to Drinking Water Intended for Human Consumption" in its general list of quality parameters meets the EU requirements, but the classification of indicators by degrees of their safety for human health in our document is set much stricter. In contemporary conditions (state of water utilities, technical conditions of water treatment facilities, applied water treatment technologies) practical implementation of some requirements of the document, as pertains to individual indicators, is impossible. Major renovation of facilities, equipment, reagents and water treatment technologies is needed.

3. Now, reforms of the sanitary and epidemiological supervision bodies continue: transfer of functions of monitoring and control of sanitary and epidemiological well-being in the sphere of drinking water supply to the newly established institutions of the MofH and the State Service of Ukraine for Food Safety and Consumer Protection, considerably reduced and weakened public supervision in the sphere, at the background of the ban on inspections. There are also changes in the system of accreditation and certification of laboratories, that cause some uncertainty in connection with laboratories for monitoring drinking water quality.
4. Implementation of DSanPiN 2.2.4-171-10 requires to control new parameters, necessitating a substantial upgrade of analytical equipment and enhanced staff qualifications in laboratories of water utilities and control bodies (LCs of the MofH) and significant financing. The decision to establish major regional laboratories of water utilities with capacity to perform complex water analyses for whole regions, has not been adopted yet.
5. The water control system in decentralised individual (private) water supply systems is extremely weak.
6. Introduction of deeper water treatment to meet requirements of the DSanPiN will inevitably lead to the need for a significant increase in tariff rates for water services, that would substantially hinder the process.
7. Water quality in water supply sources is characterized by significant geographical differences. Ensuring population provision of drinking water of due quality and safety is a serious problem, particularly in rural areas.
8. Issues of protection and use of water resources and sources of drinking water supply belong to priority problems of improving the quality of raw water for drinking water supply.

## Target area II

### Article 6, 2 (b) Reduction of the scale of outbreaks and cases of water-related diseases.

According to Article 6, paragraph 2 (c) of the Protocol, 2 national targets were set for reduction of outbreaks and cases of water-related diseases (cholera, bacillary dysentery (shigellosis), acute intestinal infection caused by enterohemorrhagic E. coli; viral hepatitis A, typhoid fever, water-nitrate methemoglobinemia) (see Table 7.)

**Table 7.** National targets and indicators set for Article 6.2(b).

Target area #	Target according to the Guide	to	National target #	National targets under the Protocol	Indicators and indicator values to be reached by 2015		National target/SDG6 indicator
					Indicators	Indicator values	

Target area #	Target according to the Guide	National target #	National targets under the Protocol	Indicators and indicator values to be reached by 2015		National target/SDG6 indicator
6.2 b)	Reduction of the scale of outbreaks and cases of water-related diseases under the Protocol	3	Reduction of incidence of cholera, bacillary dysentery (shigellosis), acute intestinal infections (AII) caused by enterohemorrhagic E. coli, viral hepatitis A, typhoid fever, water-nitrate methemoglobinemia associated with use of low-grade drinking water.	Cases of cholera, bacillary dysentery (shigellosis), acute intestinal infections (AII) caused by enterohemorrhagic E. coli, viral hepatitis A, typhoid fever, water-nitrate methemoglobinemia associated with use of low-grade drinking water.	2015. Morbidity levels per 100 thousand residents: a) cholera - 0; b) shigellosis - under 2500; c) acute intestinal infections (AII) caused by enterohemorrhagic E. coli - under 100; d) viral hepatitis A - under 2500; e) typhoid fever - 0 f) water-nitrate methemoglobinemia - 0	Not set
		4	Ensuring provision of necessary modern equipment to drinking water quality and safety assessment laboratories	The number of re-equipped (modernised) laboratories	2015  20 % were modernised	Not set

## I. Existing legal frameworks

### A. Strategies, laws / regulations and international commitments

According to the Protocol on Water and Health to 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, "**water-related diseases**" mean any significant adverse health effects such as death, disability, disease or disorder directly or indirectly caused by the state or changes in the quantity or quality of any waters."

In Ukraine, the regulatory system for detecting, investigating and reporting infectious diseases is fixed legislatively as the Centralised Information System on Infections.

Organisational arrangements and procedures of sanitary protection of the national territory are defined and implemented according to Law of Ukraine on Ensuring Sanitary and Epidemiological Well-being of the Population, Law of Ukraine on Protection of the Population from Infectious Diseases, and Law of Ukraine on Preventive Immunisation Management, the Rules of Sanitary Protection of the Territory of Ukraine (approved by CMU Decree # 893 of 22.08.2011 and developed in line with the International Health Regulations - IHR-2005), as well as according to territorial comprehensive action plans for prevention of entry and spread of particularly dangerous infections, subject to the Rules of Sanitary Protection of the Territory of Ukraine.

### B. Institutional framework

**The Ministry of Health of Ukraine** is responsible for the state registration of infections, occupational diseases and poisonings, study of the spread of infectious diseases, large-scale non-communicable diseases (poisonings), investigations of causes and conditions of emerging infections and poisonings; ensuring epidemiological investigation of cases and outbreaks of infectious diseases and poisonings to identify their causes, infection transmission factors, determine zones affected by infectious diseases, extents of their spread and to submit proposals on their localisation and elimination.

**The Ukrainian Centre for Disease Monitoring and Control and LCs of the Ministry of Health of Ukraine** ensure conduction of epidemiological investigations of cases and outbreaks of infectious diseases and poisoning, identify their causes, infection transmission factors, determine zones affected by infectious diseases, extents of their spread and submit proposals on their localisation and elimination, conduct laboratory and instrumental research and tests for purposes of the state sanitary and epidemiological surveillance.

**The State Service of Ukraine for Food Safety and Consumer Protection** (since July 2016 - inspectors), **Laboratory centres of the MofH** (epidemiologists, hygienists) are entities of the system that allows to identify water-related causes of diseases, to conduct investigations of circumstances of outbreaks and provides clear definitions of the outbreaks for application in the national observation system. In this connection, the State Service of Ukraine for Food Safety and Consumer Protection (since July 2016) can issue orders on disclosure of information or on adoption of additional measures by water management bodies. Laboratory centres of the MofH (epidemiologists, hygienists, laboratory staff - bacteriologists, virologists, parasitologists, laboratory technicians) with their available capacity can identify specific virulent agents that caused disease outbreaks.

In the case of outbreaks of infectious diseases, large-scale non-communicable diseases, group cases of acute poisonings (occupational diseases), emergencies, information from the local level should be submitted within 24 hours to relevant superior entity of the sanitary and epidemiological system, according to Order # 190 of the MofH of Ukraine of 23.05.2002 on Submission of Extraordinary Notifications to the MofH of Ukraine.

Activities are conducted with financing from the state budget, according to annual action plans for implementation of the state sanitary and epidemiological supervision, approved by heads of relevant governing bodies, as well as on as-needed basis, according to legislatively set procedures. Budgetary program 2301040 – Carry out Epidemiological Surveillance (Observation), activities of Laboratory Units of the Centre of Public Health and counter-epidemic measures - is in operation.

## II. Environmental and/or health situation – the current status and prospects

### A. The current state

Data on cholera, shigellosis, AIs caused by enterohemorrhagic E. coli, viral hepatitis A, typhoid fever, etc., are compiled on the base of state statistic reporting forms ## 1 and 2, that contain total numbers of patients, including enteritis, colitis, gastroenteritis, food toxic infections caused by other identified pathogenic agents, including campylobaccillary enteritis, rotavirus enteritis; acute intestinal infections caused by unidentified pathogenic agents, and uncertainly identified food contaminants; other protozoal intestinal diseases, including cryptosporidiosis, giardiasis. Links with

water are specified only in the case of submitting notifications on registered outbreaks according to Order # 190 of the MofH of Ukraine of 23.05.2002 on Submission of Extraordinary Notifications to the Ministry of Health Protection of Ukraine.

***General provisions of the National System of Epidemiological Surveillance (Monitoring) in Ukraine***

The country maintains a system of epidemiological surveillance to take preventive and anti-epidemic measures seeking to reduce outbreaks of infectious diseases, to prevent them (entry, spread of contagious diseases, including entry of quarantine ones from foreign countries) and to improve the epidemiological situation. The system incorporates:

- dynamic monitoring of morbidity (current and retrospective epidemiological analysis) and immunological structure of the population (analysis of the population immunisation status, etc.);
- monitoring of clinical manifestations of infections (registration of different forms and severity of infectious diseases, incidence and nature of complications, laboratory confirmation of the diagnosis);
- assessment of quality and efficiency of preventive and anti-epidemic measures and swift development of managerial decisions to improve the epidemiological situation.

The system of epidemiological surveillance functions at three levels.

*The first level (rayon/districts)* - timely detection of cases of infectious diseases and notification on them, alerts, conducting an epidemiological survey of disease outbreak zones, organising and conducting measures for their localization, analysis of infections morbidity and efficiency of the anti-epidemic measures applied.

*The second level (regions, oblasts)* - provision of organisational and methodological guidance to LCs of the MofH (the State SES of Ukraine before 01.07.2016), control over implementation of preventive and anti-epidemic measures, epidemiological analysis and assessment of efficiency of the measures applied, provision of necessary assistance.

*The third level (national)* - organisational and methodical management of structural public health entities of oblast level and Kyiv city state administrations, territorial facilities of LCs of the MofH (State SES of Ukraine before 01.07.2016) in regions, in the transport sector, control of their disease prevention and anti-epidemic measures.

***The system of registration and reporting on infectious diseases*** in the country ensures timely notification of territorial facilities of LCs of the MofH and health care facilities on identified cases of infectious diseases, in order to apply all the necessary measures to prevent their spread or emerging epidemic complications and outbreaks among the population.

Infectious or suspected infectious diseases are detected at the first level with the participation of health care facilities: primary health care facilities (paramedic and obstetric stations), district hospitals (outpatient clinics), central district (city) hospitals, clinics, etc. Medical staff of health care facilities notify territorial entities of Laboratory Centres of the MofH on detected or suspected cases.



Cases of infectious diseases are registered by compiling Registration Form # 58/o (Emergency Notification of an Infectious Disease) by doctors and medical technicians who found or suspected a disease in clinics of all agencies, regardless circumstances of the detection. Compiled Form # 58/o in a clinic is then registered in registration log-book (Form # 60/o) and within 12-24 hours should be submitted to territorial facilities of LCs of the MofH at the place of detection of the disease regardless of the residence place of patient. Upon reception of the emergency notification by the territorial facility of the LC of the MofH of Ukraine, an epidemiologist should conduct an epidemiological survey of the infectious disease focal point. Results of the survey are mapped as the map of epidemiological study of the disease outbreak zone (Form #375). Operational and retrospective epidemiological analysis of the disease is conducted at the same level.

Based on the final diagnosis defined by infectious hospitals and infectious diseases rooms, entry on the final diagnosis should be made in the infectious diseases registration log-book (Form # 60/o). Accounting to these data, territorial facilities of Laboratory Centres of the MofH produce monthly reports on certain infectious and parasitic diseases (state statistical reporting form # 1-monthly reporting). These monthly reports are submitted to the second level (since 01.07.2016) - to LCs of the MofH in the oblasts of Ukraine and the city of Kyiv, that conduct operational and retrospective analysis for whole regions and for their separate territorial constituents. If excessive disease incidence is identified, its causes are studied and necessary measures are applied with field visits for decision-making on the matter, according to relevant orders.

Every month, LCs of the MofH submit their generalised reports under state statistical reporting form # 1 - monthly reporting on certain infectious and parasitic diseases to the Ukrainian Centre of Disease Control and Monitoring of the MofH of Ukraine (prior to 1.08.2016 they were also submitted to the State SES) for analysis of the epidemiological situation. Experts of relevant national R&D institutes are also involved into these activities. Based on the monthly reports, annual reports on infectious diseases at the territory of the country are produced. Besides that, once in a year, the state statistical reporting form # 2 - reporting is compiled and adopted.

### ***The system of information on infectious morbidity***

In the case of group diseases (outbreaks), information from the first level is submitted, within 24 hours to a superior facility, that provides methodical and practical help if deemed necessary. Main activities are conducted at the first level with participation of all specialists from institutions of different ministries, agencies and services.

According to Order # 190 of the Ministry of Health of 23.05.2002, information is submitted to the MofH of Ukraine (and to the State SES of the MofH before 01.08.2016) for managerial decision-making and control over implementation of the decisions made.

Prior to the introduction of a ban on inspections of economic actors without permission of the Cabinet of Ministers of Ukraine and liquidation of the State SES in 2016, control procedures were defined by the Regulation on Interaction between Territorial SES Bodies and Entities within its Sphere of Competence State Service of Health and Services (approved by Order # 10 of January 28, 2013). According to the Regulation, in the case of non-compliance with the sanitary and epidemiological regimes on sites, fines were imposed on persons whose failures caused disease outbreaks, etc. Since January 2016, these functions have been transferred to another newly created state body - the State Service of Ukraine for Food Safety and Consumer Protection.

Monthly monitoring of infectious morbidity is maintained, on the base of the monitoring results, morbidity status is analysed and specific additional measures for morbidity reduction are developed. In the case of complications, plans for their mitigation are developed, that provide for necessary additional resources (specialists, beds for hospitalisation of patients and suspected patients, means of transport), as well as the whole package of necessary preventive and anti-epidemic measures.

Specialists of LCs of the MofH maintain registration of emergency notifications, compilation of epidemic forms, observation of disease focal points, organisation and conduction of disinfection measures, laboratory tests, conduction of factor analysis. They may be also involved into epidemiological investigations of individual cases and outbreaks of infectious diseases, monitoring surveys of sites under control, including health care facilities.

## Monitoring programs and indicators

### Water-nitrate methemoglobinemia

Pursuant to para 8.3. of the Session Protocol of the Cabinet of Ministers of Ukraine on Prevention of Water-nitrate Methemoglobinemia in Children (Protocol # 20 of May 19, 2010, and according to the State SES of Ukraine:

- in 2015, one lethal case of a child poisoning by nitrates from well water was registered in Mogyliv village of Tsarichansky district of Dnipropetrovsk oblast;
- in 2014, registered cases included: 1 case of nitrates poisoning of one child in Krynychansky district of Dnipropetrovska oblast and 2 cases of nitrate poisoning in Kharkivska oblast: one child (year of birth - 2012) in Panyutyn township, Lozovsky district, and one child (born in 2013) in Vovchansk, Vovchansky district.

### Infectious diseases

- In 2016, **two outbreaks associated with use of low-grade drinking water were registered:**
- caused by water from municipal water supply system - in Izmail, Broska village, Matroska village of Odeska oblast in June 2016 (776 persons suffered gastroenterocolitis caused by identified pathogenic agents, including 449 children);
- caused by water from village wells - in Starogorozane village of Bashtansky district of Mykolaivska oblast, in August-November 2016 (37 persons suffered viral hepatitis A, including 28 children).
- in 2015, **3 outbreaks** were registered (190 affected persons, including 148 children):
- one outbreak of intestinal infection was registered in Kyiv (Bortnichi) - 155 affected persons, including 121 children,
- 2 outbreaks of rotavirus infection were registered - in Zolotonosha of Cherkaska oblast (15 affected persons, including 12 children) and in Ozhenino of Ostrozky district of Rivnenska oblast (20 affected persons, including 15 children), caused by use of low-quality drinking water from centralised water supply systems.

In 2014, **two outbreaks of viral hepatitis A** were registered, associated with the water transmission factor (288 Roma people - residents of the district - were affected, including 142 children) due to use of poor quality drinking water from centralised water supply system of "Kryvbas" water utility in of Kryvyi Rig of Dnipropetrovska oblast and in Amur-Nizhnedniprovsky district of Dnipropetrovska oblast (in the latter case - due to migration of Roma people from the

Dovgynytsevsky district of Kryvyi Rig, where the outbreak of viral hepatitis A was initially registered).

Now, in Ukraine, the Centre for Medical Statistics of the MoFH of Ukraine does maintain separate official statistics on diseases related to the chemical quality of water, including fluorosis and arsenic impacts.

Ukraine does not use an electronic e-Health system for registration in health care facilities and public health facilities of the Ministry of Public Health are not connected to the relevant system.

Ukraine participates in submission of data to the following systems:

a) Centralised Infectious Disease Information System (CISID, <http://data.euro.who.int/cisid/>), covering all diseases of importance to the Parties: cholera, AIs caused by enterohemorrhagic E. coli, viral hepatitis A, typhoid fever and bacillary dysentery/shigellosis; as well as new diseases, the Protocol draws attention to, in particular: campylobacillary enteritis, cryptosporidiosis, giardiasis and legionellosis. CISID system collects information through annual requests by WHO Regional Office for Europe to provide data;

b) "Health for All" database is designed to collect, analyse and provide mortality data;

c) WHO Epidemic and Pandemic Alert and Response (EPR) program, as a part of the Global Alert and Response System (<http://www.who.int/csr/en/>); is based on national public health systems and is a part of an international coordinated response system. The Program covers acute diarrhoea syndrome and acute watery diarrhoea syndrome; acute haemorrhagic fever syndrome, cholera, AIs caused by enterohemorrhagic E. coli, hepatitis, shigellosis and typhoid fever; and malaria.

### III. Relevant on-going or planned actions seeking to address the main problems

The epidemic situation in the country, as pertains to infectious diseases, is extremely dangerous and requires a radical revision of approaches to addressing complex of issues of protection of the population from infectious diseases.

The range of priority objectives to be addressed through joint efforts incorporates the following:

- organisation and ensuring implementation of measures for sanitary protection of the territory of the country from entry and spread of quarantined and exotic highly contagious infectious diseases - as a priority way for protection of the nation's health;
- ensuring adequate financing of measures - resolving issues of *financing already existing state programs* within allocations envisaged by the state budget for their implementation; for better implementation of national, regional and other programs in the sphere of emergency prevention and response;
- improvement of the National System of Epidemiological Surveillance and Laboratory Control of Infectious Diseases, accounting for international standards, timely and skilled response to anthropogenic, natural and social emergencies, the development of common principles for technical equipment and modernisation of the service.
- In order to reduce risks of emerging biomedical hazards it is necessary:
- to ensure earmarked allocation of funds for reconstruction of operational water supply systems, their expansion and construction of new water supply systems for replacement of shaft wells;

- to prevent disconnection of drinking water supply and sanitation facilities from systems of power, gas, and heat energy supply. (Art. 6 of Law on Drinking Water and Drinking Water Supply);
- to comply with the due legislation in the sphere of water protection, especially in connection with water bodies that are used as sources of drinking water supply;
- to prevent commissioning of water supply systems for centralised water supply without proper provision of water treatment plants, sewers, treatment facilities; to prohibit operation of abandoned water supply systems supplying drinking water that does not meet sanitary and hygienic requirements;
- to comply with the regime of sanitary protection zones of water intakes and the regime of management in coastal strips and water protection zones of rivers, water bodies and water supply sources. To ensure implementation of relevant decrees of the Cabinet of Ministers of Ukraine (CMU Decree # 486 of 08.05.1996 on Procedures for Setting Areas and Boundaries of Water Protection Zones and Regimes of Economic Activities in the Zones and CMU Decree # 2024 of 18.12.1998 on Legal Regime of Sanitary Protection Zones of Water Bodies, etc.)

#### IV. Expert assessment

The Department of Public Health of the MofH of Ukraine should:

- jointly with the Centre of Medical Statistics of the MofH of Ukraine, address the issue of incorporation of information on some non-infectious diseases related to the chemical quality of water (in particular, fluorosis and various types of arsenic exposure) into official medical statistics, that is compiled at the level of health care facilities;
- introduce online registration of diseases, associated with microbiological or chemical pollution of water and naturally elevated levels of chemical constituents in water, to introduce a corresponding block to the electronic system of registration (e-Health) in medical facilities and to provide connection to the system for the Centre of Public Health, the Ukrainian Centre for Disease Control and Monitoring and laboratory centres of the Ministry of Health Protection of Ukraine in AR Crimea, oblasts, Kyiv and Sevastopol cities, river/sea, air and railway transport;
- provide for an additional section on infectious morbidity related to water in the state statistical reporting forms # 1 (monthly reporting) and # 2 (annual reporting), that now register total infectious morbidity (total numbers of patients), without data breakdown by transmission factors;
- submit for approval the already prepared (by the Ukrainian Centre for Disease Control and Monitoring) draft Order of the MofH on Submission of Extraordinary Notifications to the MofH of Ukraine, to replace current Order # 190 of the MofH of May 23, 2002. According to the draft, information should be submitted to the Ministry of Health on outbreaks of infectious diseases, cases of non-infectious diseases, including the water-related ones.

#### Target area III

##### Article 6. 2 (c) Access to drinking water

According to Article 6.2 (c) of the Protocol, 2 national targets were set for ensuring provision of high-quality drinking water to i) the population and ii) children in pre-school facilities and secondary schools (see Table 8.)

**Table 8.** National targets and indicators set for Article 6.2(c)

Target area #	Target according to the Guide	National target #	National targets under the Protocol	Indicators and indicator values to be reached by 2015		National SDG6 target / indicator		
				Indicators	Indicator values	Targets	Indicators	Indicator values (by 2015)
6.2 c	Access to drinking water Art. 6. 2 (c) of the Protocol	5	Ensuring provision of high quality drinking water to the population	The share of residents with access to high quality drinking water	in cities and townships: 80 % in villages: 50 %	6.1. To ensure access to services of supply of safe high quality drinking water, construction and reconstruction of centralised drinking water supply systems with application of modern technologies and equipment	6.1.1. The share of rural residents with access to safe drinking water, % 6.1.2. The share of rural residents with access to affordable drinking water of guaranteed quality, % 6.1.3. The share of urban residents with access to safe drinking water, % 6.1.4. The share of urban residents with access to affordable drinking water of guaranteed quality, % 6.1.5. The share of rural residents with access to centralised water supply, % 6.1.6. The share of urban residents with access to centralised water supply, %	50 50 90 90 17.2 89.8
		6	Ensuring provision of high-quality drinking water to children in pre-school facilities and secondary schools	Higher numbers of pre-school facilities and secondary schools with access to high quality drinking water (%)	in cities and townships - by 15 % in villages - by 10 %			

## I Existing frameworks

### A) Strategies, laws/regulations and international legal acts

Goals and objectives, main principles of the state policy regarding access to drinking water, ensuring the right to water are defined by:

the Water Code of Ukraine,

Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation,

Law of Ukraine on Housing and Utilities Services (Law # 1875-15 of 11.06.20017);

Separate legal aspects are also defined by regulations of the National Commission for State Regulation of Energy and Public Utilities and in Law of Ukraine on Commercial Metering of Thermal Energy and Water Supply.

Measures for ensuring and improving access to drinking water are also defined in:

"Drinking Water of Ukraine" – the State target program for 2011-2020;

the State Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021.



Ukraine also set nationally adapted Sustainable Development Goal 6 and associated target 6.1 to ensure availability of due quality services of safe drinking water supply, construction and reconstruction of centralised drinking water supply systems with application of modern technologies and equipment.

*ii) provisions on supply of drinking water to residents without connections to municipal water supply*

*iii) provisions on small scale and individual drinking water supply*

Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation defines **decentralised drinking water supply** as provision of drinking water to individual users from sources of drinking water supply, with use of water bottling stations (including mobile), use of drinking water treatment installations (appliances) and supply of packaged drinking water. The Law (Art. 2) covers all business entities that produce drinking water and operate water bottling stations (including mobile ones), use of installations (appliances) and other means of decentralized water supply ... "

DSanPiN 2.2.4.171-10 contains norms for equipment of sources of decentralised water supply and monitoring of quality of water from the sources.

However, the existing legal framework for regulation of decentralised drinking water supply to the population is insufficient and imperfect. In particular, state control of water quality in rural areas is usually limited to collective water wells only, individual wells are not actually controlled by authorities.

*iv) provisions that ensure application of available finance mechanisms to support residents in organisation of safe drinking water supply;*

The State target program "Drinking Water of Ukraine for 2011-2020" provides for financial mechanisms to ensure development of water supply and sanitation systems, however, since 2011, it has been financed only by 10-12%, and in 4 last years it did not receive any financing from the state budget. The list of planned actions under the Program requires now a substantial review.

Water supply of the rural population is one of the most difficult social problems in Ukraine. Measures to provide centralised water supply (construction and reconstruction of group water supply pipelines, treatment facilities, water mains, distribution networks) in rural communities that use truck water are stipulated by the State target program of Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021. The program also includes measures on the development of sanitation systems (construction of sewers), certification of water supply and sanitation facilities, research of groundwater sources and artificial recharging of groundwater, construction and reconstruction of infrastructure for operation of group water pipelines, development of R&D documentation and regulations on water supply and sanitation in rural settlements. However, from the very beginning of the Program implementation, no funding was allocated to these actions.

In the framework of the decentralisation reforms, financial assistance is provided for development of water supply systems of the newly created united territorial communities (UTCs) - to be eligible

for the assistance, UTCs have to submit all the necessary documentation as stipulated for these purposes.

Ukraine maintains a system of subsidies for low-income households to cover payments for housing and utilities bills, however, the system does not provide support to households for construction, connection, operation of individual water supply and sanitation systems or additional water purification systems to treat water “on tap”.

*v) provisions, associated with actions in emergencies.*

Problems of water supply in regions affected by natural disasters or any emergencies, are under the control of the State Service of Emergency of Ukraine (SSE). Funds for emergency response and mitigation activities are allocated from the special fund of the Cabinet of Ministers of Ukraine.

Due to the anti-terrorist operation (ATO) in the East of Ukraine, a rather difficult situation emerged with provision of water to residents in the government controlled territory, adjacent to the ATO zone. In order to address the problem, the Donetsk Regional Military-Civil Administration jointly with "Water of Donbass" water utility developed draft Regional Program "Water of the Donetsk Region for 2017-2020".

## **B) Institutional framework**

The following authorities are responsible for state governance in the sphere of drinking water and drinking water supply:

- the Cabinet of Ministers of Ukraine and the Ministry of Regional Development ensure policy-making and implementation of policies in the sphere of housing and utilities;
- the National Commission for State Regulation of Energy and Public Utilities sets tariffs rates for water supply/sanitation services for 54 major water utilities (Annex 2), that are licensed by the Commission; in the case of other utilities, tariff rates are set by the local authorities.
- oblast-level and Kyiv city state administrations and local authorities - the latter ones also set tariff rates for water supply and sanitation services of small water utilities that are not licensed by the National Commission.
- water supply and sanitation providers, including water utilities that operate water supply systems. In terms of the services provided, these facilities are subdivided into specialised ones (they provide only water supply and/or sanitation services), and multi-functional facilities (in addition to water supply and/or sanitation, they provide other services as well, e.g. heating and waste collection and removal services, etc.). The latter facilities may be of different ownership forms: public, municipal (the predominant form), etc.

## **C) Financing base**

*d) Economic capacity issues:*

*i) capacity for reliable metering of supplied and used water;*

According to the due legislation, water utilities should register and keep records on water throughout the chain - from abstraction/intake of water from the source and to its delivery to users. However, in practice, no clear water registration and record-keeping systems in water supply

systems exist, in particular due to lack of funds in water utilities, poor quality of measuring instruments used, etc.

According to the National Report, in 2015, the average rate of installation of water meters in residential blocks reached 71%. The rates varied considerably in different oblasts: from 95% in Kyiv to 2.8% in Sumska oblast. At the same time, a gradual increase of the rate was registered almost everywhere (see Fig. 1).

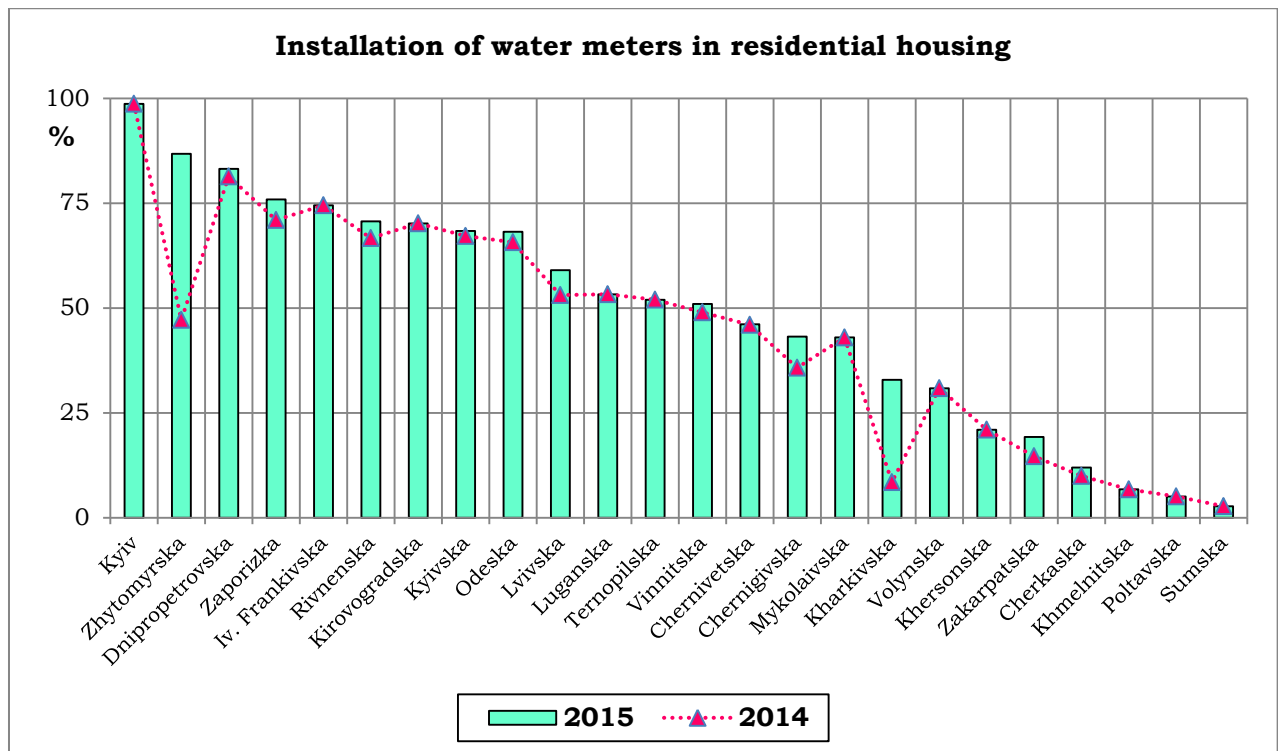


Fig. 1

*ii) the system of state subsidies for low-income groups and its sustainability:*

Since 1995, subsidies have been introduced in Ukraine as individual non-cash state aid to low-income families to cover costs of housing and utilities bills. The subsidies are granted according to the Regulation on Procedures for Granting and Provision of Subsidies to Residents for Coverage of Costs of Utilities Bills, Purchase of Liquefied Gas, Solid and Liquid Stove fuel (CMU Decree # 848 of October 21, 1995, as amended, the most recent amendments on simplification of procedures for obtaining subsidies were enacted on September 13, 2017).

According to CMU Decree # 409 of August 6, 2014 on Setting State Social Standards in the Sphere of Housing and Utilities Services, uniform social standards were set for the whole territory of Ukraine for relevant benefits and subsidies provided:

- for centralised supply of cold water - 2.4 m<sup>3</sup> per person per month (in the case of availability of centralised hot water supply), or 4.0 m<sup>3</sup> per person per month if centralised hot water supply is not available;
- for centralised hot water supply - 1.6 m<sup>3</sup> per person per month;
- for centralised sanitation - 4.0 m<sup>3</sup> per person per month.

These standards are set based on average rates of actual consumption of services. In regions, tariff rates for centralised water supply and sanitation services are set based on the norms approved by local authorities.

The subsidies are set for packages of housing and utilities services, with shares of drinking water supply bills under 10%.

According to the State Statistics Committee of Ukraine<sup>8</sup>, in September 2017, subsidies for housing and utilities bills were provided to 6.233 million households in Ukraine, or to 41.6% of the total number. The total amount of subsidies in January-September 2017 reached UAH 3 billion 344 million, or by 22.74% higher than the relevant figure for January-September 2016 (UAH 2 billion 725 million).

### *iii) sustainable water pricing in municipal systems*

In Ukraine, for many years, tariffs for water supply and sanitation services had a political component and did not meet costs of services provision: the real costs of water treatment and transportation, that led to significant losses of water utilities, shortage of funds to upgrade technologies and equipment, and hampered development of water supply and sanitation sector in general.

In 2016, the legal status of the National Commission for State Regulation of Energy and Public Utilities was defined by Law of Ukraine on the National Commission for State Regulation of Energy and Public Utilities of September 22, 2016 (Law # 1540-VII). The National Commission fulfils functions of the state regulation, monitoring and control over the activities of natural monopolies, including the ones in the sphere of centralised water supply and sanitation in volumes over the levels set by conditions and rules of economic activities (terms of licenses). State regulation in the sphere is intended to achieve a balance of interests of users and business entities and includes: regulatory and licensing activities, development and implementation of pricing and tariff policies, state control and enforcement, etc.

The National Commission sets tariff rates for centralised water supply and sanitation services for its licensors, including only 54 major (serving more than 30 thousand users) water utilities (Annex 2), based on documents and cost estimates submitted by water utilities - natural monopolies in this sphere. The process of tariff-setting in the National Commission takes a long time - as a result, tariffs set for water supply and sanitation services lag behind tariffs in other sectors, particularly in power supply.

In the case of small water utilities serving communities from 10 to 30 thousand users, tariff rates for water supply/sanitation services are set by local authorities (and often lower than actual costs).

Water utilities use "Costs +" tariff-setting model - the model does not promote their development and does not provide incentives for resource saving.

The model of RAB regulation does not have a pilot project for its implementation in Ukraine yet.

<sup>8</sup> [https://zik.ua/news/2017/10/23/derzhstat\\_povidomlyae\\_pro\\_zbilshennya\\_na\\_227\\_vytrat\\_na\\_subsydii\\_1191249](https://zik.ua/news/2017/10/23/derzhstat_povidomlyae_pro_zbilshennya_na_227_vytrat_na_subsydii_1191249)

*iv) economic sustainability of water supply systems;*

In terms of financial and economic performance, water utilities are mostly unprofitable, tariffs for their services do not allow them to accumulate necessary financial resources for investments into development. If tariffs do not cover costs of services, it is usually necessary to save money in the mainstream water treatment process (e.g. by reducing doses of reagents, reducing the number of rinses, avoiding regular repairs, etc.). Water supply systems are economically unsustainable.

In addition, the mechanism of subsidies is prone to technical problems of return of subsidies from the state budget directly to water utilities through a complex procedure of submission of requests for funds, and earmarked nature of the bunds (eligible uses include only taxes and power supply costs). A large number of water utilities cannot obtain or use funds through the subsidies and operate in a loss-making mode.

*v) affordability of water from municipal water supply systems*

Affordability of water and sanitation services is not yet a subject to state regulation, monitoring and forecasting. In additions, the population's ability to pay is not taken into account in the tariff policy in this sphere. A formal comparison of water bills with average wages gives a share under 1% (in the case of Kyiv, the tariff rate for centralised water supply of the city water utility "Kyivvodokanal" reached UAH 6.33 /m<sup>3</sup> excluding VAT, while the average wage in November 2017, according to the State Statistics Committee of Ukraine, reached UAH 11.643), i.e. the actual costs of drinking water in Ukraine are lower than in Europe.

Tariff rates for water supply services in small communities are higher than in large ones. In the case of water utilities - licence holders of the National Commission, the minimal rate for water services is set as UAH 4.32 /m<sup>3</sup>; while the maximal rate is set as UAH 15.42 /m<sup>3</sup>. The latter rate was set for small communities - for example, in Novograd-Volynsky of Zhytomyrska oblast, the water supply tariff rate is set at the level of UAH 8.95 /m<sup>3</sup>.

*vi) affordability of drinking water of good quality in small / individual water supply systems* depends on many factors. If water needs some treatment (e.g., desalination, demineralisation, manganese removal, etc.), costs of water may be high. On the other hand, in Kyiv, the system of pumphoom water supply is free for residential users, whole maintenance of pumphooms by operators is covered from the local budget.

## **II Environmental and/or health situation – the current status and prospects**

### **A) Monitoring programs and indicators**

In the sphere of access to drinking water, Ukraine has identified 2 national indicators and 4 indicators according to the Protocol on Water and Health and adapted the SDG 6.1 and SDG indicators 6.1.1. and 6.1.2. (see Table 8.)

Results of state monitoring in the sphere of drinking water and drinking water supply are published in the annual National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine and in Summary Reports of Ukraine on implementation of the Protocol on Water and



Health (every three years: in 2013, 2016). Official information covers only provision of centralised water supply services to communities and residents at the regional and national levels. Information on access to improved (and non-improved) drinking water sources of is not collected in a format used by global monitoring programs such as: the WHO-UNICEF Joint Monitoring Program (in operation since 1991) and GLAAS (WHO - UN-Water, in operation since 2008).

**B) Main problems associated with the target area**

**c) Access and quality issues:**

According to UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS), in 2015, the percentage of Ukrainian population who used at least the basic services of drinking water reached:

- on average in the country - the national level - 98%;
- for the urban population - 97%;
- for the rural population - 100%.

Basic access to drinking water, as defined by WHO-UNICEF, means providing access to improved sources: plumbing with a tap in the apartment or with a column on the street, collective wells, insulated shaft wells, protected sources and others, for water intake of which it takes up to 30 minutes (taking into account the time of travel and water intake from the source).

According to the National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine, in 2015, centralised water supply coverage rate of urban residents reached 100% only in 5 oblasts - (Kyivska, Mykolaivska, Ternopil'ska, Kherson'ska, Cherkaska) and in Kyiv; in 3 oblasts (Rivnenska, Lviv'ska and Odeska) it reached 98.1%, 96.9% and 95.3% respectively; the lowest coverage rate was registered in Chernigiv'ska oblast - 45.7% (see Fig. 2).

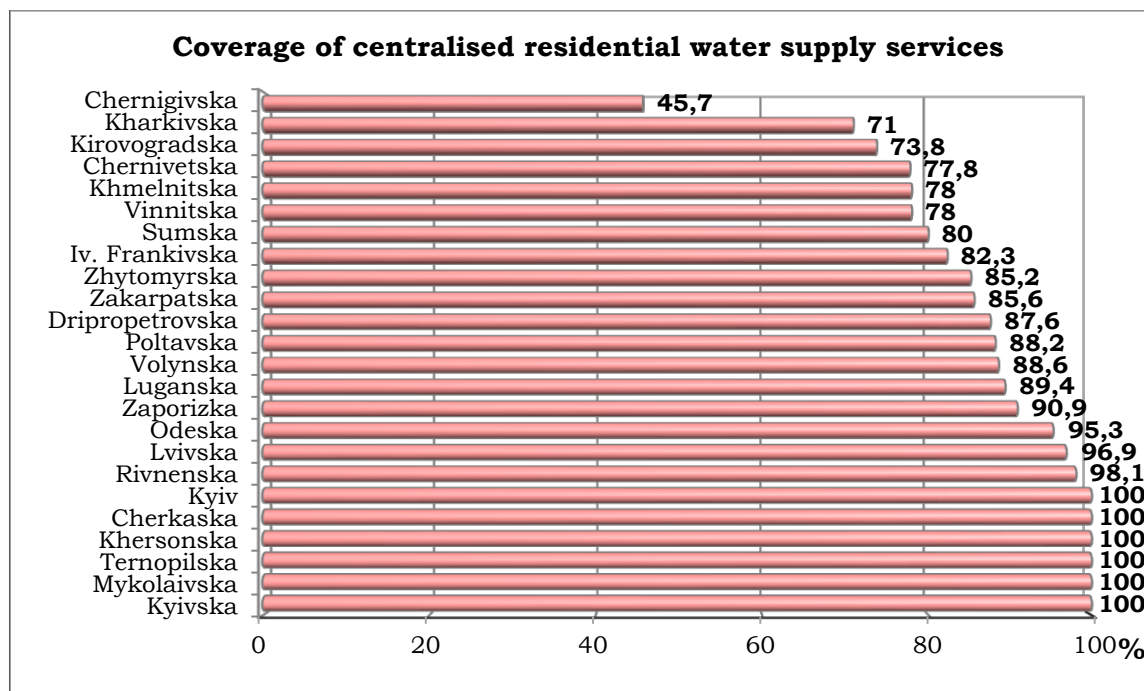


Fig. 2

Information on numbers of persons who used centralised water supply in 2015 was not provided.

Information on coverage of rural residents by centralised water supply services is incomplete, in some oblasts such information is not available. According to the available data (see Fig. 3), the largest share of rural residents are connected to centralised water supply in Khersonska oblast (about 85%), while the lowest share is registered in Chernivetska oblast (about 4%). In other words, the information on rural areas cannot be considered reliable.

The situation in the sphere of rural water supply is of particular concern, with the following main problems: incomplete process of transferring rural water supply systems to the sphere of responsibility of local authorities, lack of specialised organisations for maintenance and operation of these systems, lack facility-level laboratory control of water quality, etc. Centralised water supply is provided only to a quarter of all villages of Ukraine. The rest of the rural residents use water from wells and individual artesian wells, that are of poor technical quality in the overwhelming majority of cases.

Sometimes supply of sub-standard drinking water is observed. In 2015, largest volumes of water with deviations from quality standards was supplied: in Dnipropetrovska oblast - 8,077 thousand m<sup>3</sup> (or 1.6% of the water supplied), in Khersonska oblast - 6,892 thousand m<sup>3</sup> (or 15.4% of the water supplied). In some regions, local water sources contain naturally occurring pollutants that cannot be removed by standard water treatment technologies, while new effective water treatment methods are not affordable or are economically inappropriate to water utilities.

*ii) availability of information on quality and quantity of water used by residents without access to municipal water supply systems;*

Information on quality and quantity of water consumed by residents without access to municipal water supply systems, is very limited and controversial.

In particular, the National Report - 2015 provides data from oblast state administrations in 9 oblasts, where water supply was provided by truck water - e.g. 27.8% of communities and 4.1% of the population in Zaporizka oblast; 14% and 0.46% in Mykolaiivska oblast; 11.9% and 1.6% in Odeska oblast; 10.5% and 1.7% in Dnipropetrovska oblast; 3.0% and 0.5% in Lvivska oblast; 2.2% and 5.3% in Kirovogradska oblast; 1%; in Khersonska oblast; 0.4% and 0.1% in Poltavska oblast; 0.25% and 0.08% in Ivano-Frankivska oblast, respectively.

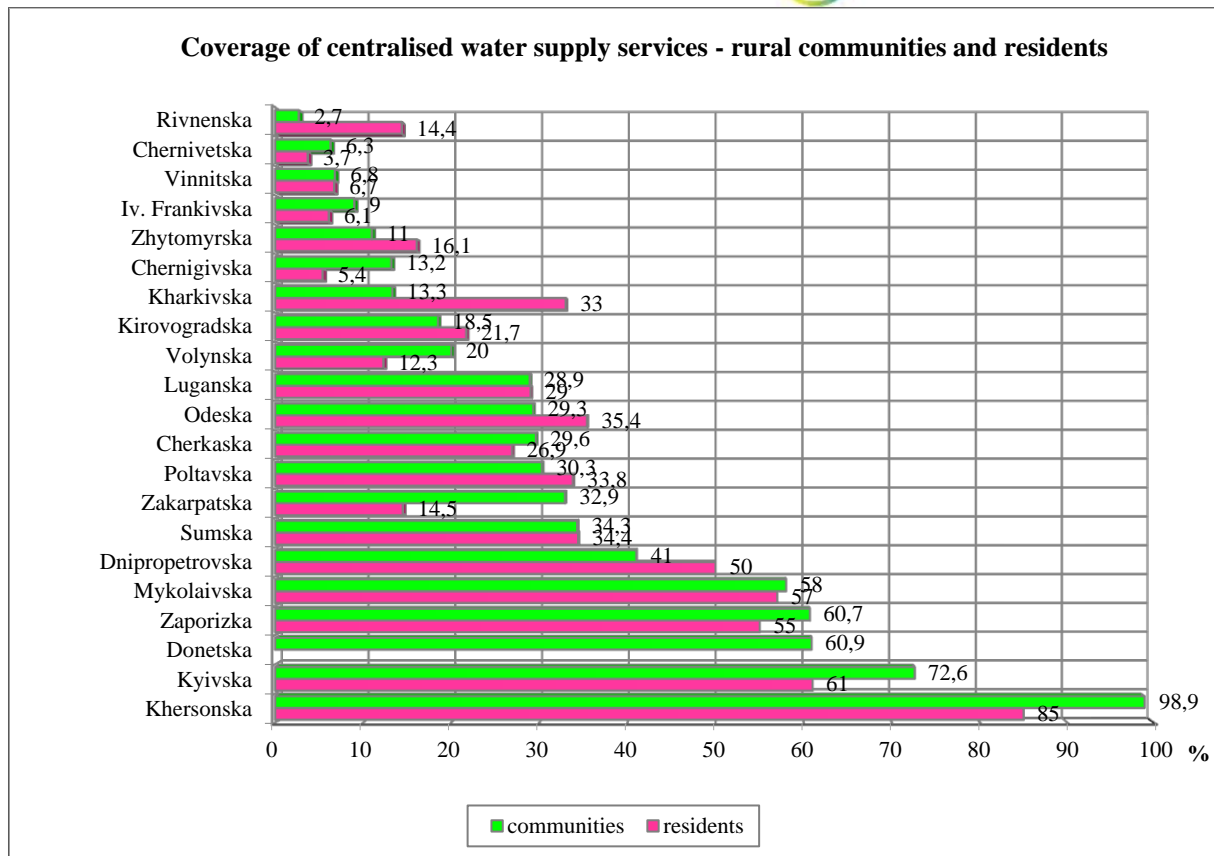


Fig. 3

According to the State Water Agency<sup>9</sup> "... as reported by local authorities and water management organisations, in 2015, 1.3 thousand rural communities were registered that relied on truck water and substandard water, with the population over 950 thousand residents in 15 regions of Ukraine (Dnipropetrovska, Donetska, Zakarpatska, Zaporizka, Ivano-Frankivska, Kievska, Kirovogradska, Lvivska, Luganska, Mykolaivska, Odeska, Poltavska, Rivnenska, Kharkivska and Khersonska oblasts).

In addition to problems of access to drinking water sources in rural areas, there is a problem of water quality in sources of decentralised drinking water supply. According to the Ministry of Health of Ukraine (see Table 9), significant water quality deviations were observed in sources of decentralised water supply in terms of chemical (32.7%) and biological (18%) parameters, in all oblasts of Ukraine, with a trend to increase.

**Table 9.** Shares of water samples from decentralised water supply sources that failed to meet sanitary standards in 2013-2015.

The region	Portion of samples in %, which did not meet sanitary norms according to indicators					
	<i>sanitary-chemical</i>			<i>sanitary-bacteriological</i>		
	2013	2014	2015	2013	2014	2015
AR of Crimea						

<sup>9</sup> National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine - 2015

The region	Portion of samples in %, which did not meet sanitary norms according to indicators					
	<i>sanitary-chemical</i>			<i>sanitary-bacteriological</i>		
	2013	2014	2015	2013	2014	2015
Vinnitsia	14,2	27,5	26,1	18,7	22,5	26,4
Volynska	29,9	16,9	21,3	11,3	10,4	5,5
Dnipropetrovsk	37,7	31,5	45,4	5,4	7,2	8,5
Donetsk	51,3	66,9	70,6	22,6	25,6	25,1
Zhytomyr	34,9	35,8	36,0	16,4	19,3	18,2
Zakarpatska	11,6	14,7	12,2	13,4	11,0	12,6
Zaporizhzhia	38,1	54,4	67,7	4,2	4,0	0,6
Ivano-Frankivsk	7,6	19,3	13,1	21,5	35,1	38,8
Kyiv	38,7	44,2	39,1	14,9	17,3	19,7
Kirovohradsk	53,0	59,7	60,5	17,3	12,5	11,5
Luhansk	54,5	31,9	37,5	39,1	8,4	13,9
Lviv	7,6	4,4	12,4	14,9	11,5	14,6
Mykolaiv	56,5	58,5	70,5	41,6	33,8	6,7
Odesa	34,2	38,1	53,0	16,7	22,4	31,3
Poltava	23,8	40,2	43,3	9,5	4,9	8,9
Rivny	21,8	32,0	40,4	15,3	23,7	29,0
Sumy	45,2	45,2	49,7	30,0	29,1	30,7
Ternopil	9,4	14,8	16,1	20,4	10,0	16,2
Kharkiv	39,1	46,7	46,9	23,0	27,4	32,4
Kherson	0,0	21,1	60,8	0,0	3,8	13,1
Khmelnysk	33,2	44,6	58,7	25,3	31,4	41,1
Cherkasy	40,5	37,2	38,6	30,8	8,2	13,5
Chernivtsi	0,4	0,5	0,3	2,8	2,1	3,6
Chernihiv	36,9	31,5	33,6	21,5	16,5	18,6
Kyiv city	6,1	11,9	27,4	4,0	4,3	6,8
Sevastopol city						
<b>Total for Ukraine</b>	30,5	31,4	32,7	16,7	15,5	18,0

Children access to safe drinking water in pre-schools and schools.

As at 01.01.2016, 66,695 educational and recreational facilities were under supervision (72,118 in 2014), including 15,072 pre-school educational facilities, 16,849 secondary education facilities, 826 boarding schools, 9704 health improvement and recreation facilities for children, 5,361 out-of-school facilities; 16,123 catering units of schools, lyceums, gymnasiums, vocational schools, and higher education facilities of I-II accreditation grades.

In 2015, percentage shares of pre-school and secondary education facilities with access to high-quality drinking water reached 93.5% and 84.9%, respectively (as compared to 94.8% and 87.5% in 2012, and 94.4% and 82% in 2009).

797 (or 6.5%) of pre-school education facilities were not connected to centralised and local water supply networks (see Table 10, as compared to 685 (or 5.2%) in 2012. Due to lack of sources of centralised water supply in communities, substandard water from local sources, 258 (or 2.1%) of pre-school education facilities rely on truck water - a little bit better in than last year - 267 (2.2%).

The largest numbers of such institutions are registered in Mykolaivska oblast (81), Odeska oblast (44) and Dnipropetrovska oblast (43), etc.

As of 15.09.2015, decentralised water supply (except for premises of catering units) was provided to 2545 (15.1%) secondary education facilities (as compared to 2414 or 12.5% in 2012), including 698 in Vinnytska oblast, 440 in Lvivska oblast, etc. Truck water was supplied to 522 secondary schools in the country (as compared to 466 in 2012), including 118 in Rivnenska oblast, 69 in Zaporizka oblast, 62 in Dnipropetrovska oblast, etc.

**Table 10.** Access to drinking water of pre-school and general education institutions of Ukraine in 2010-2015

	2010	2011	2012	2013	2014	2015
<b>Pre-school educational institutions</b>						
Total number of objects (ф. 18)	13169	13353	13445	13611	12268	15072
Not connected to centralized and local water supply networks	685	685	470	407	797	797
%	5,2	5,1	3,5	3,0	6,5	5,3
The work with imported water	268	268	259	295	258	258
%	2,0	2,0	1,9	2,2	2,1	1,7
<b>General educational institutions</b>						
Total number of objects (ф. 18)	19650	19238	19033	18720	17100	16849
Not connected to centralized and local water supply networks	2987	2987	2414	2082	1920	2545
%	15,2	15,5	12,7	11,1	11,2	15,1
The work with imported water	423	423	466	450	387	522
%	2,1	2,2	2,4	2,4	2,3	3,1

Safe water supply is one of the most important issues to check in the course of assessment of schools' preparedness to a new academic year. At the initial stage of such preparatory works, laboratory tests of water supply sources are conducted - in 2015, 8% of collected drinking water samples failed to meet standards for bacteriological indicators (as compared to 2.7% in 2014); while 2.8% of samples failed to meet sanitary-chemical standards in 2015 (as compared to 10% in 2014 and 6.7% in 2013).

Besides that, problems of access to drinking water were aggravated by the military conflict in the Donbass, where 700,000 people (according to UNICEF 2015) do not have access to drinking water, and the situation periodically worsens due to the destruction of water infrastructure along the line of contact by shelling. Internally displaced persons also have problems with drinking water access. However, no reliable official information is available.

*iii) special public education/awareness raising programs, particularly in rural communities*

No special public education and awareness raising programs exist. According to the Ministry of Health of Ukraine, in 2015, purposeful health education and awareness raising activities were conducted for the general public on topical issues of drinking water supply with participation of high officials and leading specialists of the State Sanitary and Epidemiological Service of Ukraine, including 169 radio and 103 TV communications, 301 articles published in printed media outlets,



1655 lectures, 7 press-conferences, 43 round tables, 14 briefings, 33 press-releases and 628 sanitary leaflets.

i) assessment of existing water quality problems in small/individual water supply systems ii) assessment of risks of problems associated with quality and quantity of water in individual water supply systems

General problems of small or individual water supply systems are related to lack of due legal and regulatory framework, rules of technical operation and control; lack of necessary financing for development of such water supply systems: geological and hydraulic surveys, sanitary and hygienic water quality studies, development of the necessary technical or other documentation, development and introduction of water treatment or conditioning schemes.

Typically, individual water supply systems use groundwater, and in many cases these water sources are prone to problems of high levels of iron, manganese, hardness and other inorganic components that do not pose a direct health threat but create technical and aesthetic problems. Use of individual wells or artesian wells may be associated with significant contamination risks, if they were constructed/drilled in non-compliance with requirements to water-bearing horizons (due depth of a well), and without accounting for hydro-geological features of the terrain and the local environment. In particular, water in wells may be contaminated by nitrogen substances, heavy metals, oil products, pesticides and other toxic compounds, as well as pathogenic agents. Lack of regular water quality control in individual water supply systems poses significant threats to human health.

As pertains to water quantity, use of water supply sources without assessing their water resource recovery capacity may result in depletion of the sources and the deterioration of water quality.

### III Relevant on-going or planned actions intended to address the main problems

Planned actions in "Drinking Water of Ukraine for 2011-2020" Program require revision and proper funding from the state budget. At the regional level, measures to improve operation of water supply and sanitation systems are incorporated into arrangements for optimisation of water supply and sanitation.

### IV Expert assessment

1. The overwhelming majority of residents of Ukraine have access to drinking water from centralised or decentralised sources of water supply. However, there are 1300 communities, mostly rural, where residents rely on truck water. Their number does not decrease; the problem of provision of centralised water supply to these communities is not addressed.
2. A substantial inequality (geographical / territorial / social) exists in access to high-quality drinking water. Somewhere sub-standard drinking water is supplied due to natural water pollution and inefficient water treatment technologies. As a rule, in small communities, especially in rural areas, quality of services is low, while tariff rates for these services are higher than in larger ones.
3. Provision of high-quality drinking water to all pre-school and secondary educational facilities should be a priority for authorities at all levels.
4. In the Donetsk-Lugansk region, especially in areas close to the ATO zone, significant disruptions of drinking water supply are observed, as well as a serious reduction in productivity

- of water supply systems, difficulties with organisation of due water quality control and, as a result, in some cases, water quality does not meet the standards set.
5. From the financial point of view, water supply services are affordable for the vast majority of Ukraine's residents, however, due to lack of trust in quality of tap water, people actively use water from pump rooms, bottling stations, packaged water or additionally treat water "on the tap."
  6. The mechanism of subsidies for housing and utilities bills, including drinking water supply bills, was introduced in Ukraine. In October 2015, such subsidies were provided to more than 40% of households. Lack of financial mechanisms for return of the subsidies to water supply companies leads to significant losses of the water utilities, negatively affecting their financial and economic performance, and - therefore - quality of their services.
  7. The indicator for the national target under the Protocol - "the share of the population with access to high-quality drinking water" should be adjusted and use WHO-UNICEF definition on "access to improved sources" and should account for residents who use water from wells and artesian wells.
  8. Actions to improve access to high-quality drinking water in the Drinking Water of Ukraine Program and measures to ensure quality of drinking water in rural communities under the Water Management Development Program need to be reviewed and financed from the State Budget, based on the principle of co-financing.

#### Target area IV

##### Article 6. 2 (d) Access to sanitation

According to Article 6.2 (d) of the Protocol, 2 national targets were set for the provision of sanitation services to i) the population and ii) children in pre-school and secondary education facilities (see Table 11).

Table 11. National targets and indicators set for Article 6.2(d)

Target area #	Target according to the Guide	National target #	National targets under the Protocol	Indicators and indicator values to be reached by 2015		National SDG6 target/ indicator		
				Indicators	Indicator values	Targets	Indicators	Indicator values (by 2015)
6. 2 (d)	Access to sanitation Art. 6. 2 (d) of the Protocol	7	Ensuring provision of centralised sanitation services to the population	Shares of urban and rural residents with access to centralised sanitation systems	In cities and townships - 80% In villages - 20%	6.2. To ensure availability of modern sanitation systems, construction and reconstruction of water intake and wastewater treatment facilities with application of modern technologies and equipment	6.2.1. The share of rural residents with access to improved sanitation, %	87.1
							<ul style="list-style-type: none"> <li>• By type of sanitation (centralised/other)</li> <li>• By types of improved sanitation (centralised/local sanitation) (flush toilets connected to insulated cesspits or septic tanks)/dry toilets with composting)</li> </ul>	

		8	Ensuring provision of improved sanitation to children in pre-school and secondary education facilities (improvement of sanitation and connection of pre-school and secondary education facilities to sanitation systems):	Increase of numbers of pre-school and secondary education facilities with connections to sanitation systems and cesspits	In cities and townships - by 15 % In villages - by 5 %			
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## I Existing frameworks

### A) Strategies, laws, regulation and international legal acts

The legislative framework related to the population access to sanitation services is substantially less developed than laws and regulations in the sphere of drinking water supply. Principles, concepts and tools are defined by the following legal acts:

Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation.  
 Law of Ukraine on Housing and Utilities Services.  
 Law of Ukraine on Protection of the Natural Environment.  
 Law of Ukraine on Ensuring Sanitary and Epidemiological Wellbeing of the Population.  
 The Water Code of Ukraine.  
 The Code of Ukraine on Mineral Resources  
 "Drinking Water of Ukraine" – the State target program.

A number of common with the sphere of drinking water supply rules, procedures for tariff-setting and development of investment programs,

Some State Construction Norms (DBNs):  
 DBN V.2.5-75: 2013 Sewers. Outdoor Networks and Facilities. Basic Design Provisions  
 DBN 360-92 Urban Development. Planning and Building in Urban and Rural Settlements

International legal acts:  
 Council Directive 91/271/EEC of 21 May 1991 on Urban Wastewater Treatment

### B) Institutional framework

Responsible institutions:  
 The Ministry of Regional Development, Construction, Housing and Utilities of Ukraine  
 The National Commission for State Regulation of Energy and Public Utilities  
 The Ministry of Health  
 The State Agency of Water Resources  
 Local authorities

*v) supervision (ability of competent bodies to control access and access conditions)*

Legislatively set control in the sphere of drinking water, drinking water supply and sanitation is only partly related to sanitation: state sanitary and epidemiological supervision authorities control discharge of wastewater into natural water bodies.

Information on volumes of wastewater discharged and treated at WWTPs, and information on technical state of sanitation systems is included into the annual National Report. No control/supervision is maintained over operation of sanitation systems (cesspits, septic tanks) of private farms/households.

*vi) availability of data*

Available statistical data cover only centralised and local sewers/sanitation systems. The information is incomplete and unreliable, it is published in the National Report on the Quality of Drinking Water and the State of Drinking Water Supply in Ukraine.

Local (standalone) wastewater treatment plants mean facilities and units intended for wastewater treatment at a facility (user) before their discharge into sewers, industrial wastewater systems or rainwater drains or re-use in closed circuit industrial water supply systems (DBN V.2.5-75: 2013). No information is available on their numbers and operation/maintenance conditions.

## **B) Financing base**

Costs of wastewater collection and treatment are covered by relevant utilities that have to set tariff rates for their services at the level allowing to compensate their costs. As the set tariff rates do not cover actual costs of their services, sanitation utilities bear serious losses, operate technically outdated technologies and equipment. The situation hinders development of sanitation systems in general.

The National Commission for State Regulation of Energy and Public Utilities sets tariff rates for sanitation services as well, and similarly to water supply, sanitation tariffs lag behind tariffs for power supply.

In the case of small sanitation utilities, tariff rates for sanitation services are set by local authorities according to "Costs+" model - the model does not promote their development and does not provide incentives for resource saving.

The model of RAB regulation does not have a pilot project for its implementation in Ukraine yet.

*ii) economic sustainability of sewers/sanitation systems;*

Sanitation tariffs in many cases do not meet actual costs, therefore, from the economic point of view, sanitation system are unsustainable.

*iii) affordability of sanitation services*

The ratio of sanitations tariffs to wages in Ukraine is lower (e.g. less than 1% for Kyiv) than in developed European countries. More than 40% of households received subsidies in September 2017.

## **II Environmental and/or health-related situation - contemporary status and forecasts**

### **A) Monitoring programs and indicators**

Table 1 compares European targets, national targets and indicators, as well as national targets and indicators for SDG 6.

The indicator, as set in the Protocol in 2011 - "percentage shares of urban and rural population with access to centralised sanitation systems" - is fully acceptable.

The indicator of provision of improved sanitation for pre-school and secondary education facilities also remains a priority.

Specific Indicators under SDG 6.5.2 are acceptable, however, substantial changes are needed in collection of data that are not currently monitored and are not included into the statistical reporting forms.

## **B) Main problems associated with the target area**

### ***b) Issues of information reliability:***

#### ***i) availability of information on coverage of the population (numbers of residents with/without access to sanitation systems):***

Statistical information on decentralised sanitation systems in small communities is not collected as such systems are not controlled.

According to **GLAAS** assessments, in 2015, shares of residents with access to at least basic sanitation services reached:

- *the national level - 96 %;*
- *urban residents - 97 %;*
- *rural residents - 93 %.*

According to the National Report on Drinking Water Quality and the State of Drinking Water Supply in Ukraine, in 2015, the coverage of urban settlements by centralised sanitation services reached 100% in 14 oblasts, in 5 other oblasts it varied in the range of 91-97%, while in remaining oblasts it was under 90%.

As pertains to this indicator in terms of population coverage, 100% coverage of centralised sanitation services was available only in 3 oblasts (Mykolaivska, Ternopil'ska and Kherson'ska oblasts); in Kyiv it reached 98.9%; 98% in Kyiv'ska oblast and 93.1% in Lviv'ska oblast (see Fig. 4).

Rural communities (in oblasts that provided relevant data), in 2015, were mostly covered by centralised sanitation services in Odeska oblast (16%), Dnipropetrovska oblast (12.2%) and Lviv'ska oblast (10.8%); in all other oblasts relevant indicators did not exceed 5%.

As pertains to coverage of rural residents - in many oblasts relevant data were not available at all (see Fig. 5).



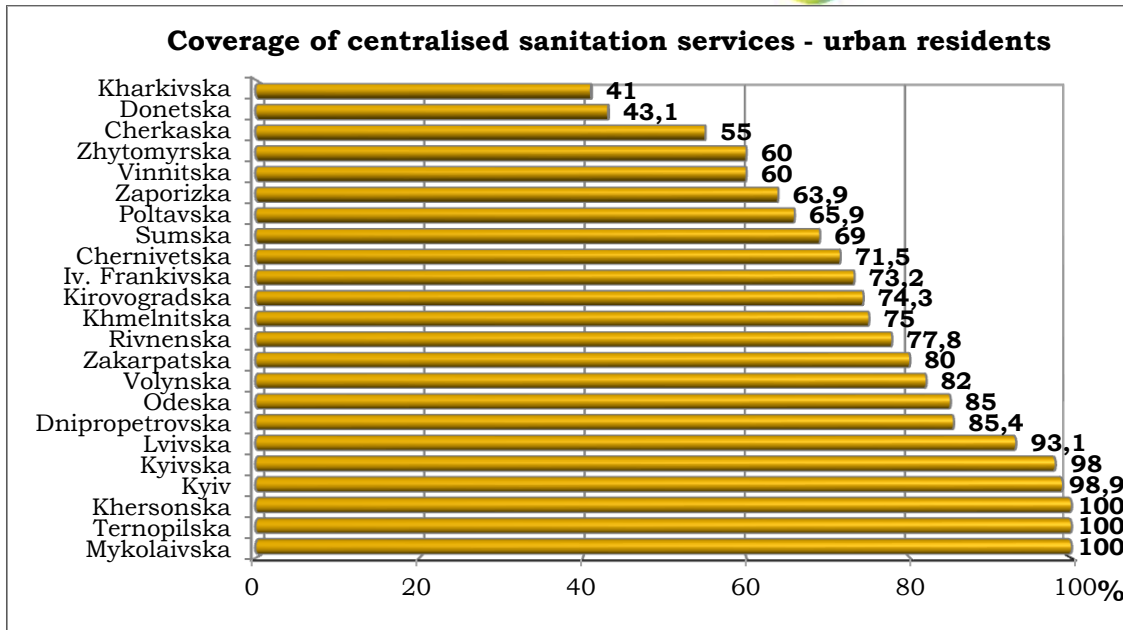


Fig. 4.

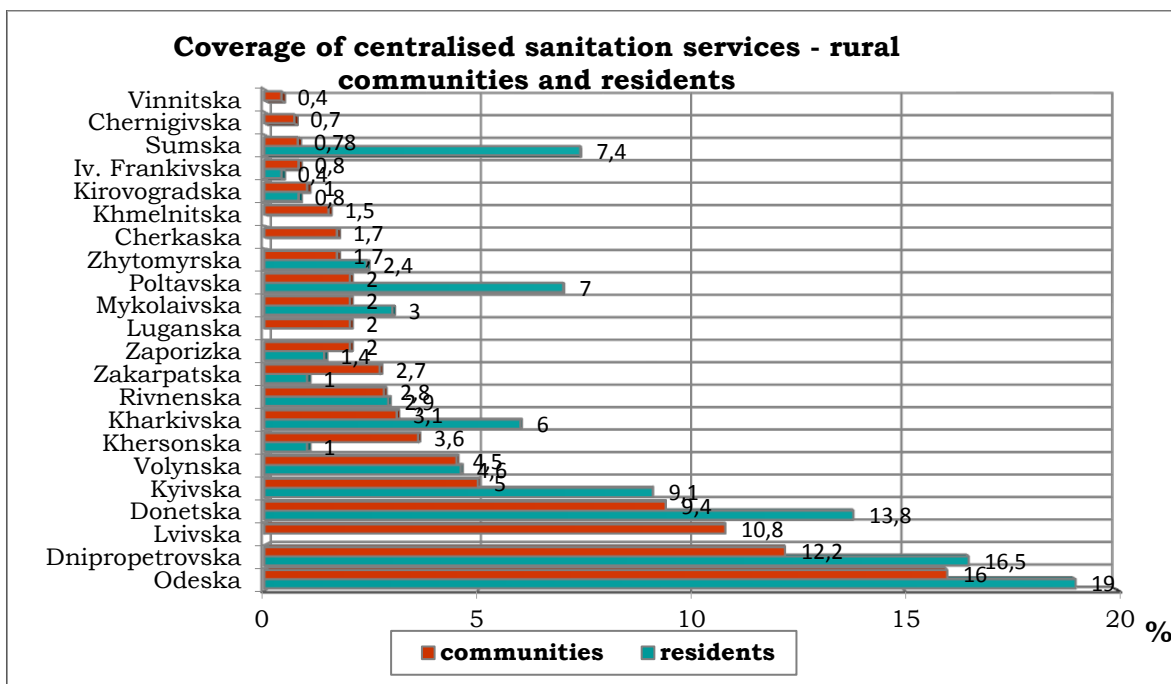


Fig. 5

According to the Ministry of Health Protection, in 2015, (see Table 12) the total number of children educational facilities with sanitation systems and cesspits reached 15072 pre-school facilities and 16849 secondary education facilities. For comparison - in 2011, relevant numbers reached 13353 pre-school facilities and 19238 secondary education facilities. In 2015, **4902 (32.5%)** of *pre-school institutions* (comparing with 4641 (34.5%) in 2012) and **7813 (46.4%)** of *secondary educational institutions* (comparing with 8026 (42.2%) in 2012) worked *sewer to the cesspool*; **95 (0,6 %)** *pre-school educational institutions* (comparing with 120 (0,9 %) in 2012) and **675 (4%)** of *secondary educational institutions* (comparing with 885 (4,6%) in 2012) **did not have a sewage system**.

**Table 12.** Access to sanitation conditions for pre-school and general education institutions of Ukraine in 2010-2015

	2010	2011	2012	2013	2014	2015
<b>Pre-school educational institutions</b>						
Total number of objects (f. 18)	13169	13353	13445	13611	12268	15072
with cesspool	4309	4309	4641	5146	5132	4902
%	32,7	32,3	34,5	37,8	41,8	32,5
without sanitation facilities	172	172	120	116	281	95
%	1,3	1,3	0,9	0,9	2,3	0,6
<b>Schools</b>						
Total number of objects (f. 18)	19650	19238	19033	18720	17100	16849
with cesspool	8573	8479	8026	6672	7463	7813
%	43,6	44,1	42,2	35,6	43,6	46,4
without sanitation facilities	1551	1087	885	916	791	675
%	7,9	5,6	4,6	4,4	4,6	4,0

As for the provision of school-children with warm toilets, the number of general educational institutions without centralized or local sewage system is 7010 in 2015 (8545 - 2012); of them the number of schools, in which toilets were equipped, 1273 in 2015 (1576 - 2011); the number of pre-school educational institutions that do not have any sanitation facilities - 3970 in 2015 (4328 - 2012); the number of pre-school educational institutions, in which toilets were equipped, 942 in 2015 (539 - 2011); number of schools (general educational institutions), which did not have toilets - 675 in 2015 (1551 - 2010); the number of kindergartens, which did not have toilets - 95 in 2015 (172 - 2010).

*ii) availability of information on quantity and quality of wastewater and wastewater treatment*

According to generalised data of the state registration of water use by the State Water Agency of Ukraine as provided in the National Report, in 2015 wastewater discharges to surface water bodies reached 5343 million m<sup>3</sup>, including wastewater discharges of industrial facilities (3348 million m<sup>3</sup>), the housing and utilities sector (1605 million m<sup>3</sup>), and agricultural facilities (361.4 million m<sup>3</sup>).

Of the total amount of wastewater discharges into water bodies, volumes of polluted wastewater reached 875.1 million m<sup>3</sup> (16%), volumes of wastewater treated to standards reached 1389 million m<sup>3</sup> (26%), volumes of untreated wastewater within standard pollution limits reached 3070 million m<sup>3</sup> (58 %). Main causes of surface water pollution include discharge of polluted municipal and industrial wastewater into water bodies directly and through municipal sewers, as well as the inflow of water pollutants into water bodies with surface runoff of water from built areas and agricultural lands.

In territorial terms, largest amounts of polluted wastewater are discharged in Dnipropetrovska oblast (39.1% of the total volume of wastewater discharges in the oblast), in Donetska oblast (31.3%), Zaporizka oblast (24.8%) and in Luganska oblast (87.9%). These 4 oblasts discharge about 77% of the total volume of polluted wastewater.

According to results of sanitary-epidemiological supervision of releases of wastewater into water bodies, including surface water bodies and seas, in 2015, wastewater was discharged by 1474 sources; the number of municipal sources reached 1019 (including 27.4% of untreated or insufficiently treated wastewater). In the case of industrial sources, these indicators, respectively, amounted to 502 and 22.5%. Table 13 contains data for individual oblasts of Ukraine.

**Table 13.** Shares of wastewater discharges to surface water bodies that did not meet sanitary norms in 2015 (%)

#	Regions/oblasts	Total	Municipal	Industrial
1	AR Crimea			
2	Vinnitska oblast	4.5	5.9	3.0
3	Volynska	19.4	22.7	11.1
4	Dnipropetrivska	58.3	62.1	56.8
5	Donetska	51.8	59.1	45.3
6	Zhytomyrska	30.5	37.3	13.0
7	Zakarpatska	26.6	27.5	
8	Zaporizka	5.4	18.2	
9	Ivano-Frankivska	10.1	10.2	10.0
10	Kyivska	18.4	21.2	
11	Kirovogradska	28.2	34.4	
12	Luganska	12.0	13.3	10.0
13	Lvivska	11.2	11.9	
14	Mykolaivska	23.3	50.0	
15	Odeska	57.5	60.6	42.9
16	Poltavska	9.5	3.8	18.8
17	Rivnenska	10.9	16.7	
18	Sumska	0.0		
19	Ternopil'ska	60.0	78.0	24.0
20	Kharkivska	22.1	24.2	9.1
21	Khersonska	60.0	60.0	
22	Khmelnitska	15.4	15.5	15.0
23	Cherkaska	7.1	10.5	
24	Chernivetska	37.5	33.3	50.0
25	Chernigivska	7.4	14.3	
26	Kyiv	0.0		
27	Sevastopol			
	<i>Ukraine, total</i>	26.4	27.5	21.3

Performance of water and sanitation utilities in 2015:

- wastewater collected - 1701.75 million m<sup>3</sup>;
- wastewater treated at WWTPs - 1597.48 million m<sup>3</sup> or 93.87 %;
- wastewater after full biological treatment - 1539.51 million m<sup>3</sup> or 90.46 %;
- wastewater after tertiary treatment - 59.9 million m<sup>3</sup> or 3.52 %.

### III Relevant on-going or planned actions intended to address the main problems

Actions intended to address the main problems:

- In the course of harmonization with the EU norms, in particular for implementation of Council Directive 91/271/EEC of 21 May 1991 on Urban Wastewater Treatment, significant

changes are needed in approaches to sanitation. First of all, it is necessary to adopt a separate law on sanitation that is currently at the stage of development.

- Upgrade of laws and regulations on sanitation matters.
- Organisation of data collection on access to sanitation in line with requirements of the Protocol and the EU Directive on Urban Wastewater Treatment.

#### IV Expert assessment

1. The legislative framework of Ukraine on sanitation matters is not sufficiently developed. The human right to sanitation is not explicitly defined in law.
2. Now, Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation/Wastewater disposal is the framework law that regulates wastewater collection and treatment by centralised and decentralised sanitation systems. However, this law, first, deals mainly with supply issues and, second, does not fully comply with requirements of Directive 91/271/EEC on Urban Wastewater Treatment.
3. In the course of harmonisation with the EU norms, in particular for implementation of EU Directive 91/271/EEC, significant changes are needed in approaches to sanitation. First of all, it is necessary to adopt a separate law on sanitation, that is currently at the stage of development.
4. Sanitation regulations and the regulatory framework are also out of date and are limited to actual availability of construction norms and standards. Now, even the key sectoral regulation is not available (the old version has been cancelled but the new one has not been adopted) - the Rules for Wastewater Acceptance, that define principles of interaction between operators of sewers and other economic actors.
5. In fact, there are no norms that regulate management of decentralised sanitation systems, resulting in use of obsolete cesspits in the majority of cases - the ones that pollute water bodies and aquifers by untreated wastewater. Use of non-insulated cesspits combined with extremely low levels of sanitation access in rural areas creates a serious problem of faecal contamination of the environment and a threat to human health.
6. No single state programs exist for development of sanitation systems and improvement of sanitation in Ukraine. Funds from local budgets and finance components in tariffs are barely sufficient to cover operational costs, as a result, development of sanitation systems is practically non-existent.
7. Tariffs for centralised sanitation services in Ukraine are lower compared to European countries, both in absolute terms and relatively to average household income levels. At the same time, lack of any mechanisms for management of decentralised sanitation systems, as well as the existing system of liability for violation of environmental standards by decentralised systems, makes connection to centralised sewers a hardly attractive option.
8. According to the National Report - 2015, levels of population access to centralised sanitation services in different oblasts of Ukraine varied from 93.1 to 100% in urban areas and from 0.4 to 16% in rural areas.
9. The indicator, set in the Protocol in 2011 - "percentage shares of urban and rural population with access to centralised sanitation systems" - is fully acceptable and should be made consistent with SDG 6.2 indicators. The target for access to sanitation in pre-school and schools still remains a priority, but relevant indicators need to be reviewed.

#### Target area V

##### Article 6. 2 (e) part 1- Performance levels of collective and other water supply systems

According to Article 6.2 (e) of the first part of the Protocol, 1 national target and 2 indicators were set for performance levels of collective and other water supply systems (see Table 14).

**Table 14.** National targets and indicators set for Article 6.2(e)

Target area #	Target according to the Guide	Nat. target #	National targets under the Protocol	Indicators and indicator values to be reached by 2015		National target/SDG6 indicator
				Indicators	Indicator values	
6.2 e	Performance levels of collective and other water supply systems Art. 6.2(e), part 1	9	Reduction of length of damaged water supply and sanitation pipes	Percentage shares of replaced damaged pipes	In cities with population over 500,000 residents - 30% in other settlements - 15 %	None set

## I Existing frameworks

### A) Strategies, legal/regulatory framework, and international commitments

Main definitions and objectives concerning performance levels of collective and other water supply systems are fixed in:

Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation (Art. 1)

**Drinking water supply norms** mean estimated amounts of drinking water necessary to meet drinking, physiological, sanitary and household needs of one person during the day in a specific community settlement, at a separate site or in a transportation vehicle in the course of normal functioning of drinking water supply systems, in the case of their failures and in the case of anthropogenic or natural disasters/emergencies;

**A drinking water supply system** means a set of technical means, including networks, facilities, equipment (devices) for centralised and non-centralised drinking water supply;

**Technological norms of drinking water use** mean the maximum permissible amount (limit) of technological water losses in the course of water treatment and transportation, use of drinking water by drinking water supply facilities for their own needs and for maintenance of sanitary protection zones.

Norms and rules are defined by the following regulations:

- DSanPiN 2.2.4.171-10 Hygiene Requirements to Drinking Water Intended for Human Consumption;
- "Procedures for development and approval of technological norms for use of drinking water by facilities that provide centralised water supply and/or drainage services" (Order # 179 of the Ministry of Regional Development of 25.06.2014);
- "The methodology for calculating drinking water losses by facilities providing centralised water supply services" (Order # 180 of the Ministry of Regional Development of 25.06.2014);



- "The methodology for calculating technological drinking water losses by facilities that provide centralised water supply and/or sanitation services" (Order # 181 of the Ministry of Regional Development of 25.06.2014).

## B) Institutional framework

Central executive bodies:

The Ministry of Regional Development, Construction, Housing and Utilities;  
The National Commission for State Regulation of Energy and Public Utilities

Local authorities are owners of water supply systems and should ensure their development. In addition, they set tariff rates for utilities that are not license-holders of the National Commission.

Water supply systems are operated by facilities of different ownership forms, that are responsible for quality of the services provided.

In the overwhelming majority of cases, water utilities are of municipal property. Some systems, e.g. "Dnieper-West Donbass" utility are publicly owned. In communities, where local residents paid for construction of water supply systems, the systems are in private ownership.

## C) Financial frameworks

### c) *Economic capacity:*

#### i) criteria of efficiency, sustainability and affordability of water services;

Water utilities apply "Costs +" model for tariff setting model is used, but the model does not promote their development and does not provide incentives for resource saving.

#### *ii) water prices and its social affordability (e.g. water prices vs household incomes)*

It is difficult to assess social affordability of drinking water prices, as water tariff rates vary widely (from minimal tariff of UAH 4.32/m<sup>3</sup> to maximal tariff of UAH 15.42/m<sup>3</sup>), both in different regions and within regions, depending on types of water intakes (surface or groundwater), water quality in the sources, availability of treatment facilities, length and conditions of networks, etc. Household incomes also vary greatly depending on regions and characteristics of households, etc.

However, water bills do not play a decisive role in total packs of housing and utility bills and for many years their share was the lowest one.

## II Environmental and/or health situation – the current status and prospects

### A) Monitoring programs and indicators

The national indicator set (see Table 12.) as "Reduction of length of damaged water supply and sanitation pipes" is not indicative. It is not the only solution and it not the key solution for the problem, as assessment of performance of centralised water supply systems by reducing the number of pipeline-related accidents is rather conditional. Therefore, this indicator needs to be reviewed.

## B) Main problems associated with the target area

### *ii) average duration of drinking water supply;*

Water supply systems may maintain drinking water supply permanently (24 h/day) or for several hours a day (i.e. as scheduled); in rural areas water supply schedules may be set as several hours per week. According to the National Report, in 2015, scheduled supply of drinking water from centralised water supply systems was maintained in 42 cities, 245 townships and 133 villages, including:

- Gaysin, Teplik township, Glukhivtsi township (Vinnytska oblast);
- 13 cities and 31 townships in Donetska oblast;
- Khust, Mukacheve, Tyachiv, Irshava (Zakarpatska oblast);
- 23 townships in Zaporizka oblast;
- Snyatyn, Nadvirna, Kosiv (Ivano-Frankivska oblast);
- Gayvoron, Pomichna (Kirovogradska oblast);
- Kreminna, Popasna, Zolote, Privillya, Novodruzhesk, 5 townships (Luganska oblast);
- Sosnivka, Khodorov, Truskavets, Novyi Kalyniv, Boryslav, 2 townships (Lvivska oblast);
- Ochakiv, Snihurovka, 133 villages of Mykolaiivska oblast;
- Bilgorod-Dnistrovsky, Rozdilna, 66 townships of Odeska oblast;
- Borschiv, Buchach, 5 townships of Ternopil'ska oblast;
- 111 townships of Kherson'ska oblast;
- Storozhinets, Gertza, Khotyn (Chernivetska oblast).

Uninterrupted drinking water supply is not fixed as a requirement at the legislative level. Schedules of water supply in settlements are set owners of relevant water supply systems.

Users may be disconnected from water supply due to scheduled or emergency repairs in water supply systems. In DBN V.2.5-74 "Water Supply. Outdoor Networks and Facilities. Main Design Provisions" provides for maximal duration of accident mitigation works (from 8 to 24 hours, depending on depth of water pipes).

Besides that, users may be disconnected for their failures to pay for services, however, relevant statistics is not available.

### *iii) shares of samples failing to meet limits for residual chlorine in points of use (only for countries with mandatory chlorination);*

According to DSanPiN 2.2.4.171-10, disinfection of drinking water is mandatory for systems with water abstraction from surface water sources. In the case of groundwater sources, if water is clean from bacteria and water flow is continuous, water may be supplied to users without disinfection, e.g. in Sumska oblast, groundwater is supplied to users without treatment and disinfection. From the epidemiological point of view, it is appropriate to disinfest water in any case.

According to DSanPiN 2.2.4.171-10, disinfection may be made by exposing pathogenic microorganisms to physical (ultraviolet irradiation, ultrasound, etc.), chemical (chlorine, sodium hypochlorite, ozone, chlorine dioxide, gaseous oxidants, etc.) and physical-chemical factors. Producers must take measures to minimise contamination of drinking water.

In contemporary practice, drinking water is mainly disinfected by chlorination due to its economic and technological efficiency in comparison with any other known methods. Besides that, the majority of utilities apply sodium hypochlorite (generated on-site by the electrolytic method), e.g. at "Belotserkivvoda" Company. Disinfection with mixed oxidants is used by utilities in Kolomyia and Ivano-Frankivsk. Chlorine dioxide is used for disinfection of drinking water in Zhovti Vody and in Chernomorsk.

In the course of disinfection of drinking water in distribution networks, residual concentrations of reagents are determined at least once per hour (paragraph 3.14). No statistics is available on percentages of samples that do not meet standards for levels of residual chlorine.

*iv) main operational "failures" (including breakdown of valves and fittings) of water supply systems, associated with accidents on pipeline systems (backbone and distribution networks).*

According to the National Report, in 2015 the total length of water supply networks was estimated as 106,374.4 km, including 36,185.4 km (or 34%) of old and damaged sections (pipes in need of replacement). During the year, only 573.6 km were replaced (or 1.6% of the need). In recent years, the situation has not changed due to a very low level of renovation works.

In 2014-2015, the largest number of accidents on pipelines of water supply systems during the year was registered in Khersonska oblast - 6.7 accidents per 1 km of networks; while the lowest numbers of accidents were registered in Sumska and Chernivetska oblasts - 0.28 and 0.32 accidents per 1 km of networks (see Figure 6).

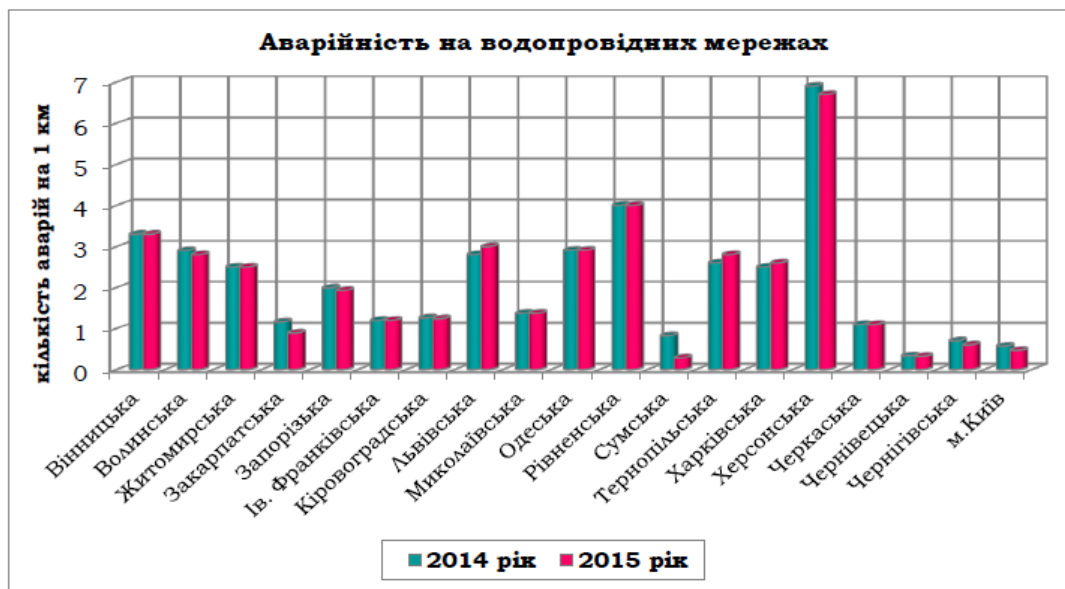


Fig. 6

Information on the causes of accidents (e.g. damaged pipes or valves) is collected by operators of relevant water supply systems in registers/data-logs or in other documentation.

v) water losses

The National Report provides a summary indicator of "technological water losses and leaks" as the difference between volumes of raw/extracted water and sold water. Technological water losses needed to ensure the process of water intake and treatment, reach about 12-15% for surface water and 3-5% for groundwater, while main water losses are associated with leakage of water from water supply networks.

In 2015, technological water losses and leaks amounted to more than 35% of the total volume of source water. The situation was similar in previous years as well, first of all (see Fig. 7) due to high accident rates at water transportation systems. Values of the water losses index were also affected by deficiencies of the existing water control system, by unauthorised (illegal) connections, lack of laboratories for swift identification and mitigation of accidents, etc.

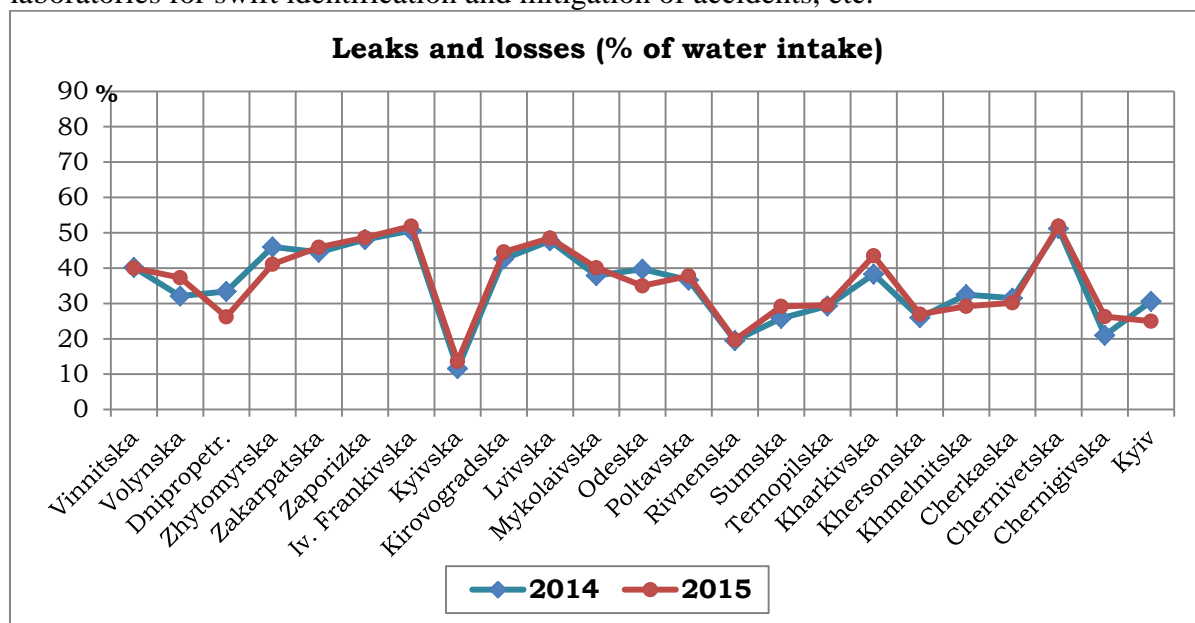


Fig. 7

vi) water supply by certified (e.g. by the International Organisation for Standardisation (ISO)) suppliers or other water quality assurance systems

According to the due legislation, utilities that operate in the sphere of centralised water supply are subject to licensing. Licensing is carried out by the National Commission for State Regulation of Energy and Public Utilities or by local authorities.

Water utility "Bilotserkivvoda" Co. developed and implemented its Enterprise Management System based on requirements of international standards (ISO 9001).

According to DSanPiN 2.2.4.171-10, sanitary norms set requirements for safety and quality of drinking water, as well as rules of facility-level control and state sanitary and epidemiological supervision in the sphere of residential drinking water supply and are mandatory for executive bodies, local authorities, facilities, bodies and organisations regardless their ownership forms and subordination arrangements.

There are some systems that are not designed to guarantee quality of drinking water at the level of DSanPiN 2.2.4.171-10, and therefore the norms should be amended. Measures for development of

such systems are reflected in the Water Supply and Sanitation Optimisation Schemes. For example, such optimisation schemes were developed for such cities as Kharkiv, Zaporizhia, Kryvyi Rig and Lugansk. In the case of systems that can guarantee quality of drinking water in accordance with requirements of DSanPiN 2.2.4.171-10, methods of guaranteeing water quality are set in technical regulations of water utilities, that contain technological regimes and requirements for ensuring due drinking water quality.

*vii) complains on quality of water services, received by authorities and/or by service providers*

No statistics is available on numbers of complains at the national level, at least in available sources.

*viii) availability of the capacity needed to overcome extreme weather conditions, and to implement the Water Supply and Sanitation Guidelines in the Course of Extreme Weather Events*

To ensure water supply in regions affected by natural disasters or other emergencies, funds are allocated from a special reserve fund by orders of the Cabinet of Ministers of Ukraine, the State Service of Ukraine for Emergency Response manages emergency response and mitigation activities.

### III Relevant on-going or planned actions intended to address the main problems

According to "Drinking Water of Ukraine" state program, In the coming years, the following priority actions are stipulated to address the main problems:

- replacement and reconstruction of damaged water supply networks;
- replacement of worn-out pumps and other technological equipment;
- construction of water supply networks in villages that rely on truck water;
- design and construction of water supply networks (if possible) in townships without centralised water supply;
- transition from scheduled water supply to continuous water supply;
- improvement of the system of drinking water disinfection, transition from use of liquid chlorine to more modern and safer methods of disinfection, e.g. use of electrolysis-generated sodium hypochlorite, chlorine dioxide, mixed oxidants, etc.;
- tightening control over wastewater discharges, especially in areas of drinking water abstraction,
- arrangement of sanitary protection zones, strict compliance with rules of their functioning.

### IV Expert assessment

1. Lack of investments into development of water supply systems (in fact, no funds were invested at all) for a long time resulted in technical ageing of applied technologies, equipment, materials, reagents, etc. The practice of constructing standard water treatment plants without accounting for local water quality in areas of specific water intakes resulted in the situation when now many water treatment facilities are inadequate to source water quality and cannot ensure the required level of water treatment to the due standards.
2. Existing water conditioning technologies and modes of operation of utilities are not designed to ensure water quality in accordance with European requirements and DSanPiN. Modern technologies are not implemented due to lack of funds of water utilities and the need to increase operating costs, and - as a result - the costs of the services provided.



3. Water transportation systems predominantly operate in modes that substantially differ from relevant design parameters and with significant underload. First of all, such a situation results in non-productive use of energy, material and labour resources, contributes to deterioration of pipelines and water quality in the course of its transportation to users.
4. Water transportation systems (water main, distribution indoor and outdoor networks) are technically obsolete, and are characterised by high accident rates, resulting in extremely high losses of drinking water in the course of its transportation.
5. At present, tariff-setting in water supply companies is based on "Costs +" model, that does not promote development of water supply systems and improvement of energy and resource efficiency.
6. The national target set - Reduction of length of damaged water supply and sanitation pipes" - rather conditional and needs to be reviewed.

## Target area VI

### Article 6. 2 (e), Part 2 Performance levels of collective and other sanitation systems

According to Article 6.2 (e), Part Two of the Protocol, 1 national target was set for the level of performance of collective and other sanitary systems (see Table 15).

**Table 15.** National targets and indicators set for Article 6.2(e), part 2

Target area #	Target according to the Guide	Nat. target #	Nat. targets under the Protocol	Indicators and indicator values to be reached by 2015		Nat. target/SDG6 indicator
				Indicators	Indicator values	
6. 2 (e)	Performance levels of collective and other sanitation systems Art. 6. 2 (e) part 2	9	Reduction of length of damaged water supply and sanitation pipes	Percentage shares of replaced damaged pipes	In cities with population over 500,000 residents - 30% In other settlements - 15 %	None set

## I Existing frameworks

### A) Strategies, legal/regulatory framework and international commitments

Laws and regulations in the sphere of sanitation are less developed than in the sphere of water supply.

Main provisions and objectives in the sphere are fixed in the Water Code of Ukraine, the Code of Ukraine on Mineral Resources, in laws of Ukraine: on Drinking Water, Drinking Water Supply and Sanitation, on Housing and Utilities Services, on Protection of the Natural Environment, on Ensuring Sanitary and Epidemiological Well-being of the Population, in Rules of Protection of Surface Waters from Pollution by Return Water; and in regulations of relevance to operations of centralised sanitation systems:

- Rules of Use of Centralised Municipal Water Supply and Sanitation Systems in Settlements of Ukraine;

- DBN V.2.5-75: 2013 "Sewers. Outdoor Networks and Facilities. Basic design provisions;
- DBN 360-92 "Urban Development. Planning and Building of Urban and Rural Settlements" (as amended);
- "Rules for Acceptation of Industrial Wastewater into Municipal and Agency-specific Sewers in Settlements of Ukraine" (the new version of the document is subject to approval by relevant institutions, the old version of the document was cancelled in May 2017).

Main definitions of relevance to the target area.

*Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation (Art. 1)*

- Sanitation means activities for wastewater collection, transportation and treatment with use of centralised sanitation systems or other sanitation/wastewater treatment facilities;
- Centralised sanitation utility means as economic actor that which operates centralised sanitation facilities/systems;
- Centralised sanitation systems mean sets of technical means, including networks, facilities, equipment (devices) for centralised wastewater collection and treatment, that are interconnected within a single technological process;
- Centralised sanitation means economic activities for wastewater collection and treatment with application of centralised sanitation systems.

*The Water Code of Ukraine (Art. 1):*

- Return water means water that is returned through technical facilities from economic water circulation circuits in natural water circulation as wastewater, mine, quarry or drainage water;
- Wastewater means water generated in the course of household and industrial activities (except mine, quarry and drainage water), as well as water in surface run-off from settled areas, where it came with precipitation;
- Maximal permissible concentration (MPC) of a substance in water means the established level of concentration of the substance in water, above which water is considered unsuitable for specific water use purposes;
- Discharge limit of a substance means mass of the substance in return water that is the maximal admissible value for its discharge in the established regime into a water body per a unit of time;
- Water pollution means inflow of pollutants into water bodies;
- Pollutant means a substance that enter a water body as a result of human economic activities;
- Water littering means entry of foreign items and materials into a water body that adversely affect water quality;
- Sanitary protection zone means a land areas and a water area where a special sanitary and epidemiological regime is introduced in order to prevent deterioration of water quality in sources of centralised drinking water supply, as well as to ensure protection of water supply facilities;
- Discharge limits of pollutants mean maximally admissible amounts of discharges of pollutants into surface water bodies, that are set in the permits for special water use.

In general, the legislative framework needs further improvement and development.

## **B) Institutional framework**

Central executive bodies:

The Ministry of Regional Development, Construction, Housing and Utilities;

The National Commission for State Regulation of Energy and Public Utilities

Local authorities are owners of sanitation systems and should ensure their development. In addition, they set tariff rates for utilities that are not license-holders of the National Commission.

Sanitation systems are operated by utilities of different ownership forms (predominantly municipal ones), that are responsible for quality of the services provided.

### C) Financial frameworks

#### *f) sanitation services prices*

Similarly to water supply services, tariff rates for centralised services (in the case of license-holders of the National Commission, minimal tariff rate for sanitation services reaches UAH 3.42/m<sup>3</sup>, while the maximal one reaches UAH 15.69/m<sup>3</sup>), in many cases do not cover service provision costs, that does not allow operators to upgrade, modernise and develop these systems.

In small communities, households do not want to connect to centralised sanitation systems as the option of discharging their wastewater into the local natural environment is much cheaper.

#### *g) sustainability of operators in certain economic, environmental, technical, financial, operational and staffing conditions;*

Now, sustainability of operators is low due to a number of financial reasons: tariff rates do not cover cost of the services provided, operators cannot ensure tariff rates to cover their costs, etc.

#### *h) complains to authorities and/or service providers in connection with efficiency of the services;*

No statistics is available on numbers of complaints filed at the national level, at least in accessible sources.

## II Environmental and/or health situation – the current status and prospects

### A) Monitoring programs and indicators

For purposes of the National Report, information from utilities is collected by oblast-level housing and utilities services and submitted to the Ministry of Regional Development. These entities are responsible for collection of the information.

The indicator set for this target area (see Table 13) under the Protocol - "Reduction of length of damaged water supply and sanitation pipes" - is quite adequate, but the value of the indicator should be revised.

### B) Main problems associated with the target area

#### *b) existing requirements to standard parameters;*

No standard performance requirements are set for collective and other sanitation systems.

### *c) pumps failures*

Centralised sanitation systems, as well as water supply systems, were mostly built in the period of the former USSR. Capacity of installed pumping (and other) equipment was designed on a long-term basis and provided for a continuous increase. During the years of independence, volumes of pumped wastewater in the systems decreased. The situation resulted in mismatch between designed and actual capacity of the pumps installed and significant over-consumption of energy. In addition, pumping and power equipment items were not upgraded for many years and currently are largely technically obsolete and does not correspond to similar high-tech units.

According to the National Report, in 2015, design capacity of sewage pumping equipment was almost 3.1 times higher than actual. 32.4% of pumping units required replacement, but only 15.1% of the demand were actually replaced.

According to DBN V 2.5-75 "Sanitation. Outdoor Networks and Facilities. Main Design Provisions", in the course of designing wastewater treatment plants, installation of back-up should be foreseen, however, in reality this is not always the case.

### *d) clogging of sewers;*

The problem of clogging of sewers is a problem at the local level, it is addressed locally by following the rules of operation of pipelines.

### *e) wastewater treatment efficiency in terms of removal of organic substances and nutrients;*

According to the National Report, in 2015, with wastewater effluents, the following amounts of pollutants were released into surface water bodies: 27.17 thousand tons of suspended matter, 311.1 tons of oil products, 5.8 thousand tons of ammonia nitrogen 44.76 thousand tons of nitrates, 1.13 thousand tons of nitrites, 212.9 tons of surfactants, 491.2 tons of iron, 4382 tons of phosphates, etc.; total COD index reached 80.7 thousand tons, while total BOD index reached 17.95 thousand tons.

Efficiency of wastewater treatment is clearly insufficient. The problem is mainly associated with insufficient capacity of WWTPs or their absence (in rural areas); lack of biological treatment and tertiary treatment steps; inadequacy of treatment technologies for quality of wastewater flows, technically outdated equipment, etc.

## **III Relevant on-going or planned actions intended to address the main problems**

The main steps planned to address the problems include the following ones:

- Optimisation of wastewater treatment systems by replacing outdated equipment and upgrading WWTPs;
- Implementation of additional wastewater treatment methods;
- Use of modern methods of utilisation of sewage sludge;
- Installation of back-up pumps at pumping stations;
- Control of compliance with the rules of pipelines operation.

## **IV Expert assessment**

1. Approaches to management of quality of wastewater treatment effluents in Ukraine differ significantly from those adopted in European countries. In particular, requirements to quality of the effluents are estimated solely based on characteristics of the receiving water body, in contrast to requirements of the European Directive, that account for a community size.
2. The tariff rates for sanitation services (with the minimal tariff rate of UAH 3.42/m<sup>3</sup>, and the maximal rate of UAH 15.69/m<sup>3</sup>), as a rule, do not completely cover costs of the services provided, that does not allow to cover operation costs and to carry out systematic development of systems. In addition, tariff setting is based on the "costs plus" model, that does not promote development of sanitation systems.
3. Existing wastewater treatment facilities do not allow to ensure the necessary efficiency of wastewater treatment, as a result, in 2015, total amount of effluents discharged into water bodies included 16% of contaminated wastewater, 26% of wastewater treated to standards and 58% of standard quality wastewater without treatment.
4. Causes of inefficient operation of wastewater treatment plants include the following ones: wastewater treatment plants are underloaded, installed technologies are not designed for removal of nitrogen and phosphorus, in large cities untreated industrial wastewater is discharged into municipal sewers.
5. A serious problem is also associated with significant (sometimes up to 10 times) underload of sanitation systems (both whole systems, and their individual elements). The situation results in excessive energy consumption and, consequently, in higher costs of sanitation services.
6. The indicator under the Protocol - "Reduction of length of damaged water supply and sanitation pipes" - is quite adequate, but the value of the indicator should be revised.

## Target area VII

### Article 6. 2 (f), Part 1 Application of recognised good practices for water supply management

#### I. The existing frameworks

##### A) Strategies, legal/regulatory framework, and international commitments

- The Action Plan for Implementation of Council Directive 98/83/EC of 3 November 1998 on Quality of Water Intended for Human Consumption of the Ministry of Regional Development of Ukraine, approved by Decree # 162 of the CMU of 04.03.2015,
- In 2009, Ukraine adopted ISO 9001: 2015 standard in the national standard DSTU ISO 9001.
- ISO 9001 is an optional standard, it is a voluntary certification system.
- ISO 14000 standards contain provisions on elements of the environmental management system, as well as environmental audit guidelines, they were revised 2 times (in 2004 and 2015), there is a transitional period until 2018, in the transition period two versions of ISO 14001 standard are applied.
- Only a few individual water supply and sanitation utilities are attempting to prepare for certification under ISO standards.
- The plan to ensure water safety and certification according to ISO 22000 in Ukraine is not implemented.



Requirements to organisation and functioning of sanitary protection zones are set out in:

- Sanitary Norms and Rules of Planning and Development of Human Settlements, approved by decision # 173 of the Chief State Sanitarian of Ukraine of 19.06.96 (as amended);
- DBN 360-92 "Urban Development. Planning and Building of Urban and Rural Settlements" (as amended);
- DBN V.2.5 - 74: 2013 "Water Supply. Outdoor Networks and Facilities. Main Design Provisions" (Section 15. Sanitary Protection Zones);
- "Regulations on Design and Operation of Sanitary Protection Zones of Water Supply Sources and Drinking Water Supply Systems" (approved by decision # 2640-82 of the Chief Sanitarian of the USSR of 18.12.1982).

## **II Environmental and/or health situation – the current status and prospects**

### **A) Monitoring programs and indicators**

In this target area, Ukraine has not set a target neither according to the Protocol, not to the SDG 6. Target under Article 6.2. f - "Application of recognised good practices for water management" - is appropriate and should be based on development and approval of the list of good water management practices, that should be developed accounting for Ukrainian and foreign experience.

### **B) Main problems associated with the target area and measures planned to address them**

The following problems may be considered as main ones:

- Low water quality in water supply sources due to increasing anthropogenic pressure on water resources;
- The system of technical standards and construction documents in the sphere of water supply is not fully consistent with world standards and since the Soviet era they have not been radically revised.
- Implementation of the Water Framework Directive has begun in Ukraine, as one of its requirements the Directive stipulates development of river basin management plans (RBMPs). Ukraine plans to develop and implement 9 RBMPs by 2024.
- Ukraine has not introduced Water Safety Plans; however, every facility develops Water Supply and Wastewater Optimisation Schemes, with appropriate measures for development of the systems; however, not all measures are actually implemented;
- Reduction of permanganate COD and contents of organochlorine substances.
- Water conditioning technologies to remove manganese, fluorine, reduction of hardness and other mineral components are almost non-existent. They may be introduced at the level of small installations.
- Water supply companies lack funds for introduction of modern technologies and water treatment equipment. It is necessary to review the measures of "Drinking Water of Ukraine" State Program to define legally and consolidate funding sources, including the State Budget.

## **IV Expert assessment**

Now, "recognised best practices" are applied by water supply and sanitation utilities in Ukraine only partially. In particular, at the legislative level (and in practice in the overwhelming majority of cases) issues of establishment of sanitary protection zones and compliance with the due regime of their functioning are addressed.

Standardisation of activities according to international standards, and development of river basin management plans, etc. are only at the stage of introduction.

Principles and methods of development of Water Safety Plans remain unknown in Ukraine, while Water Supply and Wastewater Optimisation Schemes are not fully implemented in practice.

Target under Article 6.2. f - "Application of recognised good practices for water management" - is important and should be based on development and approval of the list of good water management practices, that should be developed accounting for Ukrainian and foreign experience.

## Target area VIII

### Article 6. 2 (f), Part 2 Application of recognised good practices for sanitation management

#### I The existing legislative framework

##### A) Strategies, legal/regulatory framework, and international commitments

The plan for implementation of Council Directive 91/271/EEC of May 21, 1991 on Urban Wastewater Treatment, was approved by the CMU Decree # 162 of March 4, 2015. The Ministry of Regional Development of Ukraine is responsible for implementation of the plan.

Certification systems according to internationally recognised standards: ISO 9000 or ISO 1400, that are verified by independent bodies.

Only a few individual water supply and sanitation utilities are attempting to prepare for certification under ISO standards.

Water Supply and Sanitation Safety Plans are not available in Ukraine (WHO has developed a guide for development of sanitation safety plans in 2015).

#### II Environmental and/or health situation – the current status and prospects

##### A) Monitoring programs and indicators

In this target area, Ukraine has not set a target - neither according to the Protocol, not to the SDG 6. Target under Article 6.2. f - "Application of recognised good practices for sanitation management" - is appropriate and should be based on development and approval of the list of good sanitation management practices, that should be developed accounting for Ukrainian and foreign experience. One or more indicators to the Protocol should be developed accounting for existing best practices in the sphere.

#### IV Expert assessment

1. Currently, no efficient systems for application of recognised good practices of sanitation management are available in Ukraine.

2. Now, the certification system of Ukraine is under development on the path to integration into international standards. As pertains to water supply and sanitation utilities, only some of them try to prepare for certification under ISO standards (for example, "Belotserkivvoda" Co. developed and implemented Enterprise Management System based on the requirements of ISO 9001 international standards).
3. There is no legislative consolidation, knowledge and methodology for development of water supply and sanitation safety plans in Ukraine; development and design of river basin management plans is just starting
4. One or more indicators to Article 6.2 (f) of the second part of the Protocol should be developed accounting for the best sanitation management practices of other countries.

## Target area IX

**Article 6. 2 g) i** - Occurrence of discharges of untreated wastewater into water bodies under scope of the Protocol

One national target - "Reduction of discharges of untreated and insufficiently treated wastewater, mine, quarry and drainage water" - was set in the target area, and 2 indicators for the target, as well as national indices to SDG 6.3. (To reduce discharges of untreated wastewater, first of all, using innovative water treatment technologies at the national and individual levels, and a series of indicators on discharges in different economic sectors - see Table 16.).

**Table 16.** National targets and indicators set for Article 6.2(g) i part 2

Target area #	Target according to the Guide	Nat. target #	Nat. targets under the Protocol	Indicators and indicator values to be reached by 2015		National SDG6 target/ indicator		
				Indicators	Indicator values	Targets	Indicators	Indicator values (by 2015)
9	Occurrence of discharges of untreated wastewater into water bodies under the Protocol Art. 6.2 g) i	10	Reduction of discharges of untreated and low treated wastewater, mine, quarry and drainage water	The share of discharges of untreated and low treated wastewater, mine, quarry and drainage water into water bodies	Discharges of polluted untreated wastewater - up to 3 %	6.3. To reduce discharges of untreated wastewater, first of all, using innovative water treatment technologies at the national and individual levels	6.3.1. Discharges of polluted untreated (and insufficiently treated) wastewater into water bodies, million m <sup>3</sup> • By types of economic activities (industry, housing and utilities, power industry, transport, services)	875
					Discharges of insufficiently treated wastewater - up to 15%			6.3.2. The share of discharges of polluted (untreated and insufficiently treated polluted wastewater) into water bodies in the overall discharges, % • By types of economic activities (industry, housing and utilities,

							power industry, transport, services)	
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## I The existing frameworks

### A) Strategies, legal/regulatory framework, and international commitments

The sphere of environmental protection from wastewater pollution is regulated by numerous laws, decrees and orders of the Cabinet of Ministers of Ukraine and other CEBs of Ukraine, but there is no single legislative act that might regulate approaches to discharges of treated wastewater into water bodies. Only a draft of such a document exists.

Main documents in the sphere include the following ones:

The Water Code of Ukraine

Discharge of wastewater into water bodies is permissible only provided availability of maximal permissible concentrations set and established norms for discharge limits of pollutants. Wastewater discharges into terrain features (gulleys, depressions, quarries, etc.) are prohibited (Article 70).

In the case of exceeding established pollutants discharge limits, wastewater discharges into surface water bodies may be limited, temporarily prohibited (suspended) or terminated in accordance with procedures established by the due legislation (Article 71).

Laws of Ukraine:

- Law on Protection of the Natural Environment
- Law on Drinking Water, Drinking Water Supply and Sanitation
- Law on Environmental Impact Assessment
- Law on Amending Some Legislative Acts of Ukraine Regulating Relations Associated with Granting Permits for Special Water Use (Law # 1830-VIII of February 7, 2017).

Some measures are stipulated in the State Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021 and in "Drinking Water of Ukraine" program for 2011-2020.

Some norms in the sphere are covered by international obligations of Ukraine under the EU-Ukraine Association Agreement and action plans for implementation of the EU Directives (EU WFD, the Urban Wastewater Treatment Directive, and the Nitrate Directive).

Besides that, numerous regulations and standards exist, including the following ones:

- "Procedures for implementation of the State Water Monitoring";
- "Rules for Protection of Surface waters from Pollution by Return Water";

- "Rules for Acceptation of Wastewater into Municipal and Agency-specific Sewers in Cities and Townships of Ukraine"(KDP-204-12-Ukr.218-92);
- "Rules of Use of Municipal Water Supply and Sanitation Systems in Cities and Townships of Ukraine", "Rules of Use of Centralised Municipal Water Supply and Sanitation Systems in Settlements of Ukraine", approved by Order # 190 of the Ministry of Housing and Utilities of Ukraine of June 27, 2008.
- "Rules for Acceptation of Industrial Wastewater into Municipal and Agency-specific Sewers in Settlements of Ukraine", approved by Order # 37 of the State Construction Committee of Ukraine of February 19, 2002.
- The Tax Code of Ukraine, Section VIII ("Environmental Tax");
- SanPiN 4630-88 "Protection of Surface Waters from Pollution" (version of 21.10.91.).
- "Rules for Technical Operation of Water Supply and Sanitation Systems in Settlements of Ukraine", approved by Order # 302 of the Ministry of Regional Development of 27.11.2015;
- Construction norms and rules "Sanitation. Outdoor Networks and Constructions" (BNiP 2.04.03-85r, except para 6.2);
- The Instruction Manual on the Procedure for Setting and Approval of Discharge Limits for Discharge of Substances into Water Bodies, approved by Order # 116 of the Ministry of Ecology and Natural Resources of Ukraine of December 15, 1994.
- The Instruction Manual on the Procedure for Setting and Collection of Charges for Discharging Industrial and Other Wastewater into Sanitation Systems of Settlements (the Ministry of Justice of Ukraine, #. 402/6690 of 26.04.2002);
- Forms of Permits for Special Water Use and Forms of Standard Calculation of Water Use and Sanitation (Order # 234 of the Ministry of Ecology of 23.06.2017;

Liabilities for discharge of untreated wastewater into water bodies are not set at the legislative level.

## **B) Institutional frameworks**

13 CEBs - with the leading role the Ministry for Ecology - and their subordinate territorial bodies, facilities and organisations; oblast-level, Kyiv and Sevastopol city state administrations, as well as the executive body of the Autonomous Republic of Crimea in charge of environmental protection are involved into addressing issues of sanitation and protection of surface waters from pollution by return water, including monitoring of water resources, their registration, etc.

Long-term regional programs for water supply and sanitation development include analysis of the state of water supply and sanitation and financial models, while water supply and sanitation optimisation schemes are of short-term nature and contain hydraulic calculations, analysis of the state of water supply and sanitation, and financial models.

## **II Environmental and/or health situation – the current status and prospects**

### **A) Monitoring programs and indicators**

Control over discharges of untreated wastewater into water bodies is maintained by the State Environmental Inspectorate (of the Ministry of Ecology), while the level of liability for non-compliance is defined by the Code of Ukraine on Administrative Offenses.



In this target area, similar targets were set under the Protocol (1 national target and 2 indicators for reduction of discharges of untreated and insufficiently treated wastewater, mine, quarry and drainage water) and the target under SDG 6.3 with relevant indicators 6.3.1 and 6.3.2. (see Table 14).

The state control and analysis of the state of water use, of discharges of return water and polluting substances, include collection of information on existing wastewater treatment systems and their efficiency. Water users submit reporting on water use to the State Water Agency, that is the information manager in the sphere. In 2015, the number of facilities that submit reports under form 2-tp (water management) reached 15,204. The monitoring system of the State Water Agency includes 503 units of hydrochemical control of basin water management authorities and other water management organisations.

Levels of pollutants in wastewater flows of facilities are estimated on the base of laboratory data of water utilities and results of water sampling performed by laboratories of the local bodies of the State SES, the State Environmental Protection Directorate or other laboratories certified in this area of measurements.

Data on quality of wastewater treatment may be obtained from the annual National Report, from information sources of the Mof E of Ukraine, as well as directly from information sources of water utilities (e.g. web-sites, printed publications, etc.). Some information may be obtained from mass media outlets (radio, TV, etc.).

According to generalised data of the state registration of water use, in 2015, surface water bodies received 5343 million m<sup>3</sup> of wastewater, including: 3348 million m<sup>3</sup> from industrial facilities, 1605 million m<sup>3</sup> from the housing and utilities sector and 361.4 million m<sup>3</sup> from agricultural facilities.

Of the total amount of wastewater discharges into water bodies, volumes of polluted wastewater reached 875.1 million m<sup>3</sup> (16%), volumes of wastewater treated to standards reached 1389 million m<sup>3</sup> (26%), volumes of untreated wastewater within standard pollution limits reached 3070 million m<sup>3</sup> (58 %).

Main causes of surface water pollution include discharge of polluted municipal and industrial wastewater into water bodies directly and through municipal sewers, as well as the inflow of water pollutants into water bodies with surface runoff of water from urban areas and agricultural lands.

Monitoring of water quality in surface water bodies shows that their ecological status is not improving, in the whole country, the situation regarding the status of category I water bodies in terms of sanitary-chemical and bacteriological indicators remains practically unchanged.

In 2015, the share of analysed water samples from category I water bodies that did not meet the sanitary norms in terms of sanitary-chemical parameters reached 10.8% (and 9.3% in terms of sanitary-bacteriological parameters). In the case of the II category water bodies, 12215 samples for sanitary-chemical analysis and 19125 microbiological samples were collected and analysed. The share of analysed water samples that did not meet the sanitary norms in terms of sanitary-chemical parameters reached 19.4% (and 12.3% in terms of microbiological parameters).

In terms of territorial sub-division, largest discharges of polluted wastewater are registered in Dnipropetrovska oblast (266.6 million m<sup>3</sup> or 39.1% of the total amount of discharges in the oblast), in Donetska oblast (263.7 million m<sup>3</sup> or 31.3%), in Zaporizka oblast (70.04 million m<sup>3</sup> or 24.8%) and in Luganska oblast (72.21 million m<sup>3</sup> or 8.9%). These 4 oblasts discharge about 77% of all contaminated wastewater.

According to generalised reports on water use for 2015, the range of largest polluters includes industrial facilities (481.3 million m<sup>3</sup>), particularly ferrous metallurgy plants (327 million m<sup>3</sup>), power plants (123.3 million m<sup>3</sup>) and the coal industry (103.7 million m<sup>3</sup>).

Facilities of the housing and utilities sector discharged 308.1 million m<sup>3</sup> of polluted wastewater, while agricultural facilities discharged 24.68 million m<sup>3</sup>.

In terms of river basins, polluted wastewater discharges are distributed as follows: 429 million m<sup>3</sup> in the Dnieper basin, 96.55 million m<sup>3</sup> in the Siversky Donets, 18.43 million m<sup>3</sup> in the Dniester basin, 39.15 million m<sup>3</sup> in the Western Bug basin, 19.45 million m<sup>3</sup> in the Danube basin and 6.8 million m<sup>3</sup> in the Southern Bug river basin.

Due to poor quality of wastewater treatment, inflows of contaminated wastewater to surface water bodies do not decrease. In addition, in 2015, 327.4 million m<sup>3</sup> of mining and quarry water were discharged, practically without any treatment.

In 2015, with wastewater flows, the following amounts of pollutants were released into surface water bodies: 27.17 thousand tons of suspended matter, 311.1 tons of oil products, 5.8 thousand tons of ammonia nitrogen, 44.76 thousand tons of nitrates, 1.13 thousand tons of nitrites, 212.9 tons of surfactants, 491.2 tons of iron, 4382 tons of phosphates, etc.; total COD index reached 80.7 thousand tons, while total BOD index reached 17.95 thousand tons.

#### *iv) quality of sewers and wastewater treatment.*

According to the National Report on Drinking Water Quality and Drinking Water Supply State in Ukraine, in 2015, sanitation systems operated 3091 sewage pumping units with total installed capacity of 2647.85 million m<sup>3</sup>/year. However, their design capacity reached 8182.89 million m<sup>3</sup>/year - i.e. it was almost 3.1 times higher than needed.

As pertains to the overall technical status of the pumping equipment in the country: from the total number of 7648 pumps, 2475 units needed replacement (32.4%), and only 373 units were actually replaced during the year (15.1%); in 2014, relevant figures reached 7620, 2449 (32.1%) and 346 (14.1%), respectively. In 2015, the situation in individual oblasts may be demonstrated by the following figures: in Sumska and Khersonska oblasts 100% and 89.2% of the need were replaced, respectively, in Cherkaska and Zaporizka oblasts 3.3% and 5.3% of the need were replaced, respectively; while in Luganska oblast no pumps were replaced at all.

In 2015, the total number of wastewater treatment plants reached 1180, including 564 WWTPs (or 47.8%) in need of reconstruction; and 24 WWTPs (4.3%) where partial or full reconstruction was completed. Sanitation systems are rather capital intensive.

## **B) Main problems associated with the target area**

In general, relevant laws and regulations on wastewater discharges and environmental protection issues are outdated, they were adopted many years ago, and a number of the currently effective documents do not meet contemporary conditions.

Wastewater treatment problems in Ukraine:

- wastewater treatment facilities do not operate with application of complete biological treatment in all settlements,
- in some cases, wastewater is discharged into water bodies without treatment. In 16 cities and 375 townships, in 97.5% of rural settlements centralised sanitation systems are not available, and in 187 urban settlements, wastewater treatment facilities are inefficient - as a result, more than 154 thousand m<sup>3</sup> of untreated and insufficiently treated wastewater are discharged into water bodies every day.
- complexity and ambiguity of the currently effective legislation on wastewater treatment and discharges for small facilities, low monetary fines for discharges of untreated wastewater, high prices for connection to sewers, particularly for owners of small facilities (recreation centres, hotels) and rural residents;
- lack a legislative act and a clear mechanism for monitoring sanitation status in small settlements and on separate sites;
- a gap, allowing water users to re-categorise their polluted wastewater as treated to standards, at least in 2015, discharge limits were set for each facility individually and the process of setting discharge limits by calculations opens opportunities for corruption;
- imperfect monitoring of water quality and the need to improve it for compliance with the European requirements (commitments of Ukraine on implementation of the EU legislation).

In order to address these problems, it is necessary to adopt urgently a law in the sphere of sanitation that would regulate wastewater discharges of small farms and households, and ensure introduction and implementation of the EU Water Framework Directive and the Council Directive 91/271/EEC.

### III Relevant on-going or planned actions to address the main problems

In the framework of plans for implementation of the EU WFD and the Council Directive 91/271/EEC, approximation of the due legislation of Ukraine's is urgently needed, necessitating adoption of a specialised law of sanitation matters that would properly regulate wastewater treatment and discharges, including wastewater flows from small farms and households.

It's necessary to reform the state water monitoring by its harmonization with the European requirements (commitments of Ukraine on implementation of the EU legislation).

### IV Expert assessment

1. No effective systems of liability are available for discharges of untreated wastewater into water bodies.
2. Standards for quality of treated wastewater are set by methodologies of V.O. Frolov and I.D. Rodziller, or by methodologies of M.A. Ruffel or O.V.Karoushev in the case of lakes and water reservoirs - the methodologies do not fully meet requirements of the Directive on Urban Wastewater Treatment.
3. According to generalised data of state registration of water use, in 2015, wastewater discharges to surface water bodies reached 5343 million m<sup>3</sup>, including wastewater

discharges of industrial facilities (3348 million m<sup>3</sup>), the housing and utilities sector (1605 million m<sup>3</sup>), and agricultural facilities (361.4 million m<sup>3</sup>). Of the total amount of wastewater discharges into water bodies, volumes of polluted wastewater reached 875.1 million m<sup>3</sup> (16%), volumes of wastewater treated to standards reached 1389 million m<sup>3</sup> (26%), volumes of untreated wastewater within standard pollution limits reached 3070 million m<sup>3</sup> (58 %).

4. No strategies and programs exist in Ukraine for development of the sanitation sector, including sewers. There are some regional programs that receive inadequate funding and fail to implement planned activities.

## Target area X

**Article 6. 2 g) ii** - Occurrence of discharges of untreated storm water and overflows from sewers to water bodies under the Protocol

### I Existing frameworks

#### A) Strategies, legal/regulatory framework, and international commitments

##### *i) underlying legal frameworks of separation of wastewater and storm water drainage*

Some provisions on storm water and sanitation are provided in the Water Code of Ukraine, Law of Ukraine on Drinking Water, Drinking Water Supply and Sanitation, and Law on Protection of the Natura Environment.

Some aspects regarding storm water drainage are defined in the "Rules of Technical Operation of Water Supply and Sanitation Systems in Settlements of Ukraine", approved by Order # 30 of the State Committee of Ukraine for Housing and Utilities of July 5, 1995.

The definition of surface run-off that includes wastewater formed as a result of precipitation (rainwater and melting of snow or ice), as well as water applied for street watering/irrigation of urban green zones, watering or washing of improved pavements, roadways and streets in residential areas of human settlements and sites of economic facilities objects is provided in given in DBN V.2.5 - 75 "Sanitation. Outdoor Networks and Facilities, Basic Design Provisions" and in the "Rules of Technical Operation of Water Supply and Sanitation Systems in Settlements of Ukraine", approved by the Order #30 of the State Committee for Housing and Utilities of July 5, 1995.

According to DBN V.2.5 - 75:

- general-purpose sanitation systems mean sanitation systems consisting of sets of networks and engineering constructions intended for collection and treatment of all kinds of wastewater (including household and industrial wastewater, surface run-off);
- semi-separate sanitation systems mean sanitation systems designed to operate two independent outdoor networks - for household wastewater and storm water flows (with a possibility of discharging excessive amount of rainwater during heavy rains through distribution chambers into water bodies without treatment), while main wastewater collectors that deliver all types of wastewater into wastewater treatment facilities of settlements are designed as general-purpose sanitation systems;

- separate sanitation systems mean sanitation systems in settlements or at industrial sites consisting of several independent networks: for household wastewater (in addition to household wastewater, some parts of industrial wastewater flows may be discharged into the household sanitation networks), for industrial wastewater (for removal of contaminated industrial effluents that cannot be treated jointly with household wastewater), and for surface run-off, etc.;
- storm water drainage systems mean drainage systems, consisting of sets of networks and engineering constructions (urban development elements) for collection, removal and treatment of surface run-off.

Depending on a particular sanitation system, household and industrial wastewater or household and industrial wastewater and surface run-off enter municipal sewers, forming urban wastewater flows. Some stand-alone storm water drainage systems are used for local wastewater collection and pre-treatment (e.g. at fuelling stations).

Storm water treatment is financed from local budgets, that are loss-making, as a result, quality of the treatment is decreasing.

*ii) making wastewater treatment plants responsible for installation of storm water collectors;*

General purpose sanitation systems operate in some cities of Ukraine, for example, in Lviv, where pumping units have some excessive capacity, allowing to process storm water in addition to main wastewater flows. However, no legislatively set norms prescribe installation of storm water collectors.

At the same time, a number of facilities illegally discharge storm water into the general municipal sewer, adversely affecting the process of biological wastewater treatment.

*iii) ensuring compliance (control and fines).*

The State Environmental Inspectorate, according to its legislatively set statutory functions, maintains control over discharges of untreated wastewater into water bodies. Liability for non-compliance is defined by the Code of Ukraine on Administrative Offences. Discharge of untreated wastewater into water bodies is a subject to legislatively set sanctions. Statistics on such offences is not published.

#### ***b) Management issues:***

*i) construction of collectors or combined systems for storm water and wastewater, as well as relevant design of wastewater treatment facilities;*

Issues of design of sanitation systems are covered by DBN V 2.5-75 "Sanitation. Outdoor Networks and Facilities. Main Design Provisions", and DBN 360-92 "Urban Development. Planning and Building in Urban and Rural Settlements".

## **II Environmental and/or health situation – the current status and prospects**

### **A) Monitoring programs and indicators**



No targets for storm water drainage and treatment in Ukraine were set in the framework of commitments under the Protocol or in national SDG 6.

It is necessary to develop an indicator for this target area under the Protocol.

## **B) Main problems associated with the target area**

The following problems may be considered as the key ones in the target area:

- lack of storm water networks in the overwhelming majority of Ukrainian cities, particularly in townships or in rural areas;
- lack of treatment of surface run-off, even in the case of availability of storm water drainages in settlements, leads to discharge of untreated surface runoff from urban areas into rivers and lakes and to their contamination. For example, in Kyiv, there are 6-7 wastewater treatment facilities in the storm water sewer, that have not been in operation for decades and discharges from these facilities enter watercourses and water bodies of the city without treatment;
- untreated surface run-off from the highways, industrial sites, car washing stations into municipal canalization systems complicates the process of biological wastewater treatment;
- issues of ownership of storm canalization systems have not been resolved legislatively.

## **III Relevant on-going or planed actions intended to address the main problems**

The main action for addressing the above problems in the target are is associated with improvement of the due legislation in the sphere of storm water management

## **IV Expert assessment**

1. The legislative framework of Ukraine in the sphere of storm water management needs to be developed.
2. To address the main problems, it is necessary to develop regulations that would regulate storm water management and define owners of relevant systems.

## **Target area XI**

**Article 6. 2 h)** - quality of discharges of water from wastewater treatment installations to water within the scope of Protocol

## **I Existing frameworks**

### **A) Strategies, legal/regulatory framework, and international commitments**

Issues of wastewater quality and treatment are regulated by the Water Code of Ukraine and laws of Ukraine:

- Law on Protection of the Natural Environment
- Law on Drinking Water, Drinking Water Supply and Sanitation
- Law on Environmental Impact Assessment.

Some measures are stipulated in the Nationwide Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021 and in "Drinking Water of Ukraine" State Target Program for 2011-2020.

Now, main legislative changes are associated with implementation of European standards in the sphere in accordance with requirements of the EU Urban Wastewater Treatment Directive (as pertains to commitments under the EU-Ukraine Association Agreement).

Monitoring and control in the sphere are regulated by the following effective regulations:

- "Procedures for implementation of the State Water Monitoring" (CMU Decree # 815 of July 20, 1996);
- SanPiN 4630-88 "Protection of Surface Waters from Pollution";
- "Rules for Protection of Surface waters from Pollution by Return Water" (CMU Decree # 465 of March 25, 1999);
- "Rules for Acceptation of Wastewater into Municipal and Agency-specific Sanitation Systems of Cities and Townships of Ukraine" (KDP-204-12-Ukr.218-92);;
- "Rules for Use of Municipal Water Supply and Sanitation Systems in Cities and Townships of Ukraine", approved by Order # 190 of the State Committee for Housing and Utilities of Ukraine of 27.06.2008;
- Construction norms and rules "Sanitation. Outdoor Networks and Constructions" (BNiP 2.04.03-85r, except para 6.2);
- "Rules for Technical Operation of Water Supply and Sanitation Systems in Settlements of Ukraine", approved by Order # 302 of the Ministry of Regional Development of 27.11.2015;
- The Instruction Manual on the Procedure for Setting and Approval of Discharge Limits for Discharge of Substances into Water Bodies;
- The Instruction Manual on the Procedure for Setting and Collection of Charges for Discharging Industrial and Other Wastewater into Sanitation Systems of Settlements (approved by the Ministry of Justice of Ukraine, # 402/6690 of 26.04.2002).

## **B) Institutional framework**

Discharges of untreated wastewater into water bodies are controlled by the State Environmental Inspectorate, as well as by local bodies of the State SES and the State Environmental Protection Department.

The Ministry of Regional Development is maintains monitoring of municipal sanitation networks and wastewater treatment facilities (volumes, contents of pollutants).

Monitoring of wastewater quality is carried on by CEBs such as the Ministry of Agrarian Policy, the MofE, the State Agency of the Exclusion Zone Management, the State Service of Geology and Mineral Resources, the Ministry of Regional Development, the State Space Agency, as well as by the State Emergency Response Service, the State SES, the State Forestry Agency, the State Water Agency, the State Geological Cadastre and their territorial bodies, facilities, institutions and organisations in their spheres of competence.

The State Water Agency maintains state registration of water intake and water use, discharges of return water and pollutants, availability of water recycling systems and their capacity, as well as

existing wastewater treatment systems and their efficiency based on water users' reports (quarterly and annual reporting).

Territorial environmental supervision bodies of the MofE grant permits for discharges in locations of the wastewater discharge outlets; besides that the State Service of Geology and Mineral Resources of Ukraine issues permits for special use of groundwater sources, in the case of water extraction from deep aquifers and permits for use of mineral resources.

Water utilities analyse contents of pollutants in effluents of their wastewater treatment plants.

### C) Financial frameworks

Measures should be implemented within the limits of expenditures stipulated in the state budget's allocations to relevant authorities (monitoring entities), as well as with application of finance resources of international technical assistance and other sources of financing (unless prohibited by law).

In addition, funding for monitoring purposes is stipulated in the Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021.

## II Environmental and/or health situation – the current status and prospects

### A) Monitoring programs and indicators

There are no general standards for quality of treated wastewater. Its quality is regulated by indicators of discharge limits.

Laboratories of water utilities analyse levels of pollutants in industrial wastewater. Selective quality control of wastewater flows of facilities is conducted by laboratories of local bodies of the State SES Inspectorate, the State Environmental Protection Department or by other laboratories accredited in this sphere of measurements.

In the report of the State Environmental Inspectorate for 2015, no information was provided on implementation of inspections on discharges of wastewater into water bodies. The situation is associated with effect of Law of Ukraine on Amending and Cancellation of Some Legislative Acts of Ukraine of 28.12.2014 (Law # 76-VIII). In 2015, inspections by territorial bodies of the State Environmental Inspectorate of Ukraine were conducted on requests of economic actors.

### B) Main problems associated with the target area

#### c) Quality issues:

##### i) organic pollution: COD, BOD, total suspended solids, nitrogen and phosphorus;

According to the State Water Agency of Ukraine, in 2015, with wastewater effluents, the following amounts of pollutants were released into surface water bodies: 27.17 thousand tons of suspended matter, 311.1 tons of oil products, 5.8 thousand tons of ammonia nitrogen 44.76 thousand tons of nitrates, 1.13 thousand tons of nitrites, 212.9 tons of surfactants, 491.2 tons of iron, 4382 tons of

phosphates, etc.; total COD index reached 80.7 thousand tons, while total BOD index reached 17.95 thousand tons.

*ii) chemical pollution and hazardous chemicals;*

Main sources of chemical water pollution include chemical facilities, oil refineries, paper and pulp plants, large livestock complexes and the mining industry. Recently, synthetic surfactants become water pollutants of particular concern in Ukraine. These substances are extremely persistent and may exist in water for many years. They often contain phosphorus and contribute to rapid development of algae in water and "algae blooms" in water bodies, accompanied by a sharp decrease dissolved oxygen in water, fish kills and death of other aquatic animals.

Analysis of wastewater effluents entering water bodies from WWTPs of dairy plants in different oblasts suggests that quality of wastewater effluents from treatment facilities does not meet the due treatment standards. In particular, monitoring data of recent years indicates a continuous excess of MPCs for total mineral contents and iron (Fe) in effluents of WWTPs (see Table 17).

**Table 17.** Quality of effluents of WWTPs of dairy plants (2017).

<i>Oblasts</i>	<i>Total mineral contents, mg/dm<sup>3</sup>, MAC = 1000 mg/dm<sup>3</sup></i>	<i>Fe, mg/dm<sup>3</sup>, MAC = 0.3 mg/dm<sup>3</sup></i>
Mykolaiivska	2066-3270	
Luganska	1411	0.4
Zhytomyrska	740	0.4
Odeska	5000	0.4
Cherkaska	438-596	0.42-0.46
Volynska	140-598	0.58-1.95
Kyivska	599-988	0.4-0.8
Vinnitska	362	0.66
Dnipropetrovska	922-3108	
Khersonska	730 - 1056	0.2 - 1.45

*iii) microbiological indicators, e.g. faecal coliform bacteria, pathogenic organisms;*

The main factors of biological contamination of water bodies include untreated or insufficiently treated municipal wastewater, wastewater flows of sugar and meat processing plants, tanneries and timber processing plants. Biological pollution of water bodies causes particular damages in places of mass recreation (coastal sea resort areas). In recent years, beaches were closed several times in Odesa, Mariupol and other coastal cities of the Black Sea and the Sea of Azov, as seawater was found to contain agents of such serious diseases as cholera, dysentery, hepatitis, etc.

*iv) risk mapping and relevant adaptation of treatment systems;*

Study of pollution of natural water sources and mapping of the results obtained are conducted in the framework of environmental monitoring, however, wastewater treatment systems are not adapted.

*v) proper selection of sites/rivers/lakes for discharge of treated wastewater flows;*

General requirements for water composition and properties in watercourses and water bodies in locations of drinking water supply and municipal water use are listed in Annex 1 to the Rules of

Surface Water Protection, while requirements to concentrations of regulated substances in water use locations - are listed in Annex 2 to the Rules.

In the case of drinking water use, the water quality norms or (in the case of naturally occurring deviations from these norms), natural water composition and properties should be maintained within 1 km zone upstream (for a watercourse) or in the water within 1 km zone (for a water body) from the water intake point for residential drinking water supply or for water supply of food processing plants.

In the case of residential municipal water supply, water quality norms or (in the case of naturally occurring deviations from these norms), natural water composition and properties should be maintained in sections of water bodies within boundaries of human settlements, as well as within 1 km zones at watercourses upstream from nearest points of water use (places of organised recreation of residents, territories of settlements adjacent to water bodies), in the case of water bodies they should be maintained within 1 km zones at water areas from water use points, while in coastal zones of seas they should be maintained at the nearest boundary of water use areas or sanitary protection zones.

Operational facilities - water users - that discharge their wastewater flows in excess of the discharge limits set, in the course of submission of their draft limits, should submit also action plans for meeting the limits. In the course of implementation of these plans (or at their individual stages), that correspond to standard durations of construction and commissioning of water protection facilities, the facilities discharge their wastewater on the base of permits issued by bodies of the MofE of Ukraine. Temporary agreed discharge limits for substances in wastewater, as specified in these permits, are set according to the best results that can be achieved by a facility, based on its existing systems of reverse water supply, treatment and other water protection facilities. In the case of discharge of wastewater flows into a water body from several facilities, their summary pollution is taken into account. In accordance with the assimilation capacity of a water body, amounts of pollutants that may be allowed for discharge into the water body should be distributed among the facilities, depending on nature of their wastewater flows and their wastewater treatment capacity.

Values of discharge limits of pollutants (g/hour) for all categories of water users are defined as the product of maximum permissible wastewater discharge  $q$  ( $m^3$ /hour) and acceptable concentration of a pollutant in wastewater ( $g/m^3$ ).

Receiving water bodies of wastewater discharges are subdivided into 2 main groups:

- 1) Flowing - i.e. rivers with relatively high flow velocity;
- 2) Partly flowing or completely stagnant water bodies - water reservoirs and lakes with zero water flow velocity or so low flow, that noticeable movements of water in such water bodies are caused only by winds.

Levels of dilution of wastewater in rivers are usually estimated by V.O.Frolov - I.D.Rodziller methodology, while in the case of water reservoirs, M.A. Ruffel or O.V.Karoushev methodology is used.

The degree of mixing of wastewater and river water depends on flow in the river, the flow velocity, depth, the channel meandering, hydraulic characteristics of the river bed, wastewater inflow rates, wastewater release conditions (wastewater outlets' design) and on a number of other factors.



Besides that, levels of dilution of wastewater in a watercourse depend on design of release outlets that may be designed as distributed or point constructions.

*d) Information-related issues:*

- i) regular monitoring of quality of effluents from wastewater treatment facilities;*
- ii) regular inspections of wastewater treatment installation and industrial sites;*

According to the Rules for Technical Operation of Water Supply and Sanitation Systems in Settlements of Ukraine, operations of wastewater treatment facilities are regularly registered in the following logs: i) technical operation logs with daily records on volumes of wastewater treated, sludge, etc.; ii) analytical logs with daily records on wastewater composition on entry to WWTPs and on discharge into water bodies, as well as analytical results of wastewater composition at separate stages of treatment, analytical results of raw and treated sludge, etc.

In addition, the Rules prescribe maintenance of regular technological control by duty shift operators and duty shift laboratory personnel under general guidance of chief engineers (technologists) and laboratory chiefs. There is a program setting frequency of control of the necessary technological parameters (most of them are monitored daily), but individual control programs differ for different technological processes. All observations and measurements are recorded in logs of established formats.

*iii) availability of systems for alert/notification of downstream residents/countries on industrial accidents.*

According to Art. 31 (information in the sphere of civil protection) of the Civil Protection Code of Ukraine (# 5403-VI of 02.10.2012), the civil protection authorities are obliged to provide timely and reliable information to the population through mass media outlets (as specified in part one of this article), as well as information on their activities of relevance to civil protection matters, including information in formats accessible to persons with visual and hearing impairments. Publication of information on impacts/consequences of an emergency is conducted in accordance with the due legislation on information.

In Ukraine, the State Register of Potentially Hazardous Activities is maintained (according to Regulation # 1288 approved by the CMU on August 29, 2002) for their registration and information support for processes of administrative decision-making and fulfilment of Ukraine's obligations under international treaties on prevention and mitigation of emergencies, including transboundary ones, associated with operations of such facilities.

*e) Awareness raising, education and professional training:*

- i) relevant and regular training of WWTPs personnel;*

Relevant education facilities provide education and training for personnel of wastewater treatment plants (e.g. technical schools, higher education facilities).

- ii) public information on pollution prevention, potential risks after treatment, etc.;*

NGOs deal with public information on pollution prevention, potential risks after treatment.

### III Relevant on-going or planned actions intended to address the main problems

Adaptation of wastewater treatment systems to quality of the incoming raw wastewater is one of the most important measures to improve quality of wastewater treatment. It is necessary to allocate finance resources and to implement appropriate measures, as stipulated in "Drinking Water of Ukraine for 2011-2020" Program.

### IV Expert assessment

1. There are no general standards for quality of effluents after wastewater treatment. Quality of treated wastewater is kept within pollutants discharge limits, but the approach is not fully compliant with the requirements of the EU Directive.
2. Sanitation systems are in poor technical state. In particular, according to the National Report, in 2015, the total number of wastewater treatment plants (WWTPs) in the country reached 1180, including 564 WWTPs (or 47.8%) in need of reconstruction. The vast majority of the remaining wastewater treatment systems may be in a normal technical state, but they use outdated technological approaches and methods, that cannot always ensure meeting even the current regulatory requirements, nothing to say about the European ones.
3. In recent years, some development projects with funding of foreign investors were launched with reconstruction of some wastewater treatment plants (for example, in Zaporizhye, Ivano-Frankivsk, etc.), but even these WWTPs are not applying the complete cycle of wastewater treatment and sewage sludge utilisation. According to the National Report, only 24 (4.3%) of WWTPs underwent partial or complete renovation. In 2017, a project for reconstruction of the Bortnichi Aeration Station (Kyiv) was launched, that is expected to be completed within 5 years.
4. The indicator for the target area under the Protocol should be developed.

## Target area XII

**Article 6. 2 i), Part 1** - The burial or reuse of sludge from collective sanitation system or other treatment plants.

### I. Existing frameworks

*a) Legal, institutional and administrative frameworks:*

*i) legislative provisions ensuring that reuse of sewage sludge does not pose a risk to human health (for example, existence of national standards for the reuse of the sludge and wastewater);*

There are no state safety standards for reuse of sewage sludge.

Requirements to quality of wastewater for its use as a fertiliser are set in the Ukrainian standard DSTU 7369: 2013 "Wastewater. Requirements to Wastewater and Sewage Sludge for Irrigation and Fertilisation".

In addition, from 01.04.2018, another standards will become effective - DSTU 8727: 2017 "Sewage Sludge. Production of Organic-mineral Mixtures from Sewage Sludge".

*ii) compliance enforcement (regular inspections, fines for non-compliance)*

According to the due legislation, environmental inspections and sanitary-epidemiological supervision should be maintained, however, due to introduction of the moratorium on inspections in 2014, their frequency and numbers have decreased substantively. According to the National Report, in 2015, the State SES imposed 17 fines for non-compliance with the sanitary legislation in connection with protection of surface water bodies (as compared to 192 in 2014 and 267 in 2013); no cases were submitted to investigation bodies or to the administrative commissions for review (2 cases were transmitted in each 2014 and 2013); no orders were issued on termination of operations of facilities (as compared with 1 in 2014 and 62 in 2013).

*b) Issues of information reliability:*

*i) regular monitoring of sewage sludge quality prior to its reuse*

Sewage sludge quality is not monitored.

*c) Adequate treatment and use of sewage sludge:*

*i) adequate treatment mechanisms for sewage sludge drying (e.g. sludge drying beds, mechanical dehydration);*

Mechanical dehydration is applied only for reduction of areas for storage of the dried sludge. Statistics on volumes of treated sewage sludge is not collected at the national level.

*ii) sustainable reuse of sufficiently treated sludge.*

Processed sewage sludge is almost never reused in Ukraine.

*d) Awareness raising, education and professional training:*

*i) training of personnel dealing with sewage sludge at WWTPs and - possibly - in agriculture.*

Awareness levels of personnel dealing with sewage sludge at WWTPs remain very low.

## **II Environmental and/or health situation – the current status and prospects**

### **A) Monitoring programs and indicators**

The sewage sludge reuse is not monitored in Ukraine, however, amounts of accumulated sludge on sludge drying beds/ponds continue to increase - therefore, it is necessary to develop an appropriate target for this target area of the Protocol.

### **B) Main problems associated with the target area**

In Ukraine, in fact, sewage sludge is not reused, sometimes it undergoes dehydration, but it is never reused for energy recuperation or as a fertilizer.

### III Relevant on-going or planned actions intended to address the main problems

One of the most important measures is associated with establishment of a system for monitoring the sewage sludge reuse, as the sludge is accumulated on sludge drying beds, it is necessary to know its parameters and potential options for its reuse.

### IV. Expert assessment

In the future, it is necessary to establish a system for monitoring the sludge reuse for its use as a fertilizer or for energy recovery; and to develop an indicator under the Protocol.

## Target area XIII

**Article 6. 2 i), Part 2** - Quality of wastewater used for irrigation.

### I Existing political framework

#### A) Strategies, legal/regulatory framework, and international commitments

The following key documents should be particularly noted:

The Water Code of Ukraine and laws of Ukraine:

- Law on Environmental Impact Assessment
- Law on Protection of the Natural Environment.

Relevant are stipulated in the Nationwide Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021.

Relations in the sphere are regulated by several legislative acts:

- Regulations on the State System of Environmental Monitoring (approved by CMU Decree # 391 of March 30, 1998);
- "Procedures for implementation of the State Water Monitoring";
- DSTU 2730: 2015 "Environmental Protection. Quality of Natural Water for Irrigation. Agronomic Criteria";
- DSTU 7591: 2014 "Irrigation. Water Quality for Drip Irrigation Systems. Agronomic, Environmental and Technical Criteria";
- DSTU 7286: 2012 "Quality of Natural Water for Irrigation. Environmental criteria" - the document sets environmental criteria for assessment of quality of natural waters for irrigation in order to prevent possible adverse impacts on components of the environment and on public health (changes in sustainability of landscapes and agro-landscapes, sanitary and hygienic status and quality of agricultural food products, characteristics of sanitary and hygienic status of surface water and groundwater, protection of drinking water in aquifers from pollution, etc.).

The measured parameters characterise:

- chemical composition;
- general environmental quality and phytotoxicity;
- sanitary-toxicological properties of chemical elements and substances and their ability to migrate in aquatic systems;
- bacteriological contamination;
- levels of radioactive substances.

Three water quality classes are defined: acceptable (Class I), limitedly acceptable (Class II) and unacceptable (Class III). Use of Class II water for irrigation is possible under conditions of environmental control and mandatory application of a complex of agro-irrigation measures, while Class III water may be used after its treatment.

- ✓ Urban Wastewater Treatment and Use for Irrigation of Forage and Technical Crops. VND 33-3.3-01-98.

## B) Institutional framework

Irrigation of agricultural land by wastewater may be authorised by oblast-level, Kyiv, Sevastopol city state administrations, the executive body of the Autonomous Republic of Crimea on environmental matters, in consultations with central executive bodies of Ukraine, that implement the state policy in the sphere of sanitary and epidemiological well-being of the population, and the State Service of Ukraine for Food Safety and Consumer Protection (Art. 65 of the Water Code of Ukraine).

The Ministry of Agrarian Policy monitors surface water for agricultural purposes (toxicological and radiological measurements, residual levels of pesticides, agrochemicals and heavy metals).

In order to assess suitability of water for use, the State Water Agency monitors quality status of water in water objects in areas of main water intakes of integrated purpose, water management systems of inter-sectoral and agricultural water supply in terms of radiological and chemical parameters.

## C) Financial frameworks

Measures should be implemented within the limits of expenditures stipulated in the state budget's allocations to relevant bodies (monitoring entities), as well as with application of finance resources of economic actors.

## II. Environmental and/or health situation – the current status and prospects

### A) Monitoring programs and indicators

Wastewater types for use in irrigation may be subdivided into: 1) municipal and household wastewater; 2) industrial wastewater; 3) livestock wastewater; 4) storm water (rainfall).

However, application of any wastewater for agricultural irrigation without appropriate preliminary water treatment and application of special methods for its distribution is very dangerous in epidemiological terms in connection with presence of pathogenic bacteria, viruses and helminths



eggs. Hazards of industrial wastewater application for agricultural irrigation without pre-treatment of water are associated with presence of chemicals and hazardous substances.

It is necessary to develop an indicator for this target area under the Protocol.

## **B) Main problems associated with the target area**

In recent years, the land area under irrigation has decreased to 497 thousand hectares (in 1990 it reached 2.65 million ha), including 422 thousand ha with irrigation by sprinkling machines and 75 thousand ha irrigated by drip irrigation.

Now, due to low efficiency of wastewater treatment facilities, that do not provide wastewater treatment to the design standards, their effluents are not used for watering and irrigation.

In Ukraine, storm wastewater flows are not used for watering and irrigation, as after passing through sewers, they do not undergo any treatment at all and may pose extremely high threats to human health. In addition, there are also high risks of degradation of agricultural food products, soil salination and loss of fertile soils associated with use of untreated wastewater for irrigation.

Application of modern systems of drip irrigation poses rather high requirements on contents of suspended solids in water - as a result, these systems cannot be used for irrigation by wastewater.

In addition, due to the significant decrease of irrigated land areas, there is no need to use wastewater for irrigation of agricultural crops.

According to research results, 221 water sources (surface, groundwater and artificial water bodies) for irrigation in 2015, were analysed for assessment of water quality in terms of hydrochemical and hydrobiological composition and its suitability for use in drip irrigation systems according to agronomic, environmental and technical criteria (according to DSTU 2730: 2015, DSTU 7286: 2012 and DSTU 7591: 2014).

It has been found that water of the most (70%) sources in Mykolaivska, Khersonska, Odeska, Vinnytska and Kyivska oblasts does not meet the requirements of state standards of Ukraine (DSTU 2730: 2015, DSTU 7286: 2012 and DSTU 7591: 2014) for its safe use in "soil - plant - irrigation network" chain (see Figure 8).

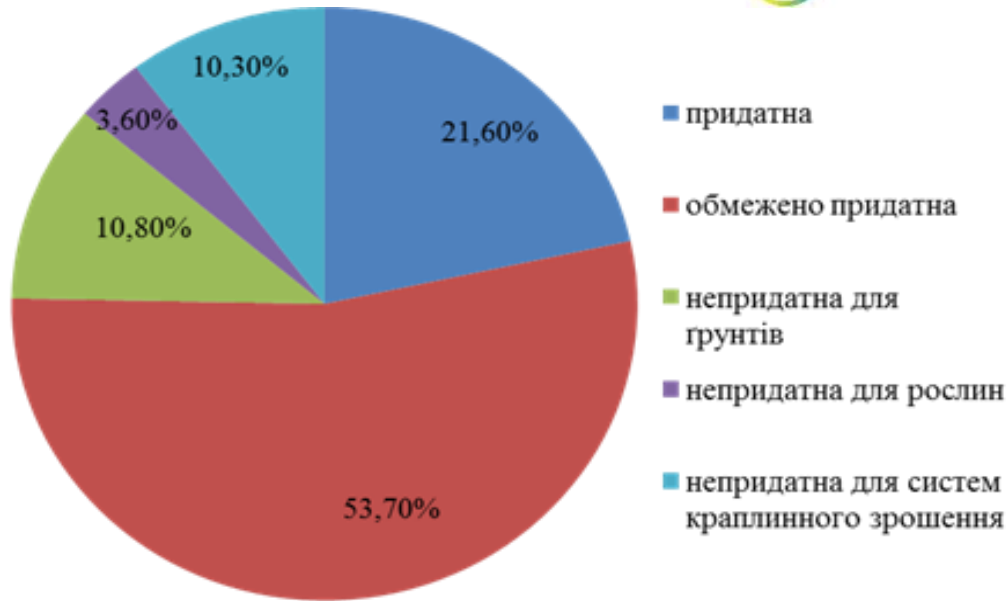


Figure. 8. Acceptability of water for application in drip irrigation in Ukraine

In sources of irrigation water in oblasts of Ukraine, the most dangerous components of irrigation water for the above chain include elevated toxic alkalinity, pH, toxic ions concentrations, carbonate alkalinity, magnesium ions to calcium ions ratio, elevated levels of iron and nitrogen, high total mineral contents and elevated levels of suspended organic matter. The main underlying factors of deterioration of water quality under technical criteria include suspended matter, with levels in water in excess of the established norms in 2-50 times, in particular in Mykolaivska oblast (in the Ingulets irrigation system). Due to persistent specific biological complexes formed as a result of high organic contents in water used in drip irrigation systems, operation regimes of the systems were violated.

Development of agricultural production with associated growth of water demands for technological processes requires improvement of water use registration, in particular as pertains to procedures of collecting reports on use of water resources in agriculture and fisheries, automatization of direct water registration in amelioration systems, as well as balancing needs of water users, water consumers and ecosystems - i.e. ensuring environmentally sustainable safe and economically viable water use in river basins.

### III. Relevant ongoing or planned activities aimed at addressing major issues

Improving the quality and safety of sewage waters that can be used for irrigation is a serious problem. There is a need to implement measures to ensure the safety of agricultural products obtained on irrigated lands, which were watered by cleaned sewage.

It is necessary to ensure the targeted allocation of funds for the implementation of measures envisaged in the State Target Program for the Development of Water Management and Environmental Restoration of the Dnipro river basin until 2021 and the Program "Drinking Water of Ukraine". They need to be revised, upgrade measures and their financing taking into account the

State Budget and funds of local budgets and water utilities, in particular regarding additional wastewater treatment as a potential water for irrigation by using modern technologies, materials and equipment.

“The Irrigation and Drainage Strategy of Ukraine” (developed by the Ministry of Ecology and Natural Resources of Ukraine, Ministry of Agrarian Policy and Food of Ukraine, representatives of scientific institutes and other stakeholders in cooperation and support of FAO and the World Bank) is prepared for approval by the Government.

#### IV. Expert assessment

1. The existing national framework for quality control of water applied for irrigation from wastewater treatment plants is insufficient and needs development. At the same time, the regulatory framework of Ukraine in this area does not fully comply with the requirements of the European Directives.
2. Unreliability and incompleteness of information about treated wastewater due to non-compliance with modern requirements to water monitoring/surveillance systems of different monitoring agents and water users, in particular, on the degree of water safety for human health.
3. The establishment of appropriate reporting system considering the requirements of European Directives is needed.
4. The accreditation and certification of appropriate laboratories have to be considered to increase the control efficiency for treated wastewater which can be used for irrigation.
5. There is a need to create a national base (registers) of WWTPs (considering the treatment quality and purification technology), treated wastewater of which can be used for irrigation.
6. There are no strategy and program of wastewater reuse, in particular, storm water for irrigation.
7. Target to this area should be set.

#### Target area XIV

##### Article 6, 2(j) Part 1 - Quality of waters used as drinking water supply sources

#### I. Existing frameworks

##### A. Strategies, laws, regulations and international commitments

The due legislation in the sphere of drinking water and drinking water supply incorporates the Water Code of Ukraine, the Code of Ukraine on Mineral Resources, laws of Ukraine: Law on Drinking Water, Drinking Water Supply and Sanitation, Law on Protection of the Natural Environment, Law on Ensuring Sanitary and Epidemiological Well-being of the Population and other legislative acts.

The Protocol on Water and Health to the Convention on Protection and Use of Transboundary Watercourses and International Lakes of 1992.

A number of regulations were developed:

The Legal Regime of Sanitary Protection Zones of Water Bodies (CMU Decree # 2024 of 18.12.1998),

Rules of Protection of Surface Waters from Pollution by Return Water,

Procedures for Setting Areas and Boundaries of Water Protection Zones and Regimes of Economic Activities in the Zones (Decree # 486 of the CMU of 08.05.1996);

Besides that, relevant actions are also stipulated in the State Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021, in para 10 of Order # 64283/0/1-10 of the Prime Minister of Ukraine of 25.10.2010, in CMU Decrees #1097-r of 02.11.2011, # 23-r of 17.01.2018 on Discharge of Surplus Return Water into the Ingulets River and # 2047-r of 03.11.2010.

Regulations in the sphere: DSanPiN 2.2.4-171-10.

In replacement of SanPiN 4630-88 "Sanitary Rules and Norms of Protection of Surface Water from Pollution", a new document - "Hygiene Norms for Chemicals in Surface Waters" was developed and now the documents is at the stage of approval by the Ministry of Health of Ukraine.

### C. Institutional framework

The range of subjects of relations in this sphere incorporates: governmental bodies and local authorities, responsible for management of drinking water supply (and sanitation); water utilities; drinking water users (and/or users of sanitation services).

Central executive bodies:

- The Ministry of Regional Development,
- The Ministry of Health of Ukraine (monitoring of water supply sources);
- The State Service of Ukraine for Food Safety and Consumer Protection under the Ministry of Agrarian Policy of Ukraine (control and supervision of facilities),
- The MofE of Ukraine, the State Water Agency, the State Service of Geology and Mineral Resources of Ukraine (monitoring of status of surface water and groundwater bodies, that are used as sources of drinking water supply);
- The State Emergency Response Service (SERS) (prevention, response to and mitigation of emergencies at water supply and sanitation facilities).
- other ministries (the Ministry of Defence, the Ministry of Infrastructure, the Ministry of Energy and Coal Industry) address issues of functioning of their agency-specific water supply (sanitation) systems.

### C. Financing, economic capacity

#### *i) finance capacity for interventions*

Monitoring and control of water quality in water supply sources are financed from:

- the state budget and local budgets (oblast-level, city, township, etc.);

- from revenues of drinking water supply utilities (from finance components of tariffs for the services provided);
- from other sources, including funds of international finance institutions.

Allocation of funds from the state budget of Ukraine may be made in the course of implementation of nationwide programs of Ukraine, particularly "Drinking Water of Ukraine for 2011-2020" Program.

## II. Environmental and/or health situation – the current status and prospects

### A. Contemporary status

The situation was affected by the administrative reform and liquidation of the State SES of the Ministry of Health with transfer of its functions to the new service and **restrictions for fulfilment of supervisory functions of the service and the prohibition on inspection of supervision objects** according to CMU Decree # 408 of August 13, 2014 on Issues of Introducing Restrictions for Inspections by State Inspectorates and other Supervisory Bodies of the CMU of August 13, 2014 (as amended). Besides that it was affected by **the military conflict in the East and the annexation of the ARC territory by RF**.

**Laboratory centres of the Ministry of Health** maintain continuous monitoring and supervision on matters of safety of drinking water, including monitoring of water in water bodies, that are used as sources of drinking water.

Measures to raise awareness about quality of drinking water include posting relevant information on web-sites of local state administrations, local authorities, central executive authorities, Laboratory Centres of the MofH of Ukraine, in Facebook, in printed media outlets, etc.

Currently, no online monitoring of the quality of raw/untreated (especially surface) water is maintained. A project for raw water monitoring from surface water was developed by the MofE of Ukraine with the involvement of other interested ministries and agencies (the State SES of MofH, SSE, the State Agency of Water Resources), but the project was not approved by a relevant regulation.

Some small communities face problems of naturally inadequate raw water sources, including, in particular, elevated levels of fluorides (in Poltavaska, Chernigivska, Lvivska and Odeska oblasts), and elevated levels of iron (in Ternopilaska, Kyivska and other oblasts), etc.

A major problem is associated with anthropogenic pollution of surface water sources due to discharge of untreated industrial and municipal wastewater containing a wide range of pollutants. A particular attention should be paid to problems of phosphate pollution of water resources due to use of synthetic phosphate-containing surfactants and the problem of algae blooms in surface water bodies that are used as sources of drinking water supply.

### Monitoring programs and indicators

Laboratory centres of the Ministry of Health of Ukraine (the State SES of MofH before July 2016) maintain permanent monitoring of sources of centralised and decentralised water supply, checking microbiological parameters and more than 70 sanitary-chemical parameters.



The situation in the sphere of rural water supply is of particular concern, with the following main problems: incomplete process of transferring rural water supply systems to the sphere of responsibility of local authorities, lack of specialised organisations for maintenance and operation of these systems, lack facility-level laboratory control of water quality, etc. Centralised water supply is provided only to a quarter of all villages of Ukraine. The rest of the rural residents use water from wells and individual artesian wells, that are of poor technical quality in the overwhelming majority of cases.

Laboratory centres monitored nitrate levels in water of decentralised water supply sources, including wells and springs used for water consumption by children under the age of 3 years, pursuant to para 8.3. of the Session Protocol of the CMU on Prevention of Water-nitrate Methemoglobinemia in Children (Protocol # 20 of 19.05.2010).

### III. Relevant on-going or planed actions intended to address the main problems

Improvement of quality and safety of drinking water is a serious problem in rural communities.

Measures for organisation and maintenance of sanitary protection zones and regimes of water supply sources; modernisation of water supply sources, construction of new and modernisation, replacement of pipelines are planned in the Water Management Development Program and in "Drinking Water of Ukraine" Program. These measures need to be revised and adjusted, finance resources should be provided to implement the updated measures from the state budget, local budgets and water utilities.

Introduction of Water Safety Plans becomes necessary.

The following solutions are possible for removal of naturally occurring and anthropogenic pollutants from water:

- reconstruction and modernisation of water treatment plants taking into account available quality of raw water and application of modern technologies, materials and equipment;
- organisation of an additional stage of water pre-treatment by installation of microfilters for removal of phytoplankton;
- application of activated carbon (powdered or grained) to reduce contents of organic matter and thus reduce permanganate COD indices;
- introduction of a reliable and effective system of disinfection of water at all stages of its treatment and transportation to users, taking into account the need to reduce levels of toxic by-products of disinfection, such as dibromochloromethane, total trihalomethanes and chloroform.

### IV. Expert assessment

1. The existing framework in the sphere of drinking water quality control in Ukraine is sufficiently developed and, in general, it can support relevant activities. But it does not fully meet requirements of the EU Drinking Water Directive.
2. The main document setting requirements to quality of water in sources of drinking water supply - DSanPiN 2.2.4-171-10 "Hygienic Requirements to Drinking Water Intended for Human Consumption" - as pertains to the general list of water quality indicators, corresponds to requirements of the EU Directive on Drinking Water Quality, however, the

classification of indicators in terms safety for human health in our document is set stricter. In contemporary conditions (technical and economic capacity of water utilities), it is impossible to meet some requirements of the document (for certain parameters). In order to comply with all requirements of the Directive, a significant upgrade/renovation of facilities, equipment, reagents and water treatment technologies is needed.

3. At present, sanitary and epidemiological supervision bodies undergo reorganisation in connection with liquidation of the State SES, that controlled quality of drinking water, and their functions are transferred to other institutions of the Ministry of Health of Ukraine.
4. Changes are under way in the system of accreditation and certification of laboratories, as a result, there are some uncertainties in connection with laboratories for drinking water quality monitoring.
5. Due to introduction of the SanPiN and the need analyse indicators that had not previously been monitored, laboratories of water supply utilities require a major upgrade of analytical equipment, associated with serious financial costs. Modern high-tech equipment also needs highly skilled personnel, that - in the contemporary situation - remains only a distant aim for water utilities. Despite the decision to create high capacity regional laboratories that would be able to conduct complex water analyses for entire regions, the decision is still far away from its actual implementation.
6. The system of water monitoring in decentralised individual systems is extremely weak. None legislative acts provide for mandatory nature of such control.
7. Requirements to sanitary protection zones of water intakes and regimes of economic activities in coastal protection strips and water protection zones of rivers, water bodies and water supply sources are not complied with. It is necessary to ensure compliance with the provisions of CMU Decree # 486 of 08.05.1996 on Procedures for Setting Areas and Boundaries of Water Protection Zones and Regimes of Economic Activities in the Zones and CMU Decree # 2024 of 18.12.1998 on Legal Regime of Sanitary Protection Zones of Water Bodies, etc.
8. The indicator for this target area should be set.

## Target area XV

### Article 6, 2 (j), Part 2 - Quality of bathing waters

#### I. Existing frameworks

##### A. Strategies, laws, regulations and international commitments

Legislative provisions of relevance to management of bathing waters are stipulated in: the Water Code, and in laws of Ukraine (Law on Improvement of Human Settlements, Law on Resorts, Law on Approval of the Nationwide Program for Protection and Restoration of the Environment of the Sea of Azov and the Black Sea), Decree # 190/001-rp of the President of Ukraine of July 14, 2001 on Urgent Measures for Prevention of Death of People on Water Bodies, Decree # 264 of the CMU of March 6, 2002 on Approval of Procedure for Registration of Places of Mass Recreation on Water Bodies, Order # 301 of the Ministry of Interior of 10.04.2017 on Approval of Rules for Protection of Human Lives on Water Bodies of Ukraine (with defined terms, safety requirements to beaches, places of mass recreation of people on water bodies, safety measures, etc.).

Up to 2017, the following regulations were effective: SanPiN 4630-88 "Sanitary Rules and Norms for Protection of Surface Water from Pollution", SanPiN 4631-88 "Sanitary Rules and Norms for Protection of Coastal Sea Waters from Pollution in Places of Residential Water Use", SP 497-64 "Sanitary Rules of Organisation, Equipment and Use of Beaches", SanPiN 4060-85 "Health Improvement Beaches. Sanitary Rules of Organisation, Equipment and Use", GOST 17.1.5.02-80 "Hygienic Requirements to Recreational Zones on Water Bodies" - these regulations were **revoked by CMU Decree # 94-r of 20.01.2016**.

## B. Institutional frameworks

Issues of management of bathing waters used belong to the sphere of competence of the State Water Agency local state administrations and local authorities (as pertains to municipal property).

Bathing places may belong to municipal property of settlements, city and township communities, to property of ministries, agencies or facilities (their health improvement units), as well as to private owners.

The Ministry of Health of Ukraine, Laboratory Centres of the MofH maintain on-site laboratory research, monitoring and epidemiological supervision, particularly in summer seasons, ensuring compliance with the due legislation.

The State Emergency Response Service of Ukraine, the State Service of Ukraine for Food Safety and Consumer Protection under the Ministry of Agrarian Policy of Ukraine, maintain control and supervision of water bodies with the application of means of administrative enforcement.

## C. Financing

All finance allocations for fulfilment of relevant management functions are made by local state administrations of the settlements, local authorities of cities and townships, by ministries, agencies or facilities that operate agency-specific health improvement units, as well as by private businesses that own such places, within their budgets.

## II. Environmental and/or health situation – the current status and prospects

### A. Contemporary status

Chiefs of local executive bodies, local authorities, facilities, bodies and organisations, regardless of their ownership forms, as well as citizens of Ukraine, foreigners and stateless persons who use water bodies for physical culture or recreational purposes or for recreation of other persons, every year, before recreation seasons should organise and implement the following measures:

- to prepare water bodies (beaches) for mass recreation of people;
- to install visible information materials on safety measures on waters, methods of providing first aid to victims and self-aid;
- to organise observation on water areas in places of mass recreation, communications with emergency medical aid units, law enforcement bodies, emergency rescue services, territorial bodies of the State Emergency Response Service of Ukraine and the State Service of Ukraine for Food Safety and Consumer Protection;

- to exercise/test procedures for informing visitors on safety measures on waters, for awareness raising and preventive activities, and to follow the procedures.

Web-sites of local state administrations, local authorities, LCs of the Ministry of Health of Ukraine regularly provide relevant information in summer recreations seasons. The information is also provided by mass media outlets at corresponding territories.

### Monitoring programs and indicators

Health impacts of water use for recreation purposes are controlled by the Ministry of Health of Ukraine, the Public Health Centre of the MofH, the Disease Control and Monitoring Centre, and LCs of the MofH that maintain laboratory monitoring of bathing water quality. They are also engaged into public information and awareness raising activities. Such central executive bodies as the State Emergency Response Service and the State Service of Ukraine for Food Safety and Consumer Protection fulfil surveillance functions and apply means of administrative enforcement.

At the level of oblast state administrations, regulations are developed on corresponding action programs, accounting for local specifics, for maintenance of the due order at beaches and in recreational areas designated for bathing, in the course of preparation of appropriate facilities to the beginning of recreation seasons.

In order to improve places of mass recreation on water bodies, these places are registered and systematic laboratory control of water from open water bodies is organised, etc.

LCs of the Ministry of Health of Ukraine maintain regular laboratory monitoring of the quality of marine and river waters by organoleptic, chemical and microbiological parameters (see Table 18), including water in recreation areas and bathing places, with application of appropriate measures in the case of violations.

**Table 18.** Results of water quality monitoring in recreation areas and bathing places of Ukraine in 2011 - 2017.

Oblasts	Numbers of water samples analysed							% of sub-standard water samples from all samples analysed for bacteriological parameters						
	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017
Donetska	570	452	479	347	205	300	280	19.8	2.4	2.7	2.0	5.4	18.3	20.4
Zaporiska	685	747	1381	833	806	1692	721	9.3	7.8	0.1	0.5	0.7	0.9	2.8
Mykolaivska	204	165	228	200	232	247	1020	23.0	21.8	21.1	19.5	21.6	38.1	7.0
Odeska	1207	1363	1060	1032	1204	1635	1430	0.3	1.2	0.7	2.6	0.7	4.5	1.0
Khersonska	1492	1672	1745	1503	1554	1433	1668	0.8	1.1	0.0	0.0	0.0	0.0	0.4
Total	4158	4399	4893	3915	4001	5307	5119	5.8	3.2	1.4	2.0	1.9	4.5	3.3

In 2017, laboratory control of water quality was carried out at 651 river beaches and in recreational zones. During June-August 2017, 10589 river water samples were analysed for bacteriological parameters: from the overall number of samples, 1325 samples (or 12.5%) failed to meet limits for lactose-positive intestinal pathogens. In the case of water analysis for physical-chemical parameters, from the overall number of 11782 analysed samples, 871 samples (or 7.4%) failed to meet applicable standards.

In cases of elevated microbiological parameters in water bodies, recommendations were issued to relevant owners on installation of warning signs on prohibition of bathing, local authorities and mass media outlets were notified (including notifications on web-pages). LCs of the Ministry of Health of Ukraine constantly provide their monitoring results to media, post information on their web-sites, maintain health promotion and public awareness raising activities on matters of prevention of acute intestinal infectious diseases, food poisonings, and rules of personal hygiene in extraordinary conditions of stay.

### III. Relevant on-going or planed actions intended to address the main problems

In replacement of SanPiN 4630-88 "Sanitary Rules and Norms of Protection of Surface Water from Pollution", a new document - "Hygiene Norms for Chemicals in Surface Waters" was developed and now the document is at the stage of its approval by the Ministry of Health.

Discharges of storm water and wastewater still remain the main sources of continuously high pollution levels in water bodies and recreation areas (especially in the Dniester and the Danube). More than 90% of polluted wastewater effluents are discharged by municipal water utilities and industrial facilities of the mining and metallurgy complexes of Dnipropetrovsk, Dniprodzerzhinsk, Nikopol, Kryvbas and Western Donbass. An acute problem persists with discharges of highly mineralized mining and quarry waters to water bodies of Kryvbas and Western Donbass (Dnipropetrovska, Mykolaivska and Khersonska oblasts).

In order to reduce biological threats to human health in the region, it is necessary:

- To allocate purposeful financing for reconstruction of existing sewers, their expansion and construction of new systems;
- To ensure compliance with the due legislation in the sphere of water protection, paying a particular attention to water bodies used by local residents for bathing.

### IV. Expert assessment

To review and prepare draft documents for approval, according to WHO and EU recommendations, Directive 2006/7/EC of the European Parliament and of the Council of 15.02.2006 on water quality management for bathing waters, plans for implementation of Directives to replace SanPiN 4630-88 "Sanitary Rules and Norms of Protection of Surface Waters from Pollution", SanPiN 4631-88 "Sanitary Rules and Norms for Protection of Coastal Sea Waters from Pollution in Places of Residential Water Use", SP 497-64 "Sanitary Rules of Organisation, Equipment and Use of Beaches", SanPiN 4060-85 "Health Improvement Beaches. Sanitary Rules of Organisation, Equipment and Use", GOST 17.1.5.02-80 "Hygienic Requirements to Recreational Zones on Water Bodies", that were **revoked by Decree # 94-r of the CMU of 20.01.2016.**

To submit for approval the new draft document "Hygienic Norms of Chemicals in Surface Waters" - the one developed to replace SanPiN 4630-88 "Sanitary Rules and Norms of Protection of Surface Waters from Pollution".

## Target area XVI

### Article 6, 2 j), Part 3 - Quality of water used for aquaculture



## I. Existing frameworks

### A) Strategies, legal/regulatory framework, and international commitments

Main documents for regulation in the target area include: the Water Code of Ukraine (requires to set maximal permissible concentrations of substances in water bodies, that are used for purposes of the fish industry - Article 36), and Laws of Ukraine:

- Law on Environmental Impact Assessment,
- Law on Protection of the Natural Environment;
- Law on Aquaculture (Law # 5293-VI of September 18, 2012);
- Law on Fisheries, Industrial Fisheries and Protection of Water Bioresources (Law # 3677-VI of July 8, 2011). Article 17 of the Law introduces environmental water quality norms for water bodies used for fisheries.

Some measures are stipulated in the State Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021.

Besides that, a number of regulations were adopted:

- Regulations on the State System of Environmental Monitoring;
- Procedure for Implementation of the State Water Monitoring;
- Order # 471 of the Ministry of Agrarian Policy of 30.07.2012 on Approval of Environmental Safety Standards for Water Bodies Used for the Fish Industry as Pertains to Maximal Permissible Concentrations of Organic and Inorganic Substances in Marine and Fresh Waters (biochemical oxygen demand (BOD-5), chemical oxygen demand (COD), suspended solids and ammonia nitrogen) (Registered by the Ministry of Justice of Ukraine on August 14, 2012 under Reg. # 1369/21681).
- Procedures for Maintenance of the State Register of Fishery Water Bodies (their parts), approved by CMU Decree # 979 of September 30, 2015.

### B) Institutional framework

Water bodies are monitored in places of their use for economic, cultural and household needs, intake for drinking and technical water supply, for recreation, etc.

In order to assess suitability of water for use, the State Water Agency maintains monitoring of quality status of water in water bodies in areas of the main water intakes for integrated purposes, water management systems of inter-sectoral and agricultural water supply by radiological and chemical parameters.

The Ministry of Agrarian Policy monitors surface waters of agricultural application (toxicological and radiological measurements, residual amounts of pesticides, agrochemicals and heavy metals).

The state registration of water use is maintained by the State Water Agency in order to systematize data on water intake and use, discharges of return water and pollutants, availability of water reuse systems and their capacity, as well as on existing wastewater treatment systems and their efficiency (Article 25 of the Water Code of Ukraine). The registration is conducted through submission of water users' reports on their water use.

## C) Financial frameworks

Implementation of the measures should be conducted within limits of expenditures envisaged by the state budget allocations to relevant authorities, as well as at the expense of economic actors.

## II. Environmental and/or health situation – the current status and prospects

### A) Monitoring programs and indicators

**Water quality standards for fishery water bodies** are set for two types of water use: the first one includes water bodies used to reproduce and preserve valuable fish species, while the second one includes water bodies used for all other fishery management needs.

Standards of water composition and properties in fishery waters may be applied to sites of wastewater discharge (in cases of rapid mixing with receiving waters) or to sites located downstream from points of discharge (in the latter case, the standards account for possibility of wastewater mixing with receiving waters and dilution in the water section from the point of discharge to the nearest boundary of the fishing zone of the receiving water body). Wastewater discharge is prohibited in areas of mass fish spawning and breeding.

In the case of discharge of wastewater into fishery water bodies, stricter requirements are applicable in comparison to wastewater discharges into water bodies used for household, drinking water supply and cultural needs of the population, namely:

- levels of dissolved oxygen (after dilution of wastewater by water of the receiving water body) should not be less than 6 and 4 mg/l for water bodies of the first and second types, respectively; in summer seasons these levels should not be less than 6 mg/l in samples taken before 12:00, for all water bodies.
- full BOD levels at 20° C should not exceed 3 mg/l in for the both types of water bodies. If, in winter seasons, levels of dissolved oxygen in water bodies of the first and second types of water use decrease down to 6 and 4 mg/l, respectively, then only discharges of wastewater that does not alter BOD levels may be allowed.
- **toxic substances** should not be present in concentrations that can result in direct or indirect harmful effects on fish or aquatic organisms that are consumed by fish.
- **water temperatures** due to the discharge of wastewater should not increase in summer seasons by more than 3° C, and in winter seasons by more than 5°C.

According to compiled data of the state registration of water use, in 2015, aquaculture facilities discharged 244.9 million m<sup>3</sup> to surface water bodies.

The above total amount of wastewater discharges to water bodies included: 8.348 million m<sup>3</sup> of polluted wastewater, 236.5 million m<sup>3</sup> of wastewater treated to standards and 0.02 million m<sup>3</sup> of untreated wastewater within standard pollution limits.

### B) Main problems associated with the target area

A significant problem in aquaculture is the gaps in the system of collection, systematization and analysis of data about production. Information required and established in the world (for example, at the FAO level and in accordance with its recommendations) does not collect fully.

It is necessary to improve the water quality monitoring system, that should include an assessments of aquaculture impacts on water pollution by organic substances and development of eutrophication, as well as water pollution by chemicals and pharmaceuticals (antibiotics, fungicides), that pose a potential threat to human health. Development of aquaculture production in connection with its growing water demands for technological processes requires improvement of water monitoring quality in places of discharge of used water, as well as water use registration, in particular as pertains to the procedure for reporting on use of water resources in the sector, that will promote environmentally sustainable and economically appropriate water use in river basins.

### III. Relevant ongoing or planned activities aimed at addressing major issues

EU Regional Project "EU Water Initiative Plus" (EUWI + EaP), the beneficiary of which is the Ministry of Ecology and Natural Resources of Ukraine (2016-2020); the thematic direction - "Strengthening of laboratory and monitoring systems".

Implementation of the water component of the EU ENI SEIS II East project in Ukraine.

### IV. Expert assessment

1. The existing framework in Ukraine for water quality control applied to aquaculture is insufficient and needs development. At the same time, the regulatory framework of Ukraine in this area does not fully comply with the requirements of the European Directives.
2. Unreliability and incompleteness of information due to non-compliance with modern requirements to water monitoring/control systems of different monitoring agents and water users, in particular, on the degree of water safety for human health.
3. The development of appropriate reporting taking into account the requirements of European Directives is required.
4. Appropriate accreditation and certification of appropriate laboratories should be envisaged to improve the control of water used for aquaculture.
5. Indicator for this area should be set.

## Target area XVII

**Article 6. 2 (k)** - Application of recognised good practices for managing closed waters available for bathing

### I. Existing legislative framework

#### A. Strategies, laws, regulations and international commitments

The main legislative provisions are fixed in the Water Code of Ukraine and in laws of Ukraine (Law on Regulation of Urban Development and Law on Improvement of Human Settlements).

Currently, several relevant legal and technical documents are effective: the list of construction works that do not require permitting documents for their completion, and commissioning after their completion (approved by Decree # 406 of the CMU of 07.06.2017); State building norms: DBN V.2.2-9-2009 "Public Buildings and Constructions. Basic Provisions", DBN, V.2.2-13-2003 "Sport, Physical Culture and Health Improvement Facilities" (taking into account access for disabled persons)", DSanPiN 202-1997 "State Sanitary Rules and Norms of Design, Construction and Operation of Swimming Pools on Sea and River Vessels", DSanPiN 2.2.4-171-10" Hygienic Requirements to Drinking Water for Human Consumption".

In 2017, seven regulations were revoked by CMU Decree # 94-r of 20.01.2016, namely: SNiP 2.04.01-85 "Indoor Water Supply and Sanitation in Buildings", SNiP 3.05.01-85 "Indoor Sanitation Systems", Sanitary rules of arranging and maintaining places for physical culture and sports (# 1567-76; adopted on 30-12-1976); "Methodical recommendations on operation of freshwater-filled health improvement pools in sanatoriums" (1977), "Methodological manual for preventive disinfection in sport swimming pools" (31.03.1980, # 28-2/6) - an annex to "Recommendations on disinfection of water, disinfection of utility rooms and sanitary regime of operation of swimming pools" (# 1229-75), SanPiN 1437-76 "Guideline manual on construction, operation and sanitary control of seawater-filled swimming pools"

## B. Institutional framework

Management of such facilities belongs to the sphere of competence of local state administrations and local authorities as pertains to facilities in municipal ownership of settlements, city and township communities; facilities in ownership of ministries, agencies or enterprises, legal entities or individuals that operate swimming pools or other facilities specially designed for bathing, in private ownership.

The State Service of Ukraine for Food Safety and Consumer Protection maintains supervision and control in the sphere.

Territorial Laboratory Centres of the MofH of Ukraine conduct laboratory tests with involvement of the State Service of Ukraine for Food Safety and Consumer Protection, or on a contractual basis.

## C. Financing

Agency-specific health improvement facilities are financed from local budgets of local state administrations of human settlements, local authorities, city and township communities, ministries, agencies or enterprises, as well as by private enterprises owning such facilities, within limits of their budgets.

## II. Environmental and/or health situation – the current status and prospects

### A. Contemporary status

At present, in Ukraine, a regulatory framework for maintenance and operation of water and sport facilities is practically non-existent.

Draft DBN B 2.2-9: 201X "Public Buildings. Key Provisions" was developed and is now in the process of discussions for further adoption - the draft contains a number of basic definitions in the sphere, in particular the following ones:

**Water park** means an entertainment complex with an infrastructure for water games and water attractions. Water parks are mainly located in the open air, usually in resort areas, but they also exist as enclosed indoor facilities. According to web information sources, 25 water parks are working in Ukraine.

**Swimming pool** means a construction for sport swimming and water jumping, playing water polo and bathing; swimming pools may be constructed as indoor (winter) and outdoor (summer) facilities. No official statistics is available on the total number of swimming pools in Ukraine.

Swimming pool is a water-filled construction with a closed system of water circulation, filtration, decontamination and chemical treatment. Disinfection of the pool include acidity adjustment (normal pH values should be kept within the range of 7.0-7.4), while in the case of serious contamination shock chlorination may be used. Concentrations of chlorine in this case may reach 3-5 mg/l, after the shock chlorination, dechlorination should be applied to reduce chlorine levels to 0.3-0.5 mg/l. If deemed necessary, water should be cleaned from chloramines, dangerous post-chlorination decay products. Besides that, it is necessary to prevent spread of algae and other water plants; to add coagulants for turbidity reduction; to monitor contents of iron in water and to prevent sedimentation of carbonates.

According to O.O. Bogomolets National Medical University, and Kyiv City State SES (Hygiene of Human Settlements, # 60, 2012, p.86-92), in the majority of existing, old and new swimming pools in educational facilities, outdated water treatment schemes are used, in particular disinfection of water by chlorination. It is necessary to introduce modern water treatment methods in Ukraine, including alternative to chlorination methods for water decontamination and conditioning.

Members of the general public are continuously informed on safety rules, precautions and recommendations on behaviour of users in public swimming pools, water clinics, water parks, etc.

In March 2017, a case of poisoning by chlorine vapours was registered in Jungle water park, 6 children were hospitalised and about 20 people applied for medical assistance. According to the Kharkiv Regional Laboratory Centre of the MofH, contents of bound chlorine in swimming pools exceeds the standard in 1.5-24 times, while levels of free residual chlorine do not exceed the standard. That case got mass media coverage.

### Monitoring programs and indicators

Currently, Ukraine has no relevant official statistics at both the national and local levels.

Some data are maintained by supervision and control services in areas of location of where such facilities are located (they collect data in the course of inspections on request or in the case of emergencies, e.g. chlorine poisoning, etc.).



### III. Relevant on-going or planed actions intended to address the main problems

DBN V.2.2-13-2003 "Sport, Physical Culture and Health Improvement Facilities" covers design of new and reconstruction of indoor and outdoor sports facilities with or without places for spectators, including indoor sports facilities: gyms, skating rinks with artificial ice, swimming pools; sports and recreation facilities, integrated facilities, open and covered pools, etc.

Construction of an open water pool or a pond, may be launched without permission until its area does not exceed 5 m<sup>2</sup>.

Functions of licensing of procedures and materials for treatment and disinfection of water since July 2017 were transferred from the Ministry of Health and the State SES of Ukraine to the State Service of Ukraine for Food Safety and Consumer Protection.

Rejection of use of chlorine preparations for water disinfection due to a "sharp smell" in favour of chlorine-free alternatives in the majority of cases is not justified, moreover, European standard DIN 19643-1: 1997 "Water Treatment in Swimming Pools and Baths. Part 1. General Requirements", and the due Ukrainian regulations prescribe only application of chlorine or chlorine compounds.

It is impossible to get complete information on these facilities without special requests from ministries and agencies due to lack of a single online network of such facilities.

### IV. Expert assessment

1. To adopt DBN V 2.2-9: 201X " Public Buildings. Key Provisions" and make it enforced.
2. To review, develop and submit draft documents for approval, in accordance with WHO and EU recommendations, EU Directives, action plans for implementation of the Directives to replace the Sanitary rules of arranging and maintaining places for physical culture and sports (# 1567-76; adopted on 30-12-1976); "Methodological recommendations on operation of freshwater-filled health improvement pools in sanatoriums" (1977), "Methodological manual for preventive disinfection in sport swimming pools" (31.03.1980, # 28-2/6) - an annex to "Recommendations on disinfection of water, disinfection of utility rooms and sanitary regime of operation of swimming pools" (# 1229-75), SanPiN 1437-76 "Guideline manual on construction, operation and sanitary control of seawater-filled swimming pools", that were **revoked by CMU Decree # 94-r of 20.01.2016**.
3. The majority of existing, old and new swimming pools in educational facilities use outdated water treatment schemes, in particular disinfection of water by chlorination. It is necessary to introduce modern water treatment methods in Ukraine, including alternative to chlorination methods for water decontamination and conditioning.

### Target area XVIII

**Article 6. 2 (I)** - Identification and rehabilitation of especially contaminated sites that affect or may have a negative impact on water resources and water bodies that fall under the Protocol, and thus constitute a source of the risk of water-related diseases.

### I. Existing frameworks

## A) Strategies, legal/regulatory framework, and international commitments

### National strategic documents

- The Strategy to Improve the Management Mechanism in the Sphere of Use and Protection of State Agricultural Lands, approved Decree # 413 of the CMU of June 7, 2017.
- The National Strategy for Waste Management in Ukraine, approved at the meeting of the CMU on November 8, 2017.
- The Action Plan for Implementation of Directive 2000/60/EC of the European Parliament and the Council Establishing a Framework for Community Action in the Sphere of Water Policy, as amended by Decision 2455/2001/EC and Directive 2009/31/EC.
- The Action Plan for Implementation of Council Directive 91/676/EEC on Protection of Waters against Pollution Caused by Nitrates from Agricultural Sources, as amended by EC Regulation # 1882/2003.

### Main laws and regulations:

- The Constitution of Ukraine,
- The Water Code of Ukraine, Chapter 20. Protection of Water from Pollution, Littering and Exhaustion.
- The Land Code of Ukraine, Chapter 27. Use of Technogenically Polluted lands; Article 167. Protection of Lands from Contamination by Hazardous Substances,
- Law of Ukraine on Basic Principles (STRATEGY) of the State Environmental Policy of Ukraine up to 2020, adopted on 21.12.2010.
- Law of Ukraine on Waste (Article 34. Requirements to Hazardous Waste Management; Article 35-1 - Requirements to Management of Household Waste), version of May 9, 2016, in force since March 5, 1998.
- Law of Ukraine on Local Self-Government in Ukraine, version of 02.08.2017.
- Law of Ukraine on the Legal Regime of Territories Affected by Radioactive Contamination as a Result of the Chernobyl Disaster (Articles 1 - 4).
- Law of Ukraine on the National Program of Protection of Residents and Territories from Technogenic Emergencies and Natural Disasters for 2013-2017.
- Law of Ukraine on the Environmental Emergency Zone.
- Decrees of the President of Ukraine on declaring certain areas environmental emergency zones.
- Law of Ukraine on Access to Public Information.
- The Methodology for estimation of damages caused by pollution and littering of land resources due to non-compliance with the due environmental legislation, approved by Order # 171 of the MofE of 27.10.1997 (as amended on 04.04.2007).
- Regulations on the State Environmental Monitoring System, approved by CMU Decree # 391 of March 30, 1998.

### Main relevant international commitments

- The Stockholm Convention on Persistent Organic Pollutants (Article 6. Measures to reduce or eliminate releases related to stocks and waste, p.1.e).
- The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (the Aarhus Convention).

## B) Institutional framework

### **Central executive bodies** in charge of compliance and enforcement

- The Ministry of Ecology and Natural Resources of Ukraine
- The Ministry of Health of Ukraine
- The Ministry of Agrarian Policy of Ukraine
- The Ministry of Economic Development of Ukraine
- The Ministry of Regional Development of Ukraine
- The State Agency of Water Resources of Ukraine
- The State Agency of Ukraine for the Exclusion Zone Management
- The Chonobyl Centre (an R&D entity subordinated to the CMU of Ukraine)

Local authorities.

### **Engagement of the private sector**

The State Environmental Policy Strategy up to 2020 is an important tool for implementation of the environmental policy, development is inter-sectoral partnerships and engagement of all stakeholders, including the private sector, into the policy planning and implementation.

### **Engagement of NGOs and the general public**

- The Coordination Committee of the National Dialogue on Water Resources Management under the MofE of Ukraine;
- Public councils under the MofE of Ukraine, the Ministry of Health of Ukraine, the Ministry of Agrarian Policy of Ukraine, the Ministry of Economic Development and Trade of Ukraine, Ministry of Regional Development of Ukraine, the State Agency of Water Resources of Ukraine, the State Agency of Ukraine on the Exclusion Zone Management as well as public councils under local authorities.
- Institutions of the National Academy of Sciences of Ukraine, the National Academy of Medical Sciences of Ukraine, the National Academy of Agrarian Sciences of Ukraine.
- Sectoral topical associations, unions, etc.
- Topical NGOs.

## **C) Financial frameworks**

### **Main relevant finance instruments**

Important economic instruments of natural resource use management in Ukraine include charges for pollution of the natural environment, that should compensate economic damages caused by facilities in the course of their operation. According to Law of Ukraine on Protection of the Natural Environment, fees are levied for special use of natural resources, for pollution of the environment, for deterioration of quality of natural resources and for other types of impacts.

## **II. Environmental and/or health situation – the current status and prospects**

### **A) Monitoring programs and indicators**

*Data availability, completeness and adequacy, institutions in charge of the data sources*

The State Institute of Soil Conservation in Ukraine (former State Technological Centre for Soil Fertility Protection) and its 24 branches in oblasts of Ukraine conduct agro-chemical surveys of land areas with determination of residual levels of pesticides; heavy metal salts; nitrates;  $^{137}\text{Cs}$  and  $^{90}\text{Sr}$  radionuclides on request of land users.

Besides that, a network of stationary soil monitoring sites operates at the territory of Ukraine (see Figure 9).

**МЕРЕЖА СТАЦІОНАРНИХ ДІЛЯНОК МОНІТОРИГУ ҐРУНТІВ НА ТЕРИТОРІЇ УКРАЇНИ**



Figure 9 – The network of stationary soil monitoring sites operates on the territory of Ukraine

General and agro-physical indices, total levels of heavy metals and trace elements are monitored every 10 years.

Agro-chemical, physical-chemical parameters, contents of immobilised of heavy metals and trace elements, residual levels of persistent pesticides are monitored every 5 years.

Contents of mobile forms of trace elements and heavy metals are controlled annually.

Gamma-radiation background levels on monitoring sites are monitored once in a year (or quarterly in the NPP zone). Specific radioactivity of cesium-137 is determined annually, while radioactivity of strontium-90 is measured every 5 years in arable and underlying soil layers.

**B) Main problems associated with the target area**

**Health and/or environmental impacts (measured or estimated)**

As defined by the State Environmental Policy Strategy up to 2020 (Section 1), the status of land resources of Ukraine is assessed to be close to the critical level - at the territory of the country, processes of land degradation are widespread with and pollution as the most significant one (about 20% of the land area).

In general, main sources of soil pollution in Ukraine include waste dumps and landfills of solid municipal waste with a wide range of pollutants; warehouses and storages of obsolete pesticides (including POPs pesticides and other xenobiotics); industrial facilities sites (pollution by heavy metals and other substances); areas affected by the Chernobyl disaster (radionuclides, heavy metals). Other important soil pollution problems are associated with nitrates from agriculture, sewers and sanitation systems, as well as pollution of soils by oil products from different sources. These pollutants migrate from soils to groundwater and water supply sources.

- *Landfills/solid municipal waste dumps*

According to the report of the Ministry of Regional Development - the Situation in the Sphere of Municipal Waste Management in Ukraine in 2016 - 305 overloaded landfills were registered (5.6%), in addition, 1646 landfills (30%) failed to meet environmental safety standards.

Due to the inadequate system of solid household waste management in settlements (mostly in the private housing sector), more than 27.5 thousand illegal waste dumps covering the area of 1.2 thousand hectares are identified annually. In 2016, more than 27.4 thousand of such dumps were eliminated (with the land area of 1.1 thousand hectares).

- *Heavy metals*

According to data of the State Institute of Soil Conservation in Ukraine, collected in the course of agrochemical certification of agricultural lands, concentrations of the most environmentally hazardous chemical elements (lead, cadmium, mercury, copper, zinc) are mainly within their background levels. High levels of soil contamination (5-15 MPCs) are observed in industrial cities and at industrial sites, that sometimes result in slightly elevated soil levels of heavy metals in excess of relevant MACs at agricultural lands adjacent to these sites. Besides that, some zones of geochemical anomalies were identified in Ukraine (in Zakarpatska, Ivano-Frankivska oblasts and in the AR of Crimea) with naturally high levels of immobilised and mobile forms of heavy metals. In Odeska and Kyivska oblasts, elevated copper levels (over the MPCs) were detected in soils of vineyards and fruit/berry gardens.

Mass media outlets reported cases of water pollution by heavy metals (Shatsky lakes, water reservoirs in the Dnieper cascade, etc.).

In 2006, soils of 18 cities of Ukraine were analysed selectively for contents of industrial toxicants. High average annual concentrations of heavy metals (lead, cadmium, copper and zinc) in the range 1.1 - 11.2 MPCs were recorded in soils of Dnipropetrovsk, Yalta, Kostyantynivka and Mariupol (Donetska oblast), Vyshneve and Fastiv (Kyivska oblast). Geo-ecological studies of soils in Mariupol and its surrounding territories revealed lead levels in excess of the MPC (18 mg/kg, or in 2.95 times). In soils of Donetsk, average lead contents reached 33.56 mg/kg, or almost twice higher than the MPC.

Mercury forms the most significant technogenic anomaly in groundwater of the central Donbass near the Nikitovsky Mercury Plant, where its levels reach 0.01 mg/l, or 20 times over the limit. High concentrations of mercury (15-20 MACs) were found near coke and metallurgical plants, as well as in areas of burning spoil heaps of coal mines



In soil samples from the site of former "Radikal" plant in Kyiv, significant levels of mercury in excess of the MAC were also found.

Substantial levels of mercury soil pollution are observed in areas of dumps of burnt fluorescent lamps.

- *Pesticides*

According to long-term monitoring data for agricultural lands, collected in the system of agrochemical service, air and water pollution was found to be closely linked to types and amounts of plant protection chemicals and mineral fertilizers applied.

In the period of the most intensive use of plant protection chemicals (1984-1988), up to 5.5 kg of pesticides were applied per hectare of arable land - their residues were found in 50-60% of soil samples and in 30-35% of plant samples, including 2.5% of samples with concentrations in excess of the MPC for soils, 3.5% of samples with levels over MPCs for food products and 2.5% of samples with levels in excess of MPCs for feed products.

Shares of samples with detected pesticide residues from the group of persistent organochlorine compounds (polychloropyren, polychlorokinfel, keltan) on treated agricultural fields reached 90 - 98%, including up to 10% of samples with levels in excess of MPCs.

The even worse situation was observed in connection with soil pollution by symtriazine herbicides - their residual levels were found in 56% of soil samples, in 3-4 years after application.

A significant reduction of application of plant protection chemicals in recent decades, as well as switch to safer chemicals, contributed to reduction of contamination of soils and vegetation. In particular, residual levels of organochlorine compounds are found in only 5 - 7% of soil samples, including less than 1% of samples with their levels in excess of MPCs.

In the course of selective sampling, soil samples from land plots adjacent to former pesticide storages, pesticide dissolution units and (rarely) in fields that were earlier used as vineyards, fruit gardens and hop-gardens, often reveal significant contamination of these territories by residues of organochlorine, organophosphorus and symtryazine pesticides.

Residual pesticides in soils migrate to deeper soil layers, contaminate surface water and groundwater, and are consumed by people with water.

- *Radionuclides*

Radiological units of the regional centres of Soil Fertility Protection Centre conduct a radiological monitoring of arable lands of Ukraine.

Monitoring data show that areas with pollution by cesium-137 above 37 kBq/m<sup>2</sup> covers 461.7 thousand hectares of agricultural lands of Ukraine, including 345.9 thousand hectares of arable land. The land area contaminated by radionuclides covers territories of 12 oblasts (overall, 8.8 million hectares were surveyed).

Largest areas of cesium-137 contaminated lands are observed in the following oblasts: 156 thousand hectares in Zhytomyrska oblast, 76 - in Cherkaska oblast, 52 - in Rivnenska oblast, 52 in Chernigivska oblast, 50 - in Vinnitska oblast and 34 thousand hectares in Kievskya oblast. In Cherkaska and Vinnitska oblasts, in recent years, agricultural products were not found to be contaminated above the acceptable levels (due to specific soils, dominated by clay loam black soils with limited capacity for migration of radionuclides).

The most difficult situation in connection with pollution by cesium-137 was found in Rivnenska oblast, where 18.6 thousand hectares of marshes (or 37%) were polluted and the most intensive migration of the radionuclide was observed.

Soil contamination by cesium-137 on agricultural lands in Ukraine is observed on a much larger scale than contamination by strontium-90. Strontium-90 contamination in the range of 0.74 - 5.55 kBq/m<sup>2</sup> covers 4.6 million hectares, or 52% of the surveyed land areas. A rather intense spread of strontium-90 at the territory of Ukraine is primarily attributed to its global emissions into the atmosphere during nuclear weapons tests. Land contamination by strontium-90 caused by the Chernobyl disaster was less intensive and the radionuclide spread mainly within the exclusion zone and on adjacent territories, but with aerosols strontium-90 spread much further.

- *Oil products*

Sources of soil pollution by oil products may include all facilities operating in the sphere associated with oil extraction, storage and processing of oil and wastes, with processing and transportation of oil and petroleum products and their consumption, as well as with almost all types of modern road, water, air and railway transport.

The oil pollution is mainly related to oil transportation. Total losses of oil products in the course of extraction, processing, transportation and use amounted to about 45 million tons per year, i.e. almost 2 - 3% of the total production (2009).

The current scale of oil consumption in cities is widely believed to cause alteration of occurrence of contaminated soils - from "traditional" industrial and transport zones in urban areas they moved to residential and recreational areas due to intensive movement of vehicles, lack of sufficient networks of equipped parkings and presence of numerous vehicles within residential areas. Soil contamination is also caused by emergencies associated with leaks/spills of oil products.

Unfortunately, today, no comprehensive information is available on contents of oil products in different functional zones of large industrial cities.

- *Nitrates*

Nitrate pollution of water sources, their eutrophication and corresponding threats are now relevant issues in Ukraine. As declared in the State Environmental Policy Strategy up to 2020, the issue of preventing pollution by nitrates from agricultural lands is considered as a priority direction of harmonization of the environmental legislation of Ukraine with provisions of the EU legislation.

The main tasks of the Action Plan for Implementation of Council Directive 91/676/EEC (with the deadline set to December 2017) stipulate:

- adoption of the national legislation and appointment of the authorized body;
- identification of areas vulnerable to (accumulation) of nitrates (Article 3 of the Directive);
- introduction of action plans for zones vulnerable to (accumulation) of nitrates (Article 5 of the Directive);
- introduction of monitoring programs (Article 6 of the Directive).

#### **Causes of the problems:**

- results of past and contemporary economic activities,
- inadequate locations of wells and protection of wells from pollution, including nitrates,
- existence of unauthorized waste dumps and problems of municipal and industrial waste landfills,
- consequences of the Chernobyl NPP disaster.

#### **III. Relevant on-going or planned actions intended to address the main problems (main objectives, assessment of results and lessons learnt)**

- The Strategy for Restoration and Development of Irrigation Systems in Ukraine (developed by the MofE, the Ministry of Agrarian Policy of Ukraine, representatives of research institutes and other involved parties, as well as by partners from the World Bank).
- The project of international technical assistance in the framework of the agreement between the MofE of Ukraine and the Danish Environmental Protection Agency (DEPA) "Assistance to the Ukrainian Authorities in Improving Management of Contaminated Sites" (2004).
- Project of the Kingdom of the Netherlands "Harmonization of National Standards for Land Monitoring in Accordance with the EU Requirements, Including Expanding the List of Parameters (Physical, Chemical, Microbiological) and Ensuring Efficient Soil Quality Indicators", the Ministry of Agrarian Policy of Ukraine is the project beneficiary (2008 - 2009); the stage of collection and processing of Ukraine's data on soil quality monitoring.
- Regional EU Water Initiative Plus project (EUWI+ EaP), the MofE of Ukraine is the project beneficiary (2016-2020); The thematic direction - "Strengthening of Laboratory and Monitoring Systems".

#### **IV. Expert assessment**

- To develop amendments to the relevant environmental legislation related to heavily contaminated sites that have or may have a negative impact on water resources and water bodies subject to the Protocol on Water and Health.
- To fix legislatively the definition of "heavily contaminated sites" and develop regulations on identification of zones vulnerable to accumulation of different types of pollutants in soils and the methodology for identification of such zones.
- To establish a national database (register) of heavily contaminated sites for main soil pollutants and, accordingly, pollutants of groundwater and water supply sources and set procedures for its updating.
- To develop a plan for remediation of heavily contaminated sites, including areas of storages/stockpiles of obsolete pesticides and zones of nitrate pollution;
- To develop a list of best agricultural practices and a program to promote their introduction for prevention of nitrate pollution of soils.

- To develop and implement an information campaign with public involvement for further identification of heavily contaminated sites. To conduct trainings, seminars and other educational activities for stakeholders.

## Target area XIX

**Article 6.2 (m)** - Efficiency of management, development, protection and use of water resources

Ukraine has set national targets and indicators for Article 6.2 (m) of the Protocol and the Indicator for SDG 6.5 on implementation of integrated water resources management (see Table 19).

**Table 19.** National targets and indicators set for Article 6.2(m)

Target area #	Target according to the Guide	Nat. target #	National targets under the Protocol	Indicators and indicator values to be reached by 2015		National SDG6 target/ indicator		
				Indicators	Indicator values	Targets	Indicators	Indicator values
19	Effectiveness of systems for management, development, protection and use of water resources) (Art. 6.2 m)	12	Development and approval of RBMPs for the Danube, the Tysa, the Dnieper, the Southern Bug, and the Siverskiy Donets	Availability of river basin management plans	River basin management plans for the Danube, the Tysa and the Southern Bug	6.5 To ensure introduction of integrated water resources management	The number of river basins with approved RBMPs	2020 - 1 2025 - 9 2030 - 9

## I. The existing frameworks

### A) Strategies, laws, regulations and international commitments

Main provisions and objectives are defined by the Water Code of Ukraine and in laws of Ukraine:

- Law on Protection of the Natural Environment;
- Law on Environmental Impact Assessment,
- Law on Amending Some Legislative Acts of Ukraine on Introduction of Integrated Approaches to Water Resources Management Based on the Basin Principle (Law # 1641-VIII of October 4, 2016).
- Law on Amending Some Legislative Acts of Ukraine Regulating Relations Associated with Granting Permits for Special Water Use (Law # 1830-VIII of February 7, 2017).

and other sectoral laws related to development of individual industries and associated with use of water resources.

Measures for water management development are stipulated by the State Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021.

Implementation of the Water Framework Directive is of particular importance (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000) in accordance with the Association Agreement between Ukraine and the EU (ratified by Law # 1678-VII of 16.09.2014).

The following regulations should be noted:

- Procedures for Implementation of the State Water Monitoring,
- Procedures for Development of River Basin Management Plans, approved by CMU Decree # 336 of May 18, 2017,
- "On approval of the medium-term plan of the Government's priority actions by 2020 and the plan of priority actions of the Government for 2017",
- The National Action Plan to Combat Land Degradation and Desertification, approved by CMU Decree # 271-r of March 30, 2016.
- Order # 234 of the MofE of Ukraine of June 23, 2017 on Approval of Permit Forms for Special Water Use and Forms of Standard Projections of Water Use and Sanitation;
- Order # 103 of the Ministry of Ecology of Ukraine of 03.03.2017 on Approval of Boundaries of River Basins, Sub-basins and Water Areas.
- Order # 26 of the MofE of Ukraine of January 26, 2017 on Approval of the Procedure for Development of Water Resources Balances,
- Order # 23 of the MofE of Ukraine of January 26, 2017 on Approval of the Model Regulations on Basin Councils,
- Order # 45 of the MofE of Ukraine of February 6, 2017 on Approval of the List of Pollutants for the Assessment of the Chemical Status of Surface and Groundwater Bodies and Ecological Potential of Artificial or Heavily Modified Surface Water Bodies,
- Order # 25 of the MofE of Ukraine of January 26, 2017 on Delimitation of Sub-basins and Water Management Areas within River Basins.
- Order # 78 of the MofE of Ukraine of March 16, 2015 on Approval of the Procedure for Conducting State Registration of Water Use.

In addition, "Sustainable Development Goals: Ukraine" National Report should be noted - the Report sets national SDG No. 6 and its target and relevant indicators to SDG 6.5 for implementation of integrated water resources management (IWRM) based on the basin principle. The document was approved at the meeting of the High-level Inter-agency Working Group for organisation of SDGs implementation.

## B) Institutional framework

CEBs of relevance to development and implementation of the state policy on water resources management, management of the water management and melioration complex (infrastructure):

the MofE, the State Water Agency, the Ministry of Agrarian Policy, the Ministry of Regional Development, the Ministry of Fuel and Energy, the Ministry of Infrastructure, the Ministry of Health, the State Service for Emergency Response, the State Geological Service, the State Fisheries Agency, etc.



According to Chapter 4 of the Water Code, the State Water Agency is the CEB in charge of implementation of the state policy in the sphere of water management development and hydrotechnical land melioration, management, use and recovery of surface water resources.

The general public, as well as the private sector may participate in activities of basin councils, equally with other stakeholders working in a river basin. Decisions of basin councils are taken into account in the course of development and implementation of RBMPs.

### C) **Financial frameworks**

Measures should be implemented within the limits of expenditures stipulated in the state budget's allocations to relevant authorities, as well as with application of finance resources of international technical assistance and other sources of financing (unless prohibited by law). According to Presidential Decree # 381/2017 of November 21, 2017 on Additional Measures for Forestry Development, Rational Natural Resources Use and Protection of Natural Reserves, a decision was made to develop a legislative document on establishment of a state fund for development of water management.

## II. Environmental and/or health situation – the current status and prospects

### A) **Monitoring programs and indicators**

In accordance with its international commitments and the national legislation, Ukraine defined national targets for development of water resources management, namely introduction of IWRM based on the basin principle. The wording of the indicator is essentially the same for purposes of the Protocol on Water and Health, and for SDG 6.5 (see Table 17), the Strategy of the State Environmental Policy of Ukraine up to 2020, and implementation of WFD according to the EU-Ukraine Association Agreement. The target stipulates development of RBMPs for all major river basins in Ukraine, however the indicators (in terms of RBMPs development deadlines) need to be unified for all these processes.

In order to fulfil the national commitments under the EU-Ukraine Association Agreement, and to achieve of the SDGs, Ukraine committed to implement measures for promotion of SDGs implementation and ensuring development in the sphere of water quality and water resources management. In particular, para 62 of the Association Agreement between Ukraine and the EU, stipulates development of RBMP for the Ukrainian part of the Danube river basin by 2019 (to be implemented by the MofE, the State Water Agency, the Ministry of Infrastructure and the Ministry of Regional Development).

In "Ukraine 2020" Sustainable Development Strategy (approved by Decree # 5 of the President of Ukraine of January 12, 2015), declared priorities of reforms and directions of development included achievement of the safe environment and access to drinking water of due quality.

According to the National Security Strategy of Ukraine (approved by Decree # 287/2015a of the President of Ukraine of May 26, 2015), among the national security priorities, the following ones were listed: guaranteeing safe living conditions of the population, improvement of the ecological status of water resources and drinking water quality; provision of pre-conditions for utilisation of the Ukrainian agrarian sector potential for production of affordable, high-quality and safe food

products.

As declared in the medium-term priority actions plan of the Government up to 2020 and the priority actions plan of the Government for 2017 (Section 9 "Sustainable Water Management"), the existing system of public governance in the sphere of water protection and rational use of water resources is not sufficiently efficient and requires reforms through transition from the administrative-territorial model of management to the basin-based one, with river basins as management units instead of their sections within administrative units - as required by the WFD (Directive 2000/60/EC), that is being implemented by Ukraine under the EU-Ukraine Association Agreement.

These Governmental priority actions plans set the relevant targets:

- to define boundaries of nine river basin districts - by the end of 2017,
- to develop nine draft RBMPs, to define boundaries of the Sea of Azov and the Black Sea basins in their Ukrainian parts - by the end of 2020.

According to the National Report "Sustainable Development Goals: Ukraine" (approved at the meeting of the High-level Inter-agency Working Group for Organisation of the process of SDGs implementation), the indicators under SDG 6.5. stipulate approval of the 1 river basin management plan in 2020, 9 RBMPs in 2025 and 9 RBMPs in 2030.

In 2017, the MofE, with assistance of GWP, conducted a self-assessment under SDG 6.5.1 indicator of integration of water resources management at the national level with application of UN-Water multi-step methodology. The degree of integration in the sphere of water resources management was assessed as 39.45 points.

## **B) Main problems associated with the target area**

Deficiencies in the due legislation on water resources management and land melioration in Ukraine result in some regulative gaps pertaining to terms and conditions for sustainable functioning of the industry, through its decentralisation with involvement of water users into management and operations, including, in particular, provision of a favourable environment for doing business, for development of small and medium-sized businesses, for ensuring transparency and fair distribution of water resources, for development of an inclusive mechanism for engagement of stakeholders into the basin management.

The complexity of institutional reforms for implementation of the basin principle and transition from the existing centralised water management system, based on the administrative principle, to the basin-based management of all water resources. The reforms require decentralisation, distribution of powers and resources.

Currently, water users are almost completely excluded from water resources management and setting of tariffs for water supply and sanitation services.

A major problem is associated with underfunding of the water quality and water management resources sector due to lack of funds in the state budget with simultaneous lack of opportunities to attract investments.

It is extremely necessary to ensure improvement of the state system for water resources monitoring, assessment of ecological status of water bodies and prediction of their changes as required by the EU WFD.

### III. Relevant on-going or planned actions intended to address the main problems (main objectives, assessment of results and lessons learnt):

- to ensure earmarked allocation of funds for implementation of actions of the State Target Program for Water Management Development and Environmental Restoration of the Dnieper Basin up to 2021;
- to approve by Governmental decision on "The Strategy of Irrigation and Drainage in Ukraine" (developed by the MofE of Ukraine, the Ministry of Agrarian Policy of Ukraine, representatives of scientific institutes and other stakeholder with the participation and assistance of FAO and the World Bank);
- to approve the Governmental decision on "The Concept of Reforms of the Sectoral Structure of Integrated Water Resources Management in Ukraine";
- to ensure efficient implementation of the EU Water Initiative Plus (EUWI + EaP) Regional Project with the MofE of Ukraine as the Project beneficiary (2016-2020).

### IV. Expert assessment

- To develop a new legislative act on maintenance of the state water monitoring of waters, accounting for implementation of EU legal provisions.
- To adjust and agree target values of indicators in "SDGs: Ukraine", taking into account harmonization of SDG 6.5 on introduction of IWRM in Ukraine.
- To ensure further development and improvement of the sectoral structure of IWRM in Ukraine, in particular, in terms of strengthening powers of Basin Water Authorities (BUVR) and development of water resources management plans.
- To develop a system of measures for provision of a supportive environment for engagement of the public and stakeholders into basin management, ensuring transparency and equitable distribution of water resources.

To develop and implement an information campaign with participation of scientific institutions, centres and educational facilities on development of trainings, seminars and other educational activities for stakeholders on matters of efficient water resources management, their rational use and protection.

## Target area XX

**Article 6.2 (n)** - The frequency of the publication of information on the quality of the drinking water supplied and of other waters relevant to the Protocol

Ukraine has set 3 national targets and 3 relevant indicators to the Article 6.2(n) (see table.20).

Table 20. – National targets and indicators to the Article 6.2(n)

Target area №	Target according to the Guide	Nat. target №	National targets under the Protocol	Indicators and indicator values to be reached by 2015
20	The frequency	13.	Preparation and publication of the	Presenting the National Report on the

of the publication of information on the quality of the drinking water supplied and of other waters relevant to the Protocol (Art. 6, п. 2-n)		National report on the drinking water quality and the state of the drinking water supply in Ukraine	drinking water quality and the state of the drinking water supplied in Ukraine - annually
	14.	Preparation and publication of a Summary Report on progress in the implementation of the Protocol on Water and Health	Presenting the Summary Report on progress in the implementation of the Water and Health Protocol – every 3 years
	15.	Stakeholders awareness raising	Carrying out health education and informing among the population - annually

## I. The existing frameworks

### A) Strategies, legal/regulatory framework, and international commitments

Legislation of Ukraine includes:

The Constitution of Ukraine,

Article 50. Everyone has the right to a safe and healthy environment and to compensation for damages resulting from the violation of this right.

Everyone is guaranteed the right to free access to information on the environmental state, the quality of food products and consumer goods, as well as the right to disseminate such information. This information cannot be made secret to anyone.

The Water Code of Ukraine,

Article 11. Participation of citizens and their associations, other public institutions... stipulates rights .. inter alia - to receive information on the status of water bodies, sources of pollution and use of water, plans and measures on water use and protection and reproduction of water resources in accordance with the established procedure.

The Law of Ukraine "On Information"

Article 13 identifies information the access to which cannot be limited: environmental information on the state of the environment, its components, factors of impact, state of health and safety of people. Article 14 identifies information about the goods (work, service).

The Law of Ukraine "On Access to Public Information",

Provision of access to information (Article 5) is carried out by: 1) systematic and in time disclosure of information in official paper publications; on official web sites in Internet; on a single state web portal of open data; on information stands; any other way; 2) providing information on information requests.

Information managers (Article 13), which are obliged to publish and provide information upon request, are equated with business entities that have information about the state of the environment; food quality ..., accidents, catastrophes, natural hazards and other emergencies that have occurred or may occur and threaten the health and safety of citizens; and another socially necessary information.

Information managers are required (Article 14): to provide and disclose reliable, accurate and complete information and, if necessary, verify the accuracy and objectivity of the information provided and update the disclosed information.

Law of Ukraine "On Drinking Water, Drinking Water Supply and Wastewater Disposal/Sanitation" Article 6 defines the principle of ensuring free access to information on the drinking water quality, the state of sources and systems of drinking water supply and sanitation, the order of formation of norms of drinking water supply and tariffs for centralized water supply and sanitation services.

In accordance with Article 9, the state is guaranteed every consumer the right to free access to information on the drinking water quality. To this end, the CEB, implementing the state policy in the sphere of housing and communal services, prepares and publishes annually, in accordance with the procedure (576-2004-n) established by the Cabinet of Ministers of Ukraine, the National Report on the quality of drinking water and the state of drinking water supply in Ukraine, provides interested state authorities, public organizations, enterprises, institutions, organizations and citizens with information on cases and causes of drinking water pollution, the procedure for calculating tariffs for centralized water supply and water disposal services.

In case when drinking water has a deviation of parameters from the state standard, local self-government bodies inform consumers through the mass media about its quality and take measures to prevent the threat to human health.

In addition, there are relevant regulations:

"Rules of the service provision on centralized heating, cold and hot water supply and wastewater management and a standard contract on provision of services on centralized heating, cold and hot water supply and wastewater drainage", approved by Decree of the CMU of 21 July 2005 N 630;

"Instruction on provision of services on bath and shower", approved by the Order of the Ukrainian Union of associations, enterprises and organizations of communal services for population of 27 August 2000 N 20.

Main relevant international commitments (other than commitments under UNECE Conventions and Protocols):

- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention);
- the Association Agreement between Ukraine, on the one hand, and the European Union and its member states, on the other hand, ratified with a statement by the Law No. 1678-VII of 16 September 2014, entered into force from 1 September 2017;
- Implementation Plan of Directive 2003/4/EU of the European Parliament and Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC (Official Journal of the European Union, L 41, 14 February 2003, p. 26-32), approved by the Resolution of the Cabinet of Ministers of Ukraine of 15 April 2015 N 371-p "On Approval of Plans of Implementation of Some Acts of EU Legislation Developed by the Ministry of Ecology and Natural Resources";
- Implementation Plan of Directive 2000/60/EU of the European Parliament and Council establishing a framework for Community action in the field of water policy, as amended by Decision 2455/2001/EU and Directive 2009/31/EU, approved by the Resolution of the CMU of 15 April 2015 N 371-p;
  - Implementation Plan of Directive 98/83/EU on water quality intended for human consumption, approved by the Decree of the CMU of 26 November 2014 N 1141-p "On



Approval of Some Acts of the EU Legislation Implementation Plans, developed by the Ministry of Health".

## B. Institutional frameworks

### Central executive bodies:

- the Ministry of Regional Development, Building and Housing and Communal Services of Ukraine prepares and published the National Report annually ;
- the Ministry of Ecology and Natural Resources of Ukraine is responsible for the system of state monitoring of water resources;
- the Ministry of Health of Ukraine ensures the formation of state policy in the sphere of sanitary and epidemiological well-being of the population, approves: state sanitary norms and rules, sanitary regulations; indicators of drinking water quality;
- the State Agency of Water Resources of Ukraine monitors surface water in the locations of the main water intakes - sources of drinking water supply and complex use;
- the State Service of Geology and Mineral Resources of Ukraine performs state accounting of groundwater and water cadastre, monitoring of groundwater;
- the State Service of Ukraine for Food Safety and Consumer Protection provides information on sanitary and epidemiology situation in the country.

### Local Self-Government Bodies:

- local state administrations and utilities - water utilities;
- involvement of the private sector – water utilities, potable water producers, manufacturers of equipment for treatment and purification of drinking water;
- involvement of NGOs and public:

The Steering Committee of National Dialogue on Water Management under the MofE of Ukraine;

professional associations: Ukrainian Association "UkrvodokanalEkologiya", Association "Drinking Water of Ukraine", Ukrainian Water Association WaterNet - professional non-governmental organization specializing in local water treatment, others;

Global Water Partnership (GWP) – Ukraine;

Ecological NGOs: UNENGO «MAMA-86».

## C. Financial frameworks

- *Main relevant financial instruments*

Preparation of the annual National Report on the drinking water quality and the state of drinking water supply in Ukraine is financed by the state budget.

The Conference "Water and Environment", conducted by the MofE of Ukraine, and the Conference "Problems and prospects of development of drinking water supply and water disposal in Ukraine" / "Current state and main directions of the solution of problems of qualitative water supply and water disposal", conducted by the Ministry for Regional Development, Building and Housing of Ukraine within the framework of the International Water Forum "AQUA-UKRAINE" are funded by state budget, participation fees, donors.

Various informational and educational events on broad spectrum of issues on drinking water quality, access to safe water, water and sanitation rights, other events are organized funded by the international donors, professional association, water utilities, within the NGO grant projects.

## II. The current status and prospects

### A. Monitoring programmes and indicators

- *Data availability, their completeness and reliability, data providers*

Since 2004, the Ministry of Regional Development, Building and Housing of Ukraine has prepared and published **the National Report on drinking water quality and drinking water supply state in Ukraine annually**. The last report was for 2015. Due to the lack of budget funds, the National Reports are prepared annually, but are not published on time, in particular National Reports for 2013-2015 were published only in 2016. There is a problem of free access to previous National Reports (2004-2012).

The National Report is prepared based on official materials provided by 11 CEBs (ministries, agencies, services and commissions), oblast/region and Kyiv city state administrations, and local self-government bodies.

The national report highlights the information on the water quality of water sources which is summarized at the national and regional levels and provided by: 1) the State Agency of Water Resources about main quality problems (by 20-49 hydro-chemical and 2 radiological parameters) of surface water according to basin principle in 79 observation points on 41 water bodies in the locations of drinking water intakes; 2) the Ministry of Health about share (%) of investigated samples of water, that did not meet the sanitary norms, from water bodies of the category I, used as sources of centralized water supply for the population: from *sources of centralized water supply for the population* (in 2015, 16215 sources were examined, including 1741 communal, 4641 departmental, 6684 rural water supply pipelines) and *sources of decentralized water supply* (in 2015 - 160343) on nitrates content in water of non-centralized water supply sources (in 2015, only 5.4% or 17 thousand) of collective and individual wells and springs); as well as the quality of water of water bodies of category II, used for recreation, as a share (%) of investigated water samples that did not meet the sanitary norms for water bodies used for recreational purposes.

Also, since 2010, Ukraine has been preparing and publishing **the Summary Report every three years in accordance with Article 7 of the Protocol on Water and Health**. MofE is responsible for preparation of the Summary Report, information for progress assessment in implementation of the Protocol on Water and Health is provided by all CEB's responsible for water quality, water resources management and drinking water supply, for sanitary and epidemiological well-being. The Summary Report relies heavily on information of the National Report on drinking water quality and state of drinking water supply in Ukraine.

The Ministry of Health, Ukrainian Center for Disease Control and Monitoring, Laboratory centers of the MofH are involved in the preparation of materials for the publication on quality of drinking water and other waters relevant to the Protocol in accordance with Directive 76/160/EEC on bathing water, Directives 98/83/EU on drinking water, Nitrate Directive 91/676/EEC and Directive 91/271/EEC on the urban waste water treatment with a given periodicity.

The State Service for Food Safety and Consumer Protection provides [information on sanitary-epidemiology situation in the country](#), including outbreaks of acute intestinal infection and poisoning, state of beaches by regions and sea beaches (approval of the beach passport), annual reports on measures of the state control of food safety and consumer protection, for example [the Report for 2016](#).

The Basin Departments provide information on the state of the water in the respective river basins, for example, the Dniprovskiyi BDWM several times (with different intervals) per year provides data by 8 physical and chemical parameters at its [website](#).

Local authorities also publish on their Internet resources relevant information on the quality of drinking water, for example there are publications on [the official website of the Kharkiv City Council](#), mayor, executive committee and link to [website of Kharkiv water utility](#).

Water utilities publish on their web-sites information about the current state of drinking water quality, for example, in 2012-2016 KyivVodokanal has published weekly data on *14 parameters of water quality control*: <https://www.vodokanal.kiev.ua/ua/page-kontrol-yakosti-vody>; InfoxVodokanal (Odessa) provides up-to-date information on the tap water quality (as of October 2017) by *18 parameters*: [https://infoxvod.com.ua/information/kachestvo\\_pitevoy\\_vodi](https://infoxvod.com.ua/information/kachestvo_pitevoy_vodi).

Information about drinking water quality is provided and distributed in various forms by public organizations, for example, UNENGO «MAMA-86» on its website publishes reports on the results of drinking water quality monitoring that have been carried out in the framework of various projects since 1999, for example: [Report «Cooperation for sustainable development of rural areas: provision of drinking water, environmental health, organic agriculture»](#); [«Nitrate pollution of drinking water sources in Ukraine»](#); [«Self-assessment of access to water and sanitation in the regions of Ukraine»](#).

The Ukrainian Water Association WaterNet maintains an [interactive water quality map](#) on its information portal, which displays the results of the drinking water quality analyzes from the water supply system, wells and other sources in various regions of Ukraine.

Information on quality of wastewater discharges is departmental one and fixed in reporting form 2TP-Vodhosp, but it is for agency use and not for free access.

Information on the quality of bathing water (closed water bodies - pools) is absent.

## **B. Main issues related to the subject area**

- Most of the official freely accessible statistics are aggregated in terms of the number of samples and analyzes, but do not provide appropriate and updated information on the frequency and territorial coverage of planned / unplanned inspections of centralized and decentralized water supply sources.
- There is no proper and up-to-date information at national and local levels on the quality and safety of drinking water, the quality of other waters (drinking water sources, bathing water, wastewater), and outbreaks of water-related diseases.

- There is no information on the deviation from the state standards of drinking water quality, the territorial distribution of such deviations, the risk groups (quantitative and qualitative indicators) that are subject to such deviations, the causes of these deviations; collective and individual methods to eliminat these water quality deviations.
- Limited information on the water–bone impacts on health of people and/or environment.

### III. **Relevant ongoing and planned activities to address the main issues**

- The Annual National Report provides generalized information at national and regional levels on the state of centralized water supply and wastewater disposal, information on the quality of drinking water, agrigated by chemical and bacteriological parameters at the national level, which is neither useful for decision-makers nor for consumers of drinking water. It is necessary to include and provide information on international/basic and national targets to the Protocol and SDG 6.1 & SDG 6.2.
- A Summary National Report to the Protocol is a report on the basic and national targets to the Protocol. National targets should be agreed with the SDG 6.1-6.2 and the reporting requirements of the EU Drinking Water Directive (Article 13, Information and Reporting).
- Awareness raising and education: "AQUA-UKRAINE" Water Forum is a platform for main stakeholders discussion of water and environmental issues, problems of the water supply and canalization sector, drinking water quality, for sharing experiences and presenting the best technologies and practices.
- International assistance projects: «Water Initiative EU+» (National policy dialogues include the review of national targets to the Protocol and the development of a plan of actions to achieve them).

### IV. **Expert evaluation**

- Unreliability and incompleteness of information due to inconsistency with modern requirements of monitoring systems/quality control of water (drinking water, water in sources of drinking water supply, water for recreation, sewage, etc.) of different participants - ministries, agencies, services and producers - water utilities and others. It's necessary to reform the water quality monitoring system in line with EU requirements: WFD and Directive on Drinking Water, Nitrate Directive, Urban Wastewater Treatment Directive.
- Reporting has to fulfil the requirements of the Drinking Water Directive Article 13. Information and reporting:

*1. Member States shall take the necessary measures to ensure that consumers are provided with sufficient and up-to-date information on the quality of water intended for human consumption.*

2. *Without prejudice to the provisions of Council Directive 90/313/EEC of 7 June 1990 on the freedom of access to information on the environment (1), each Member State publishes every three years a report on the quality of water intended for human consumption with a view to informing consumers ... Each report must include, at a minimum, all individual cases of water supply exceeding 1000 cubic meters per day on average or serving more than 5000 people and should cover three calendar years and be made public within one calendar year from the end of the reporting period.*

- Improve access to information for water utilities and consumers on the relationship between water and health, water and sanitation safety planning.

***Suggestions for possible targets that can be set in this subject area***

- 1) To include a chapter dedicated to the information related to the National targets and indicators to the Protocol and the SDG 6.1 -6.2. into the the Annual National Report on the Quality of Drinking Water..
- 2) To establish reporting and make public the reports in accordance with Drinking Water Directive 98/83/EU, Bathing Water Directive 76/160/EEC, Nitrate Directive 91/676/EEC and Urban Wastewater Treatment Directive 91/271/EEC with a given periodicity.
- 3) To establish/renew proper informing of consumers about the quality of drinking water, health risks, water and sanitation in standard and emergency situations, under extreme weather conditions by using modern tools for information visualization and access to it at local and national levels.
- 4) To conduct info actions at the national-local levels, including celebration of international days on water thematic: World Water Day - March 22, Global Hand Washing Day - October 15, World Toilet Day - November 19.





№	Name of International act	Date of ratification by the Parliament	Date of entry into force
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### III. Annexes

#### Annex 1. List of International acts, in which Ukraine participates

1.	Convention on Conservation of European Wildlife and Natural Habitats (Berne Convention)	29.10.1996 № 436/96-VR accession with reservations	May 1999
2.	Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat	29.10.1996 № 437/96-VR	15.11.1997
3.	Convention on the Transboundary Effects on Industrial Accidents	17.03.1992	
4.	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	Accession from 01.07.1999, № 803-14	
5.	Stockholm Convention on Persistent Organic Pollutants	18.04.2007 № 949-16	24.12.2007
6.	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	№ 169-15 from 26.09.2002 accession	
7.	Convention on Biological Diversity	№ 257/94-VR from 29.11.1994	07.02.1995
8.	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity	995_k03 from 29.10.2010	
9.	Programme of Work on Protected Areas of the Convention on Biological Diversity		
10.	Convention on Conservation of Migratory Species of Wild Animals	№ 535-XIV (535-14) from 19.03.1999 accession	
11.	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	14.05.1999 № 662-14 accession	
12.	European Landscape Convention	№ 2831-15 from 07.09.2005	01.07.2006
13.	Framework Convention on the Protection and Sustainable Development of the Carpathians	№ 1672-15 from 07.04.2004	
14.	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	№ 61-15 from 04.07.2002	
15.	Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)	№ 832-XIV (832-14) from 06.07.99	30.10.2001
16.	Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 1992	№ 801-14 from 01.07.1999 accession	
17.	Protocol on Water and Health to the Convention on Protection and Use of Transboundary Watercourses and International Lakes, 1992	№ 1066-15 from 09.07.2003	August 2005
18.	Convention on the Protection of the Black Sea Against Pollution	№ 3939-XII from 04.02.1994	14.04.1994
19.	Danube River Protection Convention	№ 2997-14 from 17.01.2002	
20.	Cartagena Protocol on Biosafety to the Convention on Biological Diversity	№ 152-15 from 12.09.2002	
21.	Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity to the Framework Convention on the Protection and Sustainable Development of the Carpathians	№ 1621-17 from 04.09.2009	03.02.2010
22.	Agreement on the Conservation of Populations of European Bats	№ 663-XIV from 14.05.1999	
23.	Agreement on the Conservation of African-Eurasian Migratory Waterbirds	№ 62-15 from 04.07.2002	
24.	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area	№1067-15 from 09.07.2003 accession	



№	Name of International act	Date of ratification by the Parliament	Date of entry into force
25.	Pan-European Biological and Landscape Strategy	25.10.1995	
26.	Convention on Long-Range Transboundary Air Pollution	14.11.1979	05.06.1980
27.	Protocol on Long-Term Financing of Co-operative Program for Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe (EMEP) to the Convention on Long-Range Transboundary Air Pollution	28.09.1984	
28.	Gothenburg Protocol 1999 to Abate Acidification, Eutrophication and Ground-level Ozone to the Convention on Long-Range Transboundary Air Pollution	30.11.1999	
29.	Protocol on Persistent Organic Pollutants (POPs) to the Convention on Long-Range Transboundary Air Pollution	№ 995 s75 24.06.1998	
30.	The Transport, Health and Environment Pan-European Programme (THE PEP)		
31.	United Nations Framework Convention on Climate Change	№ 435/96-VR 29.10.1996	
32.	Kyoto Protocol to the United Nations Framework Convention on Climate Change	№ 1430-15 from 04.02.2004	
33.	Vienna Convention for the Protection of the Ozone Layer	22.03.1985	
34.	Montreal Protocol on Substances that Deplete the Ozone Layer	21.09.2007	
35.	Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention)	№ 534-14 19.03.1999	
36.	Convention on the Protection of the World Cultural and Natural Heritage	№ 6673-11 from 04.10.1988	

**Annex 2. List of Vodokanals that are licensed by EUNRC**

№	Name of the enterprise
1.	Crimean Republican Enterprise "Water of Crimea"
2.	Public Joint-Stock Company "Ukrainian Railway"
3.	Communal Enterprise "Company" Water Donbass
4.	Communal Enterprise "Vodokanal" of the Melitopol City Council of Zaporizhzhia region
5.	Communal Enterprise "Oblvodokanal" of the Zaporizhzhia Regional Council
6.	Communal Enterprise "Vodokanal" (Zaporizhzhia city)
7.	Private Joint-Stock Company "Joint-Stock Company "Kyivvodokanal"
8.	Communal Enterprise "Vinnytsiaoblvodokanal"
9.	Communal Enterprise "Lutskvodokanal"
10.	Lysychansk Communal Specialized Enterprise on Extraction, Processing, Realization of Water and Purification of Wastewater "Lysychanskovodokanal"
11.	Communal Enterprise "Alchevsk Production Management of the Water Supply and Sewerage Facilities"
12.	Communal Enterprise "Dniprovodokanal" of the Dnipro City Council
13.	Communal Enterprise "Kryvbasvodokanal"
14.	Communal Enterprise "Nikopol Production Management of the Water Supply and Sewerage Facilities" of the Nikopol City Council
15.	Communal Enterprise "Pavlohrad Production Management of the Water Supply and Sewerage Facilities" of the Pavlohrad City Council
16.	Communal Enterprise "Zhytomyrvodokanal" of the Zhytomyr City Council
17.	Communal Enterprise "Production Management of the Water Supply and Sewerage Facilities of Uzhhorod city"
18.	Regional Communal Production Enterprise "Dnipro-Kirovohrad"
19.	Crimean Republican Enterprise "Production Enterprise of the of the Water Supply and Sewerage Facilities of the Southern coast of Crimea"
20.	Lviv City Communal Enterprise "Lvivvodokanal"
21.	Communal Enterprise "Drohobychvodokanal" of the Drohobysk City Council of Lviv region
22.	Communal Enterprise "Miskvodokanal" of the Sumy City Council
23.	Communal Enterprise "Ternopilvodokanal"
24.	City Communal Enterprise "Production Management of the Water Supply and Sewerage Facilities of Kherson city"
25.	City Communal Enterprise "Khmelnyskvodokanal"
26.	Communal Enterprise "Cherkasyvodokanal" of the Cherkasy City Council
27.	Communal Enterprise "Umanvodokanal" of the Uman City Council
28.	Communal Enterprise "Chernihivvodokanal" of the Chernihiv City Council

№	Name of the enterprise
29.	Communal Enterprise "Donetskmiskvodokanal"
30.	Communal Enterprise "Mariupol Production Management of the Water Supply and Sewerage Facilities"
31.	Communal Enterprise "Kremenchukvodokanal" of the Kremenchuk City Council
32.	Communal Enterprise of the Poltava City Council "Poltavavodokanal"
33.	Rivne Regional Production Communal Enterprise of the Water Supply and Sewerage Facilities "Rivneoblvodokanal"
34.	Communal Enterprise "Kharkivvodokanal"
35.	Communal Enterprise "Chernivtsivodokanal"
36.	Communal Enterprise "Irpinvodokanal"
37.	State Interregional Enterprise of the Water Supply and Sewerage Facilities "Dnipro-Zakhidnyi Donbas"
38.	Communal Enterprise "Kramatorskyi vodokanal"
39.	Communal Enterprise "Brovaryteplovodoenerhiia" of the Brovary City Council of Kyiv region
40.	Limited Liability Company "Infoks"
41.	City Communal Enterprise "Mykolaivvodokanal"
42.	Private Joint-Stock Company "Enerhoresursy"
43.	Communal Enterprise "Ivano-Frankivskvodoekotekhprom"
44.	Private Joint-Stock Company "Sievierodonetsk association Nitrogen"
45.	Communal Enterprise of the Kamianske City Council "Miskvodokanal"
46.	Communal Enterprise of the Dnipropetrovsk Regional Council "Aulskyi vodovid"
47.	Communal Enterprise "Bakhmut-water"
48.	Communal Enterprise of the Sloviansk City Council "Slovomiskvodokanal"
49.	Limited Liability Company "Town service"
50.	Communal Enterprise "Miskteplovodenerhiia"
51.	Communal Enterprise "Novomoskovsk vodokanal"
52.	Communal Enterprise "Berdianskvodokanal" of the Berdiansk City Council
53.	Limited Liability Company "Bilotserkivvoda"
54.	Regional Communal Enterprise "Starobilskvoda"