Municipal Solid Waste (MSW) Management in the United States

A Study of MSW Generation and Recycling and Composting Rates (1960 – 2015) and MSW Management Practices in 2015

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Table of Contents

List of Tables

List of Figures

Introduction

This study aims to inform the intended audience of historical and recent trends in MSW management within the United States. The report contains a compilation of data that spans 55 years, beginning in 1960 and ending in 2015.[1] The information in this document is a subset of data derived from a more extensive report entitled *Advancing Sustainable Materials Management: Facts and Figures 2015*, which the United States Environmental Protection Agency provided in July 2018. [1]

MSW Generation (1960 – 2015)

The information provided in Table 1 shows the progression of the amount of generated waste measured in thousands of tons over 55 years. In addition, the table contains an itemization of the types of waste materials included in the study. Waste is divided into "materials in products" and "other wastes." Findings of particular interest include the following:

- Paper-based products, such as paper and paperboard, account for the largest amount of waste in the materials in products category for every year surveyed, peaking at 87,740,000 tons in 2000 (36 percent of total generated MSW) and followed by a decline over the ensuing years (25.9 percent in 2015).
- While considered as materials in products, metals are further broken out into three specific types: (1) ferrous, (2) aluminum, and (3) other nonferrous. There has been an overall increase in the amount of metal waste generated (from 10,820,000 tons in 1960 to 24,000,000 tons in 2015). However, findings in this study indicate metal waste had trended down slightly from 12.3 percent in 1960 to 9.1 percent in 2015.
- Plastic waste increased from a low of 390,000 tons in 1960 to 34,500,000 tons in 2015.
- Other wastes, such as food, yard trimmings, and miscellaneous inorganics have risen over time from 33,500,000 tons to 78,440,000 tons. Similar to findings for metals, items designated as other wastes have trended downward over time from 38 percent to 29.9 percent.
- Total MSW generated increased from 88,120,000 tons to 262,430,000 tons by the end of the 55-year study.

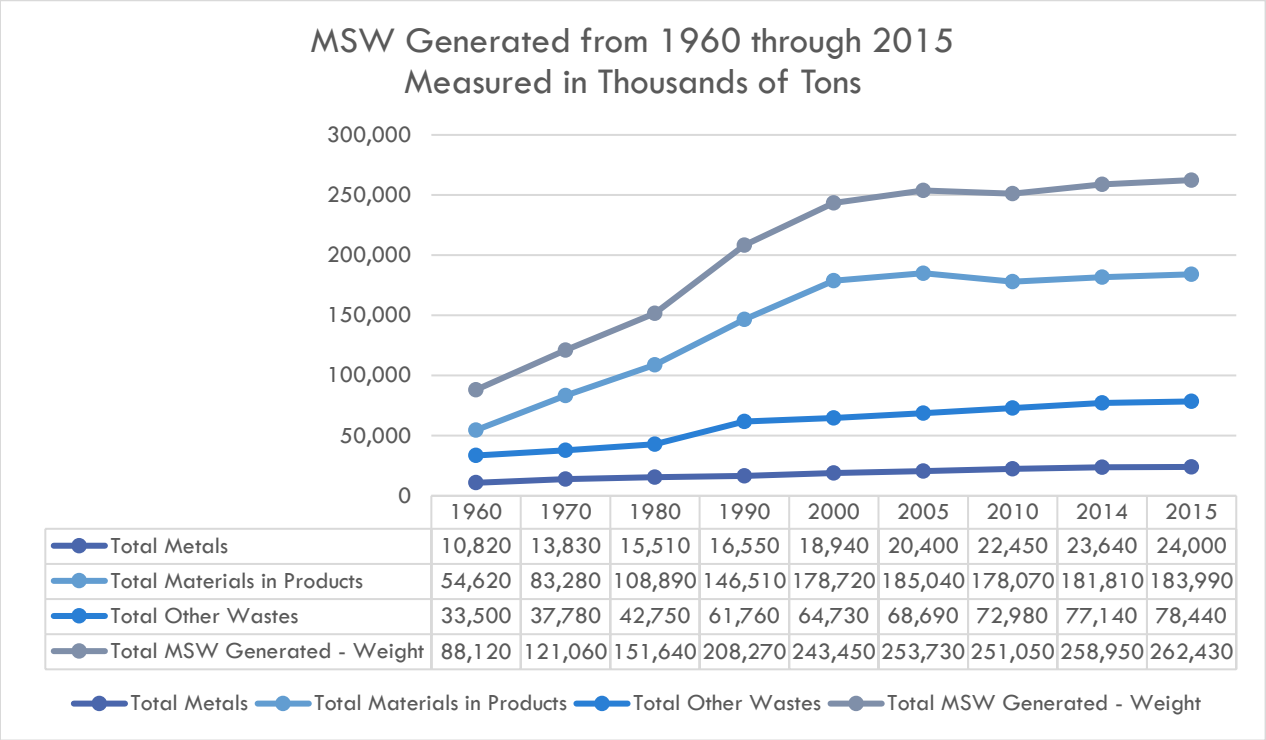
Note: Refer to Figure 1 to view a graphical representation of trends in generated MSW.

Table 1. MSW Generated from 1960 through 2015 - Itemized by Type

MSW Generated from 1960 - 2015									
	Thousands of Tons								
Materials	1960	1970	1980	1990	2000	2005	2010	2014	2015
Paper and Paperboard	29,990	44,310	55,160	72,730	87,740	84,840	71,310	68,610	68,050
Glass	6,720	12,740	15,130	13,100	12,770	12,540	11,520	11,480	11,470
Metals									
Ferrous	10,300	12,360	12,620	12,640	14,150	15,210	16,920	17,880	18,170
Aluminum	340	800	1,730	2,810	3,190	3,330	3,510	3,530	3,610
Other Nonferrous	180	670	1,160	1,100	1,600	1,860	2,020	2,230	2,220
Total Metals	*10,820*	*13,830*	*15,510*	*16,550*	*18,940*	*20,400*	*22,450*	*23,640*	*24,000*
Plastics	390	2,900	6,830	17,130	25,550	29,380	31,400	33,390	34,500
Rubber and Leather	1,840	2,970	4,200	5,790	6,670	7,290	7,750	8,210	8,480
Textiles	1,760	2,040	2,530	5,810	9,480	11,510	13,220	15,240	16,030
Wood	3,030	3,720	7,010	12,210	13,570	14,790	15,710	16,120	16,300
Other **	70	770	2,520	3,190	4,000	4,290	4,710	5,120	5,160
Total Materials in Products	54,620	83,280	108,890	146,510	178,720	185,040	178,070	181,810	183,990
Other Wastes									
Food	12,200	12,800	13,000	23,860	30,700	32,930	35,740	38,670	39,730
Yard Trimmings	20,000	23,200	27,500	35,000	30,530	32,070	33,400	34,500	34,720
Miscellansous Inorganic Wastes	1,300	1,780	2,250	2,900	3,500	3,690	3,840	3,970	3,990
Total Other Wastes	33,500	37,780	42,750	61,760	64,730	68,690	72,980	77,140	78,440
Total MSW Generated - Weight	88,120	121,060	151,640	208,270	243,450	253,730	251,050	258,950	262,430

[1] This document is intended for US municipalities and their residents who are interested in recent trends in the advancement of material waste management.

Figure 1 represents the data provided in Table 1 and shows the total waste generated for the study period, including a breakdown of the total by material composition. The graph shows that waste categorized as materials in products experienced the most notable changes throughout the years.



	1960	1970	1980	1990	2000	2005	2010	2014	2015
Total Metals	10,820	13,830	15,510	16,550	18,940	20,400	22,450	23,640	24,000
Total Materials in Products	54,620	83,280	108,890	146,510	178,720	185,040	178,070	181,810	183,990
Total Other Wastes	33,500	37,780	42,750	61,760	64,730	68,690	72,980	77,140	78,440
Total MSW Generated - Weight	88,120	121,060	151,640	208,270	243,450	253,730	251,050	258,950	262,430

Figure 1. MSW Generated from 1960 through 2015 - Categorized by Type

MSW Recycling and Composting (1960-2015)

The data presented in Table 2 shows the amount of generated solid waste material recycled and composted from 1960 through 2015. The amount of recycled and composted wastes is measured in thousands of tons. Waste is divided into the categories of materials in products and other wastes for purposes to catalog MSW recycling and composting data. Findings of particular interest include the following:

- The recycling and composting of paper-based products outpaced that of other types of waste, increasing steadily from 5,080,000 tons in 1960 to 45,320,000 tons in 2015. In 1960, the recycling of paper-based products accounted for 16.9 percent of all recycled MSW. By 2015, this percentage rose to 66.6 percent.
- Of the three types of metals included in the study, only ferrous metal was recycled in significant amounts in 1960. Statistics for aluminum and other nonferrous metals were listed as Neg, or less than 5,000 tons (0.05 percent). Recycling of metals increased by 1970, with ferrous recycling recorded at 150,000 tons, aluminum at 10,000 tons, and nonferrous metals at 320,000 tons. Thus, there has been a consistent upward trend in the total tons of metals recycled for each data period since 1970.

- Despite the rapid rise of plastics generated throughout this study (34,500,000 tons by 2015), recycling of plastics remained at low levels for each year data was collected, ending with a total of 3,140,000 tons in 2015.
- The total amount of recycled and composted MSW increased from 5,610,000 tons in 1960 to 91,160,000 tons in 2015.

Table 2. MSW Recycled and Composted from 1960 through 2015 - Itemized by Type

MSW Recycled and Composted from 1960 -2015									
	Thousands of Tons								
Materials	**1960**	**1970**	**1980**	**1990**	**2000**	**2005**	**2010**	**2014**	**2015**
Paper and Paperboard	5,080	6,770	11,740	20,230	37,560	41,960	44,570	44,400	45,320
Glass	100	160	750	2,630	2,880	2,590	3,130	2,990	3,030
Metals									
Ferrous	50	150	370	2,230	4,680	5,020	5,800	5,970	6,060
Aluminum	Neg.	10	310	1,010	860	690	680	710	670
Other Nonferrous	Neg.	320	540	730	1,060	1,280	1,440	1,550	1,500
Total Metals	*50*	*480*	*1,220*	*3,970*	*6,600*	*6,990*	*7,920*	*8,230*	*8,230*
Plastics	Neg.	Neg.	20	370	1,480	1,780	2,500	3,190	3,140
Rubber and Leather	330	250	130	370	820	1,050	1,440	1,440	1,510
Textiles	50	60	160	660	1,320	1,830	2,050	2,260	2,450
Wood	Neg.	Neg.	Neg.	130	1,370	1,830	2,280	2,570	2,660
Other **	Neg.	300	500	680	980	1,210	1,370	1,470	1,430
Total Materials in Products	5,610	8,020	14,520	29,040	53,010	59,240	65,260	66,550	67,770
Other Wastes									
Food	Neg.	Neg.	Neg.	Neg.	680	690	970	1,940	2,100
Yard Trimmings	Neg.	Neg.	Neg.	4,200	15,770	19,860	19,200	21,080	21,290
Miscellansous Inorganic Wastes	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.
Total Other Wastes	Neg.	Neg.	Neg.	4,200	16,450	20,550	20,170	23,020	23,390
Total MSW Recycled and Composted - W	5,610	8,020	14,520	33,240	69,460	79,790	85,430	89,570	91,160

Figure 2 represents the data in Table 2 and shows the total waste recycled and composted for the study period, including a breakdown of the total by material composition. The graph shows that items in the material in products category have the highest rates of recycling and composting.

Note: Rows within year columns that contain a total of 0 represent years reporting as Neg., or less than 5,000 tons (0.05 percent).

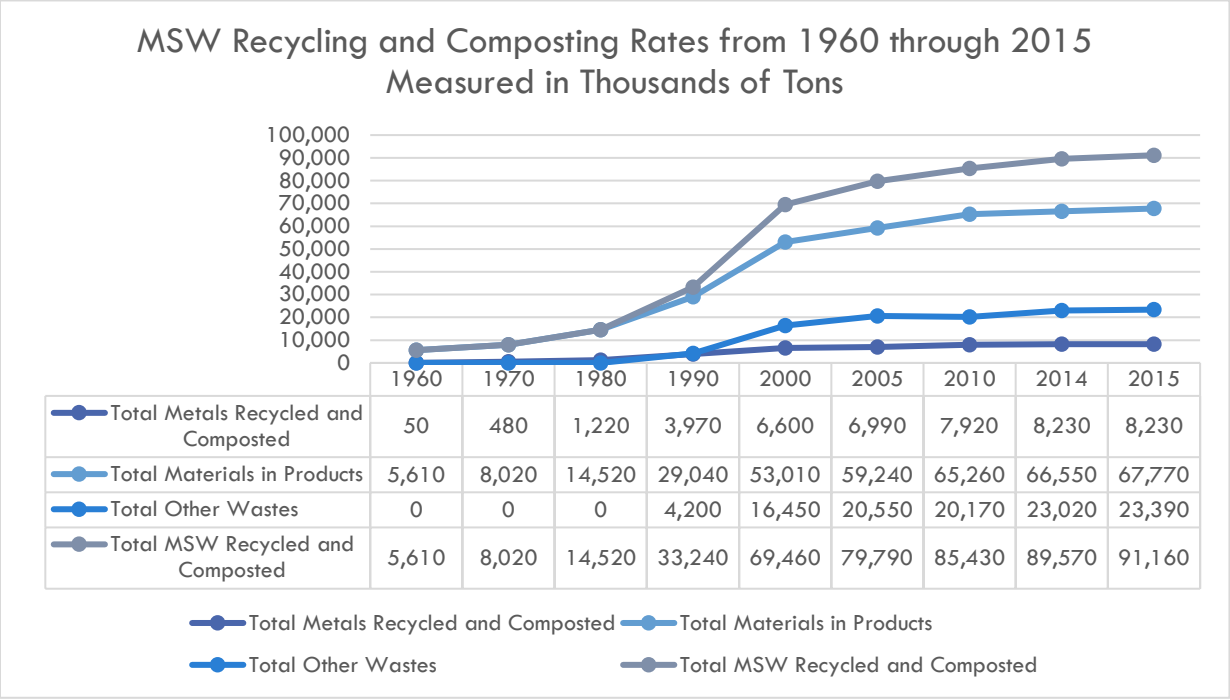


Figure 2. MSW Recycling and Composting Rates from 1960 through 2015 – Categorized by Type

MSW Management in 2015

Table 3 contains a combined list of total MSW managed in the US during 2015. Managed waste totals include the amount of material generated during the year and lists them by method of management: (1) recycled, (2) combusted, or (3) landfilled.

Table 3. MSW Amounts Managed in 2015

MSW Managed in 2015				
Thousands of Tons				
Material Category	Generated	Recycled	Combusted	Landfilled
Paper-based Products	68,040	45,320	4,450	18,270
Glass Products	11,470	3,030	1,470	6,970
Metal Products	24,000	8,230	2,700	13,070
Plastics	34,500	3,140	5,350	26,010
Rubber and Leather Products	8,480	1,510	2,490	4,480
Total Materials Managed in 2015	146,490	61,230	16,460	68,800

Figure 4 represents the data provided in Table 3 and shows the total amount of MSW managed for 2015, broken out by the percentage of waste handled by each specific method.

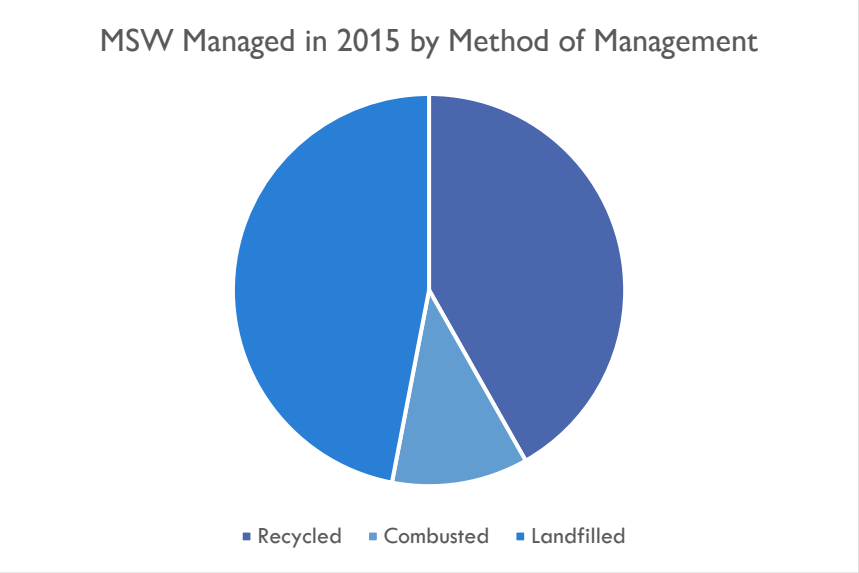


Figure 3. MSW Managed in 2015 by Method of Management

Figure 4 represents the total amount of MSW managed for 2015. The data is divided to show five categories of materials and the percentage of each type within the whole.

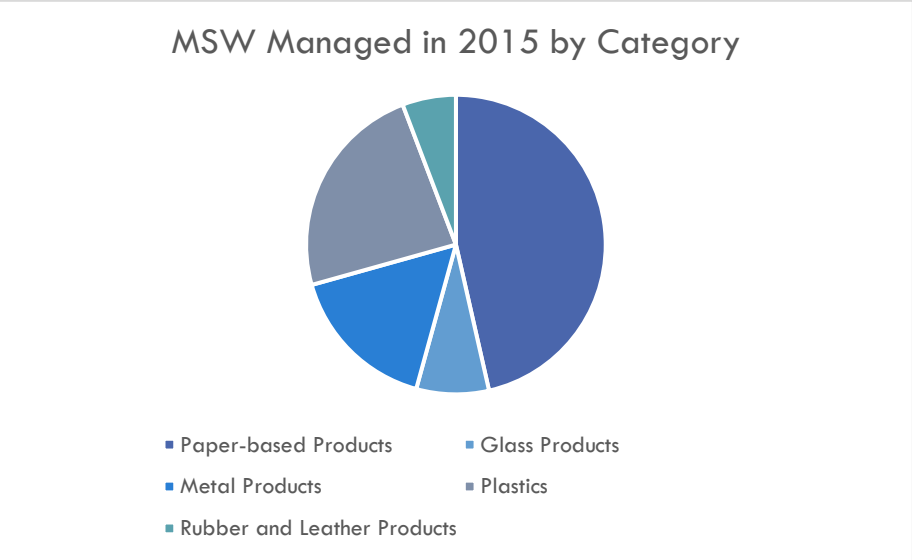


Figure 4. MSW Managed in 2015 by Category

References

[1] United States Environmental Protection Agency (EPA), Office of Land and Emergency Management. *Advancing Sustainable Materials Management: 2015 Tables and Figures.* Washington, DC, July 2018.