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# Solid Waste Management

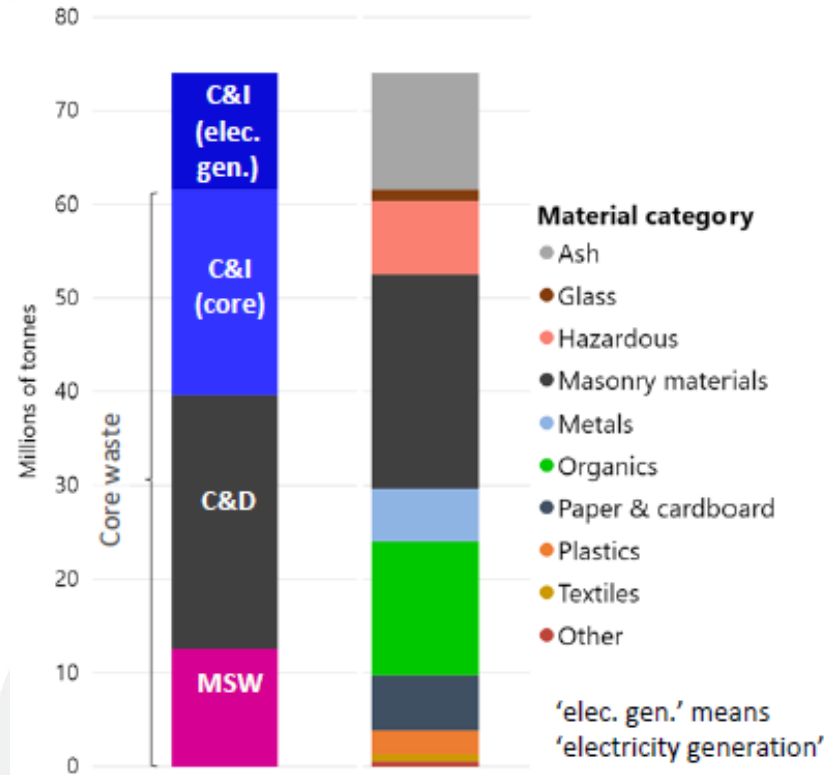
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# What needs to be managed?

- 74.1 million tonnes (Mt) of waste in 2018-2019
  - 27.0 Mt construction and demolition (C&D)
  - 21.9 Mt commercial and industrial (C&I)
  - 12.6 Mt municipal solid waste (MSW)
- 2.94 tonnes per person

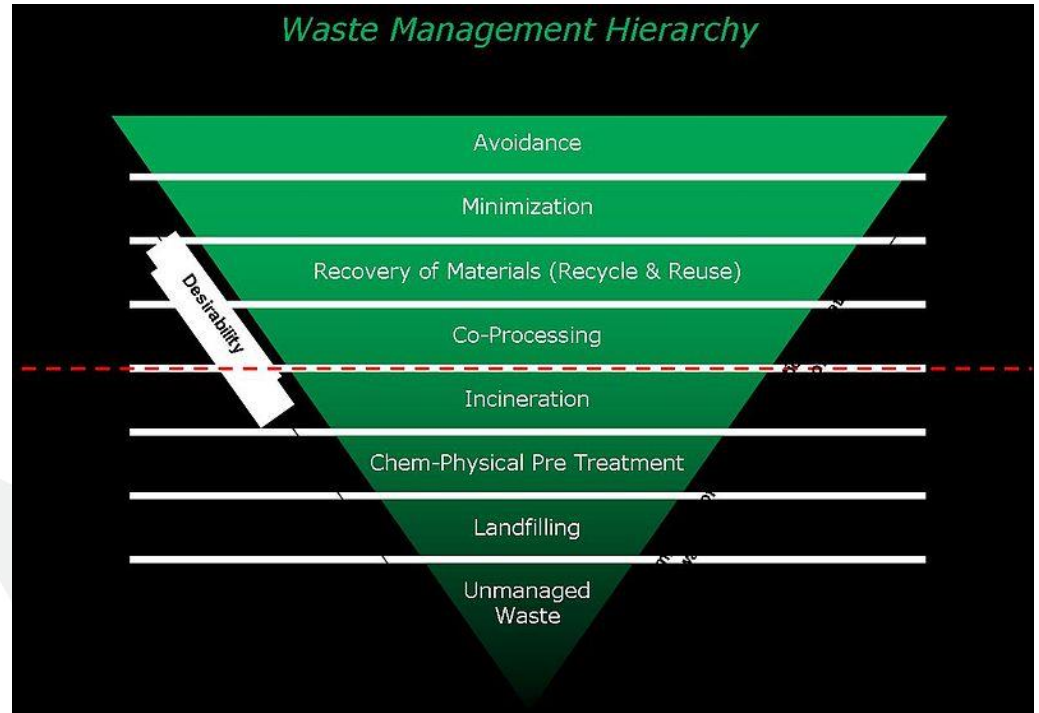


Waste generated by category (from Dept of Ag, Water & Env. National Waste Report 2020)



# What are the management options?

- Reuse
- Recycling
- Energy recovery
  - Landfill gas
  - Solid fuel
  - Waste to energy
- Landfill



(by GST HBK 2009, public domain)



# Reuse

- Requires no energy input
- Repair Cafés
- Garage sales and op shops
- Reuse containers and newspaper
- Soil



A garage sale (Jimmyjazz 2005, public domain)



# Recycling

- 60% overall
- 90% of metals
- 82% of masonry materials
- 66% of paper and cardboard
- 60% of organics
- 59% of glass
- 47% of coal ash



# Metal recycling

- Saves energy
  - 95% aluminium
  - 90% nickel
  - 84% copper
  - 75% zinc
  - 65% lead
  - 60% steel
- Eliminates need for mining (and mining waste)
- Need lithium recycling



Steel baled for recycling (blahedo 2004, CC-BY-SA-2.5)



# Other recycling

- Limited options for export
- Masonry recycling saves landfill space
- Composting organics
- Complicated sorting
- Coal ash



Compost heap at Kew Gardens (D Hawgood 2006, CC-BY-SA-2.5)



# Energy recovery

- 2.1 Mt of waste
- Landfill gas
- Waste derived fuels
- Anaerobic digestion
- Energy from waste



Baled waste-derived fuel (Fun4life.nll 2005, public domain)





# Landfill

- 37% (27.2 Mt) to landfill
- Biggest portions: ash, organics, hazardous waste and masonry
- Amount is declining, but not fast enough



Landfill compactor (2013, public domain)



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