

Creative Recycling Environmental, Sustainability and Business Perspectives

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Overview

- What is 'Waste'?
- Natural processes and principles
- Examples from Business
- Paradigm change

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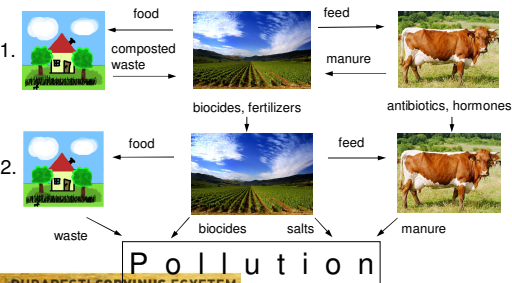
So, What is 'Waste'?



- Waste includes „all items that people no longer have any use for, which they either intend to get rid of or have already discarded. Additionally, wastes are such items which people are require to discard”
- Alternative Definition: Waste = 'inefficiency'

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'Waste' is 'not natural' ☺



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Waste Facts and Figures

- 1.8 billion tonnes of waste are generated each year in Europe.
- This equals (approximately) 3.5 tonnes per person.
- from households, commercial activities (e.g., shops, restaurants, hospitals etc.), industry (e.g. pharmaceutical companies, clothes manufacturers etc.), agriculture (e.g., slurry), construction and demolition projects, mining and quarrying activities and from the generation of energy.
- 1:70 Household/Industrial Waste Ratio!



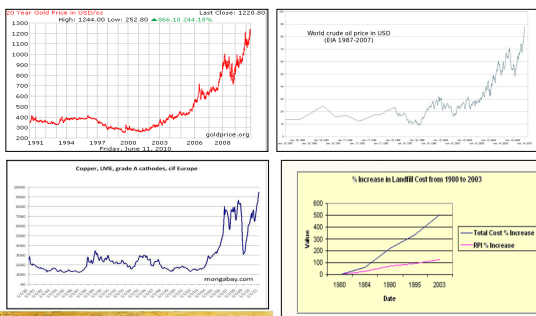
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The 2 Main Issues with 'Waste'

- SOURCE**
 - Resource Scarcity (Rare earth Metals, Water, Deforestation, Peak oil, Phosphorous, etc.)
- SINK**
 - Pollution (Climate change, air pollution, litter, etc.)

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Resource Scarcity – Supply and Demand



The 'Formal' Recycling Industry

Growth

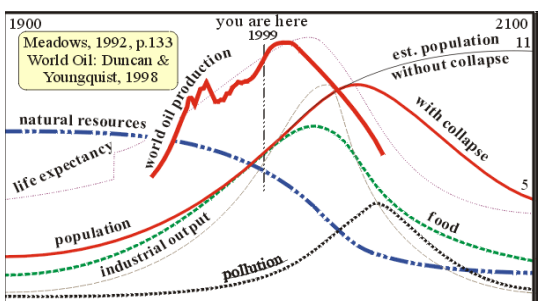
- Just in the UK, the waste management industry (i.e. the official recycling sector) is now worth around £8bn
- Major Growth Industry (an increase of £3bn, or 60%, since 2001).

Why now?

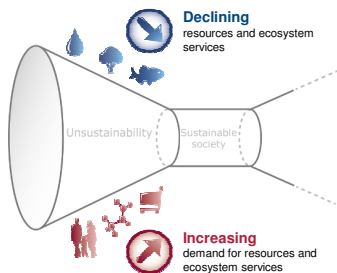
- driven by EU directives, especially the EU landfill directive
- sectors such as waste batteries have pushed up demand from certain businesses
- lots of private equity and venture capital, - indications are that recycling regulation will continue to increase
- industry certain to continue rapid expansion

Next big thing..Landfill Mining?

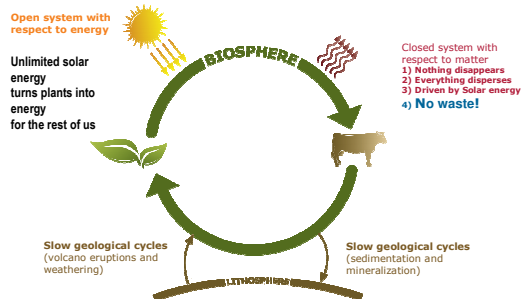
There are 'Limits to Growth'



Funnel Reality



Principles Behind Earth's Natural Systems





Practical tools for 'End-of Life Treatment' of Waste

“End-of-Life” – utilisation opportunities

- Re-use
- Assure disassembly („design for disassembly”)
- Design for re-production
- Recycle
- Incinerate/compost etc.

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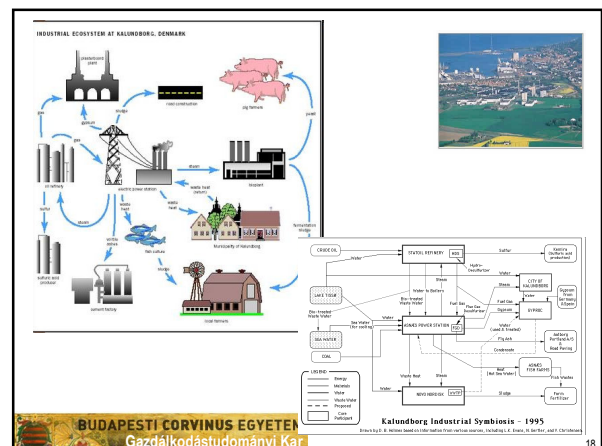
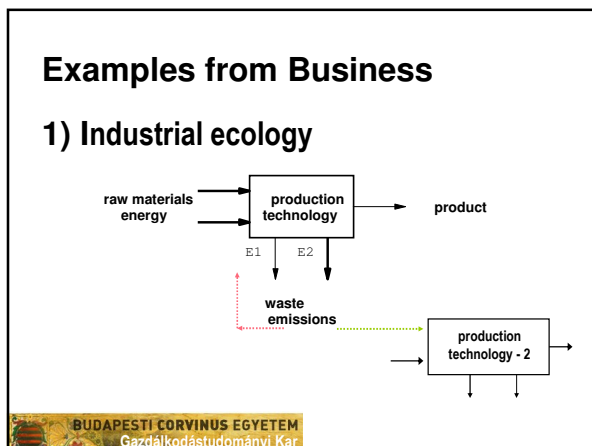


‘Industrial Ecology’

- The economic system should operate similarly to natural ecosystems: industrial ecosystems, industrial symbiosis
- ‘an integrated system in which the utilisation of energy and raw materials is at the optimum level and *the byproduct of one process serves as the raw material of another process*’ - Froesch and Gallopoulos (1989)
- mainly economic interests - taking environmental and social issues into consideration
- Large scale examples.. (e.g. ‘Kalundborg’)

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<http://hpcp.bke.hu>



Recycling Needs Eco-Design!

Environmental product design			
Traditional product design			
Raw material exploitation and processing	Production	Use	Waste

Innovative Ideas from Business

1. ZERI

Zero Emissions Research And Initiatives
Beer Case Study (Namibia)

2. NISP National Industrial Symbiosis Programme

Coffee Sacks Case Study

4 Sustainability System Conditions

In a sustainable society, nature is not subject to systematically increasing...



...concentrations of substances extracted from the Earth's crust,



...concentrations of substances produced by society,



...degradation by physical means, and, in that society...



...people are not subject to conditions that systematically undermine their capacity to meet their needs.

The Sustainable System Checklist

Does creative recycling:	Yes	No
...reduce our dependence on mining and fossil fuels?		
...reduce our dependence on persistent unnatural substances?		
...reduce our dependence on nature-consuming activities?		
...increase our resource efficiency?		

The Paradigm is Changing

- Laws of thermodynamics tell us there's really **no such thing as 'waste'**
- There are simply some things we have not found a way of using (or designing out) yet...☺





■ Thank you