

# Importance of waste water treatment on local level in Kosovo

Author: MSCE Arian Shuku

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## Abstract

Generally in Kosovo, there is no wastewater treatment. The only wastewater treatment plant is located in Llausha, Skenderaj with a capacity of about 8,000 p.e. A number of other small rural treatment facilities are also in operation. The wastewater is usually discharging directly into the rivers and represents one of the main surface water pollutants. The monitoring of rivers shows that the pollution is increasing when approaching settlements due to the discharge of wastewater and water from industrial collectors along the flow.

The wastewater collection system stands little bit better than the treatment, where out of 1.8 million inhabitants, 1.2 million, or 74% of population has access to public sewerage systems managed by the public companies and ultimately discharges to the recipients un-treated.

However, construction of the new WWTPs has already started in some major cities, covering large parts of mainly urban areas. The works have begun in Prizren and Gjakova, and soon will start in Peja, which will be followed by the WWTPs in Prishtina, Mitrovica and Gjilan. Initially, with construction of the first phase of WWTPs and sewage networks in the major cities, in the next 6-7 years is estimated to be covered up to 60 % of population with the access to the public network that will have treatment before discharge to the recipient. The coverage of the major part of the country with the wastewater collection and treatment is foreseen to be achieved until 2036, with completion of final phase of WWTPs construction in the seven major cities.

During the period of almost two decades, the donor community has mainly invested on improving the water supply services, while the local authorities, namely the municipalities, have invested more on the sewage networks.

## Background information

Kosovo has limited water resources and is unevenly divided into four main river basins. It is estimated that water resources are 1600 m<sup>3</sup>/water/year<sup>1</sup> per capita, which is well below the regional average (see figure 1 below). Hence, implementing of measures for protection of the surface and ground water is essential for the country.

**Kosovo Compares Poorly Against Regional Benchmarks in Terms of Water Availability**

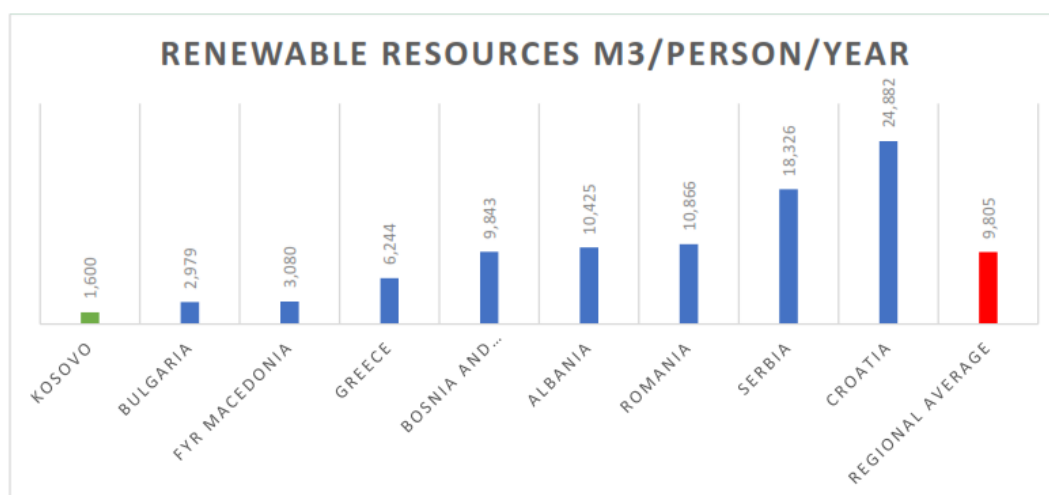


Figure 1: Water resources in the region (source WB- Kosovo Water Security Outlook Report)

In regard to the sewage system, Kosovo has inherited poor infrastructure from pre 1999, with no useful urban wastewater treatment and nonfunctional industrial wastewater facilities. Since 1999 up to 2012 the donor community has responded with investments in the water sector, which together with domestic investments have exceeded €250 million and have predominantly occurred in water supply, while less in waste water collection and in marginal amount in their treatment<sup>2</sup>. While the domestic funds have been more in wastewater services than in water supply, the international donor community have streamed their funds predominantly in water supply. The reason for not entering into the wastewater sector for the donor community are mainly concerns about the environmental liability and financial sustainability. Investing in the collection without considering the treatment presents an environmental noncompliance with the - EU directives for environment and wastewater treatment. On the other side, investments on wastewater treatment would be a challenge taking into the consideration their financial sustainability due to the lack of capacities of the utilities, as responsible entities for their operation.

Consequently, due to lack of investments from the past, today Kosovo suffers from the poor wastewater collection and in particular the treatment facilities.

## Role of stakeholders in wastewater

The seven Regional Water Companies (“RWC”) are the responsible entities for operation and maintenance of the sewage networks and the WWTPs, whereas their shareholder is the Ministry of Economic Development (MED). The role of Water Services Regulatory Authority (WSRA) is to license the RWCs for

<sup>1</sup> Report on State of Water 2015

<sup>2</sup> Historical investment trends in water sector IMWC

provision of water and wastewater services, to set and approve the fees, monitor the performance of service providers, etc. The Ministry of Environment and Spatial Planning (MESP) is the leading institution in the water sector responsible for the drafting of sectorial strategies and policies.

The role and responsibilities of the municipalities in the wastewater collection and treatment processes are rather marginal, and are focused mainly on rural schemes, albeit the investments carried out in the sewage networks in the urban and rural areas. However, there are some areas where the municipalities are implicitly engaged in the sector:

- Section 15.14 of the Law No. 04/L-111 regulates the involvement of the respective municipalities into the boards of the RWCs. According to the Section, the Government has to make sure that at least half of the Board members come from the list of candidates submitted by the respective municipalities.
- Article 24 of the Law on Environmental Protection No. 03/L-025 obliges municipalities to develop Local Environmental Action Plans and Programs, and encourages groups of two or more municipalities to create joint programs/plans, for environmental protection, on reducing of negative effects on environment.
- Municipalities are responsible for issuing of construction and environmental permits

## Current situation with wastewater collection, discharge and treatment

Mbulueshmëria me shërbime	Ujësjetës	Ujëra të ndotura
2013	82%	60%
2014	84%	62%
2015	87%	65%
2016	91%	69%
2017	94%	74%

Table 1: WSRA data about coverage with water and wastewater services

**The collection** of urban wastewater includes water of the public service network operated by the regional water companies and a number of smaller operators. Based on the Kosovo Statistics Agency latest census of population, households and dwellings of year 2011, about 53% of population discharges wastewater into the public sewerage network, 16% into sewerage systems not managed by public companies, 27% use other discharge forms (canals, septic holes, etc.), while 4% does not have access to the sewerage network.

However, according to WSRA<sup>3</sup>, out of 1.8 million inhabitants, only 1.2 million, or 74% of population has access to public sewerage systems managed by the public companies.

<sup>3</sup> WSRA annual report of year 2017

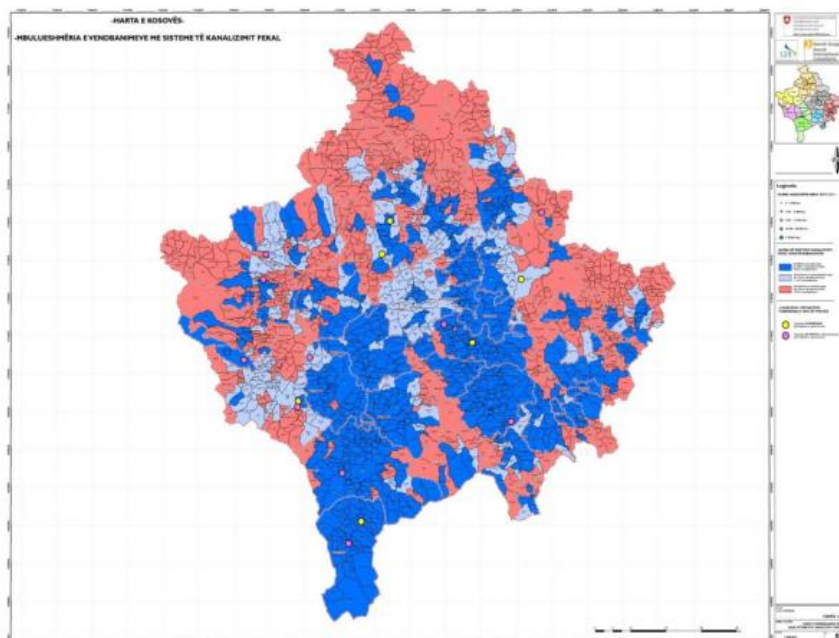


Figure 2: Coverage with sewerage system (blue is for complete and light blue partly coverage. Pink areas are without sewerage services) source Swiss Development Agency

**The discharge** of the collected waste water is usually into the rivers and streams which creates a serious environmental problem with potential of surface and groundwater contamination. Raw sewage and industrial wastewaters from current industry and power plants contaminate mostly the surface water sources. The operating industries do not provide wastewater treatment, and un-treated effluent discharges straight to the local rivers and streams. Due to the drastic reduction of production from pre1990 levels, pollution from the industry and mining has been diminished, but water use and pollution are expected to grow again with economic development. Throughout the country, apart from municipal discharge points there are also many others from the individual houses. These discharges in case of urban areas lead to high level contamination of the streams and result in increased odor especially during warmer months.

The monitoring of rivers consisting in 54 stations is conducted by Hydro-meteorological institute of Kosovo.<sup>4</sup> Results of physical-chemical analyses from the monitoring shows that the quality of water at all

## Report on State of Water-2015

### Monitoring of rivers

**Lumbardhi i Prizrenit River** - Originates from Prevala with a torrent flow. Its first monitoring station is located in the Prevala Canyon and measurements conducted in it show a good quality of water in all parameters. The second station is located in village Vllashnje 3,5 km before its confluence with the Drini i Bardhe River and the quality of water at this point is considerably poorer because of wastewater discharged into it along the flow.

**Shtime River** – This river is monitored at two stations; at the first station its quality is measured before the river is affected by human activity, resulting in a good quality of water. At the second station, its quality is measured after the discharge of urban wastewater from the town of Shtime and surrounding villages, resulting in a poor water quality.

<sup>4</sup> Report on State of Water 2015

river sources is good. The situation starts to change when approaching settlements due to the discharge of wastewater and water from industrial collectors along the flow.

The networks are mostly combined for sewage and storm water. Even when the sewage network has been designed for a separate system, due to poor design and maintenance, but also due to numerous connections of the sewage discharges to the storm water systems made by nearby inhabitants, it became combined.

**Treatment** of the wastewater in Kosovo is generally inexistent. The only wastewater treatment plant is located in Llausha, Skenderaj with a capacity of about 8,000 p.e. (population equivalent) A number of other small rural treatment facilities are also in operation.

## Projections

As Kosovo will seek to accede the European Union (EU) in the forthcoming period, one of the requirements of EU Accession is approximation to EU Legal Requirements (the *acquis communautaire*), thus the environmental standards of the EU are targeted by the national authorities, by transposing them to the local legislation. For instance, an important provision in regard to WWTPs/collector system is transposed to the local legislation<sup>5</sup>, which is the following: “*Companies should ensure that wastewater entering into the collector system before discharge must undergo to the appropriate treatment*”. Therefore, the authorities should ensure that the collection and treatment processes should proceed in parallel.

However, considerable efforts have been made to prepare for the implementation of wastewater treatment in the seven major cities. The feasibility studies for wastewater collection and treatment have been completed for Prishtina, Gjakova, Gjilan, Peja, Prizren, Ferizaj and Mitrovica. Works for the sewage network and the WWTP have already begun in Prizren and should be finished during year 2019. In Gjakova has started the construction of the sewage network and the treatment facility is expected to start soon. Peja has advanced to the phase of procurement of construction works. The WWTPs in Prishtina, Gjilan and Mitrovica are also in the process of being initiated. For these projects financial sources have been identified and while in Prishtina is under the establishment the unit for project implementation, for Gjilan and Mitrovica the financial modality is subject to further discussions between the Ministry of Finance and the Banks of EBRD and EIB as a loan providers. In addition, for these two cities will be carried out “technical gap analyses” by the Banks in order to cover revisions to the sewer catchment area, increased demand, scope definition and cost revisions. From the major cities only for Ferizaj WWTP there is not any ongoing development since the feasibility study done several years ago.

The feasibility studies developed various scenarios regarding the investments in wastewater collection and treatment facilities. Within the period of 6-7 years, up to 60 % of population will have access to the public sewage network. According to the Water Strategy 2017-2036, by the year 2036 the investments will reach the amount of approximately 560 million Euro and by then will be completed the facilities for wastewater collection and treatment in the seven major cities.

The first phase will cover mainly urban and more densely populated areas, which are the most important polluters. Consequently, the rural area will remain less covered and the development of strategies for rural wastewater management is also an important requirement. There have been some small wetlands, vertical and combined vertical and horizontal ones. They are with acceptable costs, need low skills for

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<sup>5</sup> Instruction N° 30/2014<sup>5</sup>, Article 8

operation and maintenance (O&M), and are with high hydraulic acceptance and safe treatment level complying with EU standards. In addition, there have been some small scale rural schemes septic tanks with advanced wastewater treatment. However, the rural schemes have brought into attention some hindrances in practice during implementation of wastewater collection and treatment activities. Sometimes, there is a mistrust and lack of willingness to cooperate by the local population, due to the perception that the benefit is for others, or there are worries about the odor, etc. Rural schemes should go together with the public awareness measures, mainly from the central level, to make people aware of the common benefit by the collection and treatment of the wastewater.

## Benefits from WWTPs

The construction of WWTPs will bring primarily environmental benefits in protection of the surface and underground water. But, there are also economic benefits as well: for instance sludge use generated by wastewater treatment processes, as well as temporarily and long term jobs for trained staff for O&M.

The sludge management can be rather profitable. The potential areas commonly considered for sludge use are: agriculture, compost production, power generation, production of cement and other construction materials, but also should be considered the disposal to landfill. Strategic studies are necessary to determine the best practicable environmental option for the management of sludge, which will take into consideration an integrated and holistic approach to planning treatment and reuse or disposal that is adopted to the local conditions.

Internationally, the preferred and common management option for sludge is beneficial use on land, particularly for agriculture production, since it ensures that nutrient and organic matter are recycled to the soil to enhance crop production, reducing the use of chemical fertilisers, while improving soil physical properties with regard to its cultivability, nutrient retention and moisture holding capacity.

Co-disposal of sludge with domestic solid waste in landfill has been the most popular option in many countries, but also it is widely recognized as unsustainable due to the loss of the resource value of sludge, exploiting the useful landfill space and concerns over environmental emissions, particularly methane. Therefore, this option does is not really economically interesting and beneficial.

Nevertheless, sludge is a novel product in Kosovo. Therefore, as soon as the planned WWTPs will start to operate, people's acceptance for using it in agriculture needs to be reached through respective awareness campaigns accordingly.

Socio economic benefits from construction of the WWTP are considered moderate, but they are still likely positive, since they will result in local employment opportunities during the construction phase and to a lesser extent during the operational phase.

## Obstacles

- Operation and maintenance of the WWTPs is closely related to the sustainability and financial viability of the RWCs. The billing includes services for water supply and wastewater. Despite the continuous support to the RWCs with soft and hard components from various donors, there is still considerable amount of non-revenue water (NRW), which according to WSRA report 2017 the average is 58%.

The collection rate for water and wastewater service bills as the sector average for 2017 was 84%. The financial analyses for operational and maintenance costs for WWTPs will require the reduction of NRW, improvement of bill collection and adjustment of tariffs accordingly.

- Affordability of the consumers for water and wastewater services remains the main challenge. The international financing institutions generally recommend the affordable cost of water supply and wastewater services should not exceed 3% to 4% of household income. Moreover, for transition countries, the affordability index of median households is generally in the range of 1.5 to 3%. According to the Kosovo Agency of Statistics report 2017, the average net wage for year 2016 is approximately €450, assuming 1.0 wage earner per household and excluding the contribution of remittances and impact of “grey” economy. The feasibility studies for the WWTPs, which have been prepared several years ago have projected higher economic growth from 2013 to 2018, hence, there should be conducted new studies to calculate return of the investments for new WWTPs with the affordable rates for water and wastewater services.

## Recommendations

- Improve the efficiency of the RWCs to further enhance their sustainability and financial viability as a response to increasing costs for operation and maintenance of the WWTPs in the future.
- Further analyse and develop rural schemes for wastewater treatment, accompanying with public awareness of the affected population
- The government authorities should comply with the outcomes from the Water Strategy 2017-2036 to complete the wastewater collection and treatment facilities by 2036
- Simultaneously undertake further studies to determine the best option for the management of sludge and its possible utilization in agriculture.