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Landfill management in the Netherlands

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Landfills in the Netherlands

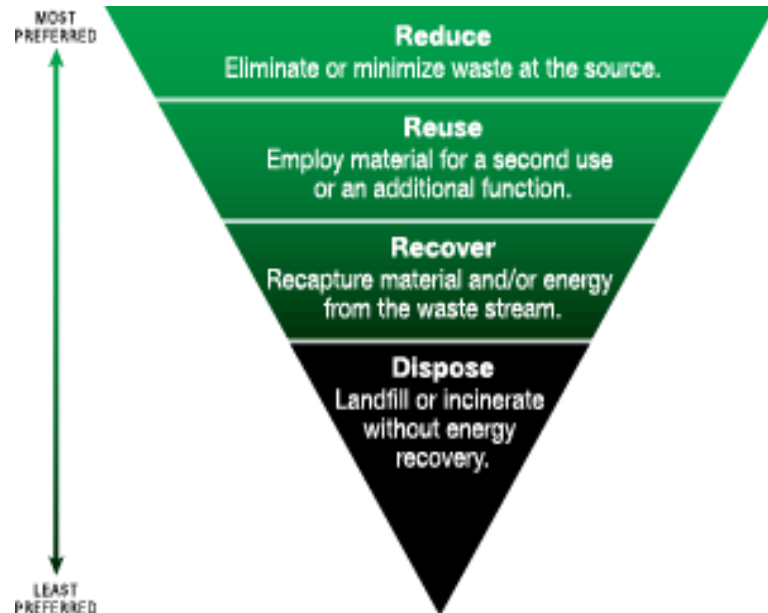
Two types of landfills

1. Former landfills (ca. 4.000): of operation before 01-09-1996

- 2021 shift of competent authority Province → Municipalities

2. Sanitary landfills (80): have to comply with the Dutch Environmental Management Act

- 19 still in operation
- 81% recycling
- 17% waste 2 energy
- 2% landfilling

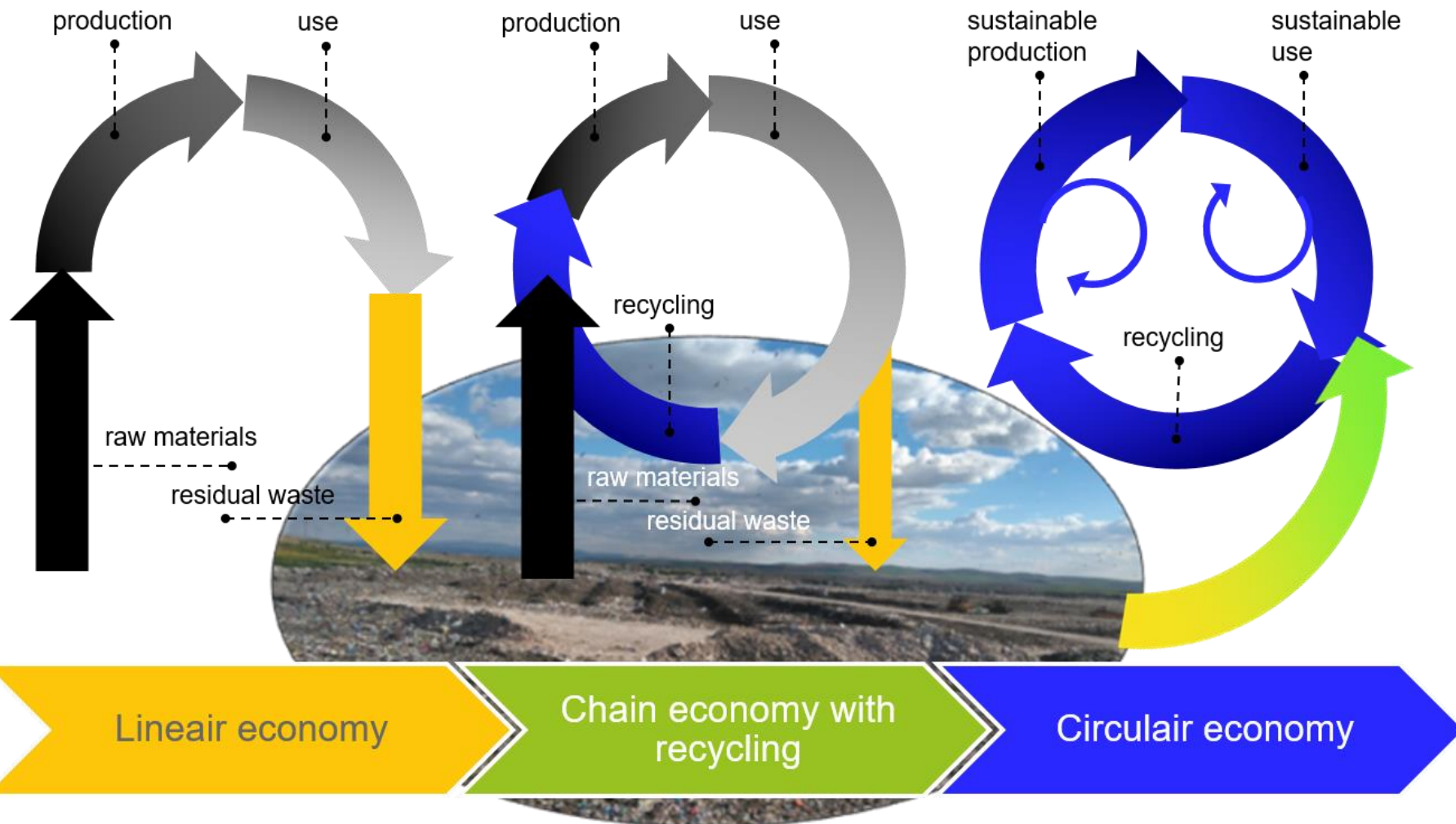


Policy Landfill Management

1. **‘Everlasting’ aftercare is expensive and drops ‘duty of care’ to next generations**
 - From waste to resource (landfills in circular economy)
 - Green deal: Sustainable Landfill Management: stimulating biodegradation processes
 - No transfer of problems to future generations
 - Active aftercare ended within 30 years after end of operation

2. **Stimulate re-use of landfills**
 - Interim landfill use
 - Landfill mining

From waste 2 resource



Landfill mining

Veenendaal (small city in the center of the Netherlands)

Complete removal of two landfills (54.000 m³) for urban planning. Waste and excavated soil largely reused. Project partly financed by the increase in land prices.



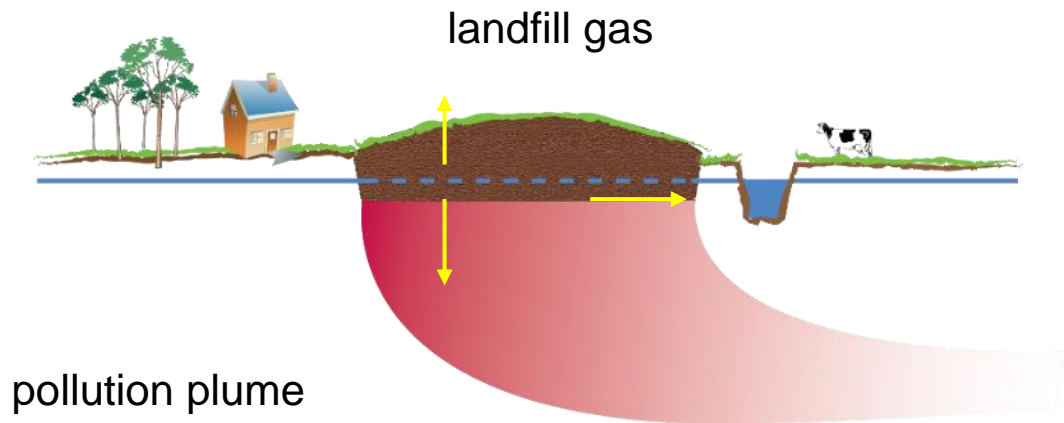
Landfill mining

Former landfills:

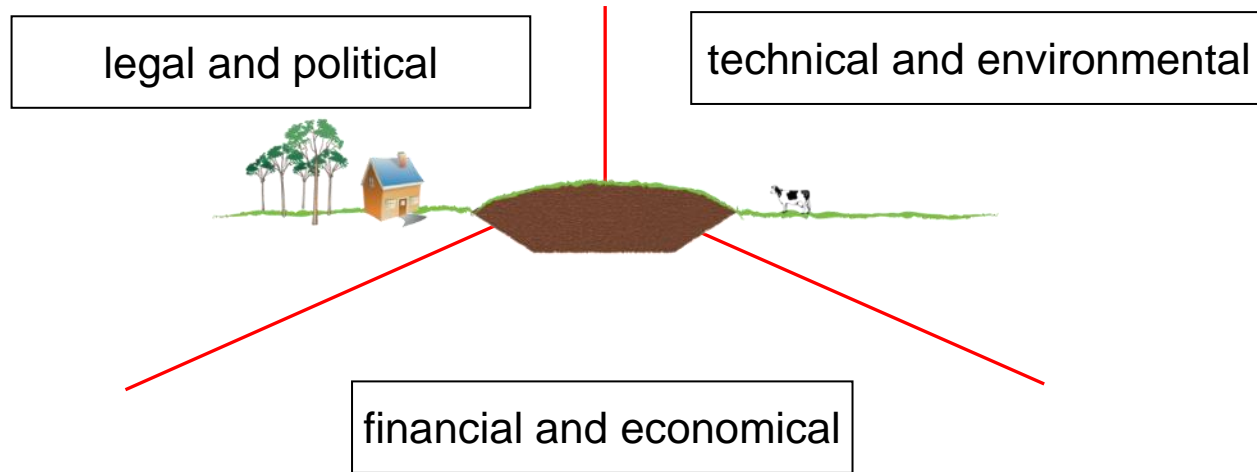
Can be an environmental problem (pollution risk)

can hinder the development of an area

need thorough analysis before actions can be taken



Analysis present situation former landfill



This analysis results in a list of possible future options and technical measures needed

Remediation and mining options

1. Fit in: isolate + monitor



2. Fit in+: reshape + isolate + monitor



3. Complete removal: excavation and transport to other landfill



4. Complete removal+ : landfill mining = excavation/ processing/reuse of fractions



Benedeneind, Veenendaal



Option 4: Complete removal+ (landfill mining = excavation/ processing/reuse of fractions)

Remediation in 1998 to 2001

Remediation cost 5 million euro (partly subsidized), unit cost €93/m³ waste

Two former landfills were removed (54,000 m³ of waste)

Excavated waste was processed into reusable fractions (80% reuse and 20% landfilled)

Popular residential area built on **the cleared area of the former landfills**



Benedeneind, Veenendaal

