

**National Workshop**  
**Alternative Approaches of Urban Wastewater Treatment**

Aghveran, Armenia  
16-17 October 2014



Country Water Partnership NGO and its partner JINJ engineering consulting company, a member of GWP network, held a two-day National Workshop on "Alternative Approaches of Urban Wastewater Treatment", on 16-17 October, 2014 in Best Western hotel in Aghveran.

Global Water Partnership Secretariat, Yerevan DjurCJSC and Armenian Water and Sewerage CJSC rendered financial support for the implementation of the Workshop.

The workshop aimed to identify the conditions promoting the application of alternative technologies for urban wastewater treatment in Armenia, as well as the impeding legal, institutional and financial frameworks and to develop ways for creation of a favorable environment in the countries for their introduction and application.

At present in all residential areas of Armenia domestic and industrial wastewaters are filled into rivers, ponds, irrigation canals and land areas without treatment, which leads to water resources pollution, land resources degradation and can cause generation of serious environmental, health and socio-economic problems.

In Soviet times, 22 wastewater treatment plants were operating in Armenia, out of which only Yerevan's wastewater treatment plant is operating presently, where only partial mechanical treatment is implemented. The remaining plants are morally and physically worn out.

In recent years, the RA government has begun to pay attention to the rehabilitation of the wastewater treatment process. In 2013-2014 five wastewater treatment plants were built and commissioned. However, due to lack of funds, only mechanical treatment structures were built in those plants.

Along with the mentioned, the experts and professional organizations of the sector are looking for ways to develop and implement alternative technologies for domestic wastewater treatment, which would demand small financial, energy and technical resources.

Country Water Partnership NGO in cooperation with JINJ engineering-consulting company has constructed a lagoon type domestic wastewater biological treatment plant in the RA Armavir region's Parakar community. After treatment, the domestic wastewater of the community is mixed with irrigation water and is used as an additional water quantity.

The treatment plant was constructed in the community within the framework of the Global Environment Facility's Small Grants Programme "Water, Climate and Development Programme in Central Asia and Caucasus". The project was funded by the Department for International Development (DFID) of the UK.

After the construction of wastewater treatment plants of alternative technology, a series of legal, structural, financial problems occur, for discussion of which and for development of relevant proposals the two-day regional training seminar was planned.

The Workshop was attended by the representatives of all the stakeholder ministries (Ministry of Nature Protection, Ministry of Urban Development, Ministry of Agriculture, Ministry of Territorial Administration, Ministry of

Economy), agencies (Public Services Regulatory Commission, State Water Committee), regional councils of all 10 marzes, Yerevan Municipality, water companies, village administrations, international organizations (UNDP, GEF, ABRD), NGOs, consulting firms, American University of Armenia, mass media.



Workshop participants

The speakers of the plenary session presented the current situation of the wastewater removal and treatment in Armenia, the legislative and regulatory framework of wastewater treatment, enforcing constraints, the mechanisms regulating the wastewater treatment process. Health problems related to wastewater removal and treatment were also presented.

Then the experts presented alternative technologies of municipal wastewater treatment, as well as their application practice in Armenia.



Speakers of plenary session

After the plenary session, the participants were divided into three groups and discussed the following issues:

1. Wastewater treatment technologies, investment approaches and incentive mechanisms.
2. Improvement of legal and institutional framework aimed at rehabilitation and development of sanitation sector.
3. Environmental, health and social issues.

As a result of the group discussion the following questions were raised:

*The first group: **Wastewater treatment technologies, investment approaches and incentive mechanisms***

As a result of the discussions at the group composed of experts the following key issues and approaches were highlighted:

1. All alternative technologies tested in different countries that fit to the conditions of our country are acceptable and applicable for treatment of wastewater removed from settlements. At the same time it should be taken into account that the technology selection will depend on the local conditions, the qualitative composition of wastewater, the requirements for the treatment, etc. .

2. Given the present actual share of funding allotted to the wastewater sector from the state budget, it is not realistic to anticipate tangible investments in the sector in coming 10 to 20 years.

In case if the current situation is not changed during the next 10 years the existing systems will deteriorate even more. As a result the investments required for rehabilitation and improvement of the systems will double.

Therefore, the situation requires that any initiative in wastewater removal and treatment process is supported and encouraged, provided that it has the potential to solve the problems even at small scale. That is, reasonable approaches must be developed and adopted and favorable conditions for attracting funds to the extent possible must be created independent on the size of funding. As such an approach the slogan **“Treat today as far as you can”** is proposed.

3. In case such a slogan is adopted, the rehabilitation, improvement and development process of wastewater removal and treatment systems must have a vertical vector in addition to the horizontal vector, which allows achieving the ultimate objective of establishing a complete system through a staged manner, with gradual implementation of the planned volumes.

4. Running the process with involving various sizes of investments will promote part by part advancement of the process, i.e. staged implementation, as a result of which, maybe slowly, but steadily, the overall program implementation will be provided. On the other hand, getting certain tangible results in certain stages can stimulate allocation of new investments, thereby speeding up the process.

5. Proposals regarding the source of funds. To solve this important problem, several approaches are proposed:

- a) With the adoption of certain pre-conditions, a bank authorized by the government provides a soft long-term credit for construction of wastewater removal and treatment systems in communities. The priority selection of the community and the capacity and volume of the sewerage system are determined in accordance with specific criteria developed by expert group (a proposal for settlements prioritization criteria and determining their values was submitted by JINJ Company).
- b) Implementation of targeted fundraising by legal or physical investors for any settlement or facility. It is very desirable that such investors benefit from significant tax privileges, which will promote expansion of the process scope.
- c) Adoption and implementation of economic incentive mechanism for construction of wastewater treatment plants for industrial enterprises, food, recreation and commercial facilities to motivate the owners to construct and operate wastewater treatment plants.

6. Establish a catalogue of designs for treatment plants of various capacities and technologies that are duplicated in different localities, which will lead to reduction of design costs and will help the investors in making correct decision.

7. Enforcement of the presence of improved public toilets and treatment of removed wastewater at tourism facilities, catering facilities located near the main highways, unorganized but paid recreation areas, as well as at car charging stations.

8. Adoption of the mandatory environmental policies of international financing institutions in commercial banks' crediting regulations for providing loans to various types of commercial constructions.

9. Along with the construction of new municipal wastewater treatment plants in Armenia, enforcement of the entities producing non-household wastewater to pre-treat the wastewater.

#### ***The second group: Legal regulation ways of water supply and sanitation sector***

As the first step of the sector regulation, adoption of legal act was considered. The main problem is the choice of one of two possible approaches.: 1) water supply and sanitation sector regulation under the Water Code, 2) adoption of a new law regulating water supply and sanitation sector. Although both options were methodologically acceptable, the participants mainly spoke in favor of the new law, which would allow integrated regulation of public relations of the sector. At the same time, the participants appreciated the principle of considering the water systems to be the state property, as ratified in the Water Code.

The participants emphasized the importance of the approach that selection of any option should be based on the developed concept paper, which will comprehensively assess the advantages and disadvantages of both options.

The need to clearly distinguish between the legislative act subject to development and the regulations resulting from it was mentioned.

While observing the problem from the institutional point of view, the importance to clearly differentiate the authorities of the sector regulation, management and control was also mentioned. Besides, the legal regulation process monitoring, which makes it possible to evaluate the effectiveness of regulation was emphasized.

#### **Tariffs and economic tools**

In terms of setting the tariffs of the provided services, it was emphasized that the legal act to be adopted (an addendum to the Water Code or a new law) shall establish the basic principles of tariff formation, as well as the ratio of the tariff to the minimum consumer basket (price index, "tolerable tariff" concept).

In the tariff setting context, the issue of including the loan management costs for establishment and reconstruction of wastewater system was raised. The problem was considered particularly for the communities that do not have wastewater systems. In this regard also the issues of handing over the wastewater system to the community for future management and establishment of tariffs will also become subject to regulation.

Importance was attached to setting of privileges for different groups, for example for households.

#### **Urban development issues**

Water and wastewater system design is one of the most important components of the modern concept for sustainable development of residential areas. In this context reviewing of construction norms and rules (SNiP) is crucial for water supply and sewerage systems (the current rules were adopted in 1984). Given the fact that these norms are generally reviewed every 5 years, the existing regulatory and technical documents are out of date. In this regard, it is also needed to review the existing sanitary norms.

The importance of improving the enforcement mechanisms, control and responsible authorities was mentioned.

The discussion results were summarized in the following formula:

$$\text{Unuseful wastewater} - \text{Useful waste} = \text{Useful water}$$

#### ***The third group: Environmental, health and social problems caused by untreated wastewater***

As a result of the group work, the environmental, health and social problems caused by untreated wastewater were identified.

From environmental point of view, wastewater was considered not only as a source of pollution of water and land resources, but also as a factor responsible for degradation of aquatic and terrestrial ecosystems and affecting public health.

As a result of the group work, a number of measures were proposed, which will allow assessing the ecosystem and health effects of untreated wastewater.

The group members noted that such complex assessments had not been done so far, which did not allow weighting the need of construction of wastewater treatment plants and the size of damage caused to ecosystems and human health.

The group made the following recommendations:

1. Conduct financial-economic analysis of the damage caused to ecosystems and public health and construction of wastewater treatment plants.
2. Assess the impact of mining on public health (since 2014 the MH has started a program, during which the impact of mining on different age groups will be assessed), as a result of which it will be possible to identify the impact of untreated industrial wastewater in different communities and regions.

3. Prioritize treatment of wastewater from public facilities, such as rest homes, catering facilities, gas-filling stations, since private business has greater financial opportunities for installation of their own wastewater treatment plants to treat their wastewater.
4. As a pilot project, installation of domestic and industrial wastewater treatment plants in Marmarik basin vacation homes, as well as in any exemplary mine was offered.
5. Oblige the WW systems operators to construct and efficiently operate WWTPs.
6. Strengthening/development of environmental policies of local banks.
7. Subvertise as far as possible the rest houses, hotels and catering facilities not having treatment plants.
8. Raise public awareness and support public activity.
9. Strengthen the idea of **considering wastewater as water resource** among all professionals, managers and decision makers in water resources sector.



Discussion in groups

The workshop participants decided to submit the summed up group work results to all stakeholders.

The representatives of the regions found it necessary to hold such seminars also in the regions where it will be a greater opportunity to discuss such issues at basin level.

During the workshop proposals were received from two regions (Ararat and Syunig) to apply alternative wastewater treatment technologies like in Parakar region also in their regions.

Attaching importance to the organized workshop in wastewater removal and treatment sector, as well as the exchange of experience between specialists during the two-day workshop and identification of present problems by them, the workshop participants proposed to organize National Water Forum every two years to discuss water issues.

The participants visited Parakar treatment plant and got acquainted with the alternative technology plant.



Workshop participants in Parakar