

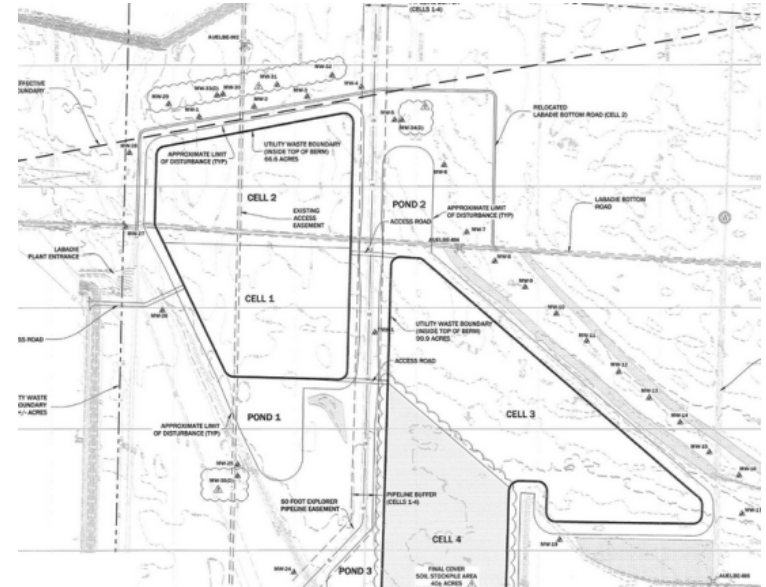
# Financial aspects of landfilling

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# From planning to remediation

- Expenditures:
  - investments for construction
  - operating expenses
  - investments for remediation
- Incomes
  - fees for deposition of waste
  - Photovoltaics, gas to power

- Planning
  - characterisation of site
  - detailed construction planning
- Planning costs:
  - about 5 % of construction costs ~ 50,000 Euro /ha (HOAI § 44)
- real estate 25,000 Euro per hectare



- Further costs (streets, functional buildings, scale, etc.)

~ 250,000 Euro per hectare

- Construction materials

- Profiling 40,000 Euro /ha

- clay / loam for technical liner

150,000 to 250,000 Euro /ha

- polymer liner 150,000 Euro per hectare

- Geotextiles 130,000 Euro per hectare

- mineral drainage layer 50,000-90,000 Euro per hectare

- leachate collection system 50,000 Euro per hectare

- Quality control
  - 5% of construction costs
  - 50,000 Euro per hectare

- Over all costs:

Real estate 25,000 Euro /ha

pre-construction costs: 50,000 Euro /ha

construction costs: 780,000 to 980,000 Euro /ha

quality control: 50,000 Euro /ha

sum: 905,000 to 1,105,000 Euro per hectare

- Further costs (streets, functional buildings, planning)

~ 210,000 Euro per hectare

- Construction materials

- Profiling	10,000 Euro /ha
- Cushion layer	26,000 Euro /ha
- Geosynthetic Clay Liner	136,000 Euro /ha
- Polymer liner	142,000 Euro /ha
- geotextiles	118,000 Euro /ha
- drainage layer	35,200 Euro /ha
- Sub-/Topsoil	200,000 Euro /ha
- Vegetative cover	2000 Euro /ha

## Remediation expenses (capping)

- Remediation overall cost ~ **885,000** Euro /ha
- Post remediation maintenance ~ **120,000** Euro /ha





- Personal staff: **60,000** Euro / per year and staff
- Supervision: **5000** Euro per year
- Leachate – Treatment: **10,000** Euro per year
- Reserve fund\*: **200,000** Euro per year
- Repayment of credit\*: **220,000** Euro per year
- Overall cost per year and ha:

**500,000** Euro

\* assuming a run-time of the landfill of 5 years



Goal: to gain at least **2,500,000** Euro per ha

Potential Volume of 100,000 m<sup>3</sup> per ha

-  **25 Euro / m<sup>3</sup>**  
average fee for deposition

- Obligatory fees set by the local authority
  - Fixed fee per household / commercial
  - considering expenditures e.g. incineration, MBT, landfilling
- >> Fees higher than **25** €/m<sup>3</sup> waste (between 30 and 70 €/m<sup>3</sup>)



- Expenditures:
  - investments for construction: 1 Mio €/ha
  - operating expenses: 500,000 € /ha\*a
  - investments for remediation 1 Mio €/ha
- Incomes
  - fees for deposition of waste at least 25€/m<sup>3</sup>
  - Photovoltaics, gas to power

Thank you for your attention