Municipal solid waste management in Turkey

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Keywords: Turkey, MSW, waste management, landfilling.
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Introduction

The management of municipal solid waste (MSW) is an important issue for all countries due to its potential of causing environmental pollution and human health problems. Turkey's population increased by 11.5% between 2008 to 2018, from 72.6 million to 82 million (Table 1, TUIK, 2020). This paper presents an analysis of the current waste management in Turkey and the potential for improvement so to protect the environment and human health and, also, to recover material and energy values from MSW.

Table 1. Population change in Turkey (TUIK, 2020).

Year	Population	Growth (%)
2008	72.561.312	-
2013	76.667.864	5.4
2018	82.003.882	6.5

Figure 1 shows that the total number of municipalities is decreased after 2012. The reason for that is changing the laws of municipalities when many municipalities become boroughs or villages. The percentage of active municipalities is increased in years which means almost all of the municipalities are equipped enough to manage waste in their territory.

Total amount of annual collected MSW is increased from 25 million tons to 32 million tons, between 2001 and 2018, respectively. However, daily collected MSW per capita is slightly decreased from 1.35 kg to 1.16 kg, between 2001 and 2018.

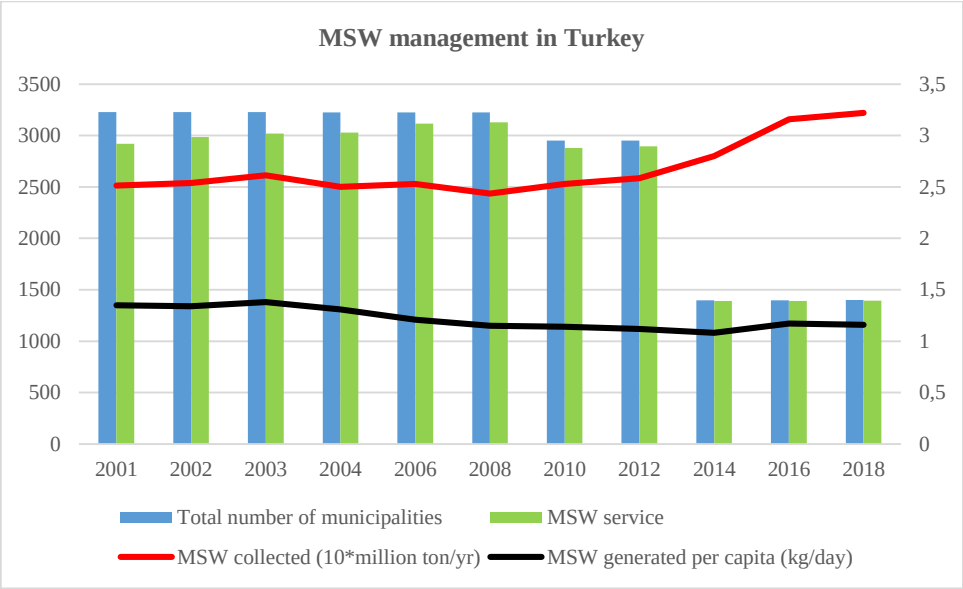

Figure 1. Summary of MSW management of Turkey: change in number of municipalities, active municipalities for MSW management (y axis on the left), annual amount of collected MSW and generated MSW per capita per day (y axis on the right).

Figure 2 shows the change in amount of MSW disposed by different methods in Turkey. The amount of dumped waste decreased appreciably with time. The waste disposed in sanitary landfills increased, and materials recovery started in 2016. Recovery consists of recycling of metals, plastics and paper, and anaerobic digestion of organics in biogas plants. Figure 2 also shows that the amount of waste disposed by open-air incineration and dumping on water resources has been largely discontinued.

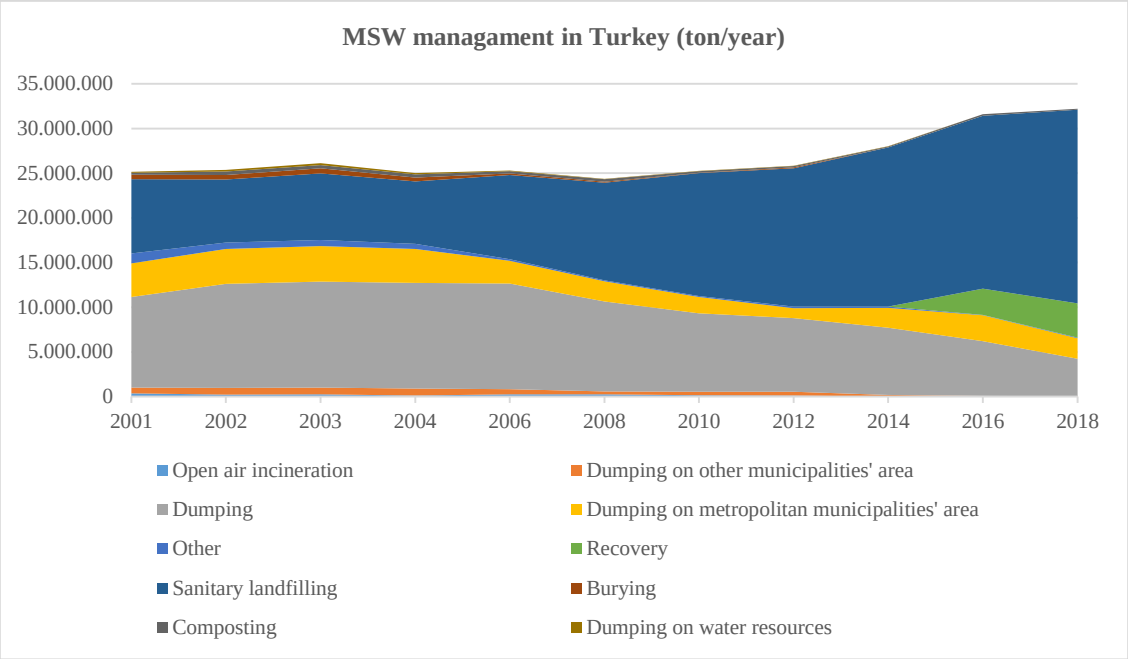

Figure 2. Historical change in amount of MSW used in different disposal methods in Turkey.

Figure 3 shows the distribution of waste disposal by various means in 2018. The recycling and composting rate (13%) is about one fourth of that attained in the European Union and the rate of sanitary landfilling nearly three times that of E.U (CEWEP, 2020). The recovery of energy by thermal processing (WTE) in Turkey is negligible, in contrast to about 28% WTE in the European Union (CEWEP, 2020).

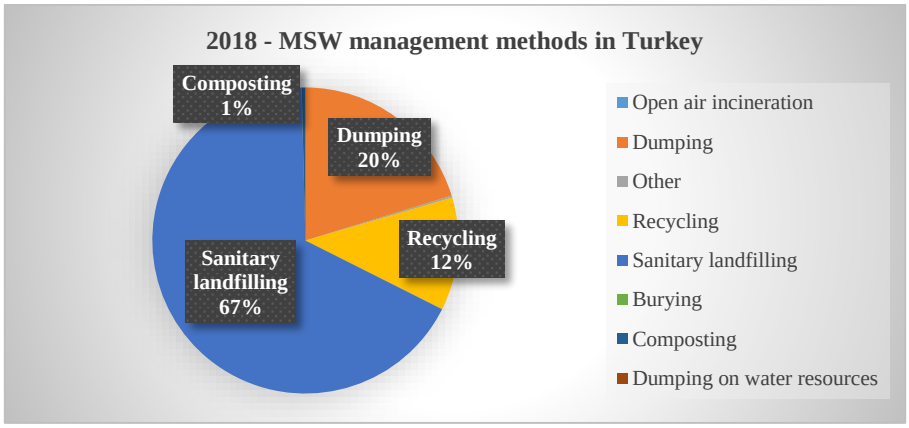

Figure 3. The share of amount of waste managed using different methods in Turkey for 2018.

Conclusions

An estimated 20% of the MSW generated in Turkey is disposed in waste dumps instead of sanitary landfills. This is the first priority for advancing waste management, followed by increased recycling and implementation of energy recovery by thermal processing of the post-recycling MSW.

References

1. TUIK. 2020; Turkish Statistics Institute, http://www.tuik.gov.tr/UstMenu.do?metod=temelist.
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