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AN EVALUATION OF SOLID WASTE MANAGEMENT IN TURKEY

Tuba BAYRAM¹, Yusuf Alparslan ARGUN², Sevtap TIRINK^{3*}

¹Yüzüncü Yıl University, Faculty of Engineering, Department of Environmental Engineering, 65000 Van, Turkey

²Karamanoğlu Mehmetbey University, Kazım Karabekir Vocational School, Department of Environmental Protection Technologies, 70600, Karaman, Turkey

³Iğdır University, Health Services Vocational School, Department of Medical Services and Techniques, 76000, Iğdır, Turkey

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Abstract


In the world, where human population exceeds 6 billion, industrialization process has been spreading in developing countries and it has caused a great increase in the amount of waste. Development levels of world countries are the significant impact to determine the amount and formation of solid wastes. The first legal regulations on the collection and evaluation of solid wastes in Turkey were entered into force in 1930. Turkey had 3140 municipalities in 2002. While 2977 (92%) of these municipalities were giving solid waste collection service, only 12 municipalities had disposal facilities according to the regulations. There were 12 regular storage and 4 composting facilities belonging to these municipalities. Basic policy in waste management in Turkey is the waste minimization, recycling and final disposal. In the case of pollution/contamination, authorities are responsible for taking required measures to prevent contamination and polluting individuals are obliged to stop pollution, take measures to reduce or eliminate its effects. This study presents a brief history of the legislative trends in Turkey for Municipality solid waste (MSW) management. In addition, submits the MSW responsibility and management structure along with the current production, composition, recycling, and treatment. The legislative system that will provide legal, administrative and technical guidance or a roadmap to the most important handicap projects of local governments which want to put their budget projects into practice isn't sufficient and effective in terms of institution. The directive on control of solid waste is crucially important for local administrations to implement urgently such infrastructure projects which are the most important actors to achieve the process of European Union (EU) accession process where legislative, administrative and technical frameworks have to be adherent to EU. Such an approach will be needed for Turkish people to live in a healthy environment and sustainable development in the country.


Keywords: Solid waste, Solid waste management, Turkey, European union

*Corresponding author: Iğdır University, Health Services Vocational School, Department of Medical Services and Techniques, TR76000 Iğdır, Turkey

E mail: sevtap.tirink@igdir.edu.tr (S. TIRINK)

Tuba BAYRAM  <https://orcid.org/0000-0003-3282-7099>

Yusuf Alparslan ARGUN  <https://orcid.org/0000-0001-6452-3634>

Sevtap TIRINK  <https://orcid.org/0000-0003-0123-0054>

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1. Introduction

In addition to the increase in human population on the earth, the amount of solid waste they produce has also increased depending on their living standards and the development level of countries. Following such advancements, solid wastes thrown to nature have begun to be threats for environment and life. It has become imperative to develop policies aimed at preventing and controlling the discharge of solid waste at their sources, as well as applying new technological methods to solve the problem of solid waste. The extents of damages to environment and public health caused by wastes have today been clearly understood, however; this issue did not attract its deserved attention in the past. Until very recent years, wastes were disposed carelessly and unintentionally and such a condition posed risks to the environment and human health.

Pollution is defined to be any activity or result that makes an environment harmful or unpleasant for living organisms. Waste can be produced by all lifeforms. However, over nearly the last two centuries humans have produced more waste than nature can cope with and in some cases reached up to a level completely which can devastate whole ecosystem caused by increasing population, modern and industrialized lifestyles based on continuously production and consumption. Wastes (solid, gas and liquid) create serious problems for human and the environment if they cannot be safely removed, transported and managed (Anonymous, 2019).

Solid waste management consists of the stages like solid waste production, accumulation, collection, transport, recycling and regular storage. Legal regulation related to solid waste includes a wide waste spectrum covering those like domestic, industrial, medical, hazardous and harmful etc. The aim of solid waste legal regulation is to develop and practice new technologies producing optimum and sustainable solutions for every stage and waste type by considering these stages and waste types in an integrated way.

The potential risks solid wastes may cause increase day by day. With rapid growth in human population, improvement in living standards, industrialization, urbanization, technological advancements, composition of wastes change and their amount increases day by day. In especially Turkey, one of the most important environmental problems is the difficulty applying waste management systems in fields and inadequacy of system.

1.1. Solid Waste Management in Turkey

In the world, where human population exceeds 6 billion, especially in the last half century industrialization process has been spreading in developing countries and such a situation has caused a great increase in the amount of waste. Development level of world countries is perhaps the most important factor to determine the amount and formation of solid wastes.

The first legal regulations on the collection and evaluation of solid wastes in Turkey were prepared within the scope

of General Sanitary Law and Municipalities Act, which entered into force in 1930, but a detailed regulation was possible only with the Solid Waste Control Regulation published in 1991. As the disposal, method of MSW in Turkey was made open dumping until 2000s. Open dumps creates critical health, safety, and environmental problems (Tırınk and Turan, 2017). Turkey had 3140 municipalities in 2002. While 2977 (92%) of these municipalities were giving solid waste collection service, only 12 municipalities had disposal facilities in accordance with the regulations. There were 12 regular storage and 4 composting facilities belonging to these municipalities. Since the existing disposal facilities are located in big cities such as Istanbul, Ankara and İzmir, the proportion of solid waste disposed in accordance with the regulations is around 25%. Such data show that the solid wastes reaching 21 million tons per year in the country are discharged into forest areas, creek beds, seashores and thus leading to many environmental problems, especially ground water pollution and air pollution (Anonymous, 2001). MSW generation in Turkey has increased 28 million tons in 2014 (Tırınk and Turan, 2017).

Our basic policy in waste management in Turkey is the waste minimization, recycling and final disposal. In the case of pollution / contamination, authorities are responsible for taking required measures to prevent contamination and polluting individuals are obliged to stop pollution, take measures to reduce or eliminate its effects. Metropolitan and other municipalities are obliged to establish, operate domestic solid waste disposal facilities. In Turkey, targeting industrial development in especially 1970s and 1980s, a serious amount of increase was witnessed in industrial solid wastes. Turkey's waste composition shown as Figure 1. The types of industrial wastes generated in Turkey are not different from those of developed countries except for high radioactive wastes. Current disposal and recycle facilities in our country are inadequate in terms of quantity and capacity. Great majority of domestic solid wastes are stored uncontrollably. Even though the works on the establishment and operation of regular landfills (storage areas) go on, they are still insufficient. For the solution of the solid waste problem in the country by the Ministry of Environment and Urbanism, construction of "Solid Waste Disposal Facilities" is seen to be the main element to protect environment and prevent from environmental pollution caused by domestic waste.

As in many developing countries, MSW is an important environmental issue in Turkey. Municipalities were found to be unsuccessful in the management of solid waste due to financial difficulties (Guerrero et al., 2013). The huge expenditure required to provide the service, the reluctance of users to pay for service, the lack of financial support and failure of proper use of economic instruments prevented the presentation of appropriate waste management services (Guerrero et al., 2013). It is

seen that the local authorities have the sole duty and responsibility in waste management. On the contrary, the public needs to contribute (Vidanaarachchi et al., 2006). The successful operation of solid waste management depends on the active participation of both the municipality and the citizens (Guerrero et al., 2013). Problems related to municipal solid waste are difficult to address. However, on the disposal of waste in Turkey, more effective collection, transport and environmentally acceptable, efforts are continuing. There are strict regulations in the management of solid waste. But, it is still used primitive disposal methods (open dumping and discharge into surface water etc.) in various place of Turkey. MSW about 25 million tons are produced annually in Turkey. Although making the necessary arrangements Turkey still has over 2000 open dumps (Turan et al., 2009).

The legal basis for the 'Waste Management' of municipalities in Turkey is outlined by the "Solid Waste Control Regulation" published in the Official Paper No. 20814 in 14.3.1991 (Anonymous, 2000). However, due to the insufficiency of municipal resources and technical and administrative staff capacities, there were no plans to implement the rule with few exceptions in the country (Curi et al., 1992; Atabarut, 2000). Therefore, required infrastructure investment is not made efficiently. Over the last 10 years all over Turkey, projects of local governments related to solid waste management have been funded and implemented through credits provided from abroad and reciprocal agreements.

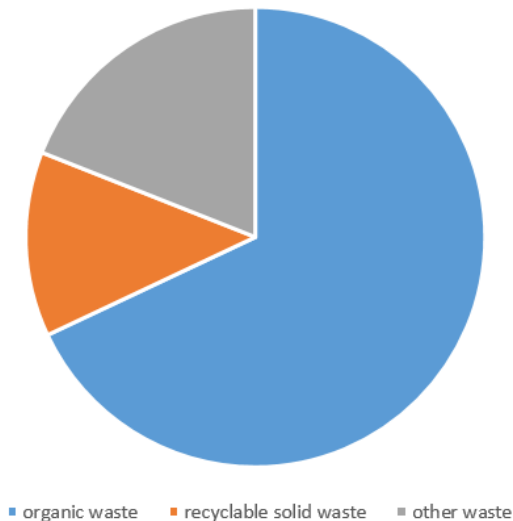


Figure 1. Waste Composition in Turkey

2. Material and Method

Previous studies, reports and statistics were used in the preparation of studies, which have been prepared by public institutions and organizations. Data and information obtained from various sources were checked for their accuracy and objectivity. Various sources have been scanned to reach the right information. The feasibility and sustainability of the study were also

investigated by considering the current laws and regulations.

3. Results and Discussion

Rapidly growing world population, as well as changes in the consumption habits and standards of societies, increasing number and capacity of industrial facilities and urbanization have caused changes in the characteristics of wastes and the amount of waste is increasing day by day. It is recommended that the level of waste management legislation in Turkey be increased from the regulations to laws and extended to cover general waste management and the objectives of the legislation should be amended in accordance with the European Union (EU) waste management principles. The existing disposal and recovery facilities in our country are inadequate in terms of their quantity and capacity. Domestic type wastes are stored majorly in an uncontrolled way. Even though insufficient, work on the establishment and operation of landfills is still going on. Projects are being prepared to determine the arrangements for the preparation of waste management plans at the regional dimension, the determination of the requirement for infrastructure from both EU and Turkey and tan appropriate investment strategy. The fact from all above is the "prevention of pollution at the source". Preventing pollution at its source and taking environmental precautions during investment both costs cheaper and the products gain environmentally friendly images on the social masses. Basic principles and priorities of our waste management policy are the reduction of wastes to minimum, collection separately at its source, recycling wastes to gain additional income to the country's economy and regular disposal of unrecycled wastes. However, a consumption policy to reduce the rate of waste, a clean production concept, the separation of waste at its source, recycling those with economic value, reduction of waste amount to be sent to the final disposal sites in the framework of a program and participation of not only public and private sectors but also whole society in acting for the mentioned process have emerged as major components of a contemporary solid waste management policy. For Turkey, different activities for modern solid waste management should be considered (etc.) for the metropolitan cities (Döberl et al., 2002). Various actions should be taken by grand municipalities in Turkey for contemporary solid waste management such as avoidance from waste, waste minimization, recycling, monitoring, planning and projection and public participation (Döberl et al., 2002). Reliable administrative and technical structures are needed to perform these activities effectively and fast. Local government and the public need to cooperate in the protection and development of the environment. In this way, the solution to environmental problems will be provided more easily and will be sustainable (Kızılboğa

4. Conclusion

One of the most important infrastructure problems of local governments, as seen from this study, is their inability to remove solid wastes. The legislative system that will provide legal, administrative and technical guidance or a roadmap to the most important handicap projects of the local governments which want to put their budget projects into practice is not sufficient and effective in terms of institution. The most important handicap of local governments trying to implement infrastructure projects with limited budget is the lack of an efficient legislative system to provide them with legal, administrative and technical guidance or a road map in the construction and execution of the projects. The Directive on Control of Solid Waste is inefficient to solve the problems mentioned. It is crucially important for local administrations to implement urgently such infrastructure projects which are the most important actors to achieve the process of EU accession process where legislative, administrative and technical frameworks have to be adherent to EU. Such an approach will be needed for Turkish people to live in a healthy environment and sustainable development in the country.

Conflict of interest

The authors declare that there is no conflict of interest.

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