

Recycling of the object, on the other hand, avoids the energy costs of additional raw material extraction, as well as some of the transportation and processing energy. Reuse, by eliminating manufacturing, saves the most energy.

Since incinerators have limited thermal efficiency, only a portion of the fuel value of the material burned can be recovered. In a standard waste-to-energy incinerator, at most 35 percent of the calorific value of the waste is recovered as electric power.¹⁰⁶ Where incinerators are linked into a municipal steam distribution system to heat buildings, an additional 40 percent of the calorific value can be recovered. However, such systems require very large capital investments that few countries make, and are, of course, of little use in warm climates.

■ Recycling Versus Incineration: An Energy Conservation Analysis¹⁰⁷

Energy Conserved in Recycled Content Manufacturing Compared with Energy from Waste Incineration

Waste Stream Materials	Energy Conserved by Substituting Secondary for Virgin Materials (MJ/Mg)	Energy Generated from MSW Incineration (MJ/Mg)
Paper		
Newspaper	22,398	8,444
Corrugated Cardboard	22,887	7,388
Office (Ledger & Computer Printout)	35,242	8,233
Other Recyclable Paper	21,213	7,600
Plastic		
PET	85,888	210,004
HDPE	74,316	21,004
Other Containers	62,918	16,782
Film/Packaging	75,479	14,566
Other Rigid	68,878	16,782
Glass		
Containers	3,212	106
Other	582	106
Metal		
Aluminum Beverage Containers	256,830	739
Other Aluminum	281,231	317
Other Non-Ferrous	116,288	317
Tin and Bi-Metal Cans	22,097	739
Other Ferrous	17,857	317
Organics		
Food Waste	4,215	2,744
Yard Waste	3,556	3,166
Wood Waste	6,422	7,072
Rubber		
Tires	32,531	14,777
Other Rubber	25,672	11,505
Textile		
Cotton	42,101	7,283
Synthetic	58,292	7,283
Others	10,962	10,713