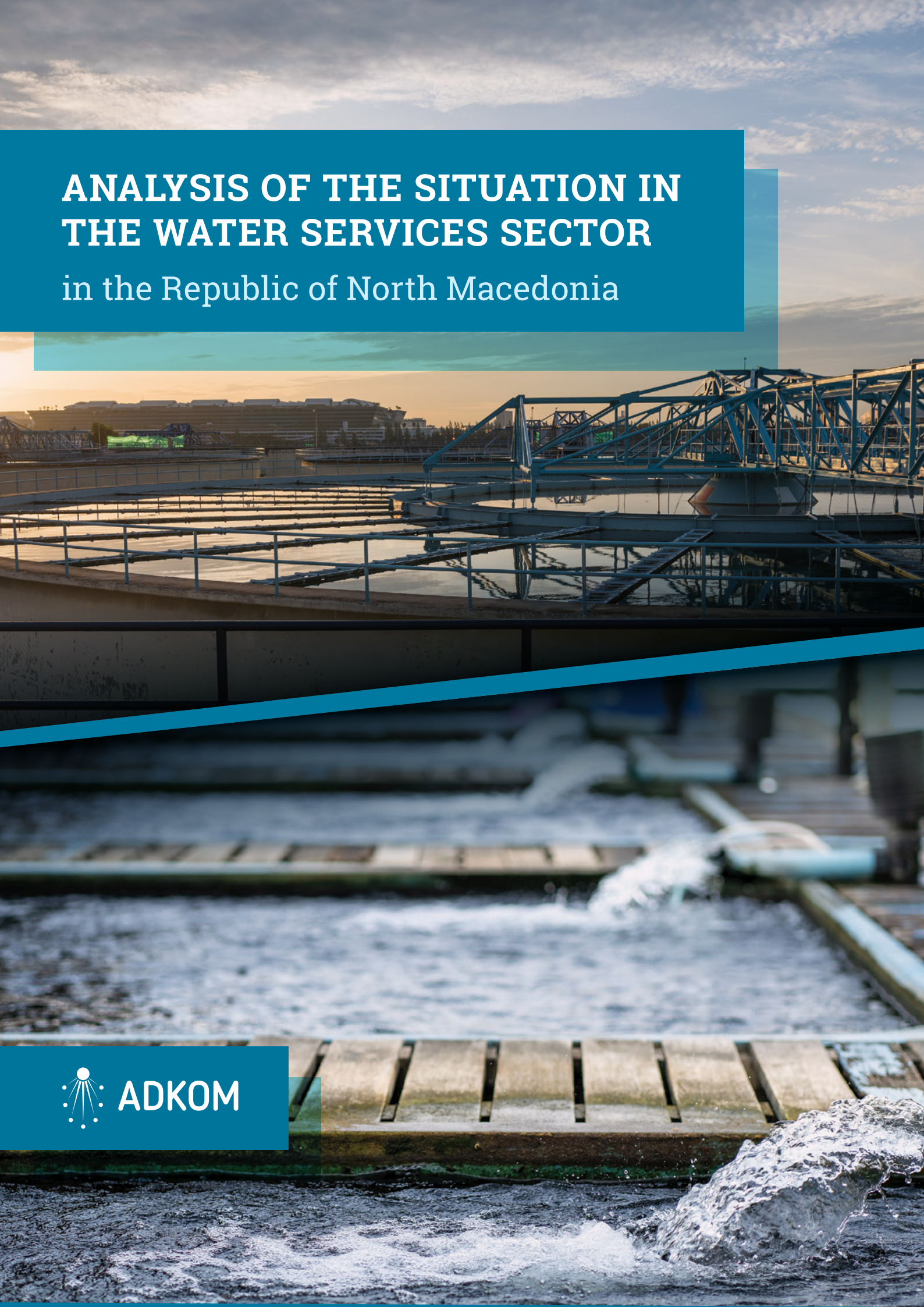
ANALYSIS OF THE SITUATION IN THE WATER SERVICES SECTOR

in the Republic of North Macedonia



ADKOM

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The "Analysis of the situation in the water services sector in the Republic of North Macedonia" is financially supported by the Ministry of Environment and Physical Planning of the Republic of North Macedonia.

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ADKOM - Association of public utility services providers of Republic of North Macedonia

FVA - Food and Veterinary Agency of the Republic of North Macedonia

SEI - State Environmental Inspectorate

SSHI - State Sanitary and Health Inspectorate

EC - European Commission

LSGU - Local self-government unit

EU - European Union

LW - Law on Waters

ZELS - Association of the Units of the Local Self-Government

IPH - Institute for Public Health

PUC - Public Utility Company

CT - Corresponding Table

MANU - Macedonian Academy of Sciences and Arts

MoE - Ministry of Economy of the Republic of North Macedonia

MoEPP - Ministry of Environment and Physical Planning of the Republic of North Macedonia

MoH - Ministry of Health of the Republic of North Macedonia

MoAFW - Ministry of Agriculture, Forestry and Water Economy of the Republic of North Macedonia

MLSG - Ministry of Local Self-Government of the Republic of North Macedonia

MoTC - Ministry of Transport and Communication of the Republic of North Macedonia

NGO - Non-government organization

WWTP - Wastewater treatment plant

WTP - Water treatment plant

ERC - Energy and Water Services Regulatory Commission

HBI - Institute of Hydrobiology

CPH - Center for Public Health

PREFACE

ADKOM - Association of public utility services providers of Republic of North Macedonia is a citizens' association established to carry out activities for enhancement of the utilities sector in the Republic of North Macedonia. ADKOM is a non-governmental and non-profit organization which unites the public utility companies in the Republic of North Macedonia, with the purpose of providing timely and high-quality services to all citizens.

ADKOM is a source of knowledge and experience for the public utility companies and is a desired partner by all the stakeholders in the utilities' sector in the country. The vison of ADKOM is to increase the capacities of the public utility companies for effective and efficient delivery of their services, while providing high-quality services for affordable prices, and at the same time protecting the environment.

As a constructive partner of the public utility companies, ADKOM aims toward strengthening their capacities as providers of water services.

The sustainable management of the water resources poses a great challenge. However, if this is managed with efficiency and balance, the water can have a key role in the social well-being, economic prosperity as well as healthy eco-systems.

Managing the "water balance" is the grounds for establishing the policy of effective water management. Just like in other parts of Europe, in the Republic of North Macedonia, the disbalance between the supply and demand of water, implies that analyzing the condition of the water sector on local and national level should be a priority.

As the water services are regulated and there is a decreased intensity of reform activities in the sector, the lack of updated structured data and overview of the water sector calls for this Analysis.

The Analysis gives insight into the condition of the water services sector, and it is a significant source of data for all stakeholders in the sector (ADKOM, PUCs, LSGUs, ZELS, MoEPP, ERC, donors, business community and academia) as it gives directions and recommendations for adapting the existing measures or creating new ones for the sector.

ADKOM

1. FOREWORD

The primary use of the Report on the Analysis of the situation in the water services sector in the Republic of North Macedonia, is to support ADKOM in the realization of its program goals.

Sustainable management with the water resources is a major challenge and if waters are managed efficiently and in a balanced way, they can play a key role in ensuring social well-being, economic prosperity, and healthy ecosystems.

The report contains an analysis of the existing national and EU regulations concerning water management. Also, it reflects the degree of implementation of national legislation by transposing EU regulations. The report identifies the competent bodies and their responsibilities at national and local level as well as the key stakeholders in water management. In addition, gives an insight into the financing of water management, i.e., the sources of financing as stipulated with the national legislation.

With this document a series of general data on the water services sector in the Republic of North Macedonia were analyzed and presented.

The Report reviews the current plans and activities concerning development policies and / or reforms in the water services sector at central and local level.

Finally, it offers conclusions and recommendations on proper management of PUCs, as well as the entire water sector.

ADKOM wishes to thank everyone who contributed to the preparation of the Analysis, primarily the Ministry of Environment and Physical Planning of the Republic of North Macedonia, the Regulatory Commission for Energy and Water Services and the water service providers for sharing data and information for this Analysis.

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2. LEGISLATIVE REGULATIONS AND POLICIES FOR DEVELOPMENT OF WATER SERVICES

Environment is one of the most complex areas in the European Union, regulated by a number of legal acts, which cover the environmental media and areas. As an environmental medium, the water area is regulated by a number of legal acts that cover various aspects of waters. The main EU legal acts governing water management are:

- Water Framework Directive 2000/60 / EC;
- Council Directive 91/271 / EEC concerning urban wastewater treatment;
- Council Directive 98/83 / EC on the quality of water intended for human consumption;
- Council Directive 2006/7 / EC on the quality of bathing water;
- Directive 2007/60 / EC of the European Parliament and of the Council on the assessment and management of flood risks;
- Directive 2006/11 / EC of the European Parliament and of the Council on pollution caused by certain hazardous substances discharged into the aquatic environment, and
- Council Directive 2006/118 / EC of the European Parliament and of the Council on the protection of groundwater against pollution and deterioration of quality.

In addition to the specific legal acts that regulate water management, it must be noted that it is also covered with other acts that complement each other, as they regulate other areas of the environment. The Republic of North Macedonia has gained the status of an EU candidate country in 2005, and on 18 February 2008, the European Council adopted the Accession Partnership with Macedonia, renewing the previous European Partnership from 2006. Macedonia's Stabilization and Association Agreement with the EU entered into force in 2004, which stipulates the country's obligation to harmonize gradually its legislation with the EU legislature, in particular by incorporating EU directives in the water sector.

The Constitution of the Republic of North Macedonia stipulates that all the natural resources of the Republic of Macedonia, the flora and fauna, amenities in common use, as well as the objects and buildings of cultural and historical value determined by law, are amenities of common interest for the Republic and enjoy particular protection. The Law regulates the mode and conditions under which specific items of general interest for the Republic can be ceded for use. The waters, as goods of general interest, are owned by the Republic of North Macedonia.

The waters are not subject to ownership by natural and legal persons, regardless of the legal regime of the land on which they are located. Under waters are intended all surface waters (all flowing and non-flowing waters on the surface), including permanent

or temporary watercourses, lakes, reservoirs, springs and groundwaters (waters which are located below ground level in the zone of saturation, and which are in direct contact with the surface or the substrata).

The Republic of North Macedonia has regulated waters with the following acts:

- Law on Environment ("Official Gazette of the Republic of Macedonia" No. 53/05, 81/05, 24/07, 159/08, 83/09, 48 / 10,124 / 10, 51 / 11,123 / 12, 93 / 13,187 / 13, 42/14, 129/15, 192/1 and 39/16);
- Law on Waters ("Official Gazette of the Republic of Macedonia" No. 87/08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163 / 13,180 / 14, 146 / 15, 52/16);
- Law on Drinking Water Supply and Drainage of Urban Wastewater ("Official Gazette of the Republic of Macedonia" No. 68/04, 28 / 06,103 / 08, 17/11, 54/11, 163/13);
- Law on Setting the Prices for Water Services ("Official Gazette of the Republic of Macedonia" No. 7/16);
- Law on Water Economies ("Official Gazette of the Republic of Macedonia" No. 51/15, 93/15) and
- Law on Food Safety ("Official Gazette of RM" No. 157/10, 53/11, 1/12, 164/13, 187/13, 43/14, 72/15, 84/15, 129/15, 213/15 and 39/16).

There are acts that regulate water management in the Republic of North Macedonia, and various aspects thereof. This Report analyzes the national regulations governing water management, especially:

- Law on Environment,
- Law on Waters,
- Law on Drinking Water Supply and Drainage of Urban Wastewater,
- Law on Water Economies,
- Law on Food Safety and
- Law on Setting the Prices for Water Services.

The general law governing the management of waters is the Law on Waters (LW), which was adopted in 2008, but which application started in 2010.

The Law on Environment is a framework law that regulates the general issues relevant to all areas of the environment. It prescribes the so-called horizontal issues that are equally important and applicable in all other areas of the environment, among which waters. This Law regulates the following issues: access to information in the field of environment, the procedure for impact assessment on Article 8 of the Constitution of

the Republic of North Macedonia, and Article 4 of the Law on Waters ("Official Gazette of the Republic of Macedonia" No. 87 / 08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163 / 13,180 / 14, 146/15 and 52/16) and the environment, from the implementation of certain public and private projects, various plans and programs, issues concerning environmental damage and the procedure for issuing integrated environmental permits. Chapter VIII of the Law on Environment generally regulates the issue of access to information in the field of environment, which defines the obligations, conditions, and manner of providing information related to the environment. Chapter V of the Law generally regulates the monitoring of the environmental media and environmental areas. For such monitoring to be possible on the territory of the Republic of North Macedonia, the Government of the Republic of North Macedonia establishes a national network for environmental monitoring, consists of national networks for monitoring of certain environmental media and areas. In that context, and in accordance with special laws, the local self-government units, may establish local monitoring networks. Chapter VI of the Law stipulates the establishment of a National Environmental Information System by MoEPP, which is further developed, maintained, and coordinated by the Ministry and it serves for the management of data concerning the environment on the territory of the Republic of North Macedonia. This system is established and operated in such a way that it provides a database of relevant data and information, which are comprehensive, accurate and publicly available and concern the condition, quality and trends of all environmental media and areas. The information system includes collection, processing, systematization, storage, utilization, distribution and presentation of data and information obtained from the national monitoring network, the local monitoring network and from own monitoring of individual environmental media and areas, as well as data from the Pollutant Release and Transfer Registry, the Environmental Cadaster, and the National List of Indicators. The Pollutant Release and Transfer Registry is established and maintained by the MoEPP. Legal entities and individuals are obliged to submit data for the Pollutants Register. The Water Polluters

Cadaster is included in the Environmental Cadaster, which is established and maintained by MoEPP. The Cadaster contains data on activities and installations that endanger or may endanger the environment. Legal entities and individuals are obliged to submit data for the appropriate cadasters. The units of local self-government can establish and maintain an environmental Registry and Cadaster for their areas. The establishment of monitoring for certain media and areas, the establishment of the information system for a particular medium or area is regulated by special laws (waste, nature, etc.). Specifically, the water monitoring and the water information system are regulated in more detail with the Law on Waters. The participation of the public in the decision-making processes concerning the environment is regulated in the Law on Environment. The manner and the procedure for public participation are regulated in the procedures for implementation of strategic evaluation of plans and programs, in the procedure for impact assessment of certain projects and the procedure for integrated environmental management. The Law on Waters regulates in detail the participation of the public in the decision-making process concerning waters as well as in the adoption of waters planning documents. It is important to say that the use of this natural resource can be executed through integrated environmental permits which also regulate the operations of large industrial facilities that should operate with the best available techniques. These permits regulate the use and drainage of waters. The Law on Environment also regulates the procedure for strategic assessment of the impact of the planning documents on the environment as well as the procedure for assessment of the impact of projects on the environment.

The Law on Waters ("Official Gazette of the Republic of Macedonia" No. 87/08, 6/09, 161/09, 83/10, 51/11, 44/12, 23/13, 163/13, 52/16) and the secondary regulations thereof, are the general acts that regulate the management of waters. This Law is a framework regulation that stipulates the basic principles for managing the water resources in an integrated and comprehensive manner. The water management covers all measures and activities for rational and efficient use of waters, sustainable development of water

resources, water protection and protection from harmful effects of water, water economies and facilities, organizational setup, and financing of water management, as well as use and drainage of waters. The need for an integrated approach to the preparation of the framework Law on Waters arises from the fact that the aspects of management and aspects of protection are essentially related and therefore they cannot be regulated separately. Thus, this subject focuses on three areas: water use, water protection and pollution control and protection from the harmful effects of water.

Several EU legislations regulating water management at EU level have been transposed in the Law and bylaws, such as:

- Water Framework Directive (WFD) 2000/60 / EC;
- Directive 98/83 / EC on the quality of water intended for human consumption;
- Directive 76/160 / EEC concerning the quality of bathing water;
- Directive 91/676 / EC on the protection of waters against pollution caused by nitrates from agriculture;
- Directive 91/271 / EEC concerning urban waste-water treatment;
- Directive 2006/118 / EC on groundwater;
- Directive 2008/105 / EC on environmental quality standards in the field of water;
- Directive 76/464 / EC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.

The Law on waters should obtain the following objectives:

- providing access to a sufficient amount of quality water, in accordance with the principles of sustainable management of drinking water and food production, for the needs of agriculture, industry, hydropower needs, the needs of parks and other public areas, tourism, navigation and other needs;
- protection, conservation and continuous improvement of available water resources, improvement of the state of coastal land, aquatic ecosystems and water-dependent ecosystems, protection and improvement of the aquatic environment through rational and sustainable use of water, as well as progressive reduction of harmful discharges and gradual elimination of emissions of hazardous substances into waters;
- mitigation of the consequences of the harmful effects of water and water scarcity; and
- protection and promotion of the environment and nature, aquatic ecosystems and biodiversity and protection of human health.

The principles for sustainable water management on which the Law on Waters is based are:

- the principle of public participation and access to information
- the principle of participation of stakeholders and
- the principle of universality of water services

The management of water is defined as an activity of public interest and stipulates undertaking all measures and activities, as well as achieving the goals defined in the Law, while ensuring rational and efficient use of water, sustainable development of water resources, protection of water and protection from the harmful effects of waters. Environmental measures, standards and objectives are considered as minimum requirements for the water management.

Water management consists of measures and activities for rational and efficient use of water, for sustainable development of water resources, water protection and protection from harmful effects on waters, which include creating public policies, laws, planning and strategic documents, their implementation through licensing, monitoring, financing and control and inspection. The integrated water management in Macedonia is regulated with the Law on Waters (87/2008, 6/2009, 161/2009, 83/2010, 51/2011, 44/2012, 23/2013, 163/2013, 180/2014, 124 / 2015, 146/2015, 52/2016), as a framework law that sets out the principles, competencies, rights, and obligations for water management. The structure of the Law reflects the comprehensive water management, namely the management of water protection, which reflects on the protection of the environment, as the primary goal of the water legislation of the European Community, and the management of the use of water resources, which refers to use of waters and flood protection and is not always related to environmental goals and water protection. In the context of the harmonization of internal legislation with the EU, there is a complete or very high rate of harmonization with certain instruments of the Union (for the quality of water for human consumption, the quality of bathing water, the urban wastewaters treatment).

In Chapter 27 of the 2021 Country Progress Report of the European Commission (EC) for the Republic of North Macedonia, the section on water management states the following progress: "On water quality management, financial agreements have been signed to secure funds for the construction of the wastewater treatment plant of Skopje and works on wastewater collectors are ongoing. The surface water surveillance monitoring network has improved. However, a system for monitoring quality and quantity of surface and groundwater is needed. The management plan of the Ohrid Lake sub-basin has been prepared but implementation of all river basin management plans remains a concern. Progress was made for the implementation of the EU Floods Directive. River Basin Councils was nominated. **Administrative capacity and inter-institutional coordination need to be strengthened; more efforts are required to reduce Non-revenue water and to implement the full cost recovery principle."**

The Drinking Water Directive has been transposed into a national legal framework by the Law on Waters (LW)[1], the Law on Food Safety[2] and the Rulebook on the safety of water for human consumption[3].

The following table lists the most relevant regulations governing the water sector in Macedonia:

1 Official Gazette of the Republic of Macedonia No. 87/2008, 6/2009, 161/2009, 83/2010, 51/2011, 44/2012, 23/2013, 163/2013, 180/2014, 124/2015, 146/2015, 52/2016.
2 Official Gazette of the Republic of Macedonia No. 157/2010, 53/2011, 1/2012, 164/2013, 187/2013, 43/2014, 72/2015, 84/2015, 129/2015, 213/2015 and 39/2016.
3 Official Gazette of the Republic of Macedonia No. 46/2008.

Table 2-1: Regulation on water for human consumption in Macedonia

EUROPEAN LEGISLATION	Council Directive no. 98/83 / EC of 03.11.1998 "on the quality of water intended for human consumption", in accordance with Regulation (EC) no. 1882/2003 of the European Parliament and of the Council of 29 September 2003 (L 284 31.10.2003). Regulation (EC) no. 596/2009 of the European Parliament and of the Council of 18 June 2009 (L 188 18.7.2009) Commission Directive (EU) 2015/1787 of 6 October 2015 (Official Journal L 260 6 7.10.2015)
MACEDONIAN LEGISLATION	1. The Law on Waters (Official Gazette of the Republic of Macedonia No. 87/2008, 6/2009, 161/2009, 83/2010, 51/2011, 44/12 23/2013, 163/2013, 180/2014, 124 / 2015, 146/2015, 52/2016);
	2. Law on Drinking Water Supply and Drainage of Urban Wastewater (Official Gazette of the Republic of Macedonia No. 68/04, 28/06, 103/08, 17/11, 54/11, 163/13, 10 / 15, 147/15, 31/16)
	3. The Law on Food Safety (Official Gazette of the Republic of Macedonia No. 157/2010, 53/2011, 1/2012, 164/2013, 187/2013, 43/2014, 72/2015, 84/2015, 129/2015, 213/2015 and 39/2016);
	4. Regulation on classification of waters (Official Gazette of RM No. 18/99)
	5. Regulation on categorization of waters (Official Gazette of RM No. 18/99)
	6. Rulebook on the safety of drinking water, spring water and bottled water (Official Gazette of RM No. 46/08)
	7. Rulebook on the type of professional training, equipment, and spatial conditions to be met by the expert legal entity for preparation of a report on setting the limits for the protected zones, protection measures and other qualities of waters intended for human consumption (Official Gazette of the Republic of Macedonia No. 29/2014).
	8. Rulebook on the content and the manner of preparing a study for setting the limits for protected zones, protection measures and other qualities of waters intended for human consumption (Official Gazette of RM No. 29/2014).
	9. Financial implications of the supervision of the quality of drinking water per the National Annual Public Health Program of the Republic of Macedonia (for 2014, published in the Official Gazette of the Republic of Macedonia No. 15/14, 19/14, 163/14; for 2015 published in the Official Gazette of the Republic of Macedonia No. 195/14, 217/15, etc.)
	10. Rulebook on the form and content of the Registry of the protected zones of waterbodies intended for human consumption, protected zones of waterbodies for recreation, including bathing water, waterbodies sensitive to the discharge of urban wastewater as protected zones (adoption in progress).
	11. Rulebook on the manner of establishing and maintaining narrower and wider protected zones and the manner of land cultivation, construction, and use of facilities, and other works that may adversely affect the qualitative and quantitative condition of the waterbody intended for human consumption (adoption in progress)

The Rulebook on the safety of water for human consumption was adopted pursuant to Article 8 para 1 of the Law on Food Safety[4], which was repealed by the existing Law on Food Safety (see note No. 8), and Article 50 of the Law on Waters[5], which was repealed by the Law on Waters currently in force.

The regulations above give the Minister of Health the authority to prescribe: General and Specific conditions for the safety of drinking water (drinking water in public water supply systems; water used and / or mixed with food as part of the process of production, preparation and processing of food; bottled water and spring water); disinfection; the size, type and methodology used for testing the drinking water and the drinking water limits concerning the contents of harmful and hazardous substances)[6].

The transposition of the Directive 98/83 / EC, before its latest amendments, is almost complete.

The missing secondary legislation is listed in Table 2 below.

Table 2-2: Legislation that needs to be adopted

#	Legal basis	Secondary legislation	Competent body	Status
1.	Art. 96 para (1) count 1 of the Law	Regulation on the establishment of protected zones for waterbodies intended for human consumption	Government of the Republic of North Macedonia at the proposal of the MoH and the MoEPP	To be defined on a case-by-case basis
2.	Art. 96, para (4) of the Law on Waters	Regulation on the measures necessary for the protection of the protected zones	Government of the Republic of North Macedonia at the proposal of the MoEPP	To be defined on a case-by-case basis
3.	Article 96 para (7) of the Law	Regulation on the conditions and the manner of establishing the protected zones and on the cartographic display of the protected zones	Government of the Republic of North Macedonia at the proposal of the MoEPP	To be defined on a case-by-case basis

4 Official Gazette of the Republic of Macedonia No. 54/2002 and 84/2007
5 Official Gazette of the Republic of Macedonia 4/98, 19/2000, 42/05 and 46/06.
6 Article 1 of the Rulebook on the safety of water for human consumption

4.	Article 96 para (8) count 1 of the Law	Rulebook on the form and content of the Registry of protected zones of waterbodies intended for human consumption; recreational waters, including bathing water and waterbodies sensitive to urban wastewater discharge.	MoH in accordance with the MoEPP	The draft is prepared and submitted to the MoH for signing, but it has not been adopted yet
5.	Article 98, para (5) of the Law	Rulebook on the manner of determining establishing and maintaining the narrower and wider protected zones and the manner of land cultivation, construction, and use of facilities, and performance of other works that may adversely affect the qualitative and quantitative condition of the water body intended for human consumption (adoption in progress)	MoH in accordance with the MoEPP	The draft is prepared and submitted to the MoH for signing, but it has not been adopted yet
6.	Article 148 para (6) of the Law	Rulebook on the methodology and detailed conditions for the facilities, equipment and professional staff, the manner, and the procedure for monitoring the safety of waters intended for human consumption	MoH	No information
7.	Article 156 para (7) of the Law	Rulebook on the detailed requirements and submission of information from the monitoring of waters intended for human consumption and bathing, as well as the form and content of the information template	MoEPP in accordance with the MoH	No information
8.	Article 183 para (4) of the Law	Rulebook on the minimum required values, standards and parameters for waters intended for human consumption, as well as the necessary measures to be adopted to meet the requirements of the LW, i.e., to have safe and clean water for human consumption	Upon proposal of the Food And Veterinary Agency	No information
9.	Article 186 para (3) of the Law	Rulebook on the required equipment and staff of legal and natural persons organizing water supply intended for human consumption, as well as the frequency and methodology of water disinfection	MoH	No information
10.	Article 148, para (11) of the Law	Report on the condition (status) of drinking water	MoH	No information

The Law on Waters envisages three types of planning documents that should be adopted after the promulgation of the Law:

- National Water Strategy, which sets the long-term policy for a period of 30 years;
- Water Management Master Plan of the Republic of Macedonia - the current state of the waters, the current and future needs for water, technical and economic solutions for rational use of the waters and timeframe for their realization; and

- River basin management plans (for each river basin determined by law) for a planning period of 6 years. These are innovative tools for integrated water management through planning.

Unlike the National Strategy, which was adopted by the Parliament in 2010 and covers the period from 2011 to 2041, the Water Management Master Plan of the Republic of North Macedonia and River Basin Management Plans have not been adopted yet. The Water Strategy does not contain specific investment strategic goals and priorities, nor measures and activities for their implementation.

The Water Management Master Plan of the Republic of Macedonia was adopted in 1972. However, it has no legal validity but is still used as a reference document in policy planning in the Ministry of Environment and Physical Planning. Additionally, the Water Management Master Plan was taken into account in the 2004 – 2020 Spatial Plan of the Republic of Macedonia, which means that the solutions in the Plan are contemplated based on an outdated document from 1972. Hence the conclusion that there is no clear picture of the future needs of water, technical and economic solutions for rational water use, for protection of waters from pollution and protection from harmful effects on waters in accordance with the principles of sustainable development, which would be based on long-term environmental goals and a program with measures for their implementation.

The Law defines four river basins for the territory of Macedonia, which according to the entire hydrographic structure, can be qualified as international, as in some part they are located on the territory of North Macedonia as well as on the territory of a neighboring country. The territory of our country consists of the following river basins: 1. The basin of the

river Vardar, 2. Strumica river basin, 3. Crn Drim river basin and 4. South Morava river basin. In accordance with the transitory and final provisions of the Law on Waters, the deadline for adoption of the river basin management plans is six years from the promulgation of the Law. Additionally, in accordance with the Law on Waters, the water rights (water use permits, water discharge permits) are issued based on the plan for the respective area and are instruments for implementation of the plan.

3. CURRENT PLANS AND ACTIVITIES CONCERNING DEVELOPMENTAL POLICIES AND / OR REFORMS OF THE WATER SERVICES SECTOR ON CENTRAL AND LOCAL LEVEL

Central level competencies for water management

According to the existing legislation, several bodies are responsible for the management of waters in the Republic of North Macedonia.

The Parliament of the Republic of North Macedonia is responsible for the adoption of the National Water Strategy and the Water Management Master Plan.

According to the Law, the Government of the Republic of North Macedonia is responsible for:

- adoption of river basin management plans;
- setting environmental goals;
- preparation and adoption of a program with measures for each individual river basin management plan;
- setting standards for water quality and
- identification of water protection zones.

MoEPP is authorized for:

- preparation of the basic planning documents and the overall development of the water management policy as well as for coordination of the management activities;
- collection, processing, and storage of all information obtained from the monitoring of water bodies as well as for maintaining an official database for water resources management, development and
- supervision of water management and, protection and exchange of relevant data with all competent bodies, upon their request and free of charge;
- providing access to the public to the data and information related to water monitoring, by publishing the data and results obtained from the monitoring of waterbodies and waters intended for use in periodic and / or annual reports;
- Establishment of a Water Register which is a complete and constantly updated registry of: water use permits; discharge permits; permits for excavation of sand, gravel, and stone from the beds and watersides of surface water bodies protection zones; flood areas; old rights and obligations; water resources management consents; applications

for issuance of permits; temporary enforced management and other data relevant to administrative decisions pertaining to waters and

- Establishment and maintenance of a Cadaster of Water Pollutants (as part of the Environmental Cadaster in order to determine the level of pollution of industrial wastewater, atmospheric and urban waters, landfill waters, as well as their harmful effects.

All expert matters concerning waters, as per the Law on Waters are discharged by the Environment Directorate, with the following authorizations:

- execute expert activities and undertake measures and activities of importance for the management of waters for each river basin;
- collect data and perform the necessary tests to determine the deposits, quantity and properties of water and order measures for protection of groundwater found during geological research or exploitation of mineral raw materials, excavation of tunnels and other activities of excavation or drilling of land;
- prepare a basic assessment of the characteristics of each river basin;
- provide management of the part of the international river basin located on the territory of the Republic of North Macedonia in accordance with the law and an international agreement ratified by the Republic of North Macedonia;
- expert work in the process of issuing permits and water management consents in accordance with the Law;
- keep and maintain the Water Registry;
- keep and maintain the Protected Zones Registry;
- coordinate activities and participate in the preparation of the National Water Strategy;
- coordinate activities and participate in the preparation of the Water Management Master Plan of the Republic of Macedonia;
- prepare and implement River Basin Management Plans;
- prepare a Program of measures;
- implement the Program of measures;
- collect, process and store data from water monitoring;
- provide management of the part of the river basin located on the territory of the Republic of North Macedonia in accordance with the law and an international agreement ratified by the Republic of North Macedonia;

- collect, store and process data from the records of water management facilities and plants;
- establishes, prepares and maintains pollutants cadasters for the respective river basin;
- ensure the implementation of the measures for protection from the harmful effect of the waters in the appropriate the river basin;
- propose expropriation of land on which groundwater is found for public water supply;
- perform scientific research activities in the field of waters;
- promote techniques and methodologies for water conservation and perform other activities determined by this or another law.

The National Water Council is an advisory body established in accordance with the Law on Waters with the Decision on the establishment of the National Water Council ("Official Gazette of RM" no. 149/09) adopted by the Government of the Republic of Macedonia. The members of the Council are representatives from MoEPP, MoH, MoE, MoTC, MoAFW, MLSG, ZELS, MANU, NGO representative, and a representative of the River Basin Management Council. The Council is responsible for reviewing water management issues, harmonizing, and coordinating various needs and interests.

The National Water Council is composed of nine members appointed by the Government of the Republic of North Macedonia, with a mandate of three years without the right to re-election, except for the representative of the river basin whose term is one year. The members of the National Water Council are selected from prominent scientists and experts in the field of water management and related fields and from the Water Users Association. In addition to the representatives of state administration bodies (environment; health; transport and communications; economy; agriculture) there are also representatives from ZELS, the Macedonian Academy of Sciences and Arts, a non-governmental organization that works in water protection at the proposal of non-governmental organizations that have worked in this area in the last three years and the River Basin Management Council, participate alternately from each council with one term.

The National Water Council reviews and gives opinions, gives proposals and recommends the adoption of regulations and measures for: drafting laws and other regulations that regulate the water management, implementation of laws and other regulations concerning water management, drafting of the national water management strategy, drafting of the Water Management Master Plan of the Republic of Macedonia, drafting of the river basin management plans, drafting of amendments to the Water Management Master Plan of the Republic of Macedonia and the river basin management plans, other plans, measures and programs in accordance with this Law and other issues in accordance with the Rules of Procedure.

The Ministry of Health is responsible for:

- preparation of legislation on water for human consumption, standards, criteria for monitoring the quality of drinking water (with MoEPP, Government of the republic of North Macedonia);
- setting of protected zones of water for human consumption (together with the MoEPP and IPH);
- identifies waterbodies suitable for drinking and bathing water;
- takes care of the safety and security of drinking and bathing water;
- informs the public about the quality of drinking water and
- informs the consumers about the measures taken in cases of reductions in the quality of water intended for human consumption.

The Food and Veterinary Agency undertakes activities for the safety of the water supplied to the consumers.

The FVA is responsible for establishing a drinking water safety database and assessing risks for sources of pollution.

The expertise of monitoring of the quality of drinking water is in the **Institute for Public Health and the Center for Public Health**, which in the laboratories on the territory of the Republic of North Macedonia conducts regular monitoring of the quality of drinking water (sampling and basic analysis). IPH prepares annual reports for monitoring of drinking water based on reports submitted by CPH.

Public water supply companies are obliged to ensure good quality of drinking water and to monitor its quality. The Public Utility Company and the CPH alert the FVA, the Ministry of Health and the public if the water quality is not in accordance with the prescribed standards, as well as they determine the causes of pollution and are obliged to take measures to stop and limit the use of water.

The Ministry of Transport and Communications is responsible for the utilities' infrastructure, water supply and collection, drainage and treatment of wastewaters, and in particular for the construction and management of water management facilities. MoTC is responsible for the infrastructure for supply of drinking water.

The Ministry of Economy is responsible for the utilization of mineral and thermo-mineral resources, as well as the generation of electricity from hydropower plants.

The Ministry of Agriculture, Forestry and Water Economy in cooperation with MoEPP is the competent body for transposition and implementation of the functions related to irrigation and protection of waters from pollution from agricultural resources (pollution with nitrate) as well as for the actual processes implemented by water supply companies.

The Infrastructure Projects Commission is a government commission that decides on priorities in financing water projects.

The water economies are responsible for the operational management of water intended for irrigation (water supply and drainage for agricultural purposes).

The **Macedonian Hydrometeorological Service** is responsible for real-time monitoring of the water regime, as part of the national monitoring network of the MoEPP. The MoEPP should define and finance the implementation of monitoring programs, collect data, reports on water statuses and supervise the enforcement of the provisions of the Law on Waters concerning the monitoring of waters. In addition, the Macedonian Hydrometeorological Service monitors the three natural lakes in the Republic of North Macedonia.

The Energy Regulatory Commission sets the tariffs for water services.

Inspection - The authorisations for the environmental inspection are divided to central and local level. At the central level, the competent body for inspection is the State Inspectorate of Environment, while at the local level the authorized environmental inspectors perform the inspections. The inspection of enforcement of water regulations is performed by the inspectors of the State Environmental Inspectorate in charge of waters as well as the environmental inspectors.

The inspection of the enforcements of the provisions concerning the bathing water and water intended for human consumption is performed by the State Sanitary and Health Inspectorate and the food inspectors from the Food and Veterinary Agency.

The inspections of the nitrate vulnerable zones, the irrigation and drainage are performed by the inspectors of the State Inspectorate for Agriculture.

The inspection of the fulfillment of obligations of the municipalities, the municipalities in the City of Skopje and the City of Skopje as prescribed with the Law on Waters is performed by the authorized inspectors of the municipalities, the municipalities in the City of Skopje and the City of Skopje.

According to the Law on Waters, the state sanitary and health inspectors are responsible for controlling the quality of bathing water and recreational waters, while the environmental inspectors supervise the protection from pollution of the bathing zones.

Research institutes do not have permanent roles and responsibilities in the water management sector.

The exception is the Hydrobiological Institute (HBI), which has a monitoring mandate.

The Hydrobiological Institute is a public higher education and research organization of national interest that covers limnological research entities (mainly) from natural lakes and artificial lakes and rivers. The main concern is the limnology of the natural lakes in Macedonia (Ohrid, Prespa and Dojran Lakes). Traditionally, the research of the Hydrobiology Institute of has focused on fundamental issues related to hydrobiology, including nutrients, temperature (mixture and currents), water transparency, primary production, chlorophyll, flora and fauna, endemism, species. The following table summarizes the institutional set-up, divided by functions at national level.

Table 3-1: Summary of the institutional infrastructure

REQUIREMENTS (FUNCTIONS)	BODIES												
	Parliament	Governement	MoH	MoEPP	MoTC	MoAFW	MoF	PHI	FVA	ADV	SSHI	SEI	NKI
REGULATORY PLANNING													
Drafting and adopting legislation, setting criteria, quality standards, procedures, etc.	X	X	X	X	X	X							
Setting of waters for human consumption in river basin management plans (Article 7 of the Water Framework Directive)		X	X	X									
Setting protected zones of waters for human consumption		X	X	X									
SUPERVISION													
Establishment and adoption of a supervision network in accordance with the Law		X	X	X				X	X				
INFORMING													
Providing information and data on water quality to the public			X					X					
Informing and advising consumers on non-compliances and corrective actions									X				
Informing the population affected by the concessions and similar conditions			X										
Report to the European Commission on the status of the DWD	--	--	--	--	--		--	--	--		--	--	--

REQUIREMENTS (FUNCTIONS)	BODIES												
	Parliament	Governement	MoH	MoEPP	MoTC	MoAFW	MoF	PHI	FVA	ADV	SSHI	SEI	NKI
ENFORCEMENT													
Enforcement of legal provisions									X		X	X	
PROVISION OF SERVICES													
Provision of water supply services in accordance with the Macedonian legal framework.		X								X			
INVESTMENT PLANNING													
Determining the investment needs and planning activities for construction and maintenance of water infrastructure		X		X	X								X
Preparation of a national budget for allocation of funds for water supply and supervision of budget expenditures							X						

Use of waters

General water use means the use of water for personal and household needs when such use does not require special facilities and plants. General water use does not require a water use permit. It includes the use of water for drinking, bathing, and other sanitary needs of the households, for sports and recreational activities and for sailing with non-motorized vessels or for other personal needs, unless it requires the construction of special facilities and plants for which a water use permit should be provided.

The general use of water also includes the use of water for firefighting and for sanitary and other measures in case of emergency or natural disaster or other activities of public interest.

Water use activities are:

1. human consumption, for irrigation, industrial, technological, economic and other purposes;
2. production of electricity and other economic purposes;
3. fish farming;
4. navigation;
5. sports, recreation, bathing and
6. accumulation, harvesting, pumping, use, diverting and for other purposes.

Water use includes the activities of drainage and discharge, as well as other activities with waters. Every beneficiary is obliged to use the water in volume, under the conditions and in accordance with the law in a rational and economical, balanced, and fair manner, per the principles of sustainable water management.

The priorities for water use are:

1. water supply to the population through a public water supply system, water supply for the healthcare institutions and for legal entities in the field of veterinary medicine, for the needs of defense, for the industry for production and processing of food and feeding of livestock;
2. irrigation of agricultural land;
3. water supply of the industry and for economic needs;
4. hydropower and other economic needs;
5. water supply for the parks and other public areas;
6. bottling water for commercial needs and
7. other needs.

The use of water is regulated with the Law on Waters. The water right is acquired with a water use permit and a water discharge permit. Also, a permit is required for any activities that may affect the water regime. The permits are issued in accordance with the river basin management plans. Upon a submitted application, the permit is issued by the MoEPP for a period not exceeding 10 years, depending on the type of water management facility. When issuing the permit, the MoEPP is obliged to provide the public with access to the information necessary for the formation of opinions, per the Law on Environment. The public can express their opinions and remarks regarding the request for obtaining a permit within 15 days from the publication of the request. Within 15 days from the receipt of the request the authorities and the public may, may submit their opinions regarding the request in writing. When issuing

the permit, MoEPP will not take into account the opinions submitted after the deadline; also, MoEPP must explain the reasons why the received opinions from the public and the authoritites were rejected. If the authorities do not submit the written opinion, then it is considered that they have no objections to the request. MoEPP rejects the request with a decision if it determines that the issuance of the permit is not in accordance with the river basin management plans, that the public interest is endangered, or the provisions of an international agreement ratified by the Republic of Macedonia are violated. The water right that arises and is exercised under conditions and in a manner determined in the permit is temporarily restricted, if it endangers the health of the people and, hence the general use of water is restricted.

Water treatment plants

From the perspective of water use and consumption by humans, the most important thing concerning the human use and consumption of water to consider is the absence of pathogenic substances. In the Republic of North Macedonia disinfection is the fundamental treatment of water intended for human consumption so that the quality of the water meets the requirements for human consumption and does not contain constituents that may harm the human health. According to the Rulebook on the safety of drinking water (Official Gazette of RM No. 46/08), every operator responsible for extraction and distribution of drinking water from public or own sources, is obliged to perform mandatory disinfection of the drinking water.

The disinfection is carried out together with the chlorination of the water at the catchment (if delivered directly to consumers) or within the water supply system, including pumping stations, pipelines, water tanks, etc.

All centralized water supply systems operated by the PUCs have appropriate chlorination systems, while the communal water supply systems are faced with inadequate operation and maintenance or no chlorination.

The existing water treatment plants have chlorination systems. Some of these systems have recently been restored, but still there are systems with outdated equipment that need to be replaced and an automatic control system installed.

The existing chlorination systems of water treatment plants are in the worst condition in terms of the physical status of the equipment, unprofessional operation, improper maintenance or improper placement of equipment and lack of preventive measures and measures to protect the environment in the event of accidents.

There are still systems owned by the local community that don't have regular chlorination or do not chlorinate at all. Compounded with the lack of sanitary protection of the springs, most of these springs do not meet the microbiological parameters (presence of fecal coliform bacteria).

In case when the raw water is drawn from the groundwaters or surface water does not meet the requirements, a more complex treatment is required, which consists of oxidation, coagulation, flocculation, sedimentation, filtration, and other treatments.

3.1. Provision of services (providers of water services)

Under the national legal framework, the local self-government units are responsible for providing water supply and sanitation services. In order to ensure adequate quality of water services, the local self-government units may delegate the provision of such services to another entity. Currently in Macedonia the water services are provided as follows:

- By PUCs established by the municipalities
- by PUCs established by the Government
- By private operators

There are 71 water service providers, servicing from 0.5 million inhabitants in the case of the City of Skopje to less than 10,000 inhabitants in the case of several rural municipalities.

The level of service provision and the success of the water sector were recently assessed with the initiative "State of the Sector" from the Danube River Program and the Local water sector reform project. Both identified several problems related to the PUCs capacity to comply with legal requirements, the efficiency of service delivery and the financial position of the PUCs.

In several cases in recent years, the PUCs have not been able to meet their obligations, and in at least one case the situation has resulted in a partial blockade of the PUCs bank account.

After receiving the results of the evaluation, the Local Water Sector Reform Project proposed several short-term and long-term measures to improve the standards of delivery and efficiency of water services, and the implementation of short-term measures will be used for ongoing EU funded projects in the water sector:

- **Short-term measures:** Investment planning and process support, business planning support and tariff adjustment processes.
- **Long-term measures:** Restructuring of the sector by grouping / regionalization, greater commercialization, and entrepreneurial management to settlement of outstanding liabilities by increasing tariffs.

The process of preparation and implementation of several wastewater projects that will serve some of the largest urban areas has started recently. However, it remains for Macedonia to develop its program and establish projects to comply with the Directive on urban waste-water treatment. "Water balance" management is the basis of effective water management policy. The growing imbalance between water supply and demand in many parts of Europe, as well as in Macedonia, water availability and water scarcity have gradually become key points in the creation of water policies at national and EU level. Changes in water availability can adversely affect ecosystems and several socio-economic sectors, including pumping water for drinking, agriculture, industry, electricity generation and navigation. One

of the basic responsibilities of EU water policy is to clearly identify and measure the risks of water scarcity. Water resources in Macedonia are used for many purposes, i.e., for activities that involve accumulation, harvesting, abstraction for:

- consumption by humans for multiple purposes, such as: irrigation, industrial and technological needs, economic needs, etc.;
- production of electricity;
- fish farming, transportation, sailing;
- sports, recreation, bathing, tourism, and other purposes.

In the analysis, the main emphasis will be placed on the use of water and water availability for consumers (the citizens), as well as their involvement in creating water management policies and pricing policy for water services.

3.2. Water distribution system

This section presents the main features of drinking water distribution systems (regional and national), including:

- Distribution networks (including pipelines and distribution networks)
- Water tanks / facilities
- Pumping stations

The annex to this document contains a detailed overview of the current water distribution system. It is based on the answers of the questionnaires submitted to the municipal water companies (where information was available) per units of local self-government.

Note:

- Although the information on the water distribution system is available in most municipalities, there were certain informational gaps that were overcome by applying the principle of “regional average” for certain parameters (network density, tank volume);
- The capacity of the water tanks was examined in relation to the calculated maximum daily demand. As a basic, general criterion is set the minimum available water storage capacity in each water distribution system to be 25% of the maximum daily demand, in order to ensure adequate disinfection, stable, balanced and uninterrupted supply, and adequate firefighting reserves in accordance with the law.

Table 3-2: Water distribution systems - main characteristics by region

Region	Number of connections (#)	Length of network (km)	Network density (persons/km)	Volume of water tanks (m^3)	Number of tanks (#)	Капацитет на резервоари (%)	No. of LSGUs with tanks < 25%	WTP capacity (l/s)	No. of WTPs
Vardar	39,662	591	215	23,535	63	41.8%	1	588	51
East	53,502	797	183	22,622	80	36.1%	1	2,509	71
Southwest	71,464	1,064	155	28,650	69	30.3%	2	1,077	22
Southeast	44,710	598	222	25,779	55	48.1%	0	605	25
Pelagonija	77,354	982	200	33,218	66	38.2%	1	787	27
Polog	50,370	767	239	19,761	74	24.7%	3	294	22
Northeast	36,485	605	191	14,515	48	37.0%	2	369	22
Skopje	85,348	1,380	407	41,415	58	12.3%	3	7,539	55
Total / average	458.895	6.783	240	209.495	513	27,7%	13	13.767	295

There are 28 drinking water treatment plants serving a population of 631,672 inhabitants (30% of the total population in Macedonia), where:

- 4 WTPs have a total production capacity of about 9,000 m^3 per day and which serve areas with less than 5,000 inhabitants;
- 24 WTP of which one (with a capacity of 360 l / s) operates only in summer, producing about 378,000 m^3 per day and serving water supply zones with population between 5,000 and 80,000 inhabitants.

Water treatment plants serve 74% of the population connected to the systems managed by PUC, while the rest of the population is supplied through local (municipal) systems (approximately 10%) or from individual sources (16%).

Table 3-3: Water Treatment Plants in Macedonia

Region	No.	MAK no.	Municipality	Name of WTP	Nominal capacity (l / s)	Year of construction	Type of treatment	Raw water source
Vardar	1	m^3 day	Veles	Veles	300	1991/ 2009	Sedimentation + filtration + ozonation + хлорирање	HS Lisiche
	2	MK00104	Kavadarci	Bunar	200	2013	Microfiltration + filtration + chlorination	Tikvesh Lake
	3	MK00104	Kavadarci	Stara Reka	100	1975	Filtration + chlorination	Stara Reka
	4	MK00108	Sveti Nikole	Sivri Tepe	90	Надградба во 2015 год.	Filtration + ozonation + chlorination	HS Zletovica
East	5	MK00201	Berovo	Berovo	200	1984	Sedimentation + filtration (sand filters & granular activated carbon) + chlorination	Berovo Lake
	6	MK00202	Vinica	Vinica	120	1990	Filtration + chlorination	Underground catchments
	7	MK00203	Delcevo	Delcevo	60	1996	Filtration + chlorination	Underground catchments
	8	MK00204	Zrnovci	Zrnovci	20	2005	Filtration + chlorination	Zrnovska River
	9	MK00206	Kocani	Kocani	300	2004	Before ozonation + deposition + filtration + chlorination	Underground catchments
	10	MK00208	Pehcevo	Pehcevo	25	1999	Complex	River
	11	MK00209	Probistip	Probistip	75	2013	Filtration + chlorination	Not specified
	12	MK00211	Stip	Stip	250	2014		Probably groundwater
Southwest	13	MK00310	Ohrid	Ohrid	360		Microfiltration + chlorination	Ohrid Lake
Southeast	14	MK00402	Bosilovo	Bosilovo	35	2005	Complex	Accumulation Ilovica
	15	MK00404	Vasilevo	Vasilevo	24	2005	Filtration + chlorination	Accumulation Turia
	16	MK00404	Vasilevo	Nova Maala	10	2008	Filtration + chlorination	Source
	17	MK00409	Radovis	Trska	45	2009	filtering (slow)+ chlorination	Radovishka River, underground каптажа Амбари
	18	MK00410	Strumica	Strumica	230	1977	?+ precipitation + filtration + chlorination	Accumulation Turia
	19	MK00410	Strumica	Bansko	25	-	Filtration + chlorination	Vodenisnica

Region	No.	MAK no.	Municipality	Name of WTP	Nominal capacity (l / s)	Year of construction	Type of treatment	Raw water source
Pelagonija	20	MK00501	Bitola	Dihovo	1,080	Upgrade in 2000.	Prechlorination + deposition + filtration + chlorination	HS Dragor / during the summer period, the accumulation Strezevo Impoundment
	21	MK00509	Resen	Pretor	15	-		Prespa Lake
Polog	22	MK00603	Vrapciste	Vrapciste	24	1997	Filtration + chlorination	Zubovska River
	23	MK00604	Gostivar	Vrutok	210	In the release phase	Coagulation + microfiltration + chlorination	Vrutok
	24	MK00607	Mavrovo	Mavrovo	50	2016	Filtration + chlorination	Belicki Sources
	25	MK00608	Tearce	Tearce	40	2005	Filtration + chlorination	Crveni Kapi
Northwest	26	MK00701	Kratovo	Kratovo	80	1998	Filtration + chlorination	River Zletovo
	27	MK00703	Kumanovo	Kumanovo	440	1990	Oxidation + precipitation + filtration +хлорирање	Wells Bedinje and Lipkovsko Lake
		MK00703	Kumanovo	Proevce	50	2005	Oxidation + precipitation + filtration +	Wells Proevce

3.3. Shortcomings and activities necessary to complete the legal framework

The following changes are proposed in order to complete the legal framework:

1. Transposition of the latest amendments to the Directive (EU Commission Directive 2015/1787): Complete transposition and implementation of these provisions by which the water monitoring program should ensure the implementation of measures within the water supply chain and consider the information on waterbodies used for pumping of drinking water in order to control the risks to human health. Recommendations: Annex I of the Rulebook on the safety of water for human consumption should be amended accordingly. A new rulebook should be adopted in accordance with the existing legalization, taking into account the current status of the water monitoring network in Macedonia.
2. Revision of the legal grounds of Article 96 of the Law on Waters, at the proposal of the Water Sector.

Recommendations: The legal basis per Article 96, paragraphs (4) and (7) should be revised, as the measures and conditions for the designation of protected zones should be defined individually for each case.

3.4. Shortcomings and activities for establishing the necessary institutional framework

This section provides a summary of the recommended activities for completing the institutional framework for each of the functions required by the Directive:

Regulatory planning

The main shortcomings in terms of planning responsibilities relate to the definition of water supply zones, the adoption of appropriate monitoring programs and the establishment of water protected zones (WPZ).

Recommendations: The legal framework is almost complete, although some secondary acts related to water supply protected zones and setting of water supply zone agglomerations are missing (see Table 4 - "Secondary drinking water legislation to be adopted").

- It is necessary to implement a systematic determination of water protected zones. This requires extensive cooperation and coordination between the MoH (IPH) and the MoEPP, including the LSGU. The determination of the water protected zones and the implementation of the measures in accordance with the conditions for determination (implementation of safety measures and restriction of activities within the IPA) is an essential component of the overall approach to providing safe drinking water.

- It is recommended that future support for investments for improvement of water quality be conditioned by the determination of the appropriate water protected zones and by the relevant safeguards that have been implemented.

- It is proposed to establish mechanisms for cooperation between the MoH and the MoEPP in order to monitor the progress of establishing the protected zones for drinking water and to speed up the process of drafting and harmonizing secondary legislation so that the Government can propose the designation of such zones.

- Strengthening the capacities of small PUCs by preparing management plans as basis for their development and obtaining finances from the state, which is in fact an obligation from the Law on setting prices for water services.

- Capacity building for Authorized Environmental Inspectors who are responsible for controlling the discharge of wastewater, as well as waste oils into the sewerage, and monitoring the enforcement of provisions of the Law, and who are responsible for controlling discharges from installations of B- SARS and control of sewerage and drainage systems, including septic tanks on their territory, which are discharged into sewerage systems. And Authorized Communal Inspectors who are responsible for inspecting the utility service providers established by the municipalities and the users of such utility services, as well as for the implementation of the relevant decisions of the municipality for communal order.

- Creating mechanisms for citizen participation as consumers in the creation and implementation of consumer protection policy at all levels when their economic interests are concerned.

- Raising the public awareness for more rational and efficient use of the water resource, ie increasing the consumer's care for the water resource in terms of its use, but not only in terms of the amount and collection of water services.

3.4.1. Regulation and licensing

No shortcomings have been identified in terms of regulatory and licensing obligations, although technical regulations have not yet been fully implemented in practice, and existing ones need to be adapted to the latest amendments to the Directive on Water for Human Consumption. It should be noted that the pumping / harvesting of water for public water supply is subject to mandatory issuance of a permit, which is in the competence of the MoEPP (UPS-SV). Therefore, it is necessary to adopt and implement a rulebook on the form and content of the application for a water use permit, which will speed up the process of granting permits.

Adoption of a new Water Management Master Plan as a planning measure

Recommendations: It is necessary to develop and amend the existing regulations in coordination among the competent authorities at the central and local level.

In general, these functions are well covered, although, given the complexity of the current legislation, significant efforts are needed to coordinate the institutions concerned at central and local level like the Institute of Public Health, the State Sanitary and Health Inspectorate and the Food and Veterinary Agency, local self-government units and public utility companies.

4. GENERAL DATA ON THE WATER SERVICES SECTOR IN THE REPUBLIC OF NORTH MACEDONIA

In the Republic of North Macedonia, the water services sector is undergoing continuous changes, which, for the most part, are reflected in the development of water services infrastructure, the increase in the number of water services provided by the water service providers, as well as in the increased efficiency and effectiveness of providing such services.

The Law on Setting the Prices for Water Services[7] stipulates the regulation of the prices of water services, i.e., setting of the tariffs for water services.

In the water services are included: 1) raw water supply intended for water supply of the population; 2) water supply; 3) collection and drainage of urban wastewater; and 4) wastewater treatment.

According to the Energy and Water Services Regulatory Commission (ERC) of the Republic of North Macedonia "the regulation of the prices of water services represents a reform of the existing water services sector, and such reform pushes water service providers to make significant changes on organizational, managerial, financial and operational level"[8]. The purpose of the reforms is to foster a sustainable development and self-financing of future investment projects of the water services providers in order to increase the number and the quality of water services, while ensuring the acceptable prices of water services for the average household, based on the income per household in the area where such water service is provided.

This chapter provides a brief overview and basic information on the water services and their providers as it reviews data from 2019 and 2020 on results, tariffs for water services (from the First regulated period) for 2019 and 2020 in the units of local self-government (LSGUs) with over / or under 10,000 population equivalent, as well as the Decisions for setting the tariffs for water services for the Second regulated period of the LSGUs with over 10,000 population equivalent.[9]

For the water services: 1) water supply; 2) collection and drainage of urban wastewater; and 3) wastewater treatment[10], the analysis is made based on:

- Overview of Water Service Coverage
- Overview of Tariffs for water services
- Overview of the Collection rate per water service
- Overview of the Expenditures to Revenues Ratio
- Overview of the Number of employees per water service

Additionally, an overview for the water service "Water Supply" will be given for:

7 "Official Gazette of the Republic of Macedonia", No. 7/16
8 Annual report of the Energy and Water Services Regulatory Commission of the Republic of North Macedonia for 2020
9 https://www.erc.org.mk/pages.aspx?id=255
10 Herein after, water services will mostly mean these 3 water services

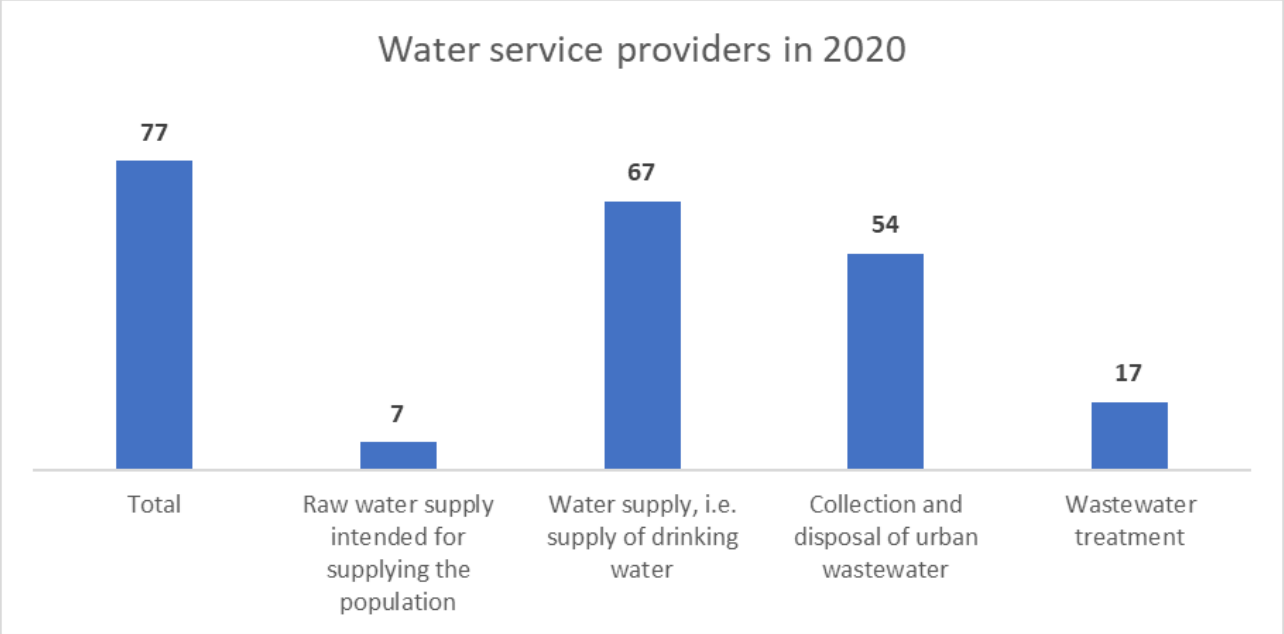
- Produced water
- Invoiced water and
- Non-revenue water

The analysis was made at the level of LSGUs and planning regions.

4.1. Water service providers

According to ERC and ADKOM, in the Republic of North Macedonia the provision of water services in 2020 was performed by 77 providers, seven of which provided raw water intended for supplying the population with water, 67 provided water supply services, i.e., supplied drinking water, 54 provided services for collection and drainage of urban wastewater and 17 treat waste waters (Figure 4-1).

Figure 4-1: Water service providers in 2020[11]



4.2. Raw water intended for supplying the population with water

In 2020, seven water providers supplied the population with raw water.

11 Source: Annual report of the Energy and Water Services Regulatory Commission of the Republic of North Macedonia for 2020. Most of the data refer to ERC reports

Table 4-1: Water service provider - Raw water intended for supplying the population with water

No.	Water service provider - Raw water supply intended for water supply of the population
1	PUC Lisiche Veles
2	PUC Studencica Kichevo
3	PUC Strezhevo Bitola
4	PUC Zletovica Probishtip
5	JSC Vodostopanstvo Branch office Berovo
6	JSC Vodostopanstvo Branch office Strumicko Pole
7	JSC Vodostopanstvo Branch office Kumanovo – Lipkovsko pole

4.3. Supply of Drinking Water or Water Supply

In 2020, the Water supply as a service in the LSGUs with over 10,000 population equivalent was provided by 29 providers, while 38 providers provided such service in LSGUs with less than 10,000 population equivalent.

4.3.1. Produced, Invoiced and Non-Revenue Water

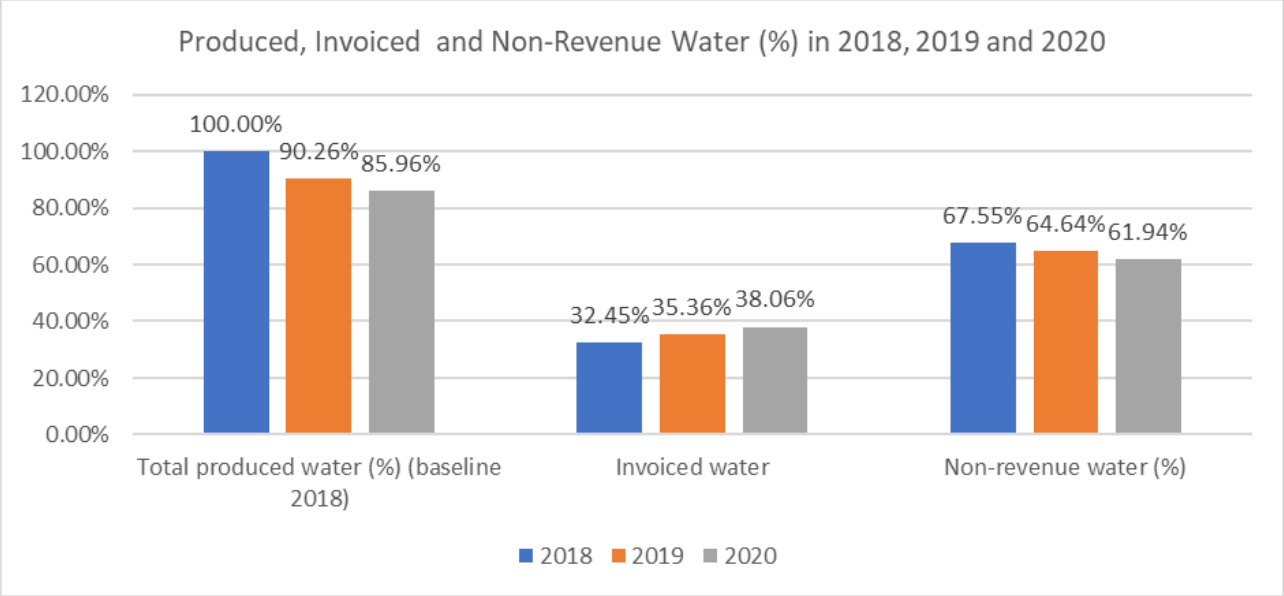
The Produced, Invoiced, and Non-Revenue water are important indicators for understanding the water supply. Table 4-2 gives data for 2019 and 2020 at national level.

Table 4-2: Produced, Invoiced and Non-revenue water (m^3) in 2018, 2019 and 2020

Datum	2018	2019	2020	2019/2018	2019/2018 (%)	2020/2019	2020/2019 (%)
Total produced water	300.536.218	271.262.710	258.346.783	-29.273.508	-9.74%	-12,915,927	-4.76%
Invoiced water	97.512.275	95.913.681	98.317.467	-1.598.594	-1.64%	2,403,786	2.51%
Non-revenue water	203.023.943	175.349.029	160.029.316	-27.674.914	-13.63%	-15,319,713	-8.74%

It is evident from Table 4-2 that in 2020 there was a significant reduction in Non-revenue water in respect to 2018, which is a consequence of the significant reduction of Total produced water (14.04%) in 2020 compared to 2018. Also, there was an increase of Invoiced water by 5.61%. Figure 4-2 gives percentage changes of the Produced, Invoiced and Non-Revenue water.

Figure 4-2: Produced, Invoiced and Non-Revenue water in the period 2018-2020



There is a significant trend of decreased Production of water and Non-revenue water, due to increased investments in infrastructure and increasing efficiency and effectiveness in operations. The prevailing opinion is that this is just the beginning toward providing the best quality of water services at the lowest possible cost.

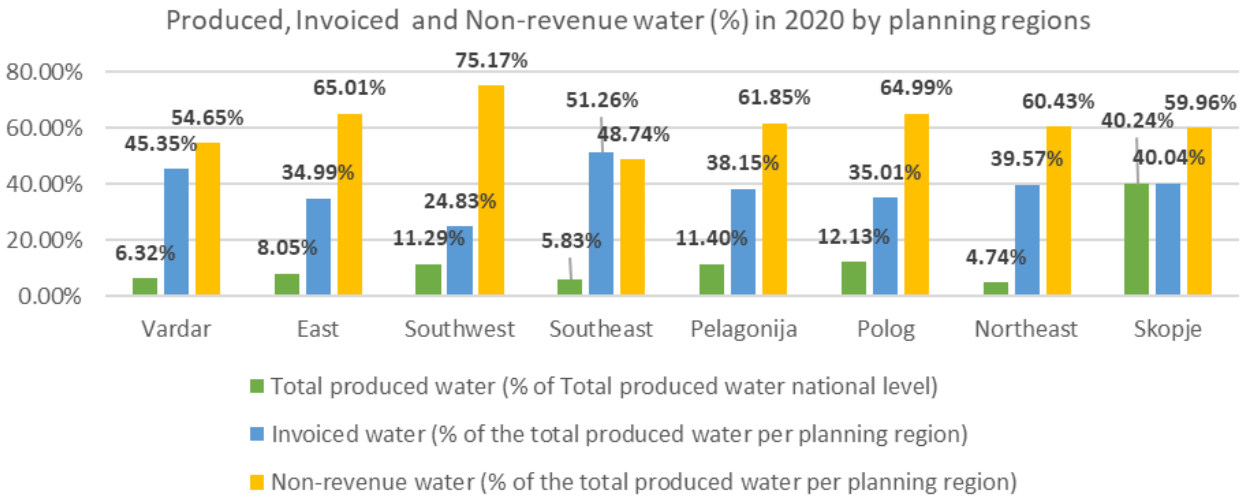
Table 4 3 shows Produced, Invoiced and Non-Revenue water by planning regions.

Table 4 3: Produced, Invoiced water and Non-revenue water (m^3) in 2020 by planning regions

Datum	Vardar region	East region	South-west region	South-east region	Pela-gonija region	Polog region	Northeast region	Skopje region	Total
	2020	2020	2020	2020	2020	2020	2020	2020	2020
Total Produced water	16,335,203	20,784,589	29,170,447	15,067,275	29,448,920	31,349,993	12,241,364	103,948,992	258,346,783
Invoiced water	7,408,174	7,271,947	7,243,002	7,723,659	11,233,424	10,975,961	4,843,331	41,617,969	98,317,467
Non-revenue water	8,927,029	13,512,642	21,927,445	7,343,616	18,215,496	20,374,032	7,398,033	62,331,023	160,029,316

From Figure 4-3 it is evident that the region of Skopje had the largest production of water, while the highest percentage of Non-revenue water was in the Southwestern region. Only in the Southeast regionern the rate of Invoiced water was higher than the rate of Non-revenue water.

Figure 4-3: Produced, Invoiced water and Non-revenue water (%) in 2020 per planning regions



4.3.2. Coverage of the Water supply service

An important datum for the analysis is how PUCs - water service providers - cover households and other beneficiaries with water services on the territory of the LSGU where such PUCs are established, as well as on the territory of the planning regions. This is significant in terms of the fact that not all households and other beneficiaries in the LSGUs receive the services of the PUCs- providers of water service. Tables 4-4 and 4-5 summarize the water supply coverage.

Table 4-4: Summary of the coverage with Water Supply service by PUCs in LSGUs with over 10,000 p.e.

Datum	% of coverage with the service Water supply	% of coverage with the service Water supply
	2019	2020
Number of PUCs	29	29
Median (%)	90.00%	90.00%
Max (%)	100.00%	100.00%
Min (%)	27.00%	27.00%
Average value (%)	83.54%	83.70%
> Average value (PUC)	19	19
< Average value (PUC)	10	10
PUC (100% coverage)	1	1
< Average value (PUC)	10	10
PUC (100% coverage)	1	1

According to Table 4-4, 29 PUCs provided water supply in the LSGUs with over 10,000 p.e., with a median of 90% in 2019 and 2020, and the average value in percentage for the coverage with the Water Supply service was 83.54% in 2019 and 83.70% in 2020. In both years, 19 PUCs had a percentage coverage above the average value, and 10 PUCs had a coverage below the average value. PUC Mirmbajtja Zhelino had the minimal coverage (27.00%), while one only water supply provider had full coverage - PUC Vodovod i Kanalizacija Skopje (100%).

Table 4-5: Summary of the coverage with Water Supply service by PUCs in LSGUs below 10,000 p.e.

Datum	% of coverage with the service Water supply	% of coverage with the service Water supply
	2019	2020
Number of PUCs	36	36
Median (%)	80.50%	81.00%
Max (%)	100.00%	100.00%
Min (%)	3.00%	3.00%
Average value (%)	72.11%	72.78%
> Average value (PUC)	22	22
< Average value (PUC)	14	14
PUC (100% coverage)	4	4
< Average value (PUC)	14	14
PUC (100% coverage)	4	4

According to Table 4-5, there were 36 water supply providers in LSGUs below 10,000 p.e., with a median of 80.50% in 2019 and 81.00% in 2020, and the average value in percentage for the coverage with the Water Supply service was 72.11% in 2019 and 72.78% in 2020. In both years, 22 PUCs had a percentage coverage above the average value, and 14 PUCs had a coverage below the average value. PUC Mavrovo Mavrovi Anovi and PUC Gazi Baba - 2007

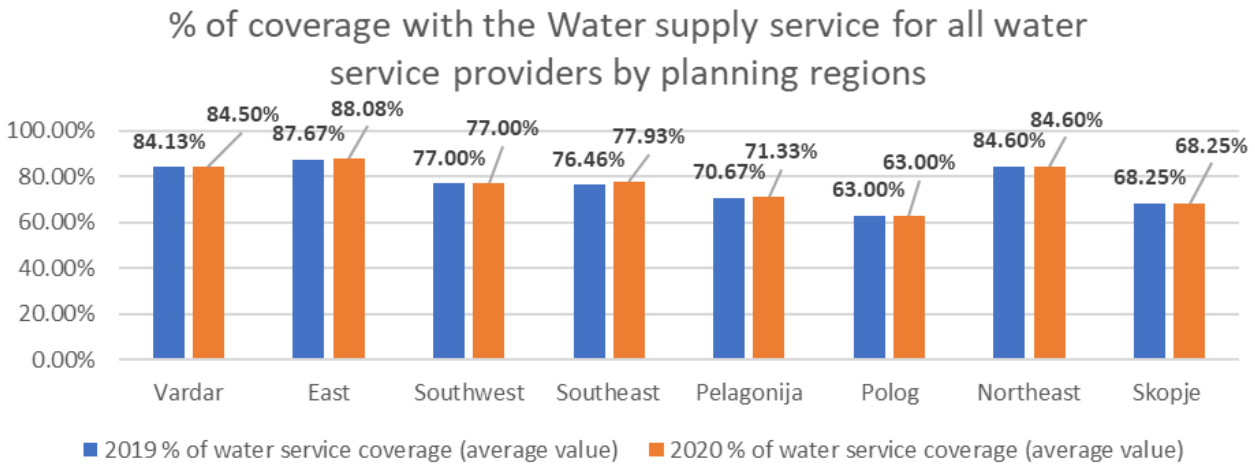
had minimal coverage of 3% and 7% respectively, while four water supply providers have full coverage (100%): PUC Eremija Vevchani, PUC Komunalec Plasnica, PUC Komunalec Polin Dojran and PUC Komunalec Demir Hisar.

Figure 4-4 provides an overview of the PUCs' coverage with Water Supply by planning regions, which is also given in Annex 2 as tabular overview.

The highest coverage was in the Eastern region with 88.08% (2020), and the lowest in the region of Polog with 63% (2020).

Also, in 2020, as seen from Figure 4-4, four planning regions had an increase in the Water Supply coverage compared to 2019: Southeast (1.92%), Pelagonija (0.94%), East (0.48%) and Vardar region (0.45%), while in the other four regions the percentage of coverage with the same service remained unchanged.

Figure 4-4: % of coverage with the Water supply service for all water service providers by planning regions



4.3.3. Water supply tariffs

The First Regulated Period lasted for three years, from 2018 until 2020. In this period, the tariffs for the Water Supply service were set for the providers in the LSGUs with over 10,000 population equivalent. The Second Regulated Period is with a duration of three years, from 2021 until 2023.

Also, the First Regulated Period lasted for three years, from 2019 until 2021, for the LSGUs with less than 10,000 population equivalent in which the tariffs for the Water supply service were set for the providers in these LSGUs. The second Regulated Period for these LSGUs is also three years and covers the period from 2022 to 2024.

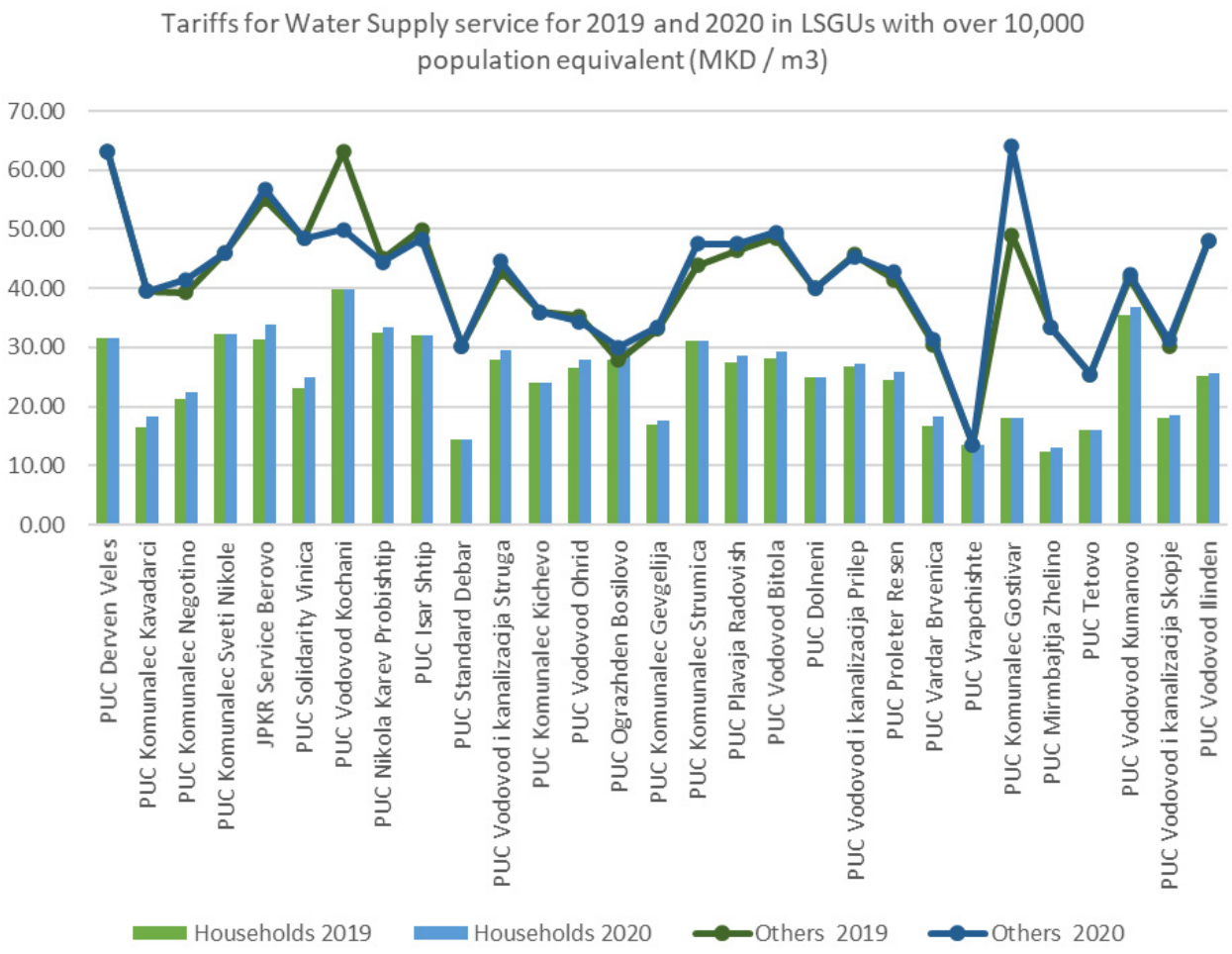
4.3.3.1. Tariffs in 2019 and 2020

4.3.3.1.1. Water supply providers in LSGUs with more than 10,000 population equivalent

Figure 4-5 shows the tariffs for the Water supply service for the providers in the LSGUs with over 10,000 population equivalent for 2019 and 2020, per categories of users: Households and Other beneficiaries.

As evident from the above, there was a variation in the amounts of tariffs for the Water Supply service for households as well as for Other beneficiaries. The minimum tariffs set for 2019 and 2020 for households were 12.37 MKD / m^3 and 13.00 MKD / m^3 respectively (both refer to PUC Mirmbajtja Zhelino), and the maximum tariff was set at 39.92 MKD / m^3 for both years (referring to PUC Vodovod Kochani). For Other beneficiaries the minimum established tariff for 2019 and 2020 was 13.60 MKD / m^3 (PUC Vrapchishte), and the maximum tariffs were set at 63.14 MKD / m^3 (PUC Vodovod Kochani) and 64.00 MKD / m^3 (PUC Komunalec Gostivar).

Figure 4-5: Tariffs for Water Supply service for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m^3)



Annex 3.1 provides a tabular overview of water supply tariffs for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m^3).

Table 4-6: Summary of tariffs for Water Supply service by PUCs in the LSGU with over 10,000 p.e. for 2019 and 2020

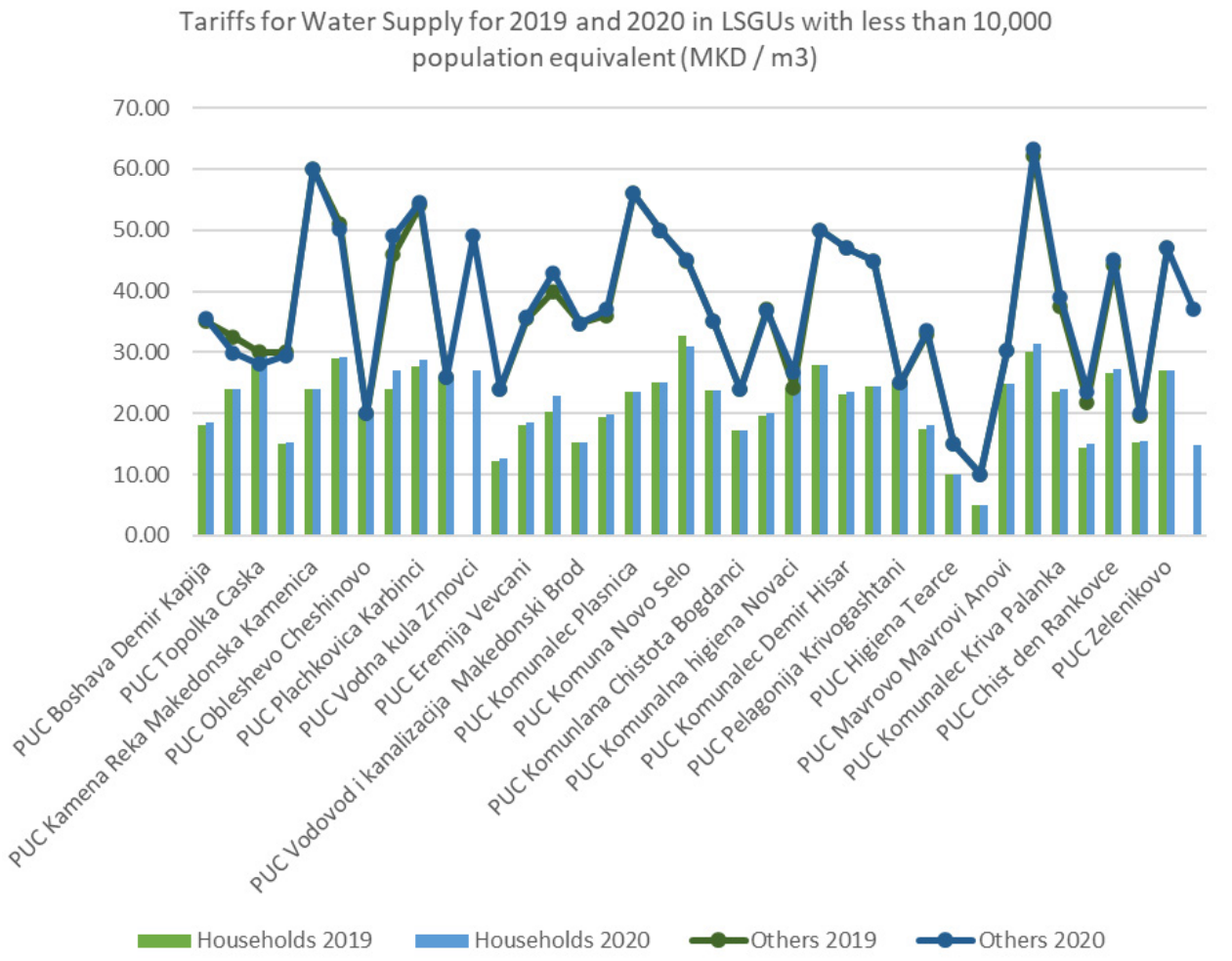
Datum	Households		Others	
	2019	2020	2019	2020
Median (MKD/m^3)	25.12	25.92	41.73	42.77
Max (MKD/m^3)	39.92	39.92	63.14	64.00
Min (MKD/m^3)	12.37	13.00	13.60	13.60
Average value (MKD/m^3)	24.70	25.49	41.12	41.67
> Average value (PUC)	16	16	16	16
< Average value (PUC)	13	13	13	13

There were 29 PUCs - water supply providers in the LSGUs with over 10,000 and according to Table 4-6 the median of the set tariffs for Households was 25.12 MKD / m^3 for 2019 and 25.92 MKD / m^3 for 2020, while for Other beneficiaries the median of the set tariffs is 41.73 MKD / m^3 for 2019 and 42.77 MKD / m^3 for 2020. The average value of the set tariffs for Water Supply for Households was 24.70 MKD / m^3 in 2019 and 25.49 MKD / m^3 in 2020, while for Other beneficiaries the average value of tariffs wass 41.12 MKD / m^3 for 2019 and 41.67 MKD / m^3 for 2020. In both years, 16 PUCs have set tariffs for Households and for Other beneficiaries above the average, while 13 PUCs' tariffs were below the average value.

4.3.3.1.2. Water Supply Providers in LSGUs below 10,000 population equivalent

Figure 4-6 shows the tariffs for the Water supply service for the providers in the LSGUs below 10,000 population equivalent for 2019 and 2020, per categories of users: Households and Others beneficiaries.

Figure 4-6: Tariffs for Water Supply for 2019 and 2020 in LSGUs below 10,000 population equivalent (MKD / m³)



As evident from the above, there is a variation in the amounts of tariffs for the Water Supply service for Households as well as for Other beneficiaries. The minimum tariff set for 2019 and 2020 for Households was 5.00 MKD / m³ (PUC Shari Bogovinje), and the maximum tariffs were set at 32.63 MKD / m³ (PUC Turija Vasilevo) for 2019 and MKD 31.33 / m³ (PUC Kozjak Staro Nagoricane) for 2020. While for the Other beneficiaries the minimum tariff set for 2019 and 2020 was 10.00 MKD / m³ (PUC Shari Bogovinje), and the maximum tariff for 2019 is 62.19 MKD / m3 and 63.23 MKD / m³ for 2020 year (both refer to PUC Kozjak Staro Nagoricane).

Annex 3.1 provides a tabular overview of Water Supply tariffs for 2019 and 2020 for water supply providers in LSGUs below 10,000 population equivalent (MKD / m³).

Table 4-7: Summary of the determined tariffs for Water Supply by PUC in LSGU below 10,000 p.e. for 2019 and 2020

Datum	Households		Others	
	2019	2020	2019	2020
Median (MKD/m³)	23,67	23,90	35,25	36,29
Max (MKD/m³)	32,63	31,33	62,19	63,23
Min (MKD/m³)	5,00	5,00	10,00	10,00
Average value (MKD/m³)	21,71	22,09	36,49	37,13
> Average value (PUC)	21	23	16	16
< Average value (PUC)	15	15	20	22

There are 38 PUCs - water supply providers in the LSGU with over 10,000 and according to Table 4-6 the median of the set tariffs for households was 23.67 MKD / m^3 for 2019 and 23.90 MKD / m^3 for 2020, while for other beneficiaries the median of the set tariffs was 35.25 MKD / m^3 for 2019 and 36.29 MKD / m^3 for 2020. The average value of the set tariffs for Water Supply for households is 21.71 MKD / m^3 in 2019 and 22.09 MKD / m^3 in 2020, while for other beneficiaries the average value of tariffs was 36.49 MKD / m^3 for 2019 and 37.13 MKD / m^3 for 2020. In 2019, 21 PUCs have set tariffs for Households above the average, and in 2020 there were 23 such PUCs, while 15 PUCs' tariffs were set below the average value for both years. Also, in 2019 and 2020, 16 PUCs had set tariffs for Other beneficiaries above the average value, while in 2019, 20 PUCs tariffs were set below the average value, and in 2020, 22 PUCs tariffs were set below the average value.

4.3.3.2. Review of tariffs for the period from 2021 to 2023

This analysis reviews the average tariffs according to the Decisions for setting the water supply tariffs for the regulated period 2021-2023, for the service providers in LSGUs with over 10,000 population equivalent[12].

12 The analysis does not refer to the Decisions for setting the water supply tariffs for the regulated period 2022-2024, for service providers in the LSGU below 10,000 population equivalent, given that the process is not yet completed in all PUCs.

Table 4-8: Average tariffs for Water Supply for the second regulated period 2021-2023 in LSGUs with over 10,000 population equivalent (MKD / m^3)

No.	Water Supply service providers	Average tariffs		
		2021	2022	2023
1	PUC Derven Veles	41.78	42.09	41.10
2	PUC Komunalec Kavadarci	24.90	25.37	25.64
3	PUC Komunalec Negotino	25.50	25.67	25.89
4	PUC Komunalec Sveti Nikole	43.65	43.98	44.40
5	PUC Usluga Berovo	37.79	38.36	38.97
6	PUC Solidarnost Vinica	28.65	29.71	30.28
7	PUC Vodovod Kochani	47.28	46.96	46.75
8	PUC Nikola Karev Probishtip	39.66	40.23	39.99
9	PUC Isar Shtip	37.77	39.27	40.32
10	PUC Standard Debar	20.23	20.82	21.74
11	PUC Vodovod i kanalizacija Struga	34.87	36.06	36.33
12	PUC Komunalec Kichevo	29.49	29.74	29.67
13	PUC Vodovod Ohrid	43.24	44.34	45.60
14	PUC Ograzhden Bosilovo	22.24	23.21	23.65
15	PUC Komunalec Gevgelija	22.05	22.12	22.03
16	PUC Komunalec Strumica	34.69	34.92	35.17
17	PUC Plavaja Radovish	30.85	32.01	33.24
18	PUC Vodovod Bitola	35.65	36.61	37.53
19	PUC Dolneni	31.14	31.60	32.06
20	PUC Vodovod i kanalizacija Prilep	32.60	33.30	34.04
21	PUC Proleter Resen	30.48	32.55	33.30
22	PUC Vardar Brvenica	16.63	16.81	17.00
23	PUC Vrapchishte	13.60	13.60	13.60
24	PUC Komunalec Gostivar	22.17	22.43	22.72
25	PUC Mirmbajtja Zhelino	13.10	13.26	13.42
26	PUC Tetovo	16.26	16.43	16.60
27	PUC Vodovod Kumanovo	33.60	33.76	33.94
28	PUC Vodovod I kanalizacija Skopje	22.54	23.24	23.14
29	PUC Vodovod Ilinden	31.96	31.89	31.80

Table 4-9: Summary of the Average Tariffs for Water Supply for the Second Regulated Period 2021-2023 in LSGUs with over 10,000 population equivalent (MKD / m³)

Datum	Average tariffs		
	2021	2022	2023
Median (MKD/m³)	30.85	31.89	32.06
Max (MKD/m³)	47.28	46.96	46.75
Min (MKD/m³)	13.10	13.26	13.42
Average value (MKD/m³)	29.81	30.36	30.69
> Average value (PUC)	16	16	16
< Average value (PUC)	13	13	13

There are 29 PUCs - water supply providers in the LSGU with over 10,000 and according to Table 4-9 the median of the average tariffs is 30.85 MKD / m^3 for 2021, 31.89 MKD / m^3 for 2022 and 32.06 MKD / m^3 for 2023. The average value of the set tariffs for Water Supply is 29.81 MKD / m^3 in 2021, 30.36 MKD / m^3 for 2022 and 30.69 MKD / m^3 in 2022. In the three years 16 PUCs have set tariffs above the average, while 16 PUCs' tariffs are set below the average value.

4.3.4. Collection rate for the Water supply service

The summary regarding the Collection rate for the Water Supply service for 2019 and 2020 by the PUCs in the LSGUs with population equivalent of more than and less than 10,000 are given in Table 4-10 and Table 4-11, while Figure 4-7 gives data per planning region.

Table 4-10: Summary of the Collection rate for the Water supply service by the PUCs in the LSGUs with over 10,000 p.e.

Datum	Collection rate for the water supply service	Collection rate for the water supply service
	2019	2020
Number of PUCs	29	29
Median (%)	85.00%	83.00%
Max (%)	100.00%	98.00%
Min (%)	45.00%	43.00%
Average value (%)	83.97%	79.39%
> Average value (PUC)	17	15
< Average value (PUC)	12	14
PUC (100% collection)	1	1

There are 29 PUCs - water supply providers in the LSGU with over 10,000 and according to Table 4-10 the median for the Collection rate for the Water supply service was 85% for 2019 and 83% for 2020. The average value of the Collection rate for the Water Supply service was 83.97% in 2019 and 79.39% in 2020. The maximum value of the Collection rate for 2019 was 100% (PUC Vodovod Ilinden), and 98.00% for 2020 (PUC Ograzhden Bosilovo). The minimum value of the collection rate for 2019 was 45% (PUC Komunalec Gostivar) and 43% (PUC Komunalec Gostivar) for 2020.

There were 17 PUCs in 2019 and 15 PUCs in 2020 that had a Collection rate above the average value. On the other hand, in 2019, the Collection rate of 12 PUCs was below the average value, while for 2020, there were 14 PUCs with lower-than-average Collection rate.

Table 4-11: Summary of the Collection rate for the Water supply service by the PUCs in the LSGUs with less than 10,000 p.e.

Datum	Collection rate for the water supply service	Collection rate for the water supply service
	2019	2020
Number of PUCs	36	36
Median (%)	83.00%	83.50%
Max (%)	100.00%	100.00%
Min (%)	37.00%	37.00%
Average value (%)	80.25%	79.78%
> Average value (PUC)	20	24
< Average value (PUC)	16	12
PUC (100% collection)	3	2

In this summary, there are 36 PUCs - water supply providers in the LSGUs with over 10,000 and according to Table 4-11 the median of the Collection rate for the Water supply service was 83.00% for 2019 and 83.50% for 2020. The average value of the Collection rate for the Water Supply service was 80.25% in 2019 and 79.78% in 2020. The maximum value of the Collection rate for 2019 was 100% (PUC Komuna Krushevo, PUC Mavrovo Mavrovi Anovi, and PUC Gazi Baba - 2007), as well as 100% in 2020 (PUC Shari Bogovinje, and PUC Mavrovo Mavrovi Anovi). The minimum value of the Collection rate for 2019 and 2020 was 37.00% (PUC Lakavica Konce).

There are 20 PUCs in 2019 and 24 PUCs in 2020 that have a Collection rate above the average value. On the other hand, in 2019, the Collection rate of 16 PUCs was below the average value, while in 2020, there were 11 PUCs with lower-than-average Collection rate.

Figure 4-7: Collection rate for the Water supply service by regions for all water service providers

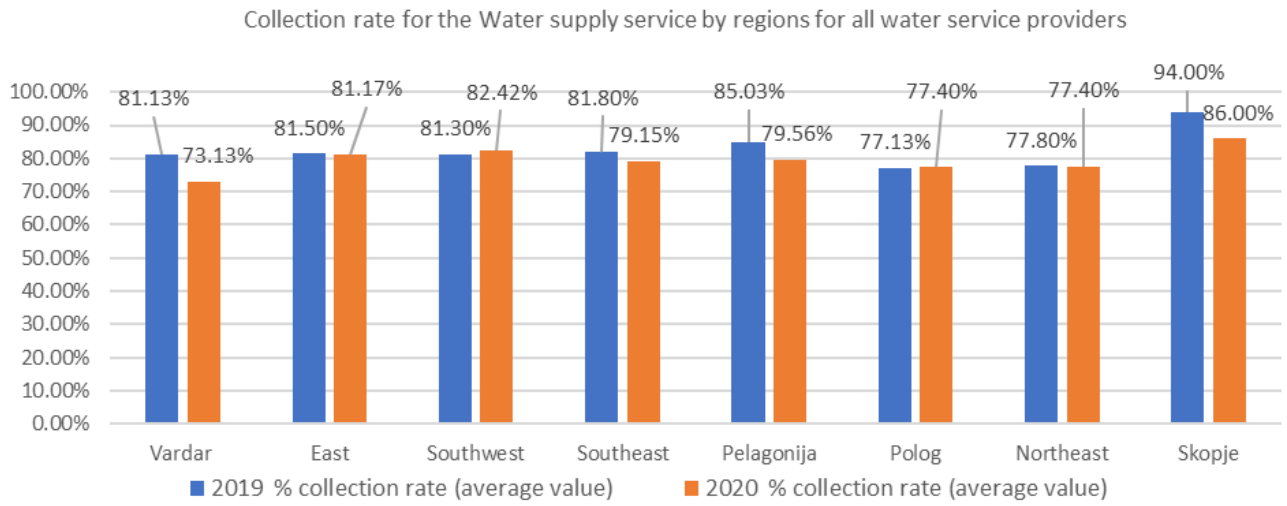


Figure 4-7 provides an overview of the Collection rate for the Water Supply service per regions for all water service providers.

The region of Skopje had the highest Collection rate for the Water Supply service in 2019 with 94.00%, and the lowest Collection rate was in the region of Polog with 77.13%. In 2020, the highest Collection rate for the Water Supply service, although lower than the previous year, was again in the region of Skopje with 86%, and the lowest ratio was in the region of Vardar with 73.13%.

As seen from Figure 4-7, in 2020, in two planning regions the PUCs had increased the Collection rate for the Water supply service compared to 2019: Southwest (1.38%) and the region of Polog (0.36%), while the PUCs in the other six regions had a reduced Collection rate for the Water supply service: Vardar (-9.86%), East (-0.41%), Southeast (-3.24%), Pelagonija (-6.44%), Northeast (-0.51%), and the region of Skopje (-8.51%).

Also, the tabular overview of coverage with Water Supply service by the PUCs in LSGUs per planning regions is given in Annex 4.

4.3.5. Expenditures to Revenues Ratio for the Water supply service

The analyzes of the Expenditures to Revenues Ratio for the Water Supply service for 2019 and 2020 for the PUCs in the LSGUs with population equivalents higher than and lower than 10,000 are given in Table 4-12 and Table 4-13, while Figure 4-7 offers an insight of the ratio per planning region.

Annex 5 provides a tabular overview of the Expenditures to Revenues Ratio for the Water Supply service for 2019 and 2020 for PUCs per planning region.

Table 4-12: Summary analysis of the expenditures to revenues ratio for the Water Supply service of the PUCs in the LSGUs with over 10,000 p.e.

Datum	Collection rate for the water supply service	Collection rate for the water supply service
	2019	2020
Number of PUCs	29	29
Median (%)	108.00%	109.00%
Max (%)	161.00%	162.00%
Min (%)	55.00%	54.00%
Average value (%)	106.31%	105.62%
> Average value (PUC)	15	15
< Average value (PUC)	14	14
PUC (100% collection)	22	21

In this summary, there are 29 PUCs - water supply providers in the LSGU with over 10,000 p.e. and according to Table 4-11 the median of the Expenditures to Revenues Ratio for the Water Supply service was 108.00% for 2019 and 109% for 2020. The average value of the e Expenditures to Revenues Ratio for the Water Supply service was 106.31% in 2019 and 105.62% in 2020. The maximum value of the ratio for 2019 was 161%, and in 2020 it was 162% (in both years it refers to PUC Tetovo). The minimum value of the Expenditures to Revenues Ratio for 2019 was 55% and 2020 was 54.00% (PUC Komunalec Gostivar).

There are 15 PUCs in 2019 and 2020 that have Expenditures to Revenues Ratio above the average value. In 2019 and 2020, 14 PUCs had a below the average value Expenditures to Revenues Ratio, while in 2019 there were 22, and in 2020 there were 21 PUCs with Expenditures to Revenues Ratio equal or greater than 100%.

Table 4-13: Summary of the Expenditures to Revenues Ratio for the Water supply service of the PUCs in the LSGU below 10,000 p.e.

Datum	Expenditures to Revenues Ratio for the water supply service	Expenditures to Revenues Ratio for the water supply service
	2019	2020
Number of PUCs	36	36
Median (%)	101.50%	102.50%
Max (%)	155.00%	193.00%
Min (%)	65.00%	57.00%
Average value (%)	102.72%	103.67%
> Average value (PUC)	17	17
< Average value (PUC)	19	19
PUC (100% coverage)	19	21

In this summary, there are 36 PUCs - water supply providers in the LSGUs with less than 10,000 p.e. and according to Table 4-13 the median of the Expenditures to Revenues Ratio for the water Supply service was 101.50% for 2019 and 102.50% for 2020. The average value of the Expenditures to Revenues Ratio for the Water Supply service for 2019 was 102.72%, while for 2020 it was 103.67%. The maximum value of the Expenditures to Revenues Ratio for 2019 was 155.00% (PUC Eremija Vevchani), and for 2020 it was 193% (PUC Klepa Gradsko). The minimum value of the Expenditures to Revenues Ratio for 2019 was 65% (PUC Zelenikovo), and for 2020 it was 57 (PUC Komunalec Plasnica).

There were 17 PUCs in 2019 and 2020 that had Expenditures to Revenues Ratio above the average value. In 2019 and 2020, 19 PUCs had a below the average value Expenditures to Revenues Ratio, while in 2019 there were 19 and in 2020 there were 21 PUCs with such ratio equal or greater than 100%.

Figure 4-8: Expenditures to Revenues Ratio for the Water Supply service for all water service providers

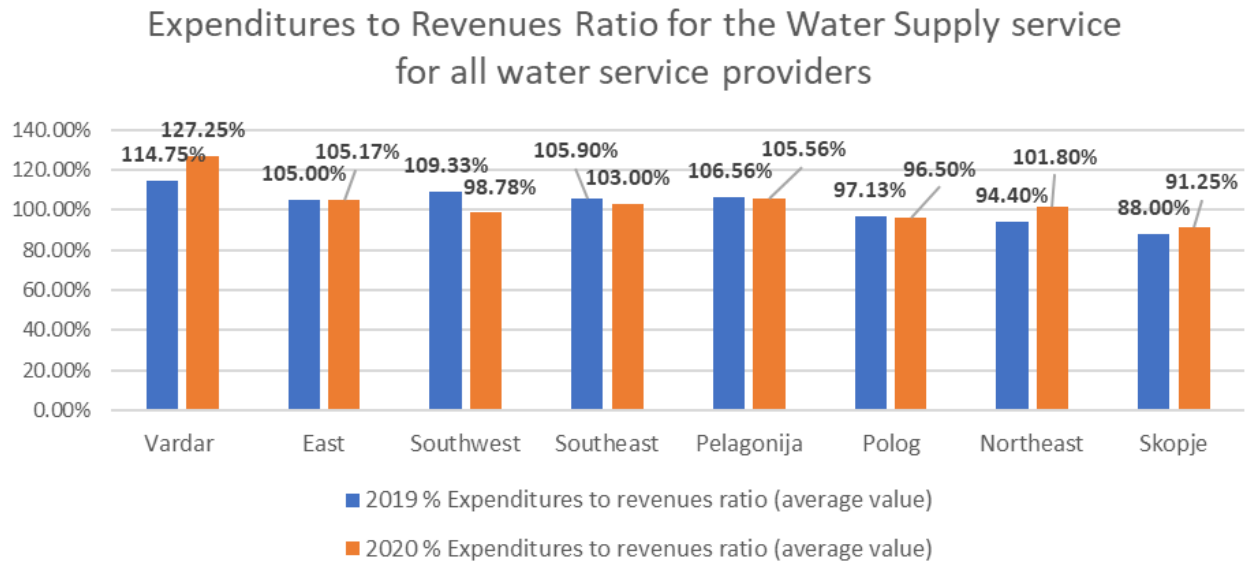


Figure 4-8 provides an overview of the Expenditures to Revenues Ratio for the Water Supply service per regions for all water service providers.

In 2019 and 2020, the highest Expenditures to Revenues Ratio of the Water Supply service was in the Vardar region with 114.75% and 127.25% respectively. As thus far, in 2019 and 2020, the lowest Expenditures to Revenues Ratio of the Water Supply service was in the region of Skopje with 88.00% and 91.25%, respectively.

As evident from Figure 4-8, in 2020 the PUCs in four planning regions had an increase of Expenditures to Revenues Ratio of the Water supply service: Vardar (10.89%), East (0.16%), Northeast (7.84%), and the region of Skopje (3.69%). While in the other four regions, in 2020, the PUCs had a decrease in the Expenditures to Revenues Ratio of the Water Supply service compared to 2019: Southwest (-9.65%), Southeast (-2.74%), Pelagonija (-0.94%), and the region of Polog (-0.64%).

The summary of the Number of PUC employees per 1,000 inhabitants for the Water Supply service for 2019 and 2020 in the LSGUs with population equivalents of more than and less than 10,000 are given in Table 4-14 and Table 4-15, while Figure 4-9 offers such an insight per planning region.

Annex 6 provides a tabular overview of the Number of employees per 1000 inhabitants for the Water Supply service for 2019 and 2020 of the PUCs in LSGUs by planning region.

Table 4-14: Summary of the Number of employees per 1000 inhabitants for the Water supply service at the PUCs in the LSGUs with over 10,000 p.e.

Datum	Number of employees per 1000 inhabitants for the Water Supply service	Number of employees per 1000 inhabitants for the Water Supply service
	2019	2020
Number of PUCs	29	29
Median	5.1	5.5
Max	9.4	10.5
Min	1.3	1.3
Average value	5.3	5.4
> Average value (PUC)	14	16
< Average value (PUC)	15	13

In this summary, there are 29 PUCs - water supply providers in the LSGUs with over than 10,000 p.e. and according to Table 4-14 the median of the Number of employees per 1000 inhabitants for the Water Supply service was 5.1 employee equivalent for 2019 and 5.5 for 2020. The average value of the Number of employees per 1000 inhabitants for the Water Supply service was 5.3 in 2019 and 5.4 in 2020. The maximum value of the Number of employees per 1000 inhabitants for 2019 was 9.4, and in 2020 it was 10.5 (in both years it refers to PUC Proleter Resen). The minimum value of the Number of employees per 1000 inhabitants for 2019 and 2020 was 1.3 (in both years it refers to PUC Komunalec Gostivar).

In 2019, for 14 PUCs and in 2020 for 16 PUCs the Number of employees per 1000 inhabitants was above the average value. While, in 2019, 15 PUCs, in 2020, 13 PUCs the Number of employees per 1000 inhabitants was below the average value.

Table 4-15: Summary of the Number of employees per 1000 inhabitants for the Water supply service in the PUCs in LSGUs below 10,000 p.e.

Datum	Number of employees per 1000 inhabitants for the Water Supply service	Number of employees per 1000 inhabitants for the Water Supply service
	2019	2020
Number of PUCs	36	36
Median	4.4	4.2
Max	9.0	8.8
Min	1.0	1.0
Average value	4.9	4.8
> Average value (PUC)	16	17
< Average value (PUC)	20	19

In this summary, there are 36 PUCs - water supply providers in the LSGUs with less than 10,000 p.e. and the median of the Number of employees per 1000 inhabitants for the Water Supply service was 4.4 employee equivalent for 2019 and 4.2 for 2020. The average value of the Number of employees per 1000 inhabitants for the Water Supply service was 4.9 in 2019 and 4.8 in 2020. The maximum value of the Number of employees per 1000 inhabitants for 2019 was 9.0, and in 2020 it was 8.8 (in both years it refers to PUC Kozjak Staro Nagorichane). The minimum value of the Number of employees per 1000 inhabitants for 2019 and 2020 was 1.0 (in both years it refers to PUC Komunalec Gostivar).

In 2019, for 16 PUCs and in 2020 for 17 PUCs the Number of employees per 1000 inhabitants was above the average value. In 2019, there were 20 PUCs and in 2020, 19 PUCs with the Number of employees per 1000 inhabitants below the average value.

Figure 4-9: Number of employees per 1000 inhabitants for the Water Supply service for all water service providers

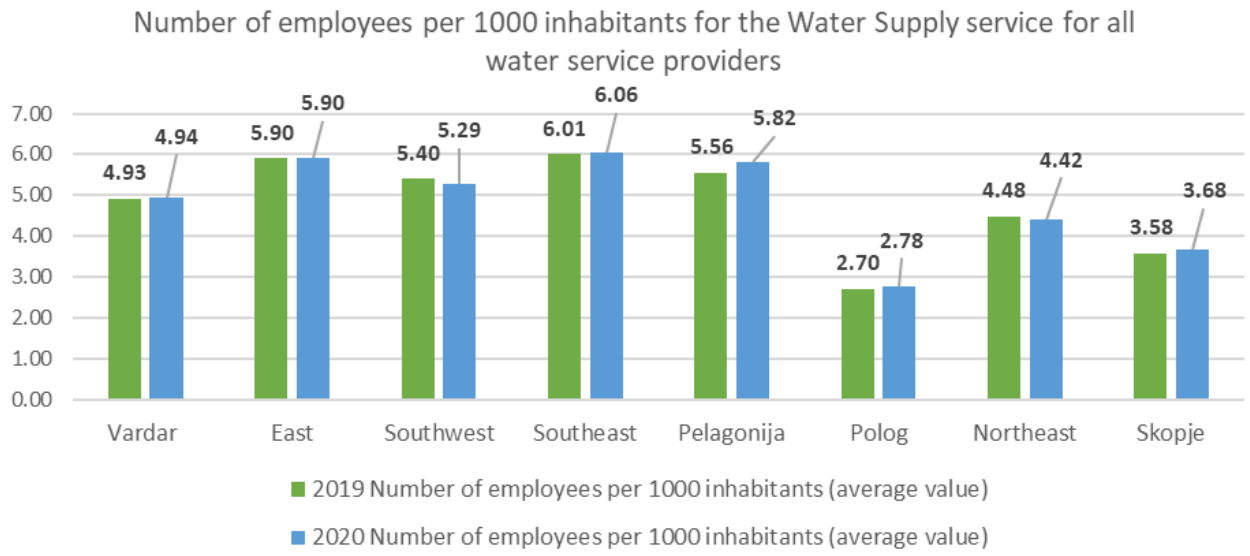


Figure 4-9 provides an overview of the Number of employees per 1000 inhabitants for the Water Supply service for all water service providers.

For the Water Supply service, the Southeastern region had the largest number of employees per 1000 inhabitants in 2019 and 2020, with 6.01 and 6.06 employees equivalent, respectively. As thus far, the lowest Number of employees per 1000 inhabitants for the Water Supply service in 2019 and 2020 was in the region of Polog with 2.70 and 2.78 employees equivalent, respectively.

As evident from Figure 4-9, in 2020 five planning regions had an increase in the Number of employees per 1000 inhabitants in PUCs for the Water supply service compared to 2019: Vardar (0.25%), Southeast (0.83%), Pelagonija (4.80%), Polog (2.78%) and the region of Skopje (2.80%), while the Eastern region had no change. Also in 2020, other two regions had a decrease in the Number of employees per 1000 inhabitants for the Water Supply service 2019: Southwest (-2.08%), and the Northeastern region (-2.74%).

4.4. Collection and drainage of urban wastewaters

4.4.1.Coverage with Urban wastewater collection and drainage service

After the analysis of the water supply, another one was made concerning the coverage with the Collection and drainage of urban wastewater by PUCs - water service providers, of households and other beneficiaries, on the territory of the LSGUs where such PUCs are established, as well as per planning region. This is a significant analysis as not all households and other beneficiaries in the LSGUs receive the service Collection and drainage of urban wastewater from PUCs - water service providers. Table 4-16 and Table 4-17 summarize the coverage with urban wastewater collection and drainage.

Table 4-16: Summary of the coverage with the Collection and drainage of urban wastewater by PUC in LSGUs with over 10,000 p.e.

Datum	% of coverage with the service Collection and drainage of urban wastewater	% of coverage with the service Collection and drainage of urban wastewater
	2019	2020
Number of PUCs	26	26
Median (%)	79.50%	82.50%
Max (%)	98.00%	98.00%
Min (%)	41.00%	38.00%
Average value (%)	74.46%	76.04%
> Average value (PUC)	14	15
< Average value (PUC)	12	11
PUC (100% coverage)	0	0

In this summary, there are 29 PUCs - water supply providers in the LSGUs with over than 10,000 p.e. and according to Table 4-16 the median was 79.50% in 2019 and 82.50% in 2020, and the average value of the percentage of coverage with the Collection and drainage of urban wastewater service was 74.46% in 2019 and 76.04% in 2020. In 2019, there were 14 PUCs with a percentage of coverage above the average value, while for 12 PUCs the percentage of coverage was below the average value. In 2020, 15 PUCs had above the average coverage and the coverage for 11 PUCs was below the average. The minimum coverage in 2019 (41.00%) was provided by two PUCs: PUC Vodovod Ilinden and PUC Vodovod i kanalizacija Struga, and in 2020 (38.00%) by PUC Vodovod i kanalizacija Struga Struga. The maximum values of the percentage of coverage with the service Collection and drainage of urban wastewater in 2019 and 2020 (98.00%) were noticed in the PUC Komunalec Kavadarci. None of the PUCs had full (100%) coverage with the service Collection and drainage of urban wastewater.

Table 4-17: Summary of the coverage with Collection and drainage of urban wastewater by PUC in LSGUs with less than 10,000 p.e.

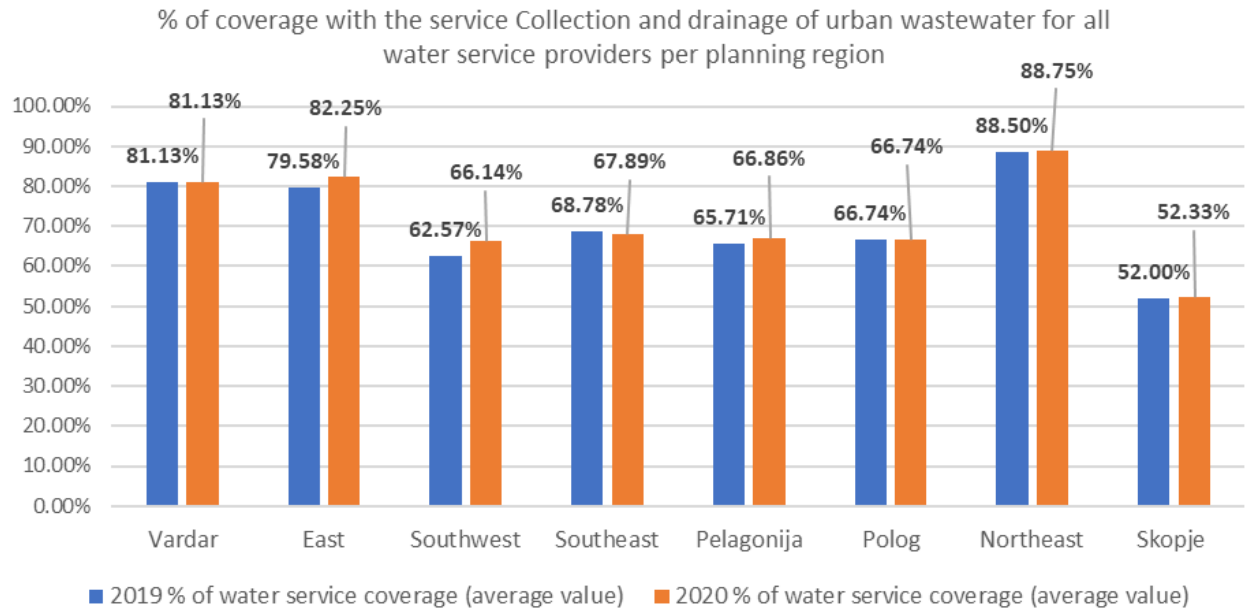
Datum	% of coverage with the service Collection and drainage of urban wastewater	% of coverage with the service Collection and drainage of urban wastewater
	2019	2020
Number of PUCs	28	28
Median (%)	73.50%	74.00%
Max (%)	100.00%	100.00%
Min (%)	3.00%	4.00%
Average value (%)	70.07%	70.71%
> Average value (PUC)	16	17
< Average value (PUC)	12	11
PUC (100% coverage)	4	4

In this summary, there are 36 PUCs - water supply providers in the LSGUs with less than 10,000 p.e. and according to Table 4-17 the median was 73.50% in 2019 and 74.00% in 2020, while the average value of percentage of coverage with the Collection and drainage of urban wastewater service was 73.50% in 2019 and 70.71% in 2020. In 2019 12 PUCs provided coverage above the average value, and 12 PUCs provided below the average coverage. In 2020, 17 PUCs provided coverage above the average value, and 11 PUCs provided below the average coverage. Minimum coverage in both 2019 and 2020 was provided by PUC Turija Vasilevo (3.00% and 4.00% respectively), and three providers had a full coverage (100%) for the Collection and drainage of urban waste waters service: PUC Eremija Vevcani, PUC Komunalec Polin Dojran, PUC Komunlana Chistota Bogdanci, and PUC Chist den Rankovce.

Figure 4-10 gives insight into the coverage with the service Collection and drainage of urban wastewater as provided by PUCs per planning region.

Annex 2 provides a tabular overview of such coverage with the water service Collection and drainage of urban wastewater by PUCs in the planning regions.

Figure 4-10: % of coverage with the service Collection and drainage of urban wastewater for all water service providers per planning region



The highest coverage with the service Collection and drainage of urban wastewater was in the Northeastern region, with 88.50% (2019) and 88.75 (2020), and the lowest in the region of Skopje, with 52.00% (2019) and 52.33% (2020).

Five planning regions had an increase in the coverage with the service Collection and drainage of urban wastewater by PUCs in 2020 compared to 2019: East (3.35%), Southwest (5.71%), Pelagonija (1.74%), Northeastern region (0.28%), and the region of Skopje (0.64%). In the Southeastern region there was a decrease of 1.29%, and in two regions, Eastern and Polog region, the percentage of coverage with the service Collection and drainage of urban wastewater remained unchanged.

4.4.2. Tariffs for the service Collection and drainage of urban wastewater

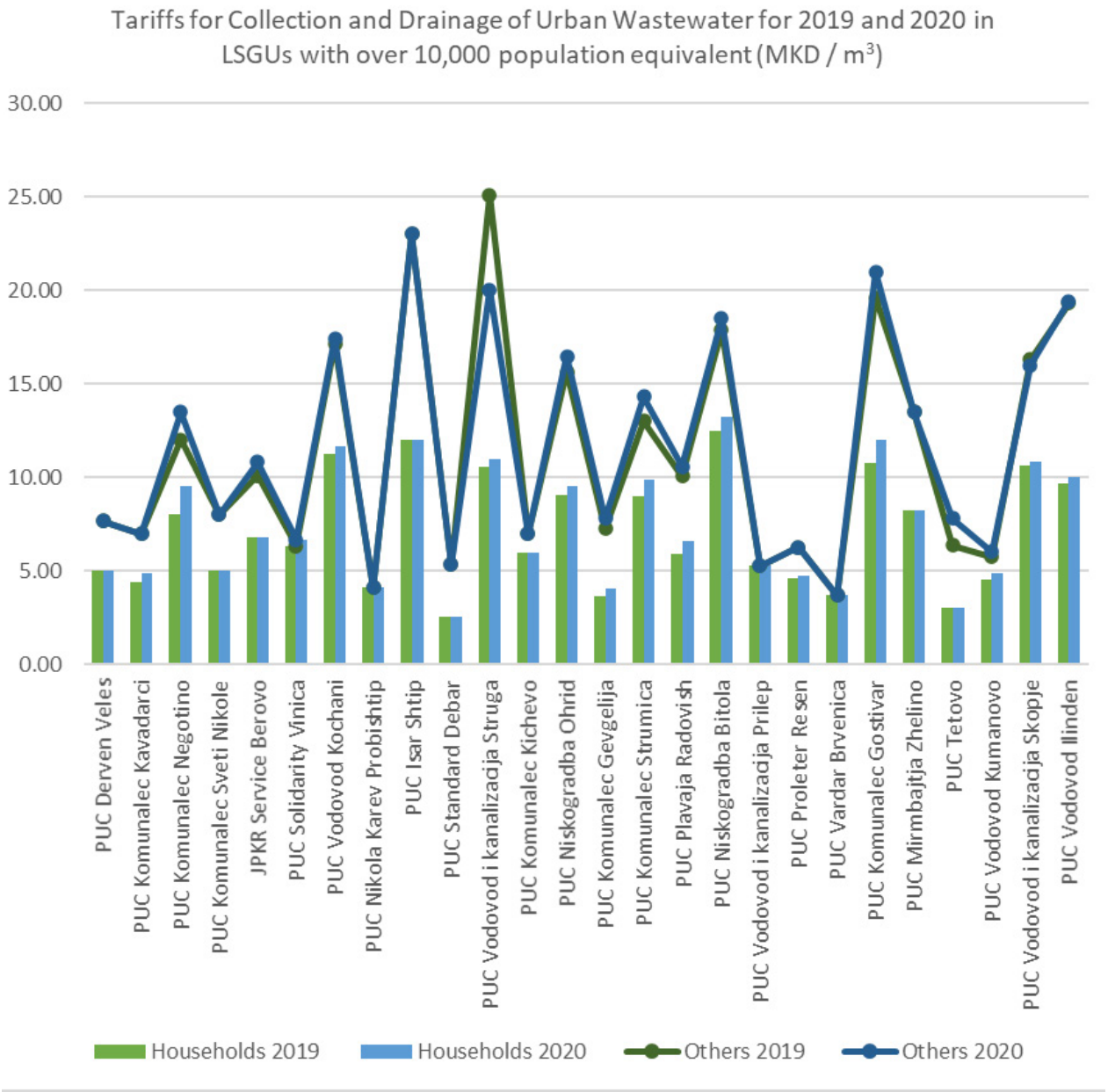
The service Collection and drainage of urban wastewater in LSGUs with more than and less than 10,000 population equivalent in the First and Second Regulated Periods coincides with the corresponding periods for the Water Supply service.

4.4.2.1. Tariffs for 2019 and 2020

4.4.2.1.1. Service providers for Collection and drainage of urban wastewater in LSGUs with over 10,000 population equivalent

Figure 4-11 gives an insight into the set tariffs for the service Collection and drainage of urban wastewater for the service providers in LSGUs with over 10,000 population equivalent for 2019 and 2020, according to categories of users: Households and Other beneficiaries.

Figure 4-11: Tariffs for Collection and Drainage of Urban Wastewater for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m³)



It is evident that for both years, different PUCs had variations in the tariffs for the service Collection and drainage of urban wastewater, both for Households and for Other beneficiaries. The minimum tariffs set for 2019 and 2020 for Households were 2.52 MKD / m^3 (PUC Standard Debar), and the maximum tariffs for 2019 were set at 12.50 MKD / m^3 and 13.21 MKD / m^3 for 2020. (PUC Niskogradba Bitola). While for the Other beneficiaries the minimum tariffs set for 2019 and 2020 were the same and amounted to 3.71 MKD / m^3 (PUC Vardar Brvenica), and the maximum tariffs for 2019 were set at 25.10 MKD / m^3 (PUC Vodovod i kanalizacija Struga) and at 23.00 MKD / m^3 (PUC Isar Shtip).

Annex 3.2 provides a tabular insight into the tariffs for the service Collection and drainage of urban wastewaters for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m^3).

Table 4-18: Summary of tariffs for collection and drainage of urban wastewaters for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m^3)

Datum	Households		Others	
	2019	2020	2019	2020
Median (MKD/m^3)	6.17	6.66	9.04	9.30
Max (MKD/m^3)	12.50	13.21	25.10	23.00
Min (MKD/m^3)	2.52	2.52	3.71	3.71
Average value (MKD/m^3)	7.02	7.35	11.26	11.43
> Average value (PUC)	11	11	11	11
< Average value (PUC)	15	15	15	15

In this summary, there are 26 PUCs - providers of the service of Collection and drainage of urban wastewater in the LSGUs with over 10,000 p.e., and the median of the set tariffs for Households was 6.17 MKD / m^3 for 2019 and 6.66 MKD / m^3 for 2020, while for the Other beneficiaries the median of the established tariffs was 9.04 MKD / m^3 for 2019 and 9.30 MKD / m^3 for 2020. The average value of the set tariffs for the service Collection and drainage of urban wastewater for households was 7.02 MKD / m^3 in 2019 and 7.35 MKD / m^3 in 2020, while for other beneficiaries the average value of the set tariffs was 11.26 MKD / m^3 for 2019 and 11.43 MKD / m^3 for 2020. In both years, the 11 PUCs PUCs had set tariffs for households and other beneficiaries above the average value and 15 PUCs had set tariffs below the average value.

4.4.2.1.2. Service providers of Collection and drainage of urban wastewaters in LSGUs with less than 10,000 population equivalent

Annex 3.2 provides the set tariffs for the service Collection and drainage of urban wastewaters for providers in LSGUs with less than 10,000 population equivalent for 2019 and 2020, according to categories of users: Households and Other beneficiaries.

Table 4-19: Summary of tariffs for collection and drainage of urban wastewaters for 2019 and 2020 in LSGUs with less than 10,000 population equivalent (MKD / m³)

Datum	Households		Others	
	2019	2020	2019	2019
Median (MKD/m³)	6.00	6.30	10.00	10.00
Max (MKD/m³)	12.54	12.54	24.45	24.45
Min (MKD/m³)	3.04	3.04	3.61	4.11
Average value (MKD/m³)	6.50	6.88	10.44	11.33
> Average value (PUC)	9	13	11	10
< Average value (PUC)	17	15	15	18

In this summary, there are 28 PUCs - providers of the service of Collection and drainage of urban wastewater in the LSGU with less than 10,000 p.e., and the median of the set tariffs for Households was 6 MKD / m³ for 2019 and 6.30 MKD / m³ for 2020, while for the Other beneficiaries the median of the set tariffs was 10 MKD / m³ for both 2019 and 2020. The average value of the set tariffs for the service Collection and drainage of urban wastewaters for households was 6.50 MKD / m³ in 2019 and 6.88 MKD / m³ in 2020, while for Other beneficiaries the average value of the set tariffs was 10.44 MKD / m³ for 2019 and 11.33 MKD / m³ for 2020. The were 9 PUCs in 2019, and 13 in 2020 that had set tariffs above the average value for households (2019), while there were 17 PUCs in 2019 and 15 in 2020 that had set tariffs below the average value. There were 11 PUCs in 2019 and 10 PUCs in 2020 that had set tariffs above the average value for other beneficiaries and 15 PUCs in 2019 and 18 in 2020 that had set tariffs below the average value.

4.4.2.2. Tariffs for collection and drainage of urban wastewater for the period 2021 - 2023

This analysis reviews the average tariffs according to the Decisions for setting the tariffs for the service Collection and drainage of urban wastewaters in the regulated period 2021-2023, for the service providers in LSGUs with over 10,000 population equivalent[13].

Table 4-20 shows the average tariffs for the service Collection and drainage of urban wastewaters for the Second regulated period 2021-2023 in LSGUs with over 10,000 population equivalent (MKD / m³).

13 The analysis does not refer to the Decisions for setting the water supply tariffs for the regulated period 2022-2024, for the providers of the service Water supply in the LSGUs with less than 10,000 population equivalent, considering that the process is not yet completed in all PUCs.

Table 4-20: Average tariffs for the Collection and drainage of urban wastewater service for the Second regulated period 2021-2023 in LSGUs with over 10,000 population equivalent (MKD / m^3)

No.	Providers of the service Collection and drainage of urban wastewater	Average tariffs		
		2021	2022	2023
1	PUC Derven Veles	5.21	5.51	5.72
2	PUC Komunalec Kavadarci	5.98	6.52	7.32
3	PUC Komunalec Negotino	9.02	9.08	9.15
4	PUC Komunalec Sveti Nikole	4.93	5.49	5.62
5	PUC Usluga Berovo	5.12	5.22	5.14
6	PUC Solidarnost Vinica	8.07	8.12	8.20
7	PUC Vodovod Kochani	16.25	15.92	15.67
8	PUC Nikola Karev Probishtip	4.08	4.42	4.63
9	PUC Isar Shtip	14.11	15.85	16.70
10	PUC Standard Debar	2.99	3.26	3.41
11	PUC Vodovod I kanalizacija Struga	11.56	10.65	9.96
12	PUC Komunalec Kichevo	7.07	13.39	19.51
13	PUC Niskogradba Ohrid	17.89	19.17	19.76
14	PUC Komunalec Gevgelija	5.87	6.37	7.14
15	PUC Komunalec Strumica	13.21	13.08	12.96
16	PUC Plavaja Radovish	4.51	5.21	5.74
17	PUC Niskogradba Bitola	13.54	13.62	13.69
18	PUC Vodovod I kanalizacija Prilep	5.57	5.76	5.83
19	PUC Proleter Resen	5.02	5.23	5.37
20	PUC Vardar Brvenica	7.46	7.59	7.72
21	PUC Vrapchishte	2.60	2.60	2.60
22	PUC Komunalec Gostivar	13.13	12.35	11.66
23	PUC Mirmbajtja Zhelino	8.23	7.89	7.56
24	PUC Tetovo	2.69	2.69	2.68
25	PUC Vodovod Kumanovo	4.51	4.50	4.51
26	PUC Vodovod i kanalizacija Skopje	12.73	12.99	13.25
27	PUC Vodovod Ilinden	10.69	11.13	10.92

The average tariffs in each of the 27 PUCs vary significantly among different PUCs, while within each PUC they do not vary drastically in this period of three years. The minimum average tariffs per the Decisions for setting the tariffs for the service Collection and drainage of urban wastewater for the regulated period 2021-2023 are 2.60 MKD / m^3 for 2021, 2022 and 2023 (all three refer to PUC Vrapchishte), and the maximum average tariffs are set for PUC Niskogradba Ohrid t 17.89 MKD / m^3 for 2021, 19.17 MKD / m^3 for 2022 and 19.76 MKD / m^3 for 2023.

Table 4-21: Summary of the average tariffs for the Collection and drainage of urban wastewaters service for the Second regulated period 2021-2023 in LSGUs with over 10,000 population equivalent (MKD / m^3)

Datum	Average tariffs		
	2021	2022	2023
Median (MKD/m^3)	7.07	7.59	7.56
Max (MKD/m^3)	17.89	19.17	19.76
Min (MKD/m^3)	2.60	2.60	2.60
Average value (MKD/m^3)	8.22	8.65	8.98
> Average value (PUC)	11	11	11
< Average value (PUC)	16	16	16

In this summary, there are 29 PUCs - providers of the service of Collection and drainage of urban wastewater in the LSGUs with more than 10,000 p.e., and according to Table 4-21 the median of the average tariffs is 7.07 MKD / m^3 for 2021, 7.59 MKD / m^3 for 2022 and 7.56 MKD / m^3 for 2023. The average value of the set average tariff for the service Collection and drainage of urban wastewater is 8.22 MKD / m^3 in 2021, 8.65 MKD / m^3 in 2022 and 8.98 MKD / m^3 in 2023. In all three years, there are 11 PUCs that have set tariffs above the average value, and 16 PUCs have set tariffs below the average value.

4.4.3. Collection rate for the service Collection and drainage of urban wastewater

The summary of the Collection rate of the service Collection and drainage of urban wastewaters for 2019 and 2020 per PUC in the LSGUs with more than and less than 10,000 p.e. is given in Table 4-22 and Table 4-23, while Figure 4-12 gives an insight per planning region.

Annex 4 provides a tabular overview of the Collection rate for the service Collection and drainage of urban wastewater for 2019 and 2020 for PUCs per planning regions.

Table 4-22: Summary of the collection rate of the service Collection and drainage of urban wastewater by the PUC in the LSGUs with over 10,000 p.e.

Datum	% of payment of water service Collection and drainage of urban wastewater	% of payment of water service Collection and drainage of urban wastewater
	2019	2020
Number of PUCs	26	26
Median (%)	85.00%	83.00%
Max (%)	100.00%	98.00%
Min (%)	44.00%	39.00%
Average value (%)	81.92%	79.67%
> Average value (PUC)	15	16
< Average value (PUC)	11	10
PUC (100% coverage)	1	1

There are 29 PUCs that provided the service Collection and drainage of urban wastewater in the LSGUs with over 10,000 p.e., and according to Table 4-22 the median of the Collection rate for the service Collection and drainage of urban wastewater was 85% in 2019 and 83% in 2020. The average value of the Collection rate for the service Collection and drainage of urban wastewater was 81.92% in 2019 and 79.67% in 2020. The maximum value of the Collection rate was 100% in 2019 (PUC Vodovod Ilinden), and 98.00% (PUC Komunalec Kichevo) in 2020. The minimum value of the Collection rate for 2019 was 44.00%, and in 2020 it was 39.00% (both for PUC Tetovo).

In 2019, there were 15 PUCs that had a Collection rate above the average value, and in 2020 there were 16 such PUCs. On the other hand, there were 11 PUCs in 2019, and 10 PUCs in 2020 that had a Collection rate below the average value.

Table 4-23: Summary of the Collection rate for the service Collection and drainage of urban wastewaters per PUCs in the LSGUs below 10,000 p.e.

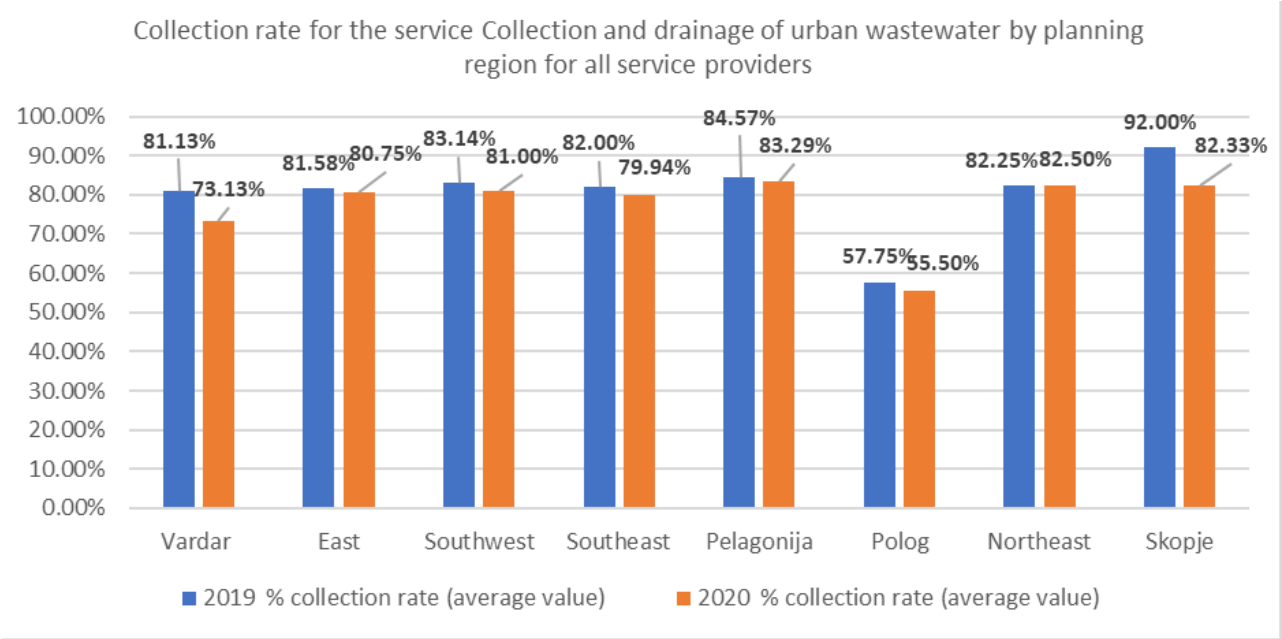
Datum	% of payment of water service Collection and drainage of urban wastewater	% of payment of water service Collection and drainage of urban wastewater
	2019	2020
Number of PUCs	28	28
Median (%)	84.00%	84.50%
Max (%)	100.00%	100.00%
Min (%)	35.00%	35.00%
Average value (%)	80.36%	79.36%
> Average value (PUC)	17	18
< Average value (PUC)	11	10
PUC (100% coverage)	2	1

There are 28 PUCs providers of the service Collection and drainage of urban wastewater in LSGUs with less than 10,000 p.e., and according to Table 4-23 the median of the Collection rate for the service Collection and drainage of urban wastewaters was 84.00% in 2019 and 84.50% in 2020. The average value of the Collection rate for the service Collection and drainage of urban wastewater was 80.36% in 2019 and 79.36% in 2020. The maximum value of the Collection rate in 2019 and in 2020 was 100% (PUC Turija Vasilevo). The minimum value of Collection rate for 2019 and 2020 was 35.00% (PUC Lakavica Konche).

In 2019, there were 17 PUCs and in 2020, 18 PUCs that had a Collection rate above the average value. In 2019 there were 11 PUCs and 10 in 2020, that had a Collection rate below the average value.

Figure 4-12 provides an insight into the Collection rate for the service Collection and drainage of urban wastewaters by regions for all water service providers.

Figure 4-12: Collection rate for the service Collection and drainage of urban wastewater by planning region for all service providers



The highest Collection rate for the water service Collection and drainage of urban wastewater in 2019 was in the region of Skopje with 92%, and the lowest in the region of Polog with 57.75%, while in 2020 the highest Collection rate for this service was in the region of Pelagonija with 83.29%, and the lowest in the region of Polog with 55.50%

It is evident from Figure 4-12 that there is a slight increase in the Collection rate for the service Collection and drainage of urban wastewater in 2020 compared to 2019 only in the PUCs in the Northeastern region (0.30%), while in the other seven regions there was a reduction of the Collection rate for the same service in the PUCs in the region of Vardar (-9.86%), Eastern region (-1.02%), Southwestern region (-2.58%), Southeastern region (-2.51%), region of Pelagonija (-1.52%), region of Polog (-3.90%) and the region of Skopje (-10.51%).

4.4.4. Expenditures to Revenues Ratio for the Service Collection and Disposal of Urban Wastewater

Table 4-24 and Table 4-25 give the summary of the Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater for 2019 and 2020 by PUC in LSGUs with more than and less than 10,000 p.e. , while the summary per planning regions is given in Figure 4-13.

Annex 5 provides an insight into the Expenditures to Revenues Ratio for the service collection and drainage of urban wastewater for 2019 and 2020 in PUCs per planning regions.

Table 4-24: Summary of the Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater of the PUC in the LSGUs with over 10,000 p.e.

Datum	% of expenditures to revenues ratio for the water service Collection and drainage of urban wastewater	% of expenditures to revenues ratio for the water service Collection and drainage of urban wastewater
	2019	2020
Number of PUCs	26	26
Median (%)	107,50%	116,00%
Max (%)	192,00%	191,00%
Min (%)	42,00%	81,00%
Average value (%)	114,92%	118,00%
> Average value (PUC)	12	13
< Average value (PUC)	14	13
PUC (100% coverage)	15	23

There are 26 PUCs providers of the service Collection and drainage of urban wastewater in LSGUs with more than 10,000 p.e., and according to Table 4-24 and Table 4-12 the median for the Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater was 107.50% in 2019 and 116.00% in 2020. The average Expenditures to Revenues Ratio for this service was 114.92% in 2019 and 118.00% in 2020. The maximum value of the Expenditures to Revenues Ratio for the service in 2019 was 192.00% (PUC Vodovod Kumanovo), and in 2020 it was 191.00% (PUC Derven Veles). The minimum value of this ratio for the same service in 2019 was 42.00% (PUC Komunalec Gostivar), and in 2020 it was 81.00% (PUC Komunalec Kavadarci).

In 2019, 12 PUCs had Expenditures to Revenues Ratio above the average value, while in 2020 this number was 13 PUCs. Also, in 2019, 14 PUCs had Expenditures to Revenues Ratio lower than the average value, with 13 such PUCs in 2020. The number of PUCs with Expenditures to Revenues Ratio equal or greater than 100%, in 2019 was 15, and in 2020 it was 23.

Table 4-25: Summary of Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater in the PUCs in the LSGUs with less than 10,000 p.e.

Datum	% of expenditures to revenues ratio for the water service Collection and drainage of urban wastewater	% of expenditures to revenues ratio for the water service Collection and drainage of urban wastewater
	2019	2020
Number of PUCs	28	28
Median (%)	100,50%	102,00%
Max (%)	232,00%	213,00%
Min (%)	35,00%	60,00%
Average value (%)	114,61%	115,75%
> Average value (PUC)	12	10
< Average value (PUC)	16	18
PUC (100% coverage)	16	18

The analyzed PUCs for the service providers Collection and drainage of urban wastewater in LSGUs with less than 10,000 p.e. was 28, and according to Table 4-25 and Table 4-12 the median of the Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater was 100.50% in 2019 and 102.00% in 2020 year. The average value of the Expenditures to Revenues Ratio for the service was 114.61% in 2019 and 115.75% in 2020. The maximum value of this ratio for the same service was 232.00% in 2019 and 213.00% in 2020 (in both years in PUC Komuna Krushevo). The minimum value of the ratio for the same service was 35.00% in 2019 (PUC Chist den Rankovce), and 60.00% in 2020 (PUC Komunalec Polin Dojran).

In 2019, 12 PUCs had the Expenditures to Revenues Ratio above the average value, and in 2020, 10 PUCs had the same outcome. Also, in 2019, 16 PUCs and in 2020, 18 PUCs had the Expenditures to Revenues Ratio below the average value. The number of PUCs that had this ratio equal to or greater than 100%, in 2019 was 16 PUCs, and in 2020 it was 18 PUCs.

Figure 4-13: Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater by planning regions for all water service providers

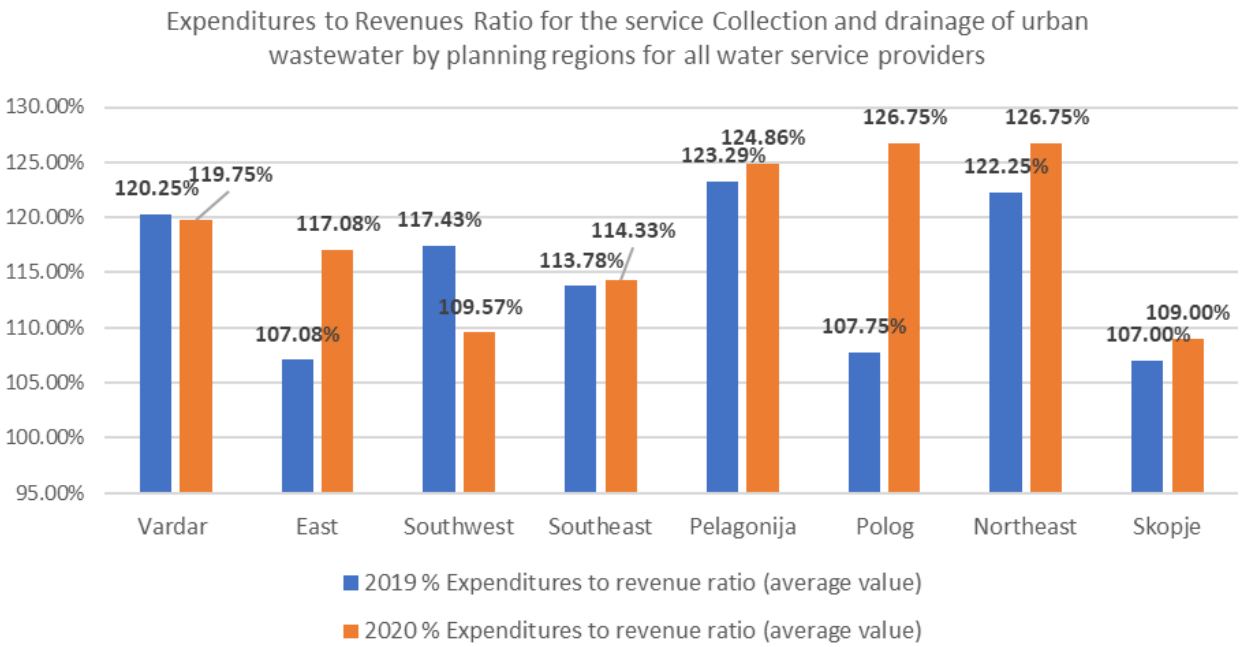


Figure 4-13 offers an insight into the Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater by regions for all service providers.

The highest Expenditures to Revenues Ratio for the service Collection and drainage of urban wastewater in 2019 was in the Pelagonija region (123.29%), and in 2020 it was in the region of Polog and Northeastern region (126.75%). The lowest Expenditures to Revenues Ratio for the same service in 2019 and in 2020 was in the region of Skopje with 107.00% and 109.00% respectively.

It is evident from Figure 4-13 that in 2020, six planning regions had an increase of the Expenditures to Revenues Ratio per PUC compared to 2019: East (9.34%), Southeast (0.49%), Pelagonija (1.27%), Polog (17.63%), Northeast (3.68%) and the region of Skopje (1.87%). While in the other two regions there was a decrease of the same ratio in 2020 compared to 2019: Vardar (-0.42%), and the Southwestern region (1.27%).

4.4.5. Number of employees for the service Collection and drainage of urban wastewater

Table 4-26 and Table 4-27 offer the summary of the Number of employees per 1000 inhabitants for the service Collection and drainage of urban wastewater for 2019 and 2020 per PUC in the LSGUs with more and with less than 10,000 p.e., while the summary per planning region is given in Figure 4-14.

Annex 6 provides an insight into the Number of employees per 1000 inhabitants for the service Collection and drainage of urban wastewater for 2019 and 2020 in PUCs per planning regions.

Table 4-26: Summary of the Number of employees per 1000 inhabitants for the service Collection and drainage of urban waters in PUCs in LSGUs with more than 10,000 p.e.

Datum	Number of employees per 1000 inhabitants for the service Collection and drainage of urban waters	Number of employees per 1000 inhabitants for the service Collection and drainage of urban waters
	2019	2020
Number of PUCs	26	26
Median	1,6	1,6
Max	3,7	3,7
Min	0,5	0,4
Average value	1,6	1,7
> Average value (PUC)	13	13
< Average value (PUC)	13	13

For the service Collection and drainage of urban wastewater, 26 PUCs were analyzed in the LSGUs with more than 10,000 p.e., and according to Table 4-26 the median of the Number of employees per 1000 inhabitants for the service is 1.6 employee equivalent for 2019 and 2020. The average value of the Number of employees per 1000 inhabitants for the service is 1.6 in 2019 and 1.7 in 2020. The maximum value of the Number of employees per 1000 inhabitants for 2019 and 2020 is 3.7 (in both years for PUC Komunalec Strumica). The minimum value of the Number of employees per 1000 inhabitants for 2019 is 0.5 (PUC Isar Shtip and PUC Tetovo), and for 2020 it is 0.4 (PUC Komunalec Gostivar).

In 2019 and 2020, in 13 PUCs the Number of employees per 1000 inhabitants was above the average value. In both years, 13 PUCs had a Number of employees per 1000 inhabitants below the average value.

Table 4-27: Summary of the Number of employees per 1000 inhabitants for the service Collection and drainage of urban waters in PUCs in LSGUs with less than 10,000 p.e.

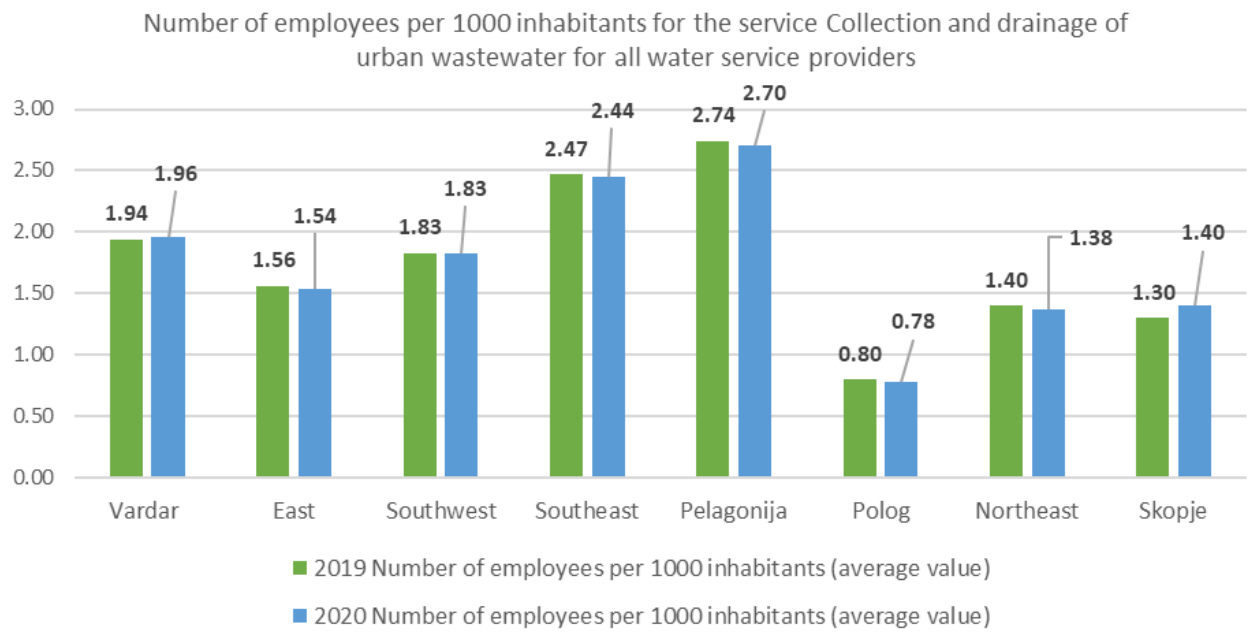
Datum	Number of employees per 1000 inhabitants for the service Collection and drainage of urban waters	Number of employees per 1000 inhabitants for the service Collection and drainage of urban waters
	2019	2020
Numebr of PUCs	28	28
Median	1,7	1,7
Max	8,8	8,8
Min	0,5	0,6
Average value	2,1	2,0
> Average value (PUC)	10	9
< Average value (PUC)	18	19

For the service Collection and drainage of urban wastewater, 28 PUCs were analyzed in the LSGUs with less than 10,000 p.e., and according to Table 4-27 the median of the Number of employees per 1000 inhabitants for the service was 1.7 employee equivalent for 2019 and for 2020. The average value of the Number of employees per 1000 inhabitants for the service was 2.1 in 2019 and 2.0 in 2020. The maximum value of the Number of employees per 1000 inhabitants for 2019 and 2020 was 8.8 (in both years in PUC Pela Higiena Mogila). The minimum value of the Number of employees per 1000 inhabitants for 2019 was 0.5 (PUC Vodna Kula Zrnovci), and for 2020 it was 0.6 (PUC Komuna Krushevo).

In 2019, there were 10 PUCs that had Number of employees per 1000 inhabitants above the average value and for 2020 it was 9 PUCs. In 2019, 18 PUCs had Number of employees per 1000 inhabitants below the average value and for 2020 it was 19 PUCs.

Figure 4-14 provides an overview of the Number of employees per 1000 inhabitants for the service Collection and drainage of urban wastewater by regions for all water service providers.

Figure 4-14: Number of employees per 1000 inhabitants for the service Collection and drainage of urban wastewater for all water service providers



The largest Number of employees per 1000 inhabitants for the service Collection and drainage of urban wastewater in 2019 and 2020 was in the Pelagonija region with 2.74 and 2.70 employees equivalent, respectively. As thus far, the lowest Number of employees per 1000 inhabitants for the same service in 2019 and 2020 was in the region Polog with 0.80 and 0.78 employees equivalent, respectively.

It is evident from Figure 4-14 that in two planning regions there is an increase in the Number of employees per 1000 inhabitants for the service Collection and drainage of urban wastewater by PUC in 2020 compared to 2019: Vardar (1.29%) and the region of Skopje (7.69%), while in the Southwestern region there was no change. While in the other five regions there was a decrease in the number of employees per 1000 inhabitants for the same service in the PUCs in 2020 compared to 2019: East (-1.07%), Southeast (-0.90%), Pelagonija (-1.56%), Polog (-3.13%) and the Northeast region (-1.79%).

4.5. Wastewater treatment

In 2020, there were 12 service providers for the Wastewater treatment service in LSGUs with more than 10,000 population equivalent in the Republic of North Macedonia, and 3 service providers in LSGUs with less than 10,000 population equivalent.

In the Republic of North Macedonia, the Wastewater treatment is the least developed water service, as it is not delivered to households and other users in all LSGUs. There are few providers of the service and a lack of sustainable financial resources, infrastructure, and human capital, which hinder the increase in the scope and quality of the Wastewater treatment service.

4.5.1. Coverage with the Wastewater treatment Service

Table 4-28 and Table 4-29 provide an insight into the providers of the service Wastewater treatment in LSGUs with more than and less than 10,000 population equivalent, as well as the percentage of the coverage with the service of the beneficiaries.

Table 4-28: Service providers for the Wastewater treatment and % of service coverage in the LSGUs with over 10,000 p.e.

No.	Wastewater treatment service providers in areas with more than 10,000 population equivalent	% of coverage with service	% of coverage with service	Difference
		2019	2020	20/19
1	PUC Service Berovo	71%	71%	0%
2	PUC Vodovod Kochani	74%	97%	31%
3	PUC Kolesktorski sistem Skopje	62%	62%	0%
4	PUC Komunalec Kichevo	49%	49%	0%
5	PUC Komunalec Gevgelija	75%	75%	0%
6	PUC Komunalec Strumica	80%	70%	-13%
7	PUC Plavaja Radovish	59%	57%	-3%
8	PUC Niskogradba Bitola	1%	1%	0%
9	PUC Proleter Resen	66%	66%	0%
10	PUC Vodovod Kumanovo	84%	84%	0%
11	PUC Vodovod Ilinden	22%	22%	0%
12	PUC Vodovod i kanalizacija Prilep	91%	91%	0%

It is evident from Table 4-28 that the percentage of coverage with the service varies, and in 2019 and 2020 the highest coverage was noticed in PUC Vodovod i kanalizacija Prilep (91%), PUC Vodovod Kochani (74% in 2019 and 97% in 2020) and PUC Vodovod Kumanovo (84%). Most of the PUCs had the same percentage of the service coverage. Also, PUC Vodovod Kochani increased the percentage of coverage with the service, while PUC Komunalec Strumica and PUC Plavaja Radovish reduced the coverage. Additionally, PUC Vodovod i kanalizacija Skopje provided the service to an insignificant number of beneficiaries (while working on this Report, the construction of WWTP for the City of Skopje has started).

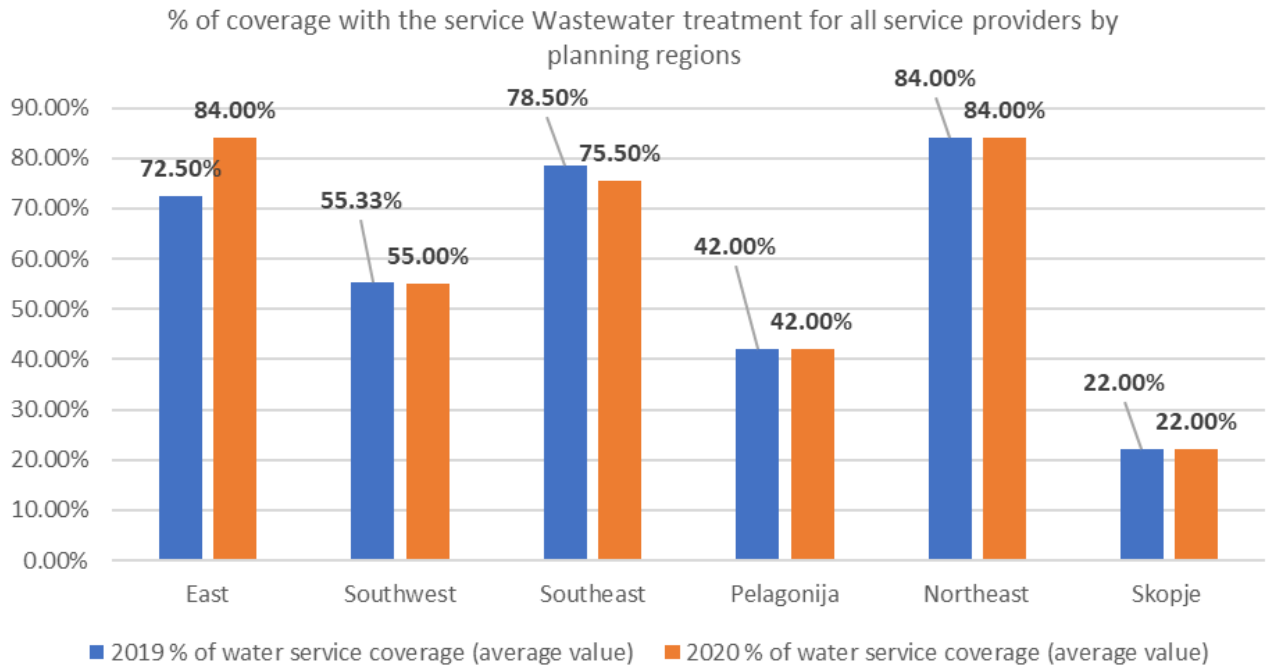
Table 4-29: Service providers for Wastewater treatment and % of service coverage in LSGUs with less than 10,000 p.e.

No.	Wastewater treatment service providers in areas with less than 10,000 population equivalent	% of coverage with service	% of coverage with service	Difference
		2019	2020	20/19
1	PUC Vodovod i kanalizacija Makedonski Brod	55%	54%	-2%
2	PUC Komunalec Polin Dojran	100%	100%	0%
3	PUC Pelagonija Krivogashtani	59%	59%	0%

Only PUC Komunalec Polin Dojran has 100% coverage with the service (Table 4-29). It should be noted that the above three LSGUs have a very small number of beneficiaries.

Figure 4-15 provides an insight into the coverage with the service Wastewater treatment by PUCs per planning regions.

Figure 4-15: % of coverage with the service Wastewater treatment for all service providers per planning regions



Only six planning regions provide the Wastewater treatment service. The highest coverage is in the Eastern and Northeastern region with 84% (2020), and the lowest in the region of Skopje with 22% (2020).

It is evident from the above that in three planning regions there is no change of the coverage with this service, and in the Eastern region there is an increase of 15.86%, while the coverage in the Southwestern (-0.60%) and in the Southeastern regions (-3.82%) has decreased.

4.5.2. Tariffs for Wastewater treatment service

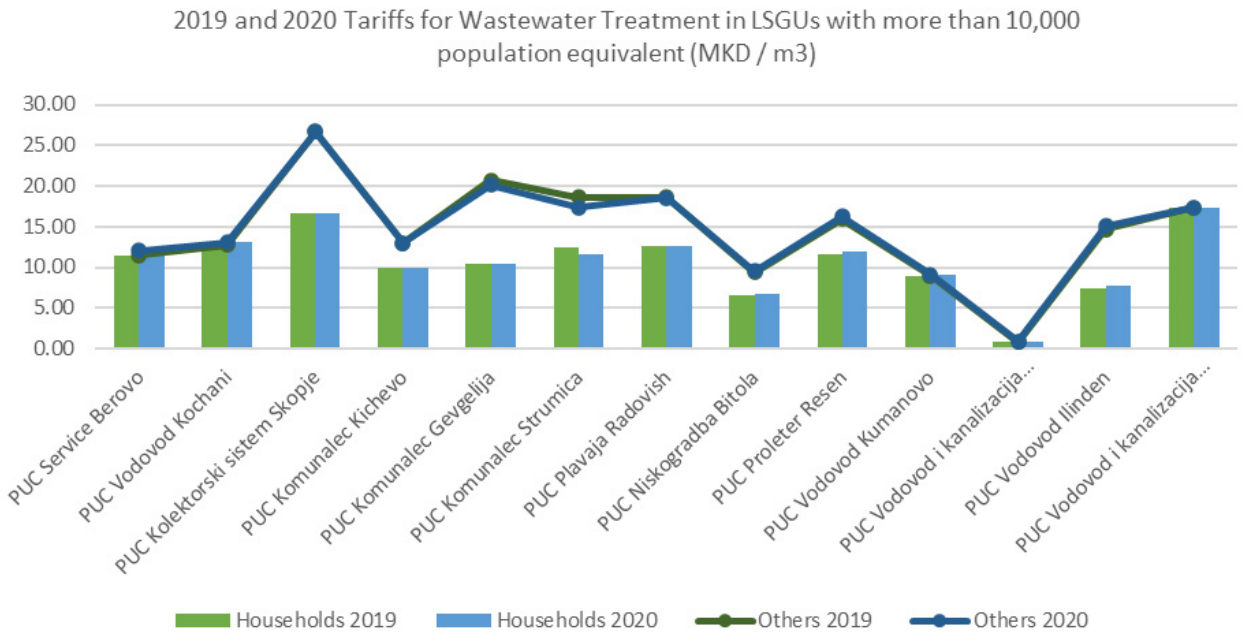
The First and Second Regulated Periods for the providers of the Wastewater treatment service in LSGUs with more than and less than 10,000 population equivalent coincide with the respective periods for the services Water supply and Collection and drainage of urban wastewater.

4.5.2.1. Tariffs in 2019 and 2020

4.5.2.1.1. Providers of the Wastewater treatment service in LSGUs with more than 10,000 population equivalent

Figure 4-16 gives insight into the 2019 and 2020 tariffs for the service Wastewater treatment of the providers in LSGUs with more than 10,000 population equivalent, according to categories of users: Households and Other beneficiaries.

Figure 4-16: 2019 and 2020 Tariffs for Wastewater Treatment in LSGUs with more than 10,000 population equivalent (MKD / m³)



For 2019 and 2020, the minimum set tariffs for the service Wastewater treatment for households were 0.85 MKD / m^3 and 0.86 MKD / m^3 respectively (both apply to PUC Vodovod i kanalizacija Skopje)[14], and the maximum tariffs were set at 17.35 MKD / m^3 for both years (PUC Vodovod i kanalizacija Prilep). For the other beneficiaries, for 2019 and 2020, the minimum set tariffs were the same: 0.85 MKD / m^3 and 0.86 MKD / m^3 respectively (PUC Vodovod i kanalizacija Skopje), and the maximum tariffs were set at 26.68 MKD / m^3 and at 26.70 MKD / m^3 (PUC Kolektorski sistem Skopje) respectively.

Annex 3.3 provides an insight into the tariffs for the service Wastewater Treatment for 2019 and 2020 in LSGUs with more than 10,000 population equivalent (MKD / m^3).

Table 4-30: Summary of the tariffs for Wastewater Treatment for 2019 and 2020 in the LSGU with more than 10,000 population equivalent (MKD / m^3)

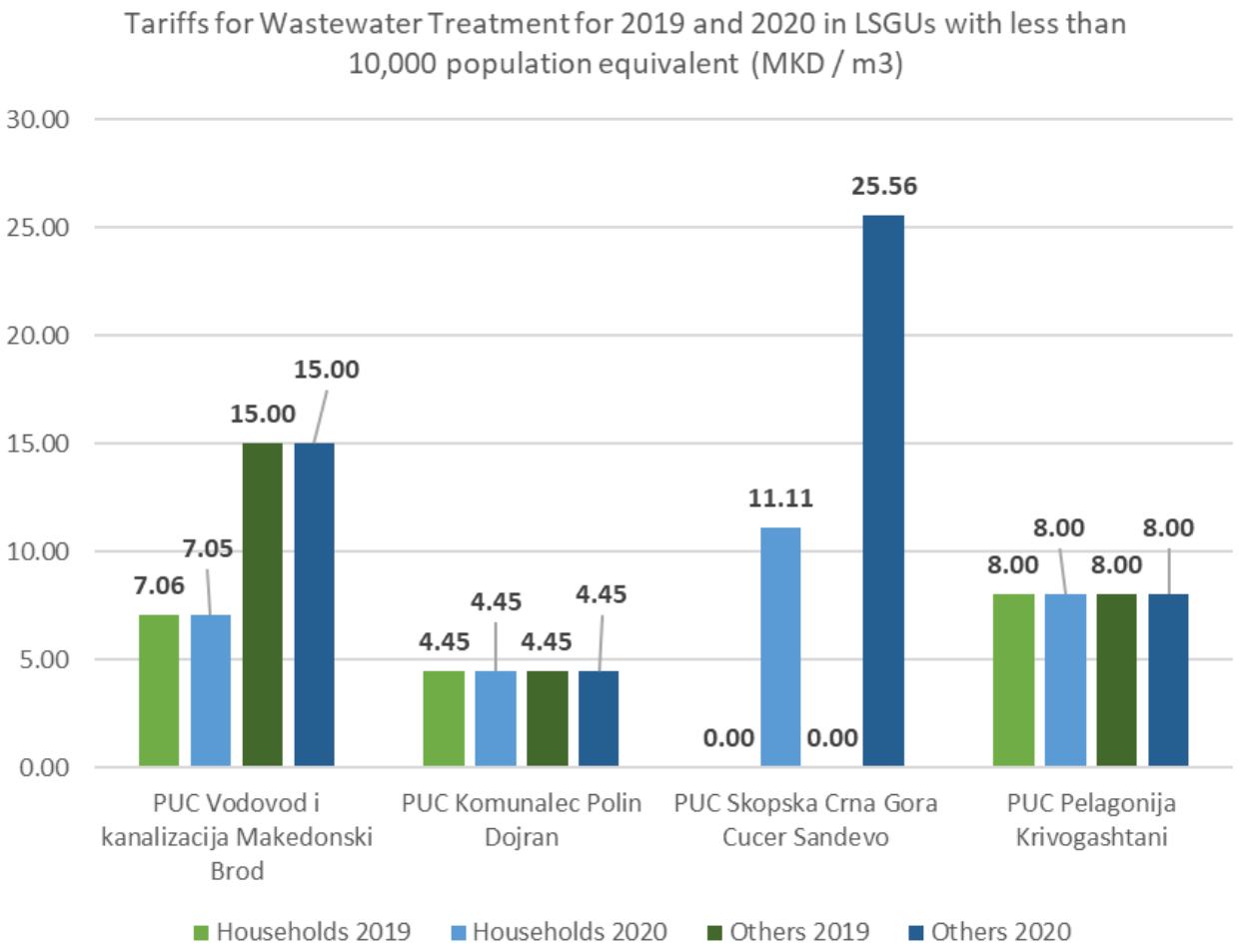
Datum	Households		Others	
	2019	2020	2019	2020
Median (MKD/m^3)	11.50	11.56	14.69	15.11
Max (MKD/m^3)	17.35	17.35	26.68	26.70
Min (MKD/m^3)	0.85	0.86	0.85	0.86
Average value (MKD/m^3)	10.70	10.79	14.54	14.55
> Average value (PUC)	7	7	7	7
< Average value (PUC)	6	6	6	6

n this summary, there are 13 PUCs - providers of the service Wastewater treatment in the LSGU with more than 10,000 p.e., and according to Table 4-30 the median of the set tariffs for Households was 11.50 MKD / m^3 for 2019 and 11.56 MKD / m^3 for 2020, while for Other beneficiaries the median of the set tariffs was 14.69 MKD / m^3 for 2019 and 15.11 MKD / m^3 for 2020. The average value of the set tariffs for the service Wastewater treatment for Households was 10.70 MKD / m^3 in 2019 and 10.79 MKD / m^3 in 2020, while for Other beneficiaries the average value of the set tariffs was 14.54 MKD / m^3 for 2019 and 14.55 MKD / m^3 for 2020. In both years, the number of PUCs that had set tariffs, both for Households and Other users, above the average value is 7, and below the average value is 6.

Figure 4-17 shows the tariffs for the service Wastewater treatment of the providers in LSGUs with less than 10,000 population equivalent for 2019 and 2020, according to categories of users: Households and Other beneficiaries.

14 These tariffs are low considering the current insignificant operating costs, which are shared with all beneficiaries in the City of Skopje.

Figure 4-17: Tariffs for Wastewater Treatment for 2019 and 2020 in LSGUs with less than 10,000 population equivalent (MKD / m³)



It is evident from the Figure that PUC Komunalec Polin Dojran (4.45 MKD / m³) and PUC Pelagonija Krivogashtani (8.00 MKD / m³) have the same tariffs for Households and for Other beneficiaries, while PUC Vodovod i kanalizacija Makedonski Brod and PUC Skopska Crna Gora Chucher Sandevo (from 2020) have tariffs for Other beneficiaries which are twice higher than the tariffs for Households.

4.5.2.2. Tariffs for Wastewater Treatment for the period 2021 - 2023

Table 4-31 analyzes the average tariffs according to the Decisions for setting the tariffs for the Wastewater treatment service for the regulated period 2021-2023, for the providers in LSGUs with more than 10,000 population equivalent, as given in MKD / m³ in Table 4-31.

Table 4-31: Summary of the average tariffs for the Wastewater treatment providers in LSGUs with more than 10,000 population equivalent

No.	Wastewater treatment service providers in areas with more than 10.000 population equivalent	Average tariffs	% на покриеност со водната услуга	Разлика
		2021	2022	2023
1	PUC Komunalec Sveti Nikole	2.82	2.86	2.90
2	PUC Usluga Berovo	15.23	15.48	15.74
3	PUC Vodovod Kochani	14.19	14.27	14.46
4	PUC Kolektorski sistem Skopje	25.17	25.71	26.11
5	PUC Komunalec Kichevo	8.26	8.33	8.40
6	PUC Komunalec Gevgelija	14.51	14.46	14.31
7	PUC Komunalec Strumica	11.89	12.07	12.25
8	PUC Plavaja Radovish	27.93	28.64	29.55
9	PUC Niskogradba Bitola	27.93	28.64	29.55
10	PUC Vodovod I kanalizacija Prilep	17.61	18.04	18.38
11	PUC Proleter Resen	12.24	12.37	12.43
12	PUC Vodovod Kumanovo	13.30	13.22	13.16
13	PUC Vodovod I kanalizacija Skopje	0.83	0.84	0.86
14	PUC Vodovod Ilinden	9.83	10.42	10.73

It is evident that the average tariffs in each of the 14 PUCs do not vary significantly in the three years. The minimum average tariffs set by the Decisions for setting the tariffs for the Wastewater treatment service for the regulated period 2021-2023 are 0.83 MKD / m^3 for 2021, 0.84 MKD / m^3 for 2022 and 0.86 MKD / m^3 for 2023 (PUC Vodovod i kanalizacija Skopje), and the maximum average tariffs are set at 27.93 MKD / m^3 for 2021, 28.64 MKD / m^3 for 2022 and 29.55 MKD / m^3 for 2023 (PUC Niskogradba Bitola).

Table 4-32: Summary of the average tariffs for the Wastewater treatment service for the Second regulated period 2021-2023 in the LSGU with more than 10,000 population equivalent (MKD / m³)

Datum	Average tariffs		
	2021	2022	2023
Median (MKD/m³)	13.75	13.75	13.74
Max (MKD/m³)	27.93	28.64	29.55
Min (MKD/m³)	0.83	0.84	0.86
Average value (MKD/m³)	14.41	14.67	14.92
> Average value (PUC)	6	5	5
< Average value (PUC)	8	9	9

According to Table 4-9 the median of the set average tariffs for 14 PUCs included in the analysis is 13.75 MKD / m^3 for 2021, 13.75 MKD / m^3 for 2022 and 13.74 MKD / m^3 for 2023. The average value of the set average tariffs for the Wastewater treatment service is 14.41 MKD / m^3 in 2021, 14.67 in 2022 and 14.92 MKD / m^3 in 2023. There are PUCs that have average tariffs set above the average value: 6 PUCs in 2021, 5 PUCs in 2022, and 5 PUCs in 2023. Also, the number of PUCs that have certain average tariffs below the average value in 2021 is 8 PUCs, in 2022 it is 9 PUCs and in 2023 it is 9 PUCs.

4.5.3. Collection rate for the Wastewater treatment service

Figure 4-18 and Figure 4-19 give insight into the Collection rate for the service Wastewater treatment for 2019 and 2020 for the PUCs in the LSGUs with less than 10,000 p.e., as well as by planning regions.

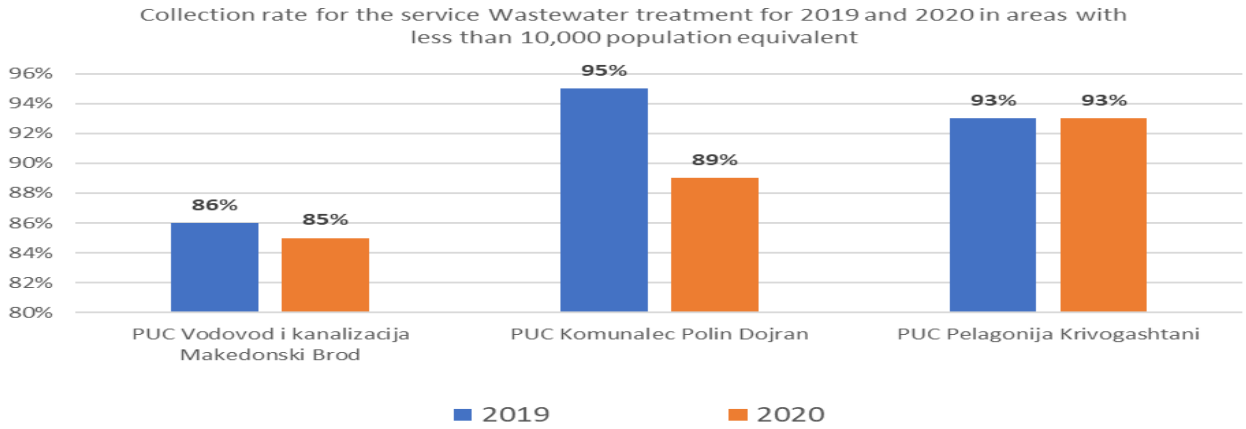
In this summary, there are 12 PUCs - providers of the service Wastewater treatment - in the LSGUs with more than 10,000 p.e., and according to Table 4-33 the median of the Collection rate for the service Wastewater treatment was 86.05% in 2019 and 85.95% in 2020. The average value of the Collection rate for the service collection is 86.09% in 2019 and 85.87% in 2020. The maximum value of the Collection rate for 2019 was 100% (PUC Vodovod Ilinden), and in 2020 it was 98.00% (PUC Niskogradba Bitola). The minimum value of the Collection rate for 2019 was 75.00% (PUC Komunalec Strumica), and 76.00% for 2020 (PUC Proleter Resen).

In 2019 and 2020 there were 6 PUCs with a Collection rate above the average value. Also, in 2019 and 2020 there were 6 PUCs with a Collection rate below the average value. In 2019, only the PUC Vodovod Ilinden had a 100% Collection rate for this service.

Table 4-33: Summary of the Collection rate for the service Wastewater treatment of the PUCs in the LSGU with more than 10,000 p.e.

Datum	Collection rate for the service Wastewater treatment	Collection rate for the service Wastewater treatment
	2019	2020
Number of PUCs	12	12
Median (%)	86.05%	85.95%
Max (%)	100.00%	98.00%
Min (%)	75.00%	76.00%
Average value (%)	86.09%	85.87%
> Average value (PUC)	6	6
< Average value (PUC)	6	6
PUC (100% coverage)	1	0

Figure 4-18: Collection rate for the service Wastewater treatment for 2019 and 2020 in areas with less than 10,000 population equivalent



The Figure below provides data on the Collection rate for the service Wastewater treatment for 2019 and 2020 in areas with less than 10,000 population equivalent.

It is evident from the Figure that PUC Vodovod i kanalizacija Makedonski Brod (86% and 85%) had the lowest Collection rate for the Wastewater Treatment service in 2019 and 2020, and PUC Komunalec Polin Dojran (95%) had the highest Collection rate in 2019, while PUC Pelagonija Krivogashtani (93%) had the highest Collection rate in 2020.

Figure 4-19: Collection rate for the Wastewater treatment service by planning regions for all service providers

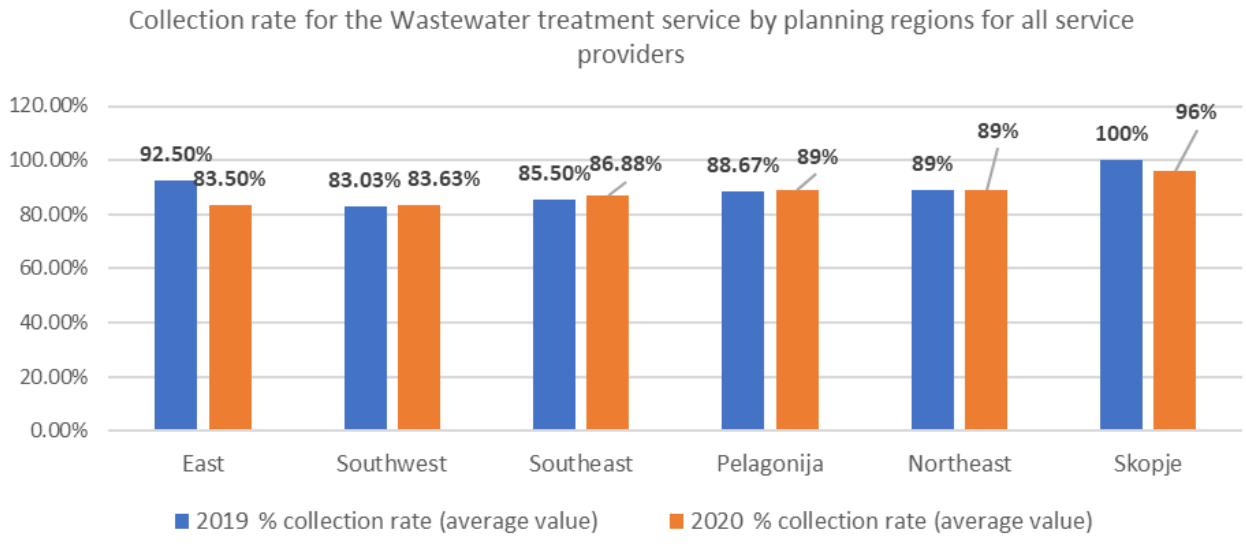


Figure 4-19 provides an insight into the Collection rate for the service Wastewater treatment by region for all water service providers.

Skopje region had the highest Collection rate in 2019 (100.00%), while the lowest Collection rate was in the Southwestern region (83.03%). In 2020, the region of Skopje has the highest Collection rate again, for the service water supply, though lower than the previous year (96.00%), and the lowest Collection rate for 2020 was in the Eastern region 83.50%.

In 2020 the PUCs of three planning regions had increased Collection rate in respect to 2019 for the Wastewater treatment service: Southwest (0.72%), Southeast (1.61%), and Pelagonija region (0.38%), in the Northeastern region there is no change in the Collection rate, while in the other two regions there is a decreased Collection rate for the service Wastewater treatment: East (-9.73 %), and the region of Skopje (-4.00%).

4.5.4. Expenditure to Revenues Ratio for the Wastewater Treatment service

Annex 5 provides an insight into the Expenditures to Revenues Ratio for the service Wastewater treatment for 2019 and 2020 of the PUCs by planning regions.

In this summary, there are 12 PUCs - providers of the service Wastewater treatment in the LSGUs with more than 10,000 p.e., and according to Table 4-34 the median for the Expenditures to Revenues Ratio for the service Wastewater treatment was 117.00% in 2019 and 101% in 2020. The average value of this ratio for the same service was 129.67% in 2019 and 102.25% in 2020. The maximum value of the Expenditures to Revenues Ratio in 2019 was 185.00% (PUC Komunalec Kichevo), and in 2020 it was 116% (PUC Komunalec Gevgelija). The minimum value of the ratio for the same service for 2019 was 98.00% (PUC Vodovod Kumanovo), and in 2020 it was 84.00% (PUC Komunalec Kichevo).

The number of PUCs that had Expenditures to Revenues Ratio for the service above the average value in 2019 was 4 PUCs, and in 2020 it was 5 PUCs. In 2019, 8 PUCs had Expenditures to Revenues Ratio for the service below the average value, and in 2020 7 PUCs had this ratio below the average value. In 2019, 11 PUCs had Expenditures to Revenues Ratio equal to or greater than 100%, and in 2020 this number was 10 PUCs.

Table 4-34: Summary of the Expenditures to Revenues Ratio for the service Wastewater treatment of the PUCs in the LSGUs with more than 10,000 p.e.

Datum	Expenditures to revenues ratio for the service Wastewater treatment	Expenditures to revenues ratio for the service Wastewater treatment
	2019	2020
Number of PUCs	12	12
Median (%)	117.00%	101.00%
Max (%)	185.00%	116.00%
Min (%)	98.00%	84.00%
Average value (%)	129.67%	102.25%
> Average value (PUC)	4	5
< Average value (PUC)	8	7
PUC (100% coverage)	11	10

It is evident from the Figure 4-20 that in 2019 and 2020, PUC Komunalec Polin Dojran (34% and 31%) had the lowest Expenditures to Revenues Ratio for the service Wastewater treatment, while the PUC Pelagonija Krivogashtani (96% and 126%) had the highest Expenditures to Revenues Ratio for the water service Wastewater treatment in 2019 and in 2020.

Figure 4-20: Expenditures to Revenues Ratio for the service Wastewater treatment for 2019 and 2020 in LSGUs with less than 10,000 population equivalent

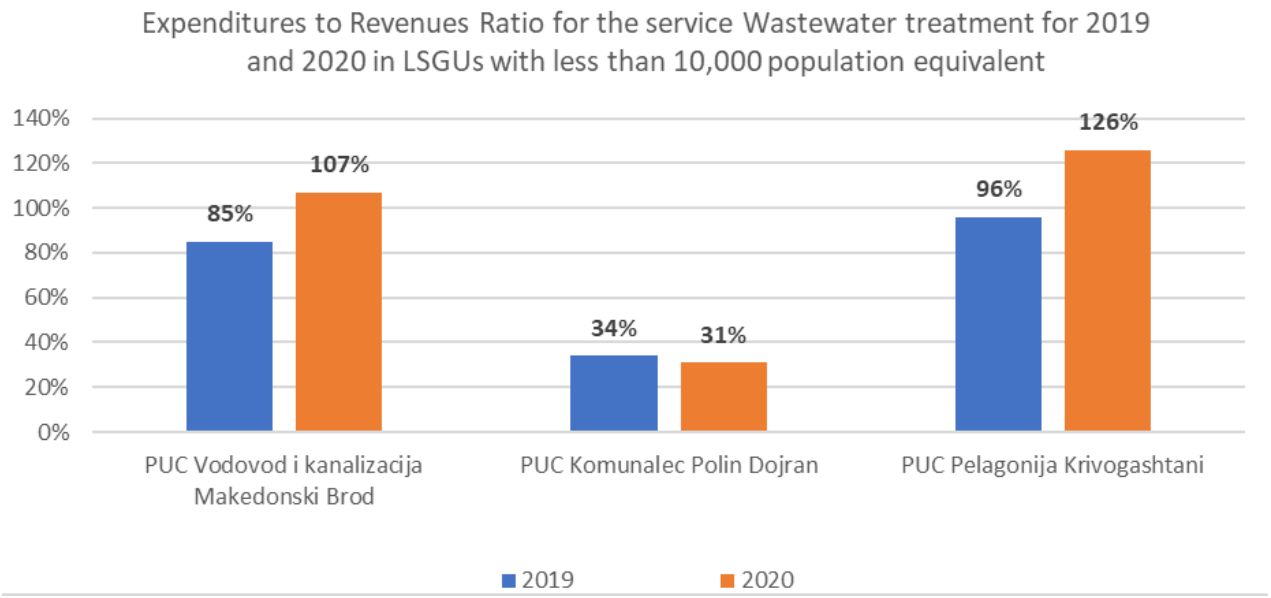
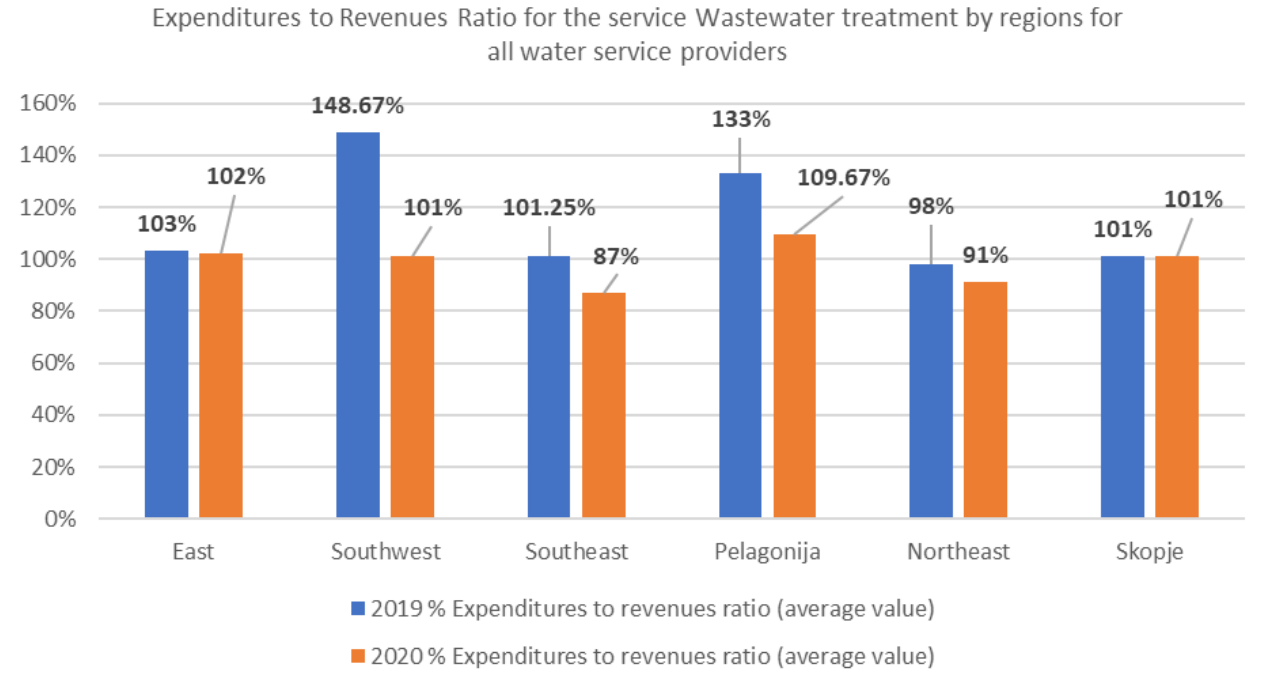


Figure 4-21 gives an insight into the Expenditures to Revenues Ratio for the service Wastewater treatment by regions for all water service providers.

Figure 4-21: Expenditure to Revenues ratio for the service Wastewater treatment by regions for all water service providers



The highest Expenditures to Revenues Ratio for the service Wastewater treatment in 2019 was in the Southwestern region (148.67%), and in 2020 it was in the Eastern region

(102.00%). The lowest ratio for the same service was noticed in the Northeastern region (98.00 %%) in 2019, and in 2020 in the Southeastern region (87.00%).

Except for the region of Skopje where the Expenditures to Revenues Ratio for the service Wastewater treatment by PUCs in 2020 compared to 2019 remained the same (101.00%), in the other five planning regions there is a significant reduction of the ratio for the same service in 2020 compared to 2019: East (-0.97%), Southwest (-32.06%), Southeast (-14.07%), Pelagonija (-17.54%) and the Northeastern region (-7.14%).

4.5.5. Number of employees for the Wastewater treatment service

The summary of the Number of employees per 1000 inhabitants for the service Wastewater treatment for 2019 and 2020 in PUCs from LSGUs with more than and less than 10,000 p.e. are given in Table 4-35 and Figure 4-22, while Figure 4-23 gives an insight per planning regions.

Annex 6 provides an insight into the Number of employees per 1000 inhabitants for the service Wastewater treatment for 2019 and 2020 in PUCs by planning regions.

Table 4-35: Summary of the Number of employees per 1000 inhabitants for the service Wastewater treatment in PUCs in LSGUs with over 10,000 p.e.

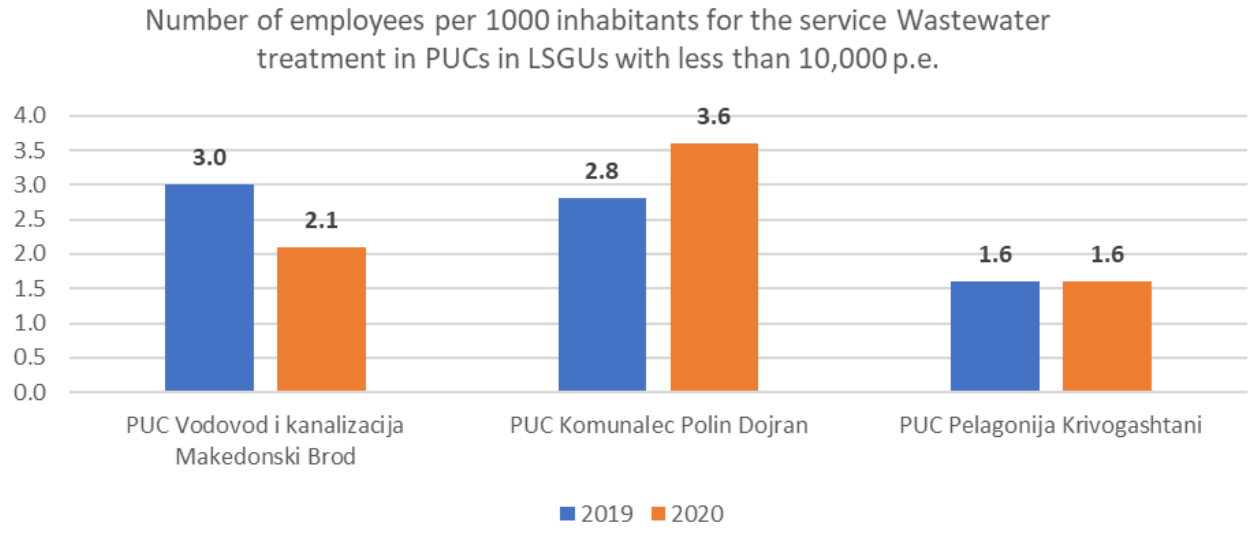
Datum	Number of employees per 1000 inhabitants for the service Wastewater treatment	Number of employees per 1000 inhabitants for the service Wastewater treatment
	2019	2020
Number of PUCs	12	12
Median	1,5	1,9
Max	3,2	3,3
Min	0,3	0,3
Average value	1,7	1,7
> Average value (PUC)	5	6
< Average value (PUC)	7	6

In this summary, there are 12 PUCs - providers of the service Wastewater treatment in the LSGUs with more than 10,000 p.e., and according to Table 4-35 the median for the Number of employees per 1000 inhabitants for the service Water supply was 1.5 employees equivalent for 2019 and 1.9 employees equivalent for 2020. The average value of the Number of employees per 1000 inhabitants for the service Wastewater treatment was 1.7 employees equivalent in 2019 and in 2020. The maximum value of the Number of employees per 1000 inhabitants for 2019 was 3.2 employees equivalent (PUC Proleter Resen), and in 2020 it

was 3.3 employees equivalent (PUC Vodovod Ilinden). The minimum value of the Number of employees per 1000 inhabitants for 2019 and 2020 was 0.3 employees equivalent (PUC Vodovod Kochani).

In 2019, there were 5 PUCs, and in 2020 there were 6 PUCs that had Number of employees per 1000 inhabitants above the average value. In 2019, there were 7 PUCs, and in 2020 there were 6 PUCs that had Number of employees per 1000 inhabitants above the average value.

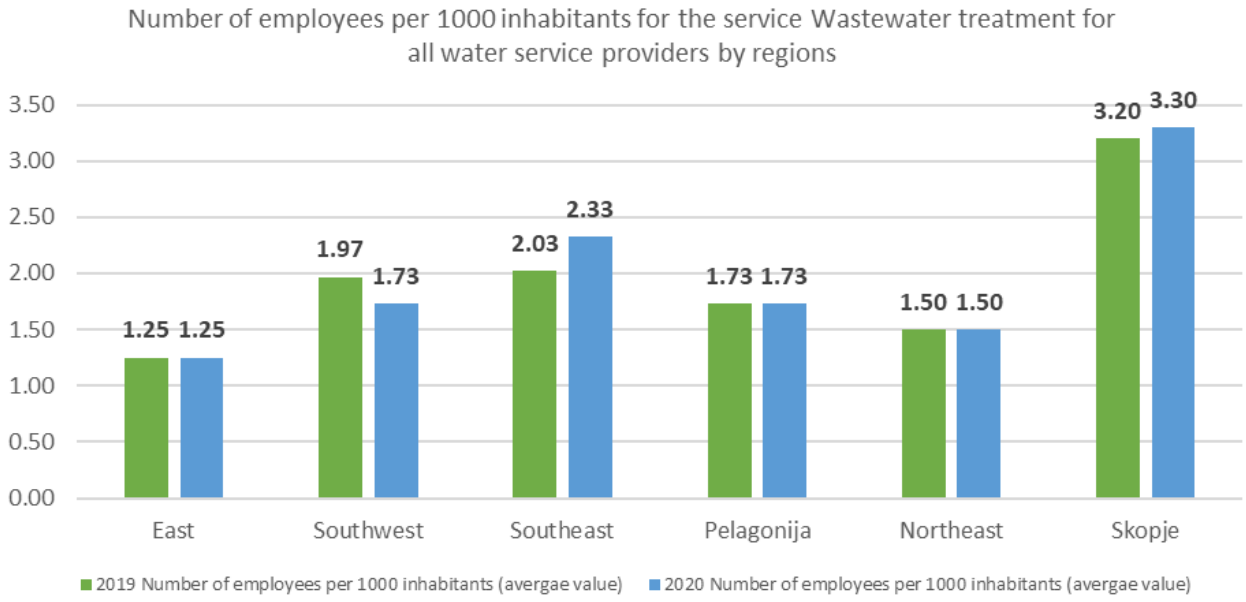
Figure 4-22: Number of employees per 1000 inhabitants for the service Wastewater treatment in PUCs in LSGUs with less than 10,000 p.e.



It is evident from Figure 4-22 that in 2019 and in 2020, PUC Pelagonija Krivogashtani (1.6 employees equivalent) had the lowest Number of employees per 1000 inhabitants for the service Wastewater treatment in LSGUs with less than 10,000 population equivalent. In 2019, PUC Vodovod i kanalizacija Makedonski Brod (3.0 employees equivalent) had the highest Number of employees per 1000 inhabitants, while in 2020 the largest Number was noticed for PUC Komunalec Polin Dojran (3.6 employees equivalent).

Figure 4-23 gives an insight into the Number of employees per 1000 inhabitants for the service Wastewater treatment for all providers by regions.

Figure 4-23: Number of employees per 1000 inhabitants for the service Wastewater treatment for all water service providers by regions



In 2019 and 2020, the region of Skopje had the highest Number of employees per 1000 inhabitants for the service Wastewater treatment (3.20 and 3.30 employees equivalent), while the Eastern region had the lowest Number of employees per 1000 inhabitants for the same service in 2019 and in 2020 (1.25 equivalent employees).

Also, it is evident from Figure 4-23 that in 2020 three planning regions had no change in the Number of employees per 1000 inhabitants for the service Wastewater treatment in PUCs compared to 2019: East, Pelagonija and the Northeastern region.

Two regions had an increase in the Number of employees per 1000 inhabitants for the service Wastewater treatment in 2020 compared to 2019: the Southeast (14.81%), and the region of Skopje (3.12%), while the Southwestern region had a decrease in the Number of employees per 1000 inhabitants for the same service (-11.86%).

5. PLANS AND ACTIVITIES FOR DEVELOPMENT OF THE WATER SERVICES SECTOR IN THE LOCAL SELF-GOVERNMENT UNITS

Article 22 of the Law on Local Self-Government[15] stipulates the competencies of LSGUs, among which are the water services (water supply, collection and drainage of urban wastewater and wastewater treatment) as part of the utilities' activities, within the responsibilities of the LSGUs.

In the past several decades the strategic planning, development planning, capital investment planning of the LSGUs played a significant part in the planning and construction of the water services infrastructure.

The utilities activities are executed per the development plans and programs adopted by the Municipal Councils (of the municipalities and the City of Skopje) for a three-year period. Based on these development plans, the PUCs founded by the LSGUs, adopt their annual programs by the end of each year for the following year, upon a prior consent of the Municipal Council.

The water services must be included in the LSGUs' development plans as LSGUs are obligated to provide conditions for organized and continuous provision of utilities, which of course include the water services. Also, it is even more important for all stakeholders to be involved in the planning process.

In addition to the adoption and implementation of the Law on Setting Prices of Water Services[16], the service providers develop Tariff Adjustment Plans in accordance with the data from their Business Plans. During the First and Second Regulated Periods, the ERC ensured the creation and implementation of the three-year business plans (with elements of strategic plans) for all service providers. These plans indicate the need for close cooperation between the service providers and the decision-makers on the enhancement of the water services sector at a local level. The LSGUs play a crucial role in establishing communication and synergy with the central government.

This is especially important given that LSGUs are the investors in the water services infrastructure, and water services are provided by the PUCs established by the LSGUs, or in some settlements these services are provided independently, as organized by the residents or local communities.

In order to be able to obtain the latest information on the activities of the LSGUs concerning the water services sector at the local level, ADKOM has developed and submitted to the LSGUs an online Questionnaire on the water services in the LSGU (Annex 1).

The questionnaire was answered by 14 LSGUs, where almost half of the population of the country lives.

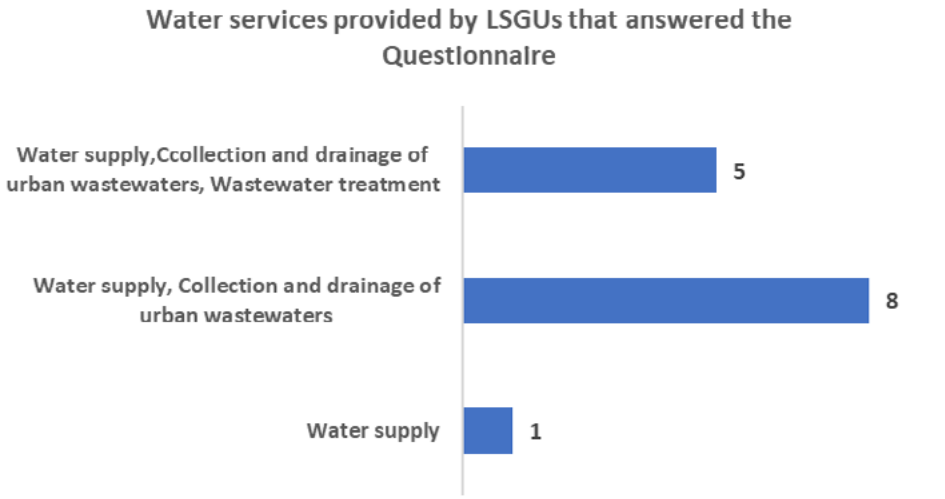
15 "Official Gazette of the Republic of Macedonia" No. 5/2002
16 "Official Gazette of the Republic of Macedonia" No. 7/2016

5.1. Plans and activities of the LSGUs in the water services sector

This part of the Analysis reviews the answers received by the LSGUs on some of the questions from the Questionnaire.

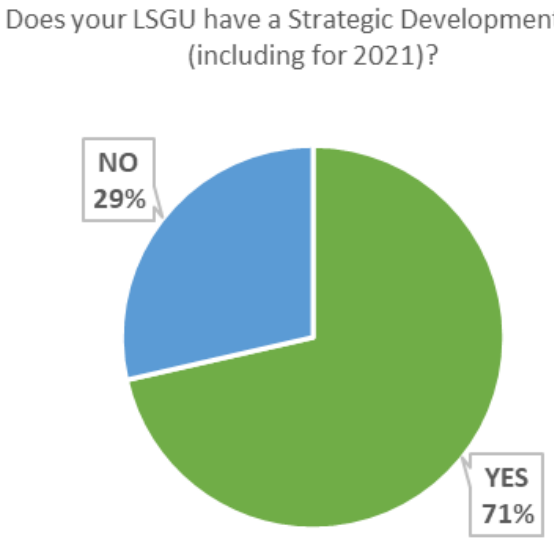
- It is evident from Figure 5-1 that from the LSGUs that answered the questionnaire 21% are the providers of the service Water supply, 24% are providers of the service Collection and drainage of urban wastewater and 36% are the providers of the Wastewater treatment service. This review also indicates that the LSGUs' administration needs to pay more attention to the water services.

Figure 5-1: Water services providers in LSGUs that answered the Questionnaire



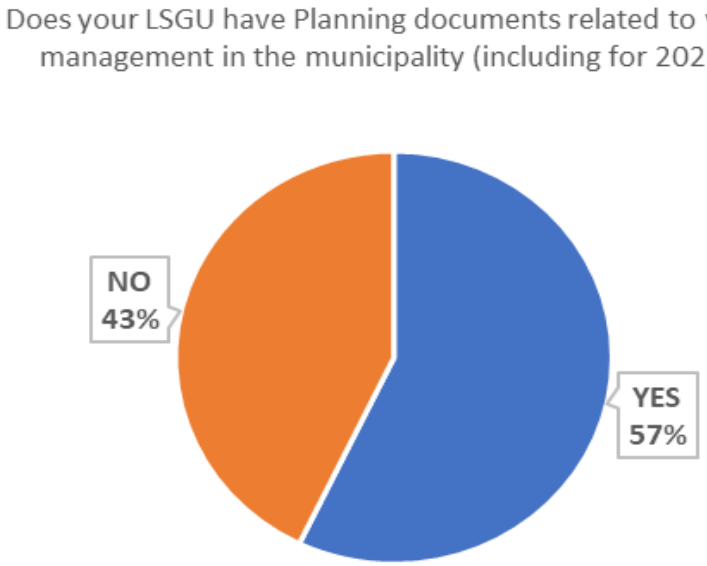
- 71% of LSGUs stated that they have current strategic plans (Figure 5-2)

Figure 5-2: Strategic plans for the development of LSGUs



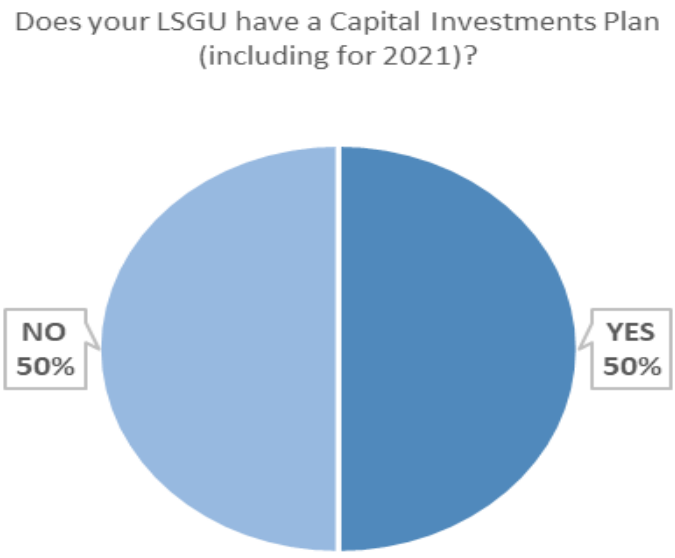
- 57% of LSGUs stated that they have planning documents for water management on the territory of their LSGU (Figure 5-3)

Figure 5-3: Water Management Plans



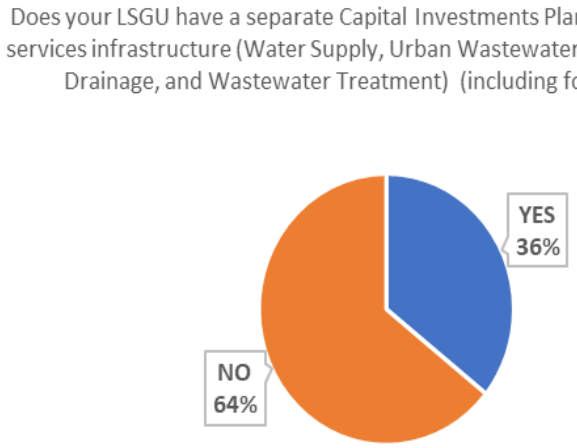
- Half of the LSGUs stated that they have capital investment plans.

Figure 5-4: Capital investment plans of LSGUs



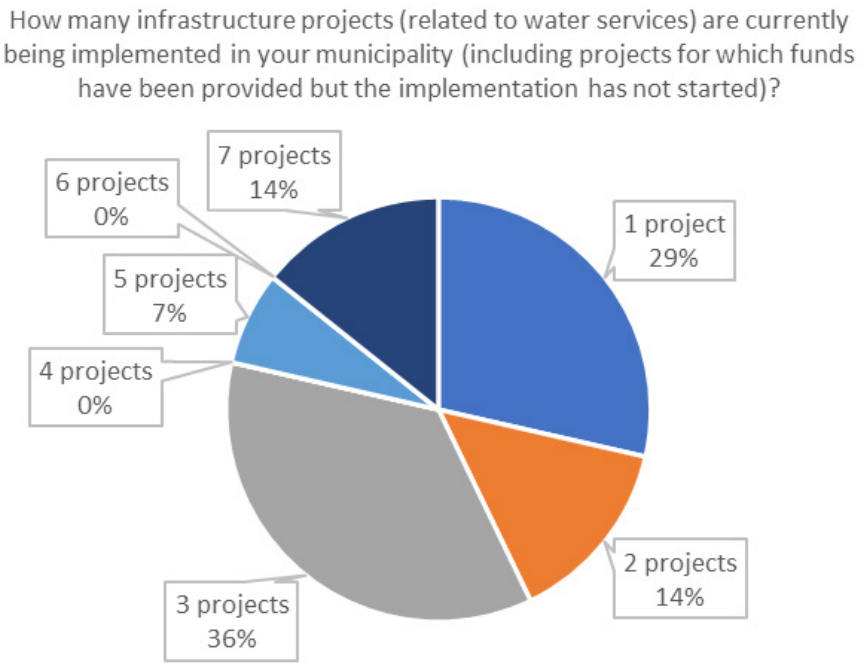
- 36% of LSGUs stated that they have capital investment plans for water services (Figure 5-5).

Figure 5-5: Capital investment plans for the infrastructure in the water services sector



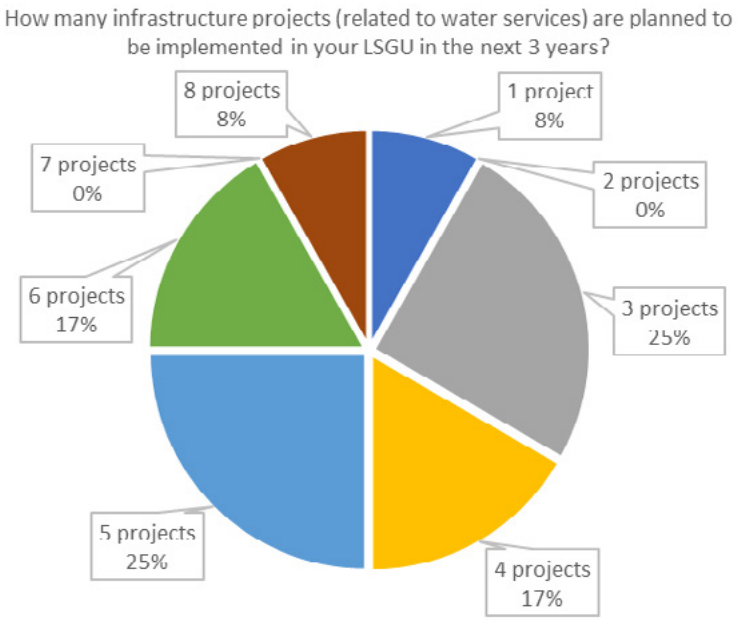
- Figure 5-6 shows the percentage of LSGUs that are currently implementing one or more projects related to water services. Half of the LSGUs implement two or three projects, and 20% of the LSGUs five or more projects.

Figure 5-6: Number of water services infrastructure projects that are currently being implemented



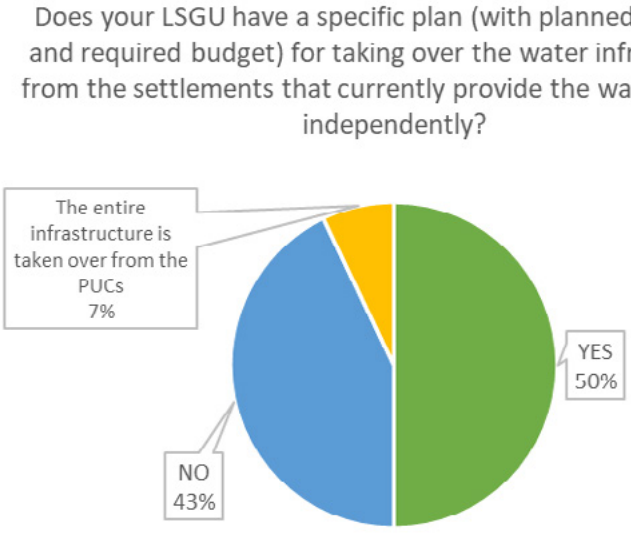
- Figure 5-7 shows the percentage of LSGUs that currently have one or more projects related to water services. Almost two thirds of the LSGUs plan to implement four or more projects in the water services sector in the next three years.

Figure 5-7: Planned number of water services infrastructure projects



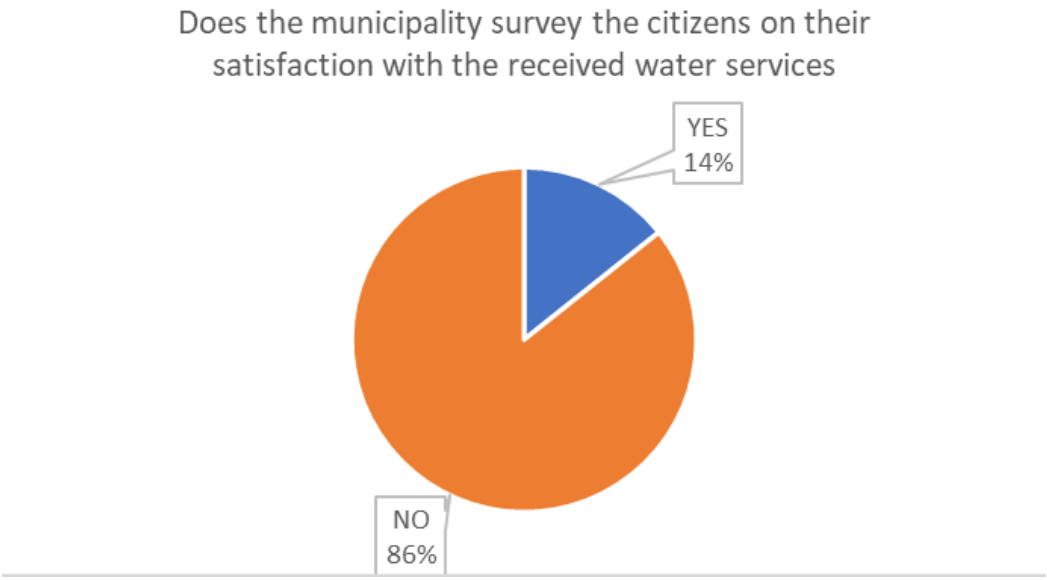
- Half of the LSGUs stated that they plan to take over the infrastructure for water services from the settlements that currently do not receive services from the PUCs. 43% of LSGUs do not have such a plan, and only one LSGU stated that the entire infrastructure is taken over by the PUC (Figure 5-8).

Figure 5-8: Plan for undertaking the water infrastructure and provision of water services by the PUCs in all settlements in the LSGU



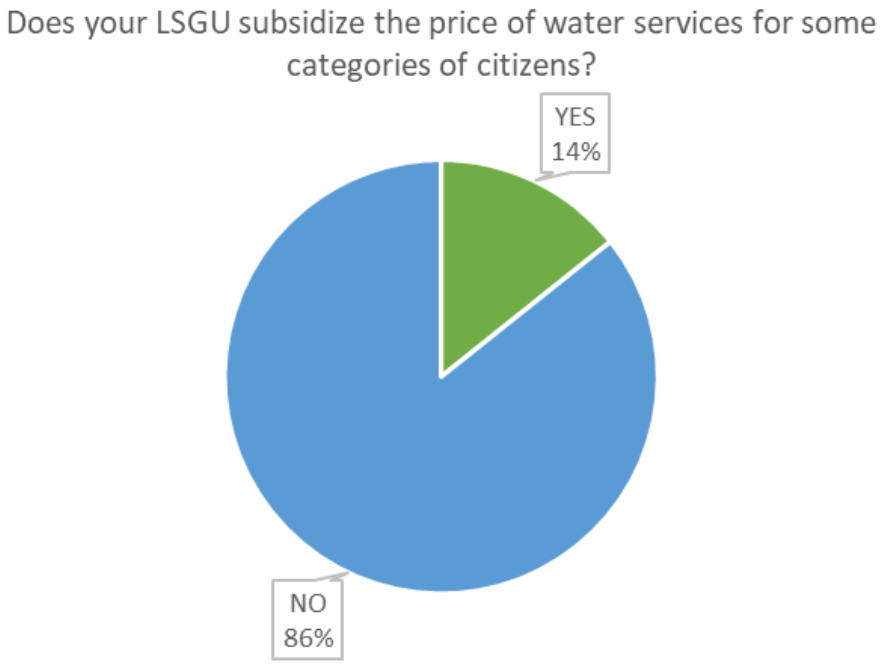
- Only 2 LSGUs (14%) stated that they conduct surveys of their citizens on their satisfaction with the received water services (Figure 5-9).

Figure 5-9: Survey for Citizens' Satisfaction with Water Services



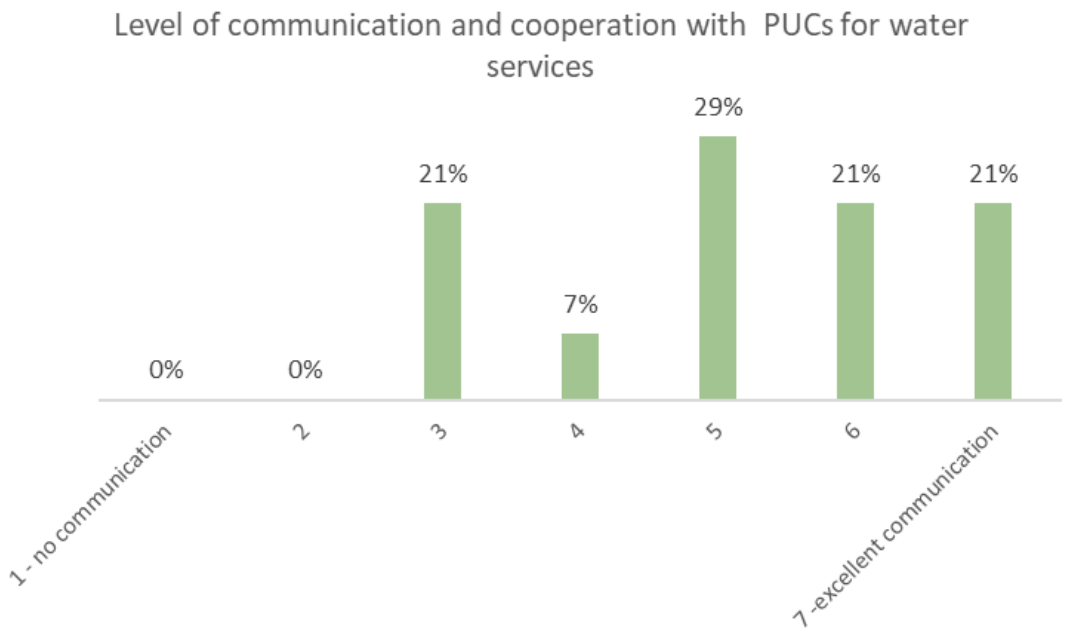
- Only two LSGUs stated that they subsidize the price of the water service for certain categories of citizens (Figure 5-10).

Figure 5-10: Subsidies for water services by LSGUs



- Figure 5-11 shows that LSGUs and PUCs communicate, but only about 40% of the LSGUs stated that the communication is close to excellent. This is an indicator that LSGUs and PUCs must strengthen their communication and cooperation level.

Figure 5-11: Level of cooperation between LSGUs and PUCs



5.2. Investments in water services

Despite the answers given in thesurvey that half of the LSGUs implement two or three projects, and 20% of the LSGUs five or more projects (Figure 5-6), and that almost two thirds of the LSGUs plan to implement four or more projects in the water services sector in the next three years, the reality is quite different.

We will address this by analyzing the LSGUs' investments, which were part of the business plans of the water service providers in the First Regulated Period. The review of the completed investments will be made for the LSGUs with more and those with less than 10,000 population equivalent, by regions and by the total completed investments for 2019 and 2020, separately.

Annex 7 provides a detailed insight into the percentage of completed investments for all water services for 2019 and 2020 in PUCs by planning regions.

5.2.1.1. Investments in LSGUs with more than 10,000 population equivalent

Table 5-1 gives a summary of the percentage of completed investment in 2019 and 2020 in LSGUs with more than 10,000 population equivalent.

Table 5-1: Summary of the percentage of completed investments in 2019 and 2020 in LSGUs with over 10,000 population equivalent for all water service providers

Datum	2019	2020
Number of service providers	29	29
Median (%)	3.00%	6.22%
Max (%)	100.00%	100.00%
Min (%)	0.00%	0.00%
Average value (%)	20.28%	20.75%
> Average value (PUC)	10	11
< Average value (PUC)	19	18
PUC (0% investments)	14	10
PUC (100% investments)	3	2
PUC (0-100% investments)	12	17
PUC (0% investments for 2019 and 2020)	24	
PUCs without investments in both years	7	

In this summary, there are 29 PUCs - providers of the water service in the LSGUs with more than 10,000 p.e., and according to Table 5-1 the median for the percentage of completed investments for all water services was 3% in 2019 and 6.22% in 2020.

In 2019, the average value of the percentage of completed investments for all water services was 20.28%, and in 2020 it was 20.75%. In 2019, 10 PUCs had a percentage of completed investments for all water services above the average value, and in 2020 this number was 11 PUCs. In 2019, 19 and in 2020 18 PUCs had a percentage of completed investments for all water services below the average value.

The maximum value of the percentage of completed investments for all water services in 2019 and in 2020 was 100%. In 2019, 100 PUCs had 100% completion of the planned investments: PUC Komunalec Kavadarci, PUC Plavaja Radovish, and PUC Vodovod i kanalizacija Skopje, while in 2020, 2 PUCs had 100% completion of the planned investments: PUC Komunalec Kavadarci and PUC Plavaja Radovish.

In 2019, 12 PUCs had a percentage of completed investments for all water services between 0% and 100% and in 2020 this number was 17 PUCs.

In 2019 and 2020, the minimum value of the percentage of completed investments for all water services was 0%. In 2019, 14 PUCs had 0% completion of the planned investments, and in 2020 this number was reduced to 10 PUCs. A total of 24 PUCs did not have investments either in 2019 or in 2020. There are 7 PUCs without any investment in the two years: PUC Solidarnost Vinica, PUC Standard Debar, PUC Ograzhden Bosilovo, PUC Dolneni, PUC Vrapchishte, PUC Mirmbajtja Zhelino and PUC Tetovo.

5.2.1.2. Investments in LSGUs with less than 10,000 population equivalent

Table 5-2 gives a summary of the percentage of completed investments for all water services in 2019 and 2020 in LSGUs with less than 10,000 population equivalent.

Table 5-2: Summary of the percentage of completed investments in 2019 and 2020 in LSGUs with less than 10,000 population equivalent for all water service providers

v	36	36
Median (%)	0.00%	0.00%
Max (%)	100.00%	100.00%
Min (%)	0.00%	0.00%
Average value (%)	16.87%	9.05%
> Average value (PUC)	7	5
< Average value (PUC)	29	31
PUC (0% investments)	26	30
PUC (100% investments)	5	2
PUC (0-100% investments)	5	4
PUC (0% investments for 2019 and 2020)	48	
PUCs without investments in both years	22	
ЈКП без инвестиции во двете години	7	

In this summary, there are 36 PUCs - providers of the water service in the LSGUs with more than 10,000 p.e., and according to Table 5-2 the median of the percentage of completed investments for all water services was 0% in both 2019 as well as in 2020.

In 2019, the average value of the percentage of completed investments for all water services was 16.87%, and 9.05% in 2020. In 2019, 7 and in 2020 5 PUCs had a percentage of completed investments for all water services above the average value. In 2019, 29 and in 2020 31 PUCs had a percentage of completed investments for all water services below the average value.

The maximum value of the percentage of completed investments for all water services for 2019 and 2020 was 100%. In 2019, 5 PUCs had 100% realization of the planned investments: PUC Rosoman, PUC Bregalnica Delchevo, PUC Turija Vasilevo, PUC Kozjak Staro Nagoricane and PUC Gazi Baba - 2007, while in 2020, 2 PUCs had 100% realization of the planned investments: PUC Topolka Chaska and PUC Kamena Reka Makedonska Kamenica.

In 2019, 5 and in 2020 4 PUCs had the percentage of completed investments for all water services between 0% and 100%.

The minimum value of the percentage of completed investments for all water services for

2019 and 2020 was 0%. In 2019, 26 PUCs had 0% realization of the planned investments, and in 2020 this number has increased to 30 PUCs. A total of 48 PUCs did not have investments either in 2019 or in 2020. There are 22 PUCs without any investment in both years.

5.2.1.3. Investments in all LSGUs

Table 5-3 gives a summary of the percentage of completed investments for all water services for 2019 and 2020 in all LSGUs, where there are water service providers.

This summary unites data from sections 2.2.1.1 and 2.2.1.3.

Table 5-3: Summary of the percentage of completed investments for 2019 and 2020 in all LSGUs for all water service providers

Number of service providers	68	68
Median (%)	0.00%	0.00%
Max (%)	100.00%	100.00%
Min (%)	0.00%	0.00%
Average value (%)	17.78%	14.70%
> Average value (PUC)	17	18
< Average value (PUC)	51	50
PUC (0% investments)	40	40
PUC (100% investments)	8	4
PUC (0-100% investments)	20	24
PUC (0% investments for 2019 and 2020)	80	
PUCs without investments in both years	29	

In this summary, there are 68 PUCs - providers of the water services in the LSGUs with less than 10,000 p.e., and according to Table 5-2 the median of the percentage of completed investments for all water services was 0.00% for both 2019 and 2020.

The average value of the percentage of completed investments for all water services was 17.78% in 2019 and 14.70% in 2020. In 2019 there were 17 and in 2020 18 PUCs that had a percentage of completed investments for all water services above the average value. In 2019 there were 51 and in 2020 50 PUCs that had a percentage of completed investments for all water services below the average value.

The maximum value of the percentage of completed investments for all water services in 2019 and 2020 was 100%. In 2019, 8 PUCs had 100% realization of the planned investments, while in 2020, 4 PUCs had 100% realization of the planned investments.

In 2019, the percentage of completed investments for all water services was between 0% and 100% in 20 PUCs, and in 2020 in 24 PUC.

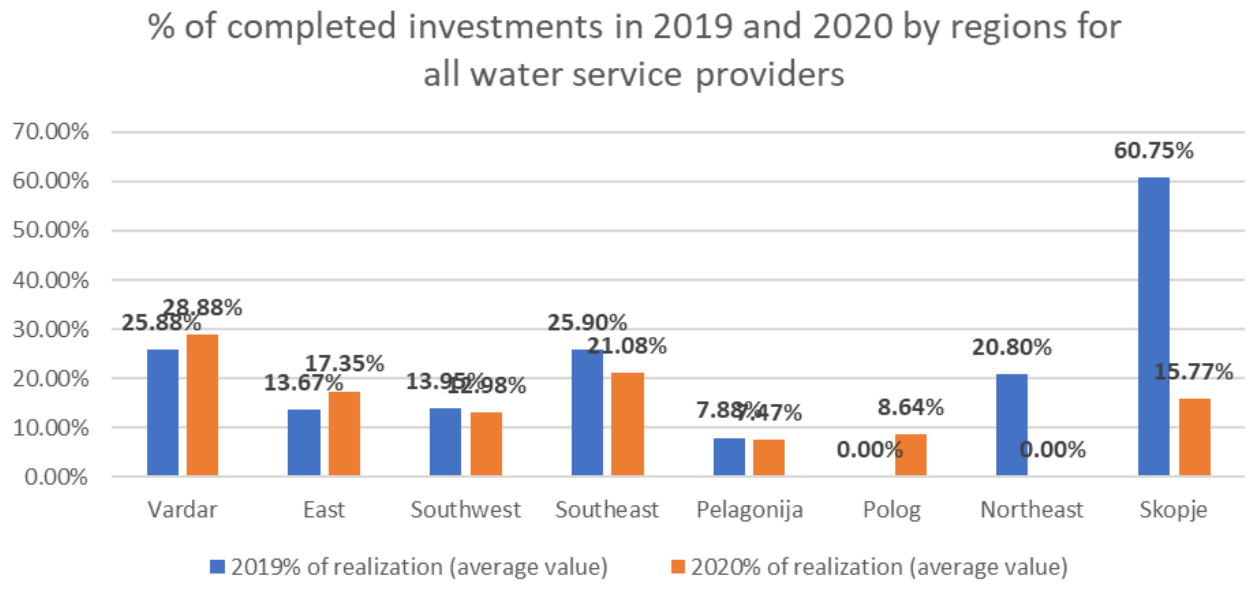
The minimum value of the percentage of completed investments for all water services for 2019 and 2020 was 0%. In both 2019 and 2020, 40 PUCs have 0% realization of the planned investments. A total of 80 PUCs did not have investments either in 2019 or in 2020. There are 29 PUCs without any investment in both years.

5.2.1.4. Investments in water services by PUCs at a planning region level

Figure 5-12 gives insight into the percentage of completed investments in 2019 and 2020 all water service providers per regions.

In 2019, the region of Skopje had the highest percentage of completed investments (60.75%), and in 2020, the region of Vardar (28.88%) had the highest percentage of completed investments. Also, the lowest percentage of completed investments per regions for all water service providers, was in the region of Polog in 2019 (0%), and the region of Pelagonija (7.47%) in 2020.

Figure 5-12: % of completed investments in 2019 and 2020 by regions for all water service providers



It is evident from Figure 5-12, that in 2020 three planning regions had an increase in the percentage of completed investments for all water service providers compared to 2019: Vardar (11.59%), East (26.88%) and the region of Polog (completed 8.64% of the investments in respect to 0% in 2019). In 2020, the other five regions had a decrease in the percentage of completed investments for all water service providers compared to 2019: Southwest (-6.92%), Southeast (-18.62%), Pelagonija (-5.31%), Northeast (in 2020 there were 0% of investments) and the region of Skopje (-74.04%).

6. FINDINGS AND RECOMMENDATIONS

The findings and recommendations resulting from the analysis of the water services sector should help ADKOM and the other stakeholders with the planning and implementation of activities that will enable greater communication and cooperation among central and local governments, LSGUs and PUCs, ADKOM and ZELS, as well as donors and financial institutions toward providing affordable, effective, and efficient water services.

6.1. FINDINGS

- Lack of coordination of programming and planning among organizational units with the water service providers.
- In most cases, the accounting software cannot fully meet planning needs, it lacks the functionality for analyzing and reporting.
- Almost all water service providers have underdeveloped registries of fixed assets and, in many cases, these do not match the accounting registry. Almost all water service providers have a significant part of their fixed assets not registered in the accounting books, as these are kept as fixed assets of the LSGUs.
- The water service providers that perform additional activities which are not covered with the Law on setting Prices for Water Services usually have one organizational unit dedicated to water supply, drainage, and wastewater treatment services.
- Insufficient quality of the data and the database of the information system of the water service providers.
- The water service providers have shortage of qualified staff for various operational activities.
- Lack of effective and well-integrated institutional water management set-up.
- Water service providers have extensive experience which can be used for identifying future challenges of the reform process.
- Water service providers have good technical staff that can train new staff, which in turn could affect the improvement of the PUCs performance and the servicing of the public.
- Cooperation with other water service providers in many respects is welcome and as such has an impact on future interventions and planning, especially if it should be attained in the same region where the water service is provided.
- Monitoring of daily activities is adequate and thus contributes to the preparation of weekly and monthly reports for each unit.

6.2. RECOMMENDATIONS

- Strengthen the network with all stakeholders.

  Enhanced communication, dialogue and cooperation between the central government, local government and water service providers is crucial for the sustainability and development of water services in the Republic of North Macedonia.

- Work intensively on building a system for planning investments and other development plans.

  The central and local governments need to develop a system and synchronize during the preparation of development plans at central and local level, through a unified approach and by establishing an obligation for creating and having development planning documents and capital investment plans in the LSGUs. In this process it is important to consider integrated fact-based development planning and to create a synergy horizontally and vertically among various stakeholders. Water services should have an appropriate place in the plans, not only in terms of infrastructure, but also in terms of service and the connection of such services with other sectors.

- Harmonize the reform process on all decision-making levels.

  The process of reforms in the water services sector requires dialogue, communication, and cooperation between central and local governments, but also between LSGUs and water service providers, especially in terms of sustainability, effectiveness, and efficiency in providing services.

- Significantly increase investments in the water services sector.

  This is especially important in terms of the necessary and planned investments in the water services sector in the current and the next decade. This should initiate a new, dynamic, and competitive system in securing investment funds, but also in establishing a system for realization of investments. The existing situation and the experience from the past years indicate that the methodology of providing financial resources for investments in the water sector, and especially the approach to the realization of investments do not provide for the necessary investments in the sector.

- Intensify cooperation with international organizations and institutions.

  There is a need to increase the awareness of all stakeholders at central and local level about the need for clear and harmonized water services policies, which is important for maintaining and improving relations with international organizations and institutions.

- Amend the Law on Setting the Prices for Water Services, by elaborating and clarifying the competencies and obligations of all stakeholders.

  As evident from the practice thus far, water service providers are under pressure from local authorities when setting tariffs and prices for water services. This affects the effectiveness and efficiency of water service providers and makes difficult the gradual implementation of the principles “the polluter pays”, “the user pays and the “costs of the resource” per the Law on Waters. Therefore, this aspect should be essential when considering the role of ERC.

- Take over and manage rural water supply systems.

  Considering that most of the LSGUs do not have a 100% coverage with the water services, as provided by the PUCs, it is necessary to establish a model or models for the provision of water services in those settlements where water services are not provided by the PUCs. This is a complex problem and requires dialogue among the LSGUs, the central government, PUCs, and the residents of these settlements. This is important from the aspect of sustainable provision of water services according to all standards, but also from the aspect of the cost of maintaining the existing infrastructure.

- Build a system for organizing and systematizing the work processes.

  In the past 5 years, with the implementation of the Law on Setting Prices of Water Services, the PUCs have made a significant step forward in terms of planning their activities and changing their viewpoint on managing their activities. This was a challenge for the management teams of the PUCs, as these activities should be part of the organization and systematization of work processes according to the modern trends in work process management.

- Strengthen the database and records, generate data based on multiple elements of analysis and improve such tools.

  One of the weakest links in managing the PUCs is the lack of valid data needed for analysis and fact-based decision making. In their Systematization of posts, PUCs must provide for a post responsible for data management, with tasks relating only to operations and processing of data. All progress is based on data and PUCs are not and will not be excluded from this.

- Train the technical staff in accordance with the current needs of the system.

  Technological innovations and processes require constant learning and acquisition of new knowledge and skills. For effective and efficient operation of the systems, the approach of water service providers to the training of technical staff is crucial. The PUCs must allocate funds for training in their annual budgets.

- Prioritize capacity building of water service providers.

  Investing in human resources and considering the human resource as the capital for building the organizational capacity of any institution is the concept around which the central and local governments, as well the management of PUCs, need to raise their awareness. Given that PUCs have limited opportunities in terms of motivating and attracting appropriate staff, the central and local governments need to reconsider their policies especially because the expensive and vitally important infrastructure cannot be used, maintained, and upgraded with minimal human resource costs. In this regard, it is necessary to raise the awareness among users of water services.

- Map and create an updated inventory / registry of (underground) assets.

  Asset management is one of the key segments of achieving the goal of delivering water services with the best value for costs. The current situation requires urgent and mandatory action from both local and central authorities. This is quite important, as despite the legal obligations, there have not been any activities for over a decade.

- Reduce Non-revenue water.

  The amounts of Non-revenue water, as one of the key indicators for the effectiveness and efficiency of water service systems and the performance of service providers, are very high, and require an integrated and systematic approach toward their reduction.

- Network zoning and operational monitoring and management.

  The zoning of the distribution networks and the establishment of SCADA systems are more than necessary for the high percentage of Non-revenue water and for the complexity of the systems for providing water services. Also, equally important is the digitization of services related to monitoring the consumption and collection rates for the provided water services.

- Introduce accounting based on cost centers, which is kept for all water services separately.

  Given that most of the PUCs are providers of other utilities, in addition to water services, their operations require mandatory application of legal solutions for accounting based on cost centers, which is kept separately for all services provided by PUCs. This is crucial for the validation of the financial data and for the creation of various reports, business plans for water services and plans for adjustment of tariffs for water services.

- Digitization of water services.

  The digitalization of services is a process that has already changed the delivery, use, management, and development of services under the competence of central and local governments. Water services are no exception to this. With this in mind, water service providers, together with the local and central authorities, should start a dialogue on digitalization of water services.

7. REFERENCES

- Annual report of the Energy and Water Services Regulatory Commission of the Republic of North Macedonia for 2020.
- Annual report of the Energy and Water Services Regulatory Commission of the Republic of North Macedonia for 2019.
- Materials from the trainings organized by ADKOM for the PUCs in the process of preparation of the Business Plans of the PUCs and Tariff Adjustment Plans for the First and Second Regulated Period, ADKOM, unstructured data for 2019, 2020 and 2021
- Materials from the trainings organized by ADKOM for the PUCs in the process of preparation of the Annual reports on tariffs for all water services, ADKOM, unstructured data for 2019, 2020 and 2021
- Law on Local Self-Government (Official Gazette of the Republic of Macedonia No. 5/02)
- Law on Setting the Prices for Water Services (Official Gazette of the Republic of Macedonia No. 7/16)

8. ANNEXES

8.1. APPENDIX 1 Questionnaire on the water services in the local self-government units

1	Mark the water services provided in your LSGU
2	Does your LSGU have a Strategic Development Plan (including for 2021)?
3	If YES, what period is covered with the plan? Enter the period.
4	Does your LSGU have Planning documents related to water management in the municipality (including for 2021)?
5	Does your LSGU have a Capital Investments Plan (including for 2021)?
6	If YES, what period is covered with the plan? Enter the period.
7	Does your LSGU have a separate Capital Investments Plan for the water services infrastructure (Water Supply, Urban Wastewater Collection and Drainage, and Wastewater Treatment) (including for 2021)?
8	If YES, what period is covered with the plan? Enter the period.
9	How many infrastructure projects (related to water services) are currently being implemented in your municipality (including projects for which funds have been provided but the implementation has not started)? Please choose an answer from the offered options.
10	What is the total value of the projects (related to water services) that are currently being implemented in your municipality (including projects for which funds have been provided but the implementation has not started)? Enter an integer, without decimals, without spaces, and separate the thousands with periods (e.g., 1,450,000). If you do not have projects, please enter zero (0).
11	What is the structure of the provided sources of funds from which these water services projects are financed (including projects for which funds have been provided but the implementation has not started)? Mark the appropriate fields (one or more)
12	How many infrastructure projects (related to water services) are planned to be implemented in your LSGU in the next three years? Please choose an answer from the offered options.
13	What is the total value of these projects (related to water services) that are planned to be implemented in your LSGU? Enter the values in EURO. Enter an integer, without decimals, without spaces, and separate the thousands with periods (e.g., 2,700,000). If you do not have projects, please enter zero (0).
14	How do you plan (state the sources) to finance these water services projects? Mark the appropriate fields (one or more).
15	List the number of settlements that GET the Water Supply service through you or your PUCs? Enter a number.
16	List the number of settlements in your LSGU that organize the Water Supply independently (DO NOT GET the Water Supply service through you or your PUCs)? Enter a number.
17	What is the number of settlements in your LSGU that do not have any water supply infrastructure? Enter a number.
18	List the number of settlements that GET the wastewater collection and drainage service through you or your PUC? Enter a number.

19	List the number of settlements in your LSGU that independently organize the collection and drainage of wastewaters (DO NOT GET the wastewater collection and drainage service through you or your PUCs)? Enter a number.
20	What is the number of settlements in your LSGU that do not have any infrastructure for collection and drainage of wastewater? Enter a number.
21	List the number of settlements that GET the wastewater treatment service through you or your PUC? Enter a number.
22	List the number of settlements in your LSGU that organize the Wastewater Treatment independently (DO NOT GET the wastewater treatment service through you or your PUCs)? Enter a number.
23	List the number of settlements in your LSGU that do not have any Wastewater Treatment infrastructure? Enter a number.
24	Does your LSGU have a specific plan (with planned dynamics and required budget) for taking over the water infrastructure from the settlements that currently provide the water services independently?
25	What percentage of the above and underground infrastructure for the water services (Water Supply, Urban Wastewater Collection and Drainage, and Wastewater Treatment) are fixed assets of your LSGU? Enter a whole percentage, without dots and commas (e.g., 65%).
26	What percentage of the above and underground infrastructure for the water services (Water Supply, Urban Wastewater Collection and Drainage, and Wastewater Treatment) are fixed assets of your PUC? Enter a whole percentage, without dots and commas (e.g., 0%).
27	What percentage of the above and underground infrastructure for water services (Water Supply, Urban Wastewater Collection and Drainage, and Wastewater Treatment) are NOT fixed assets of either the LSGU or your PUC? Enter a whole percentage, without dots and commas (e.g., 15%).
28	Does the municipality survey the citizens on their satisfaction with the received water services (Water supply, Collection and drainage of urban wastewater, and Wastewater treatment)?
29	If YES, when was the last survey? Enter a year (e.g., 2019).
30	If YES, are the results from the survey public?
31	Does your LSGU subsidize the price of water services for some categories of citizens?
32	If YES, what is the average amount in MKD of subsidies per year in the last 3 years (average for 3 years)? Enter an integer, without decimals, without spaces, and separate the thousands with periods (e.g. 1,500,000).
33	On a scale of 1 to 7, evaluate the level of communication and cooperation with your PUC for water services. (1 - no communication, 7 - excellent communication) [Level of communication and cooperation with PUC for water services]

8.2. ANNEX 2: % of coverage with the water service

WATER SUPPLY	VARDAR	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	POLOG	NORTHEAST	SKOPJE
2019	84,13%	87,67%	77,00%	76,46%	70,67%	63,00%	84,60%	68,25%
% of coverage with water service (average value)	84.13%	87.67%	77.00%	76.46%	70.67%	63.00%	84.60%	68.25%
2020	0,45%	0,48%	0,00%	1,92%	0,94%	0,00%	0,00%	0,00%
% of coverage with water service (average value)	84.50%	88.08%	77.00%	77.93%	71.33%	63.00%	84.60%	68.25%
Difference (20/19)	0.45%	0.48%	0.00%	1.92%	0.94%	0.00%	0.00%	0.00%

COLLECTION AND DRAINAGE OF URBAN WASTEWATERS	VARDAR	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	POLOG	NORTHEAST	SKOPJE
2019	81,13%	79,58%	62,57%	68,78%	65,71%	66,74%	88,50%	52,00%
% of coverage with water service (average value)	81.13%	79.58%	62.57%	68.78%	65.71%	66.74%	88.50%	52.00%
2020	0,00%	3,35%	5,71%	-1,29%	1,74%	0,00%	0,28%	0,64%
% of coverage with water service (average value)	81.13%	82.25%	66.14%	67.89%	66.86%	66.74%	88.75%	52.33%
Difference (20/19)	0.00%	3.35%	5.71%	-1.29%	1.74%	0.00%	0.28%	0.64%

WASTEWATER TREATMENT	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	NORTHEAST	SKOPJE
2019 % of coverage with water service (average value)	72,50%	55,33%	78,50%	42,00%	84,00%	22,00%
2020 % of coverage with water service (average value)	84,00%	55,00%	75,50%	42,00%	84,00%	22,00%
Difference (20/19)	15,86%	-0,60%	-3,82%	0,00%	0,00%	0,00%

8.3. APPENDIX 3: Set tariffs in the First and Second regulated period

8.3.1. APPENDIX 3.1: Set tariffs in the First and Second regulated period for the service Water supply

No.	Tariffs for Water Supply for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m³)	Households		Others	
	Water supply service providers	2019	2020	2019	2020
1	PUC Derven Veles	31,62	31,62	63,05	63,05
2	PUC Komunalec Kavadarci	16,50	18,23	39,50	39,50
3	PUC Komunalec Negotino	21,27	22,42	39,34	41,47
4	PUC Komunalec Sveti Nikole	32,33	32,33	46,00	46,00
5	JPKR Service Berovo	31,32	33,84	55,13	56,85
6	PUC Solidarity Vinica	23,20	24,83	48,50	48,50
7	PUC Vodovod Kochani	39,92	39,92	63,14	49,90
8	PUC Nikola Karev Probishtip	32,50	33,50	45,00	44,50
9	PUC Isar Shtip	31,96	31,93	49,94	48,29
10	PUC Standard Debar	14,31	14,31	30,20	30,20
11	PUC Vodovod i kanalizacija Struga	27,89	29,61	42,83	44,59
12	PUC Komunalec Kichevo	24,00	24,00	36,00	36,00
13	PUC Vodovod Ohrid	26,50	28,02	35,24	34,36
14	PUC Ograzhden Bosilovo	27,80	30,00	27,80	30,00
15	PUC Komunalec Gevgelija	16,83	17,50	33,10	33,48
16	PUC Komunalec Strumica	31,20	31,20	43,87	47,50
17	PUC Plavaja Radovish	27,47	28,70	46,36	47,54
18	PUC Vodovod Bitola	28,15	29,35	48,60	49,45
19	PUC Dolneni	25,00	25,00	40,00	40,00
20	PUC Vodovod i kanalizacija Prilep	26,70	27,13	45,65	45,33
21	PUC Proleter Resen	24,52	25,92	41,43	42,77
22	PUC Vardar Brvenica	16,70	18,20	30,53	31,31
23	PUC Vrapchishte	13,60	13,60	13,60	13,60
24	PUC Komunalec Gostivar	18,00	18,00	49,00	64,00
25	PUC Mirmbajtja Zhelino	12,37	13,00	33,33	33,33
26	PUC Tetovo	16,08	16,08	25,45	25,45
27	PUC Vodovod Kumanovo	35,47	36,77	41,73	42,33
28	PUC Vodovod i kanalizacija Skopje	18,00	18,50	30,25	31,25
29	PUC Vodovod Ilinden	25,12	25,71	48,00	48,00

No.	Tariffs for Water Supply for 2019 and 2020 in LSGUs with less than 10,000 population equivalent (MKD / m³)	Households		Others	
	Water supply service providers	2019	2020	2019	2020
1	PUC Boshava Demir Kapija	18,00	18,50	35,00	35,50
2	PUC Klepa Gradsko	24,00	24,00	32,55	29,91
3	PUC Topolka Caska	28,00	30,00	30,00	28,08
4	PUC Rosoman	15,00	15,20	30,00	29,50
5	PUC Kamena Reka Makedonska Kamenica	24,00	24,00	60,00	60,00
6	PUC Bregalnica Delchevo	28,98	29,10	51,07	50,12
7	PUC Obleshevo Cheshinovo	20,00	20,00	20,00	20,00
8	Obleshevo	24,00	27,00	46,00	49,00
9	PUC Plachkovica Karbinci	27,69	28,72	54,00	54,57
10	PUC Komunalec Pehchevo	26,00	26,00	26,00	26,00
11	PUC Vodna kula Zrnovci		27,00		49,00
12	PUC Lozovo	12,29	12,64	23,96	24,03
13	PUC Eremija Vevcani	18,00	18,50	35,50	35,80
14	PUC Debrca	20,36	22,83	40,00	43,00
15	PUC Vodovod i kanalizacija Makedonski Brod	15,30	15,30	34,70	34,70
16	PUC Kale Center Zupa	19,47	19,74	36,00	37,00
17	PUC Komunalec Plasnica	23,54	23,54	56,03	56,03
18	PUC Komunalec Polin Dojran	25,00	25,00	50,00	50,00
19	PUC Komuna Novo Selo	32,63	30,85	45,00	45,06
20	PUC Turija Vasilevo	23,80	23,80	35,00	35,00
21	PUC Komunlana Chistota Bogdanci	17,21	17,21	23,94	23,94
22	PUC Komunalna usluga Valandovo	19,67	19,95	37,09	36,77
23	PUC Komunalna higiena Novaci	24,25	26,76	24,25	26,76
24	PUC Komuna Krushevo	28,00	28,00	50,00	50,00
25	PUC Komunalec Demir Hisar	23,00	23,50	47,00	47,00
26	PUC Pela Higiena Mogila	24,41	24,41	45,00	45,00
27	PUC Pelagonija Krivogashtani	25,00	25,00	25,00	25,00
28	DU Chistota Jegunovce	17,50	18,00	33,00	33,50
29	PUC Higiena Tearce	10,00	10,00	15,00	15,00
30	PUC Shari Bogovinje	5,00	5,00	10,00	10,00
31	PUC Mavrovo Mavrovi Anovi	24,80	24,80	30,40	30,40
32	PUC Kozjak Staro Nagoricane	29,98	31,33	62,19	63,23
33	PUC Komunalec Kriva Palanka	23,50	24,00	37,50	39,00
34	PUC Silkom Kratovo	14,28	15,08	21,82	23,62
35	PUC Chist den Rankovce	26,49	27,25	44,24	45,23
36	PUC Gazi Baba - 2007	15,25	15,50	19,50	20,00
37	PUC Zelenikovo	27,00	27,00	47,00	47,00
38	PUC Skopska Crna Gora Cucer Sandevo		14,82		37,04

No.	Water supply service providers	Average tariffs		
		2021	2022	2023
1	PUC Derven Veles	41,78	42,09	41,10
2	PUC Komunalec Kavadarci	24,90	25,37	25,64
3	PUC Komunalec Negotino	25,50	25,67	25,89
4	PUC Komunalec Sveti Nikole	43,65	43,98	44,40
5	JPKR Service Berovo	37,79	38,36	38,97
6	PUC Solidarity Vinica	28,65	29,71	30,28
7	PUC Vodovod Kochani	47,28	46,96	46,75
8	PUC Nikola Karev Probishtip	39,66	40,23	39,99
9	PUC Isar Shtip	37,77	39,27	40,32
10	PUC Standard Debar	20,23	20,82	21,74
11	PUC Vodovod i kanalizacija Struga	34,87	36,06	36,33
12	PUC Komunalec Kichevo	29,49	29,74	29,67
13	PUC Vodovod Ohrid	43,24	44,34	45,60
14	PUC Ograzhden Bosilovo	22,24	23,21	23,65
15	PUC Komunalec Gevgelija	22,05	22,12	22,03
16	PUC Komunalec Strumica	34,69	34,92	35,17
17	PUC Plavaja Radovish	30,85	32,01	33,24
18	PUC Vodovod Bitola	35,65	36,61	37,53
19	PUC Dolneni	31,14	31,60	32,06
20	PUC Vodovod i kanalizacija Prilep	32,60	33,30	34,04
21	PUC Proleter Resen	30,48	32,55	33,30
22	PUC Vardar Brvenica	16,63	16,81	17,00
23	PUC Vrapchishte	13,60	13,60	13,60
24	PUC Komunalec Gostivar	22,17	22,43	22,72
25	PUC Mirmbajtja Zhelino	13,10	13,26	13,42
26	PUC Tetovo	16,26	16,43	16,60
27	PUC Vodovod Kumanovo	33,60	33,76	33,94
28	PUC Vodovod i kanalizacija Skopje	22,54	23,24	23,14
29	PUC Vodovod Ilinden	31,96	31,89	31,80

8.3.2. ANNEX 3.2: Set tariffs in the First and Second regulated period for the service Collection and drainage of urban wastewater

No.	Tariffs for Collection and Drainage of Urban Wastewater for 2019 and 2020 in LSGUs with over 10,000 population equivalent (MKD / m³)	Households		Others	
	Water service providers	2019	2020	2019	2020
1	PUC Derven Veles	5,01	5,01	7,66	7,66
2	PUC Komunalec Kavadarci	4,37	4,91	7,00	7,00
3	PUC Komunalec Negotino	8,00	9,50	12,00	13,50
4	PUC Komunalec Sveti Nikole	5,00	5,00	8,00	8,00
5	JPKR Service Berovo	6,77	6,77	10,11	10,83
6	PUC Solidarity Vinica	6,33	6,69	6,33	6,69
7	PUC Vodovod Kochani	11,27	11,67	17,15	17,41
8	PUC Nikola Karev Probishtip	4,10	4,10	4,10	4,10
9	PUC Isar Shtip	12,00	12,00	23,00	23,00
10	PUC Standard Debar	2,52	2,52	5,33	5,33
11	PUC Vodovod i kanalizacija Struga	10,56	10,98	25,10	20,01
12	PUC Komunalec Kichevo	6,00	6,00	7,00	7,00
13	PUC Niskogradba Ohrid	9,05	9,51	15,66	16,46
14	PUC Komunalec Gevgelija	3,67	4,04	7,26	7,79
15	PUC Komunalec Strumica	9,00	9,87	13,00	14,31
16	PUC Plavaja Radovish	5,93	6,62	10,08	10,59
17	PUC Niskogradba Bitola	12,50	13,21	17,88	18,49
18	PUC Vodovod i kanalizacija Prilep	5,28	5,28	5,28	5,28
19	PUC Proleter Resen	4,62	4,75	6,25	6,25
20	PUC Vardar Brvenica	3,71	3,71	3,71	3,71
21	PUC Komunalec Gostivar	10,80	12,00	19,60	21,00
22	PUC Mirmbajtja Zhelino	8,21	8,21	13,50	13,50
23	PUC Tetovo	3,00	3,00	6,38	7,82
24	PUC Vodovod Kumanovo	4,54	4,90	5,74	6,01
25	PUC Vodovod i kanalizacija Skopje	10,60	10,85	16,30	16,00
26	PUC Vodovod Ilinden	9,70	10,02	19,32	19,40

No.	Tariffs for Collection and Disposal of Urban Wastewater for 2019 and 2020 in LSGUs below 10,000 population equivalent (MKD / m³)	Households		Others	
	Water service providers	2019	2020	2019	2020
1	PUC Boshava Demir Kapija	6,68	6,96	13,00	13,25
2	PUC Klepa Gradsko	4,00	4,11	4,00	4,11
3	PUC Topolka Caska	4,30	7,00	4,30	7,00
4	PUC Rosoman	5,06	5,04	9,86	9,58
5	PUC Kamena Reka Makedonska Kamenica	7,00	7,00	11,00	11,00
6	PUC Bregalnica Delchevo	10,28	10,17	18,89	18,25
7	PUC Obleshevo Cheshinovo Obleshevo	10,00	10,00	10,00	10,00
8	PUC Plachkovica Karbinci	6,00	7,00	6,00	7,00
9	PUC Komunalec Pehchevo	9,61	9,75	18,74	18,52
10	PUC Vodna kula Zrnovci	6,00	6,00	6,00	6,00
11	PUC Lozovo	/	10,00	/	20,00
12	PUC Eremija Vevcani	6,16	6,34	12,01	12,05
13	PUC Debrca	3,27	3,41	5,00	5,00
14	PUC Vodovod i kanalizacija Makedonski Brod	9,06	9,19	15,00	15,00
15	PUC Komunalec Polin Dojran	12,54	12,54	24,45	24,45
16	PUC Komuna Novo Selo	6,25	6,25	12,50	12,50
17	PUC Turija Vasilevo	5,61	5,61	10,62	10,62
18	PUC Komunlana Chistota Bogdanci	5,00	5,00	10,00	10,00
19	PUC Komunalna usluga Valandovo	3,04	3,04	4,97	4,97
20	PUC Lakavica Konce	4,43	4,52	4,43	4,52
21	PUC Komuna Krushevo	3,80	3,80	8,00	8,00
22	PUC Komunalec Demir Hisar	6,00	6,10	10,00	10,00
23	PUC Pela Higiena Mogila	12,23	12,22	22,50	22,50
24	PUC Pelagonija Krivogashtani	9,00	9,00	9,00	9,00
25	PUC Komunalec Kriva Palanka	3,61	3,69	3,61	4,43
26	PUC Chist den Rankovce	5,00	5,20	6,65	6,50
27	PUC Skopska Crna Gora Cucer Sandevo	/	8,81	/	22,02
28	PUC Zelenikovo	5,00	5,00	11,00	11,00

No.	Average tariffs for Collection and drainage of urban wastewaters for the second regulated period 2021-2023 in LSGUs with over 10.000 population equivalent (MKD / m^3)	Average tariffs		
	Water service providers	2021	2022	2023
1	PUC Derven Veles	5,21	5,51	5,72
2	PUC Komunalec Kavadarci	5,98	6,52	7,32
3	PUC Komunalec Negotino	9,02	9,08	9,15
4	PUC Komunalec Sveti Nikole	4,93	5,49	5,62
5	PUC Service Berovo	5,12	5,22	5,14
6	PUC Solidarity Vinica	8,07	8,12	8,20
7	PUC Vodovod Kochani	16,25	15,92	15,67
8	PUC Nikola Karev Probishtip	4,08	4,42	4,63
9	PUC Isar Shtip	14,11	15,85	16,70
10	PUC Standard Debar	2,99	3,26	3,41
11	PUC Vodovod i kanalizacija Struga	11,56	10,65	9,96
12	PUC Komunalec Kichevo	7,07	13,39	19,51
13	PUC Niskogradba Ohrid	17,89	19,17	19,76
14	PUC Komunalec Gevgelija	5,87	6,37	7,14
15	PUC Komunalec Strumica	13,21	13,08	12,96
16	PUC Plavaja Radovish	4,51	5,21	5,74
17	PUC Niskogradba Bitola	13,54	13,62	13,69
18	PUC Vodovod i kanalizacija Prilep	5,57	5,76	5,83
19	PUC Proleter Resen	5,02	5,23	5,37
20	PUC Vardar Brvenica	7,46	7,59	7,72
21	PUC Vrapchishte	2,60	2,60	2,60
22	PUC Komunalec Gostivar	13,13	12,35	11,66
23	PUC Mirmbajtja Zhelino	8,23	7,89	7,56
24	PUC Tetovo	2,69	2,69	2,68
25	PUC Vodovod Kumanovo	4,51	4,50	4,51
26	PUC Vodovod i kanalizacija Skopje	12,73	12,99	13,25
27	PUC Vodovod Ilinden	10,69	11,13	10,92

8.3.3. ANNEX 3.3: Set tariffs for the First and Second regulated period for the service Wastewater treatment

No.	Average tariffs for Wastewater Treatment for the Second regulated for 2019 and 2020 in LSGUs with over 10.000 population equivalent (MKD / m³)	Households		Others	
	Water service providers	2019	2020	2019	2020
1	PUC Service Berovo	11.50	12.03	11.50	12.03
2	PUC Vodovod Kochani	12.75	13.04	12.75	13.04
3	PUC Kolektorski sistem Skopje	16.64	16.66	26.68	26.70
4	PUC Komunalec Kichevo	10.00	10.00	13.00	13.00
5	PUC Komunalec Gevgelija	10.44	10.44	20.70	20.13
6	PUC Komunalec Strumica	12.38	11.56	18.64	17.39
7	PUC Plavaja Radovish	12.61	12.68	18.66	18.57
8	PUC Niskogradba Bitola	6.59	6.80	9.39	9.53
9	PUC Proleter Resen	11.60	11.86	15.89	16.24
10	PUC Vodovod Kumanovo	8.97	9.16	8.97	9.16
11	PUC Vodovod i kanalizacija Skopje	0.85	0.86	0.85	0.86
12	PUC Vodovod Ilinden	7.38	7.80	14.69	15.11
13	PUC Vodovod i kanalizacija Prilep	17.35	17.35	17.35	17.35

No.	Average tariffs for Wastewater Treatment for the Second regulated for 2019 and 2020 in LSGUs with less than 10,000 population equivalent (MKD / m³)	Households		Others	
	Water service providers	2019	2020	2019	2020
1	PUC Vodovod i kanalizacija Makedonski Brod	7,06	7.05	15.00	15,00
2	PUC Komunalec Polin Dojran	4,45	4.45	4.45	4,45
3	PUC Skopska Crna Gora Cucer Sandevo	/	11.11	/	25,56
4	PUC Pelagonija Krivogashtani	8,00	8.00	8.00	8,00

No.	Average tariffs for Wastewater Treatment for the Second regulated period 2021-2023 in LSGUs with over 10,000 population equivalent (MKD / m³)	Average tariffs		
	Water service providers	2021	2022	2023
1	PUC Komunalec Sveti Nikole	2.82	2.86	2.90
2	PUC Service Berovo	15.23	15.48	15.74
3	PUC Vodovod Kochani	14.19	14.27	14.46
4	PUC Kolektorski sistem Skopje	25.17	25.71	26.11
5	PUC Komunalec Kichevo	8.26	8.33	8.40
6	PUC Komunalec Gevgelija	14.51	14.46	14.31
7	PUC Komunalec Strumica	11.89	12.07	12.25
8	PUC Plavaja Radovish	27.93	28.64	29.55
9	PUC Niskogradba Bitola	27.93	28.64	29.55
10	PUC Vodovod i kanalizacija Prilep	17.61	18.04	18.38
11	PUC Proleter Resen	12.24	12.37	12.43
12	PUC Vodovod Kumanovo	13.30	13.22	13.16
13	PUC Vodovod i kanalizacija Skopje	0.83	0.84	0.86
14	PUC Vodovod Ilinden	9.83	10.42	10.73

8.4. APPENDIX 4: Collection rate for the water service fee

WATER SUPPLY	VARDAR	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	POLOG	NORTHEAST	SKOPJE
2019	81,13%	81,50%	81,30%	81,80%	85,03%	77,13%	77,80%	94,00%
Collection rate (average value)	81.13%	81.50%	81.30%	81.80%	85.03%	77.13%	77.80%	94.00%
2020	-9,86%	-0,41%	1,38%	-3,24%	-6,44%	0,36%	-0,51%	-8,51%
Collection rate (average value)	73.13%	81.17%	82.42%	79.15%	79.56%	77.40%	77.40%	86.00%
Difference (20/19)	-9.86%	-0.41%	1.38%	-3.24%	-6.44%	0.36%	-0.51%	-8.51%

COLLECTION AND DRAINAGE OF URBAN WASTEWATERS	VARDAR	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	POLOG	NORTHEAST	SKOPJE
2019 Collection rate (average value)	81.13%	81.58%	83.14%	82.00%	84.57%	57.75%	82.25%	92.00%
2020 Collection rate (average value)	73.13%	80.75%	81.00%	79.94%	83.29%	55.50%	82.50%	82.33%
Difference (20/19)	-9.86%	-1.02%	-2.58%	-2.51%	-1.52%	-3.90%	0.30%	-10.51%

WASTEWATER TREATMENT	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	NORTHEAST	SKOPJE	Североисточен Регион	Скопски Регион
2019 Collection rate (average value)	92.50%	83.03%	85.50%	88.67%	89.00%	100.00%	77,80%	94,00%
2020 Collection rate (average value)	83.50%	83.63%	86.88%	89.00%	89.00%	96.00%	77,40%	86,00%
Difference (20/19)	-9.73%	0.72%	1.61%	0.38%	0.00%	-4.00%	-0,51%	-8,51%

8.5. APPENDIX 5: Expenditures to Revenues Ratio

WATER SUPPLY	VARDAR	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	POLOG	NORTHEAST	SKOPJE
2019 Expenditures to Revenues Ratio (average value)	114.75%	105.00%	109.33%	105.90%	106.56%	97.13%	94.40%	88.00%
2020 Expenditures to Revenues Ratio (average value)	127.25%	105.17%	98.78%	103.00%	105.56%	96.50%	101.80%	91.25%
Difference (20/19)	10.89%	0.16%	-9.65%	-2.74%	-0.94%	-0.64%	7.84%	3.69%

COLLECTION AND DRAINAGE OF URBAN WASTEWATER	VARDAR	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	POLOG	NORTHEAST	SKOPJE
2019 Expenditures to Revenues Ratio (average value)	120.25%	107.08%	117.43%	113.78%	123.29%	107.75%	122.25%	107.00%
2020 Expenditures to Revenues Ratio (average value)	119.75%	117.08%	109.57%	114.33%	124.86%	126.75%	126.75%	109.00%
Difference (20/19)	-0.42%	9.34%	-6.69%	0.49%	1.27%	17.63%	3.68%	1.87%

WASTEWATER TREATMENT	EAST	SOUTHWEST	SOUTHEAST	PELGAONIJA	NORTHEAST	SKOPJE	Североисточен Регион	Скопски Регион
2019 Expenditures to Revenues Ratio (average value)	103.00%	148.67%	101.25%	133.00%	98.00%	101.00%	77,80%	94,00%
2020 Expenditures to Revenues Ratio (average value)	102.00%	101.00%	87.00%	109.67%	91.00%	101.00%	77,40%	86,00%
Difference (20/19)	-0.97%	-32.06%	-14.07%	-17.54%	-7.14%	0.00%	-0,51%	-8,51%

8.6. ANNEX 6: Number of employees per 1000 inhabitants per water service

COLLECTION AND DRAINAGE OF URBAN WASTEWATER	VARDA	EAST	SOUTHWEST	SOUTHEAST	PELGAONIJA	POLOG	NORTHEAST	SKOPJE
2019 Number of employees per 1000 inhabitants (average value)	1.94	1.56	1.83	2.47	2.74	0.80	1.40	1.30
2020 Number of employees per 1000 inhabitants (average value)	1.96	1.54	1.83	2.44	2.70	0.78	1.38	1.40
Difference (20/19)	1.29%	-1.07%	0.00%	-0.90%	-1.56%	-3.13%	-1.79%	7.69%

COLLECTION AND DRAINAGE OF URBAN WASTEWATER	VARDA	EAST	SOUTHWEST	SOUTHEAST	PELGAONIJA	POLOG	NORTHEAST	SKOPJE
2019 Number of employees per 1000 inhabitants (average value)	1.94	1.56	1.83	2.47	2.74	0.80	1.40	1.30
2020 Number of employees per 1000 inhabitants (average value)	1.96	1.54	1.83	2.44	2.70	0.78	1.38	1.40
Difference (20/19)	1.29%	-1.07%	0.00%	-0.90%	-1.56%	-3.13%	-1.79%	7.69%

WASTEWATER TREATMENT	EAST	SOUTHWEST	SOUTHEAST	PELAGONIJA	NORTHEAST	SKOPJE	Североисточен Регион	Скопски Регион
2019 Number of employees per 1000 inhabitants (average value)	1.25	1.97	2.03	1.73	1.50	3.20	77,80%	94,00%
2020 Number of employees per 1000 inhabitants (average value)	1.25	1.73	2.33	1.73	1.50	3.30	77,40%	86,00%
Difference (20/19)	0.00%	-11.86%	14.81%	0.00%	0.00%	3.12%	-0,51%	-8,51%

8.7. APPENDIX 7: Completed investments by planning regions

COMPLETED INVESTMENTS	VARDA	EAST	SOUTHWEST	SOUTHEAST	PELGAONIJA	POLOG	NORTHEAST	SKOPJE
2019 % of realization (average value)	25.88%	13.67%	13.95%	25.90%	7.88%	0.00%	20.80%	60.75%
2020 % of realization (average value)	28.88%	17.35%	12.98%	21.08%	7.47%	8.64%	0.00%	15.77%
Difference (20/19)	11.59%	26.88%	-6.92%	-18.62%	-5.31%	#DIV/0!	-100.00%	-74.04%

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