

The Zero Waste Approach to Resource Management

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www.zwia.org
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Definition of Zero Waste*

- Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.
- Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.
- Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.

* www.zwia.org/standards.html

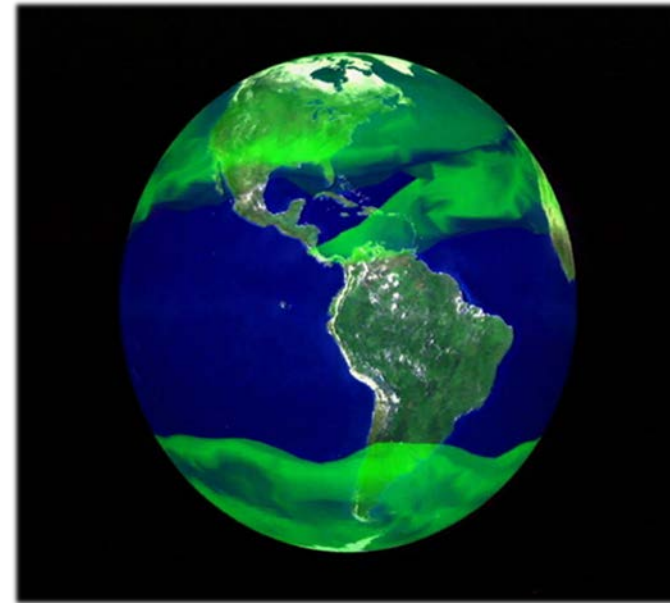
Zero Waste & Global Warming

- Landfills are one of the largest sources of Greenhouse Gases (GHG)
- Methane is 21-72x more potent than CO₂
 - 71 Tons “Upstream” For Every Ton MSW
 - Recycling & Composting all discards in CA = eliminating all auto exhaust in CA



Is Zero Waste Attainable?

- Nature Is The Model
- Zero Waste, or Darn Close
- Businesses have Achieved Over 90% Waste Reduction



Basic Principles

- **E=MC²**
 - Stuff exists
- **There is no “away”**
 - Your “away” might be my back yard
- **No such thing as a free lunch**
 - Your free lunch is your grand-children's dinner
- **Highest and Best Use**
- **Required Separation at source of generation**

5 R's Reduce Resource Use & Greenhouse Gas Production

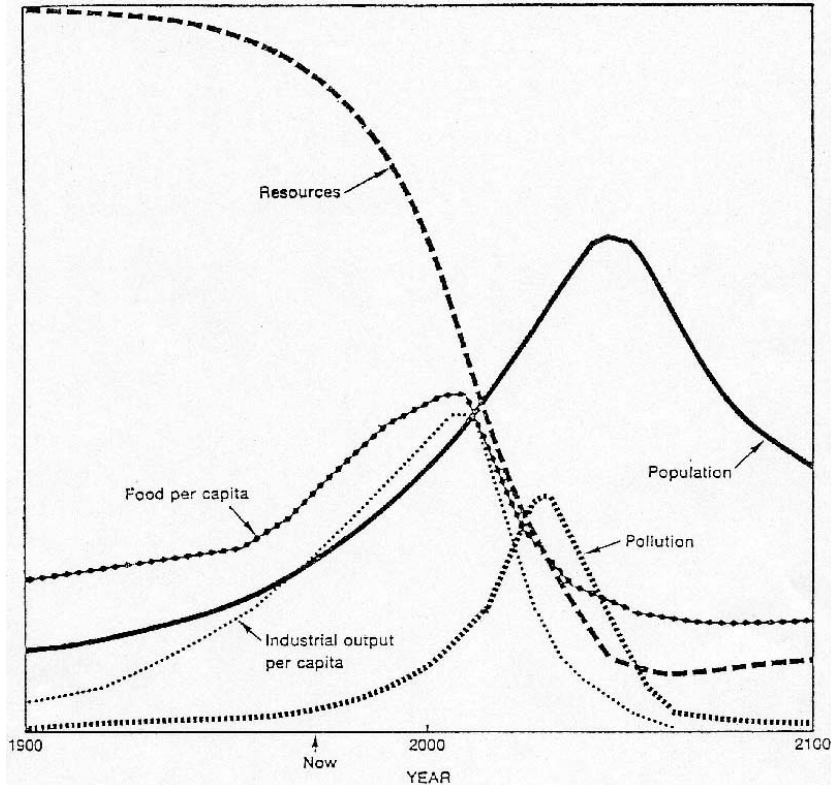


Figure 10-2 World model standard run.

The "standard" world model run assumes no major change in the physical, economic, or social relationships that have historically governed the development of the world system. All variables plotted here follow historical values from 1900 to 1970. Food, industrial output, and population grow exponentially until the rapidly diminishing resource base forces a slowdown in industrial growth. Because of natural delays in the system, both population and pollution continue to increase for some time after the peak of industrialization. Population growth is finally halted by a rise in the death rate due to decreased food and medical services.

The horizontal scale in Figures 10-2 to 10-4 shows time in years from 1900 to 2100. With the computer the progress over time of five quantities has been plotted:

- population (total number of persons)
- industrial output per capita (dollar equivalent/person/year)
- food per capita (kilogram-grain equivalent/person/year)
- pollution (multiple of 1970 level)
- nonrenewable resources (fraction of 1900 reserves remaining)

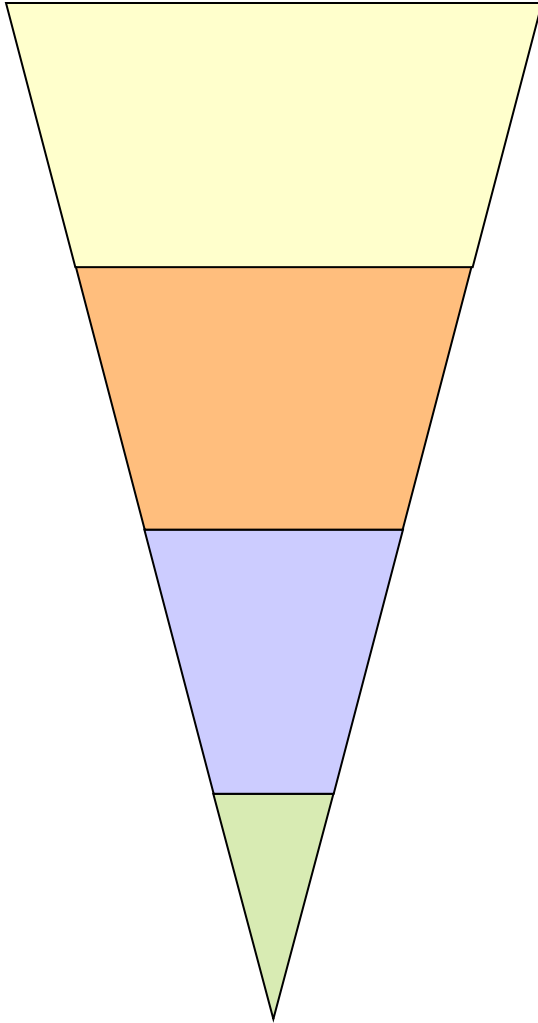
	Aluminum	Steel	Paper	Glass
Energy Use	90-97%	47-74%	23-74%	4-32%
Air Pollution	95%	85%	74%	20%
Water Pollution	97%	76%	35%	
Mining Wastes	99%	97%		80%
Water Use		40%	58%	50%

[1] R. Letcher and M. Shiel, "Source separation and Citizen Recycling", in William Robinson, ed., *The Solid Waste Handbook*, New York, 1986.

Zero Waste Management

- **Up Stream**
 - Clean Production
 - Product Redesign
 - Product Stewardship
- **Down Stream**
 - Reuse
 - Composting
 - Recycling
 - Resource Recovery Parks

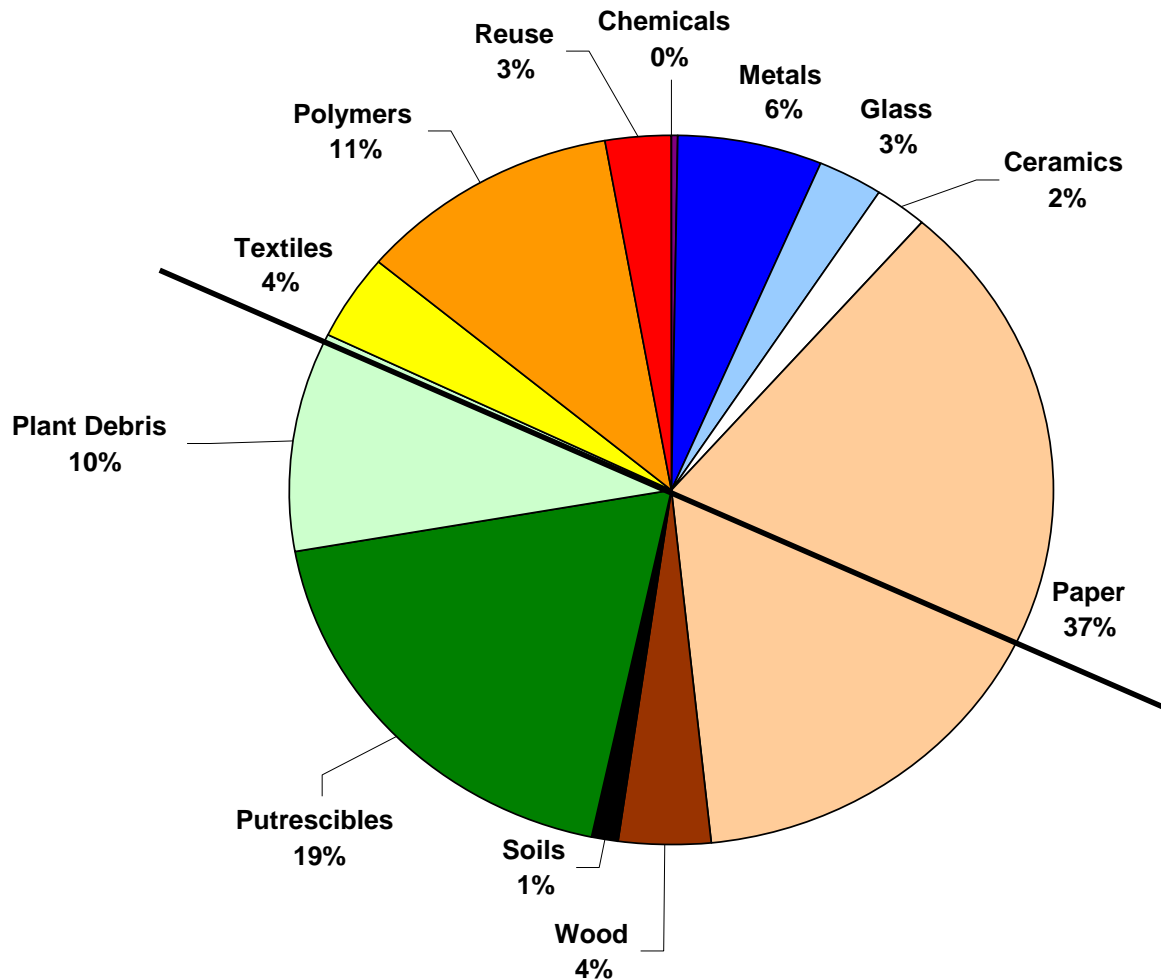
Highest and Best Uses



- End Subsidies for Wasting
- Clean Production and EPR
- Reduce, Refuse & Return
- Reuse
- Recycle
- Regulate
- **NOT OK:** Incineration and
Subtitle D Landfills

Discards Sorted into the 12 Market Categories

Note: Half of the Pie is Organic Material Suitable for Composting



Clusters and Facilities

CLUSTERS

Recyclables:

Paper and containers;
Paper, Metals, Glass, Polymers

Organics:

Food, vegetative debris, food
dirty paper, paper, plant debris,
putrescibles, wood

Reused Products:

Furniture, appliances, clothing,
toys, tools, reusable goods,
textiles

Special Discards:

Chemicals, construction and
demolition materials, wood,
ceramics, soils

PROCESSING CENTERS

Recyclables:

Papers, plastic, glass and metal
containers

Organics:

Food, vegetable debris, and food
paper, putrescibles, untreated
wood and sheetrock

Reuse & Repair:

Reuse, repair, dismantling,
reconditioning, remanufacturing,
manufacturing and resale of
furniture, large and small
appliances, electronics, textiles,
toys, tools, metal and ceramic
plumbing, fixtures, lighting,
lumber and other used building
materials

C and D:

Rock, soils, concrete, asphalt,
brick, land clearing debris, and
mixed construction and
demolition materials

Regulated Materials:

Used motor oil, paint,
pesticides, cleaners, and other
chemicals

Summary

The elements of a Zero Waste system include:

- Producers taking responsibility for the impact of their product on the environment,
- Producers designing products for the environment,
- Clean production systems at factories that create neither wasted materials nor toxic discharges,
- Retail stores take back products that are not recyclable or compostable,
- Consumer purchase products that are environmentally friendly,
- Resource recovery parks replace transfer stations and landfills,
- Rules are changed to require separation, ban organics from landfill, no c and d without a plan and take back where no recycling system or composting system is in place,
- Tax rules are changed to tax resources not labor,
- Many new jobs in reuse, repair, recycling and composting care created.

A sunset over a lake with silhouetted hills and trees. The sun is low on the horizon, creating a bright glow and lens flare. The water reflects the light, and the sky is a mix of orange and dark tones. The foreground shows dark silhouettes of trees and a shoreline.

**If you're not for Zero Waste,
how much waste are you for?**

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