

Management of Urban Water Sources and Use and Sustainability of Wastewater

İsmail Hakkı Kalyoncu

University of Selcuk, Faculty of Agriculture,
Department of Horticultural Science, Konya, Turkey

kalyon@selcuk.edu.tr

Hasan Kalyoncu

University of Süleyman Demirel, Faculty of Science & Arts,
Department of Biology, Isparta, Turkey

hasankalyoncu@gmail.com

Abstract: The usage of fresh water supplies on the surface of globe is serviced for human in two forms to be ground and surface water. 75%, 15% and 10% of that water has been used for agriculture, industry and living, respectively. Geographical structure and climate conditions of region have determined the usage of water. While some regions having so much rain and surface water, some regions have not got enough groundwater because of the distinctive properties of those regions. The service of groundwater for usage is more expensive and risky. The unplanned activities in the closed basins can also increase the risks on the usage of groundwater sources.

Beside the importance of water services for cities, the case of the wastewater is also so important. The wastewater of the cities located in closed basin also creates some environmental problems as well as some bigger economical problems. The increase in the amount of waste water has been an important problem as population increases nowadays. Sustainable projects on the economical and lack of these sources of groundwater have stamina importance. It can be suggested that the waterworks of city must be reconstructed in two waterworks one of which is to deliver water for drink and another one must deliver water for use. At this stage, the wastewater must be refined and distilled for reuse for some other resound such as especially water agriculture, etc. The distilled water must also be delivered into fields through suitable pipes for agricultural usage. Therefore, the economical, planned and sustainable water usage will be provided.

Keywords: Urban water sources, wastewater, sustainability

Introduction

Nowadays, providing drinking water and that for usage for cities serviced is quite difficult because of the existence of healthy water sources and water sources being nearer to the crowded places. In some years, the problems of suffering for water can become very important struggling problem. Beside the water has a vital importance for livings, it is also important for some sectors of industry. But, the sources have an arbitrary distribution in location and time, and humanistic and natural activities use up, consume and suppress the natural water sources. The sustainable management of the water sources have become an important issue for demands continuously increasing. In spite of the increase of the knowledge of people about how to use the water, economic criteria and political approaches have intent to use water strategies in all manners. Suppressions on the usage of water sources increase pollution with increasing especially urbanization, increase of population and standard of living, competition for water and, therefore, these become prominent and stronger with changes on the climate and natural conditions (Anonymous, 2010a).

The water sources are face to face with very important global problems today. The dearth of water becomes more pronounced and world wide problem; inundation happens in many places on the world; the quality of water becomes worse and worse in time in almost all countries in the world and these problems cause many problems such as economic and social. The most important one of these problems is that the sustainability of life on the ecosystems is being threaded. These problems have introduced that some new approaches are needed on the development and that control and management of water sources are needed. At this stage, the issue becomes the subject of meeting, programmes, conferences and some commissions. In spite of the importance of water as a natural source is globally stated, the problems of “lack and pollution of water” is increasing gradually in Turkey

as it is in the world. It must be well realised that as a source the problem of lack and pollution of water is based on the bad policies and management of water sources in Turkey as it is in the world (Anonymous, 2010b).

In some countries, there exist some programs to decrease the loss of water on the urban waterworks and this program also try to re-determine the areas where water being used but some more efforts are needed to get access. For the management of water sources, the approaches have focused on river basin rather than centre, and compact projects have mostly been followed by all people (Anonymous, 2010a). A large amount of the water in Turkey has been polluted or is under the risk of pollution because of fast increase in population, urbanization and industrialization etc. For different ideas (irrigation, agricultural usage etc.), many large watery lands have been dried or are under the risk of being dried. On the other hand, many changes have been made in river basins but the ecological effects of them have not been discussed enough in Turkey. As a result, water sources due to sustainability can be subjected to bad results of these. Continuous observation (living sources in water, pollution, environmental quality, general hydraulic, irrigation, water sources, ground water, well problems, providing and purification of water) of water sources and protection taken necessary under collected data due to either preservation or provide the effective sustainability are a human duty for future generations (Anonymous, 2010c).

There is no successful organisation on the usage and management of water sources. Neither official nor between offices or reiteration and authority complications between offices or problems on the laws and regulations related to protection and usage of water sources make this issue more complicated. Defects of coordination damps the developments on the sustainability of such an important issue (Anonymous, 2010d).

The industrial systems to increase the production of ground or surface water must be enhanced because of the fast urbanization necessities of social-economical development beside the increases on the need of irrigation as a result of the increases on the food because of increase on the population. Development of economic potential related to the fresh and groundwater sources in parallel to the principles of the sustainable development by taking care of the environmental effects is also important to prove development on the sustainability of economic development. For the policies on the management of sustainable water can be applied, the legal and official structures on the production and consumption of water are directly related to coordination between corporations, participator authority, truthfully sharing, education, culture, research and development and suitable choice of technologies. On the other hand, the sectoral weights and sectoral powers of the multinational water companies on the determination of water policies are increased by time as a result of global water politics developed on the management of water services. These processes on which the scenarios of changes in the climate, it is needed that international policies on the water management must be discussed by considering due to the our national benefits and public realities. Beside this, some new corporations, institutions and management policies on the management of the water sources and water services may appear in the process of the entering into the European Union must be investigated by considering the our public and national benefits. At present, a process is going on that international politics and the management of our rivers going through boundaries is being concentrated. Weakening of national control on the water sources and planning put some limitation on the development of these sources which must be considered, investigated and some policies must be produced (Anonymous, 2010b).

The construction of industrial systems for decontamination and reuse of the wastewater in urban areas must be constructed. Instead of more decontamination system to be constructed, effective usage of enough number of them must be provided and salvation of such problems must be carried out. Decontamination of wastewater and the usage of decontaminated water for city needs must be provided. Water usage, management and economical and sustainable usage of purified water by stopping the leakages of waterworks will be provided.

Urban Water Sources and Their Management

10 %, 15 % and 75 % of 40 billion m³ water used up in a year in Turkey has been used in industry, as drinking water and for irrigation in agriculture, respectively. Therefore, the agricultural irrigation must be most important and has to have priority from all others. It is possible that 30-40 % of water used at the present by taking the precautions (Anonymous, 2009e; Kalyoncu et al. 2009a; Kalyoncu et al. 2009b). The situation in the case of foundation, management and usage of water source shows the same problems beside this general situation of the water. Clean water must not unnecessarily be wasted and polluted. Drinking water others used some other reasons must be separated from each other. The water obtained by purification of wastewater must be used in green lands, industry and irrigation of agriculture of urban and if it is possible these needs must not be got from clean water. Clean drinking water must only be used for drinking needs, waterworks for cities must be separated from the water pipe nets of that used for other reasons. Therefore, the problems on providing water for cities from clean/fresh ground or surface water sources will be decreased and clean water will be continued to be used. In this case, the effective use in the real part and sustainability of the clean water sources will be kept. Clean water usage will be left for future generations without bad pollution. Besides, that water will provide healthy water for urban kept alive for years (Anonymous, 2010f).

The waste and leakage of water must be minimized by checking often and maintaining water working system. The social opinion must also be constructed on this point. It is believed that 30-40 % of water used for urban will

be saved by preventing loss and leakages. The regulations must be re-arranged for groundwater to be used effectively and efficiently. When regulation and organisations are made about groundwater more expensive and high risky, everybody must be more careful. Instead of conserving the water, it must be used in effectively and efficiently by taking benefits of scientific programs, and sustainability must be put on. The regulations in law must be done for management of natural sources due to the individual basin. In order to solve the problem of the water in our country, it must be taken into account that the solution must be looked on the basis of dynamics, researchers and scientific or political offices and programs in country. Because of authorization coincidence, complication and insufficient coordination, the water is not managed by only one office or regulation in Turkey, the water sources are not efficiently used. The problem is made bigger and bigger in time rather than producing solution. Some local organizations and local management must be considered, employed and the solution must be fastened by defeating authorization complexity in water policy and management. Existing water sources must be enhanced and saved in the quality and amount of water. Government must put a strong discussion platform and develop information flow rate from related public offices, Universities and industrial unions. Some project and some programs must be carried out about the efficient usage of water in agriculture, industry and buildings. The problems mentioned above about water policy especially being not one office to organize all have shown some problems especially on applications. This case causes some applications to appear in the quantity and quality of the water. It is not possible to say that the water is managed efficiently in Turkey. The management of water must be in integrity with other organisations. Because of increasing pollution and limited sources, it is necessary that some research and development units must be constructed in this subject. Coordination experience of public offices and societies in Turkey are very poor about the management of water and water sources. Especially, these problems on the areas of management of water and water sources can clearly be seen. For the solution of this problem, a strong coordination between all relevant public offices or civilian societies must be regulated and the water management must be carried out by only one office. Therefore, there must be only one public office and officer powered and in charge of water management in Turkey and coordination must be organized with other offices dealing with water (Anonymous, 2009d; Anonymous, 2009g; Anonymous, 2009h; Anonymous, 2009i; Kalyoncu et al., 2009a; Kalyoncu et al., 2009b).

The Use and Sustainability of Wastewaters

The damages given by very fast and unplanned urbanization to the ecological balance is increasing day by day. The industrial areas located around cities and prodigality consumption by people living in cities badly affect environment. Only applications of natural and organic agriculture carried out on the urban agricultural applications provide the ecological systems to be conserved and sustained. Especially, recycling of urban organic wastes by compost method provides a large benefit. Beside this, the effective usage of unused agricultural areas around cities for the reason of urban agriculture will give benefit of usage these areas for some advantages and make around more beautiful from the environmental point of view. Transforming urban agriculture into "Ecological Agriculture" is very important concept because of a series of reasons. The some health and environmental risks caused by closeness of urban agricultural applications to the cities and drinking water sources must be minimized. Changing to the ecological urban agriculture will remove the risk of pollutions on the soil, water and products which are polluted in traditional agriculture because of some hormones, chemicals and some other damaging artificial materials being used (Anonymous, 2010f).

The usage of wastewater by purification is most important issue on the management of wastewater. The waste water purified in cities must be used for irrigation and some other needs apart from as drinking water. This will ensure that the fresh-drinking water will not be used and wasted for such ideas. The usage of such purified water for the reasons as mentioned will make the usage of groundwater and the usage of freshwater for such reason will barely or completely be stopped.

Because of that, the pureed water will be transferred into the application areas through some suitable pipes of water, the losses and dissipations of water will be minimised. Controllability and sustainability will be provided. The use of the waste water in cities can be kept using some agricultural applications. The solution of this problem and effective usage of these sources can only be possible if authorities pay enough attention to this problem and effort more energy on that in nationwide (Anonymous, 2010f).

Results and Suggestions

All policies about the management of water must be on the basis that all people have right to reach and use water sources for public benefits. The right of getting clean water free of charge must be guaranteed for everybody. In order to conserve water richness and relieve water problem for the future, the necessary systems, equipments and methods must be developed. In this point, a view of point must be presented and put forward.

Ownership, management and control of water sources must be held by public authorities and must be kept away from effects of global authorities. They have not certainly to be denationalized. The management and control of water must be kept far from political effects, must be regulated in parallel to that what suits national benefits. National water policy must be regulated and applied including some rivers or river basins which flow along the some parts of border of country. Water and environmental issues must seriously be considered in either legislation or execution. A national water policy must be regulated considering the future of water in short and long terms.

An environment and water law relating on the usage and conservation of the water sources must be regulated. An authority putting coordination must be considered rather than a single authority relating water policy. Water and water sources are not an area of only one dimension and profession. The solution to problems appeared for some reasons must be made easier by making related authorities obeying related ministry and eliminating the loopholes in the law. The ministry in charge of agriculture and villages controlling the usage of 75 % of water in country must be put also in charge of management of water nationwide. The number of office and organization authorized on the conservation and usage of water sources must be reduced and coordination between them must be organized. Inventory, usage, consumption and scripts of ground and surface waters in Turkey must be carried out regarding public and participant view of point. Pollution of water by wastewater, solid wastes, agricultural additives and usage of hormones must be prevented and some obligatory regulation must be applied. Especially, the situation and usage of the groundwater must be made to have a sustainable solution. Inventory work on the number of groundwater sources, their properties, capacities, etc. must be presented together with local planning. In some cases, rather than forbid groundwater, the usage of them must be regulated according to most effective and scientific usage due to local properties of region.

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