



WORKSHOP: Implementation of the Landfill Directive
FEAD - EJKL


Implementation of the EU Landfill Directive in Estonia – the perspective of Estonian landfills

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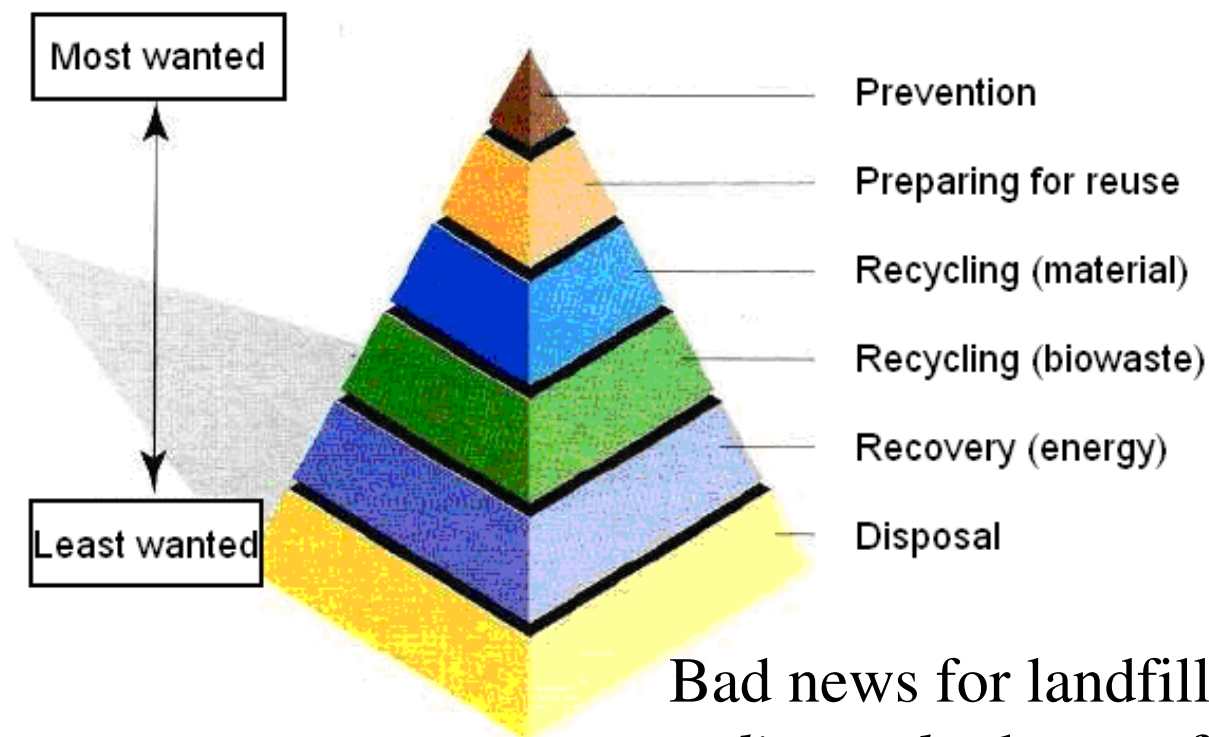
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- Experience: 16 years in University, *assoc. Prof.*
 - Engineering, Dept of Water Management
 - solid waste, waste water, contaminated soils, sludge
 - academic lecturing, continuous education, project work, consulting

Waste management hierarchy



Bad news for landfills:

- *disposal* = last preference
- *prevention* = less waste available!

Directive 2008/98/EC



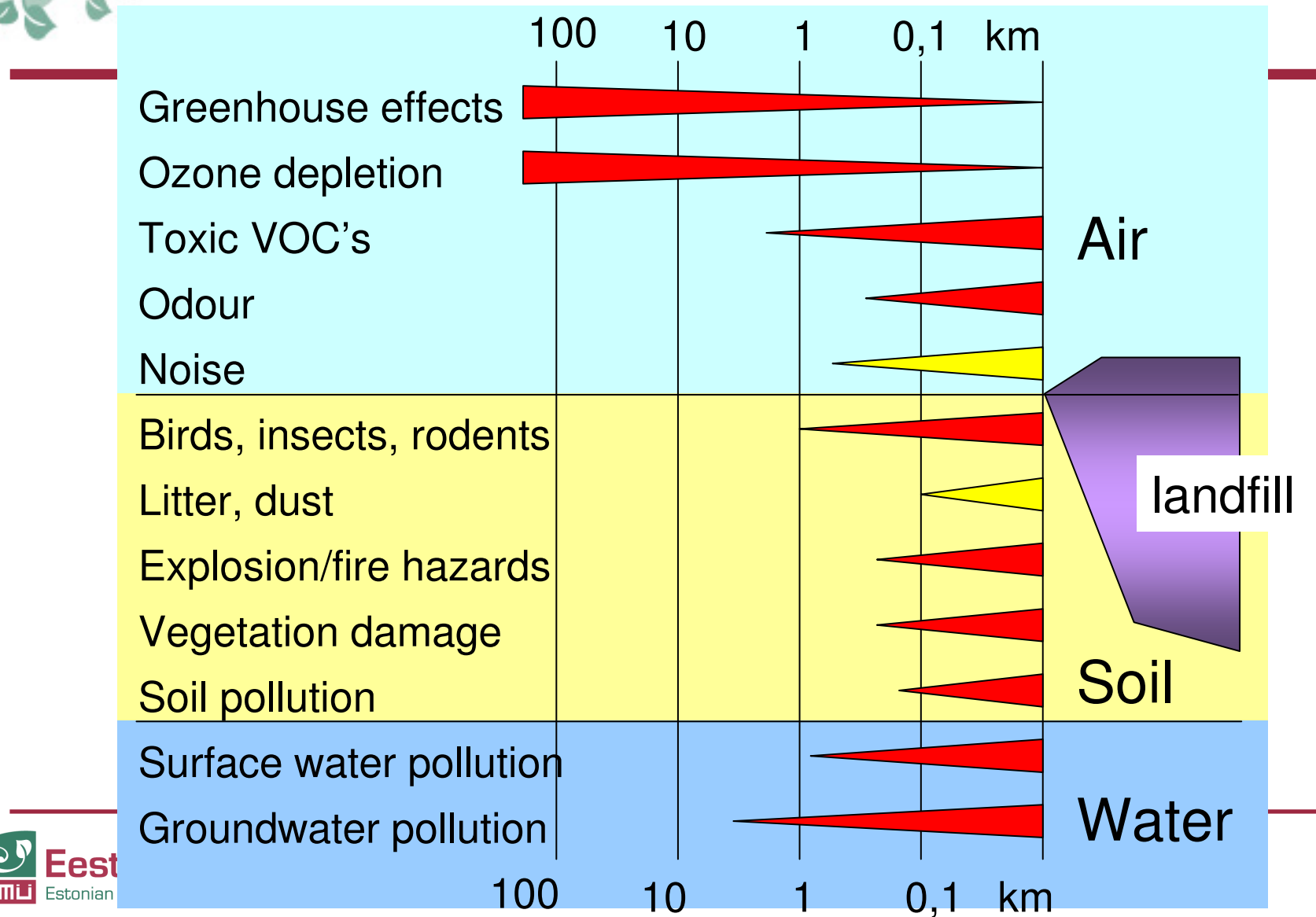
Directive 1999/31/EC – the driver

- The message is clear – disposal is least favoured!

WHY?

- Disposal of waste is wasting of materials (Rio)
- Disposal is hazardous for environment

Environmental impact of landfills





Directive 1999/31/EC – the driver

- The message is clear – disposal is least favoured!

WHY?

- Disposal of waste is wasting of materials (Rio)
- Disposal is hazardous for environment
 - Some wastes to be excluded from landfills
 - Organic wastes
 - Waste acceptance criteria
- Landfilling principles must change
 - Sorting & processing required

... organic content of disposed wastes
must not exceed (compared to today):

45 % by 2010

30 % by 2013

20 % by 2020



How do the landfills survive?

disposal = last preference

prevention = less waste available!

Disposal is becoming expensive for waste producers

- What does the waste hierarchy say?
- Composition of waste is a key
- Economy may compromise our choices

Mass balance I

Best

Material recycling



Bio-treatment



Energy recovery



Final disposal



Worst

	Material recycling	Bio-treatment	Energy recovery	Final disposal
1990	1%	0%	0%	99%
2005	7%	1%	0%	92%
2010	15%	5%	0%	80%
2020	30%	30%	50%	☹️?%

Timeframe

Best

Material recycling



Bio-treatment



Energy recovery



Final disposal



Worst

Construction:

sorting system

doable

requires

done

done

fast

Organics:

time

45 % by 2010

30 % by 2013

20 % by 2020



Collection & supply of wastes

Best

Material
recycling



Today: good

Bio-
treatment



poor

Energy
recovery



none

Final
disposal



good

Worst

Systems required/planned

Best

Material recycling



Bio-treatment



Energy recovery



Final disposal



Worst

Amount: many

many

1 – 3

5 (+1)

Scale: any

any

only large

large

Cost €: depends

all scales

very expensive

investments done

Mass balance II

Best



Worst

... organic content of disposed wastes must not exceed (compared to today):

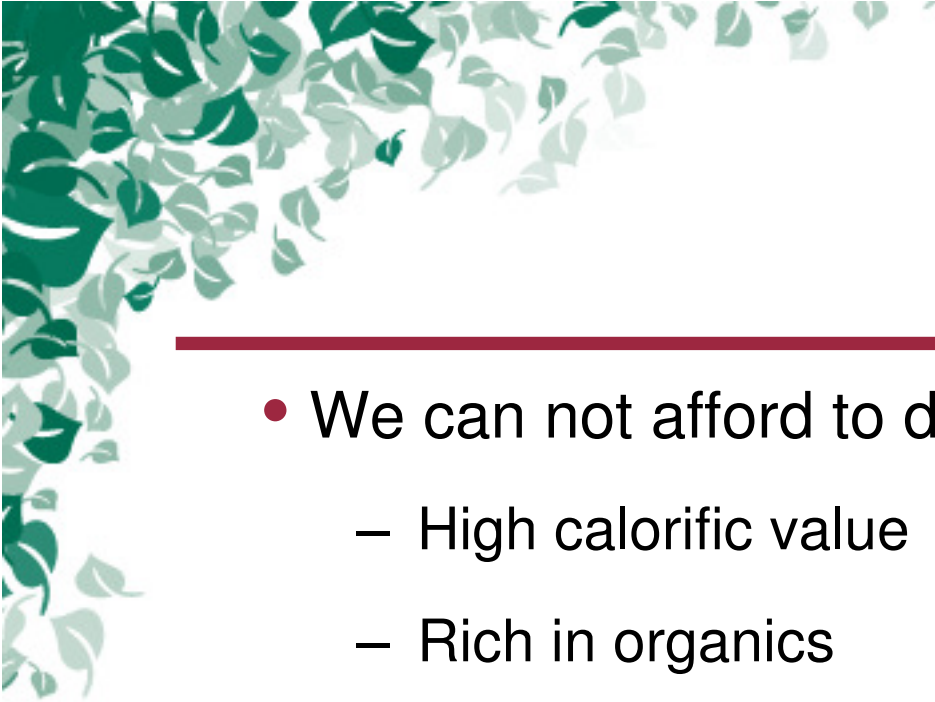
Year	Material recycling	Bio-treatment	Energy recovery	Final disposal
1990	1%	0%	0%	99%
2005	7%	1%	0%	92%
2010	15%	5%	0%	80%
2020	30%	30%	50%	☹️?%

Waste = energy

50 : 50

Recyclables should not support the landfilling or incineration whenever possible (2008/98/EC).




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- We can not afford to dispose of waste with:
 - High calorific value
 - Rich in organics
 - Rich in marketable products



What about existing landfills?


- **Disadvantage** of the existing landfills:
 - less waste available for disposal
- **Solution:**
 - Need to implement other activities
- **Disadvantage** of the existing landfills:
 - they are located away from the producers
- **Advantage** of the existing landfills:
 - They exist already (infrastructure, skills)
- **Major question:** how to benefit?

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- The future of landfills is to adopt!
 - And they are adapting already!

 - The first built 'Eurolandfill' was merely for disposal.
 - Today, the same landfill is functioning as a waste management center.

 - The last built 'Eurolandfill' is functioning as a waste management center from day 0.
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	Väätsa	Torma	Uikala	Jõelähtme	Paikre
Startup	2000	2001	2002	2003	2006
First/tot disposal area, ~ha	1 / 9	0,5 / 2	2 / 8	5 / 30	5 / 15
Weights	At once	At once	At once	At once	At once
Public recycling station	Later	Later	Later	At once	At once
Hazwaste	Later	Later	Later	At once	At once
Manual package sorting	Later	Later	Later	No	Elsewhere
Storage for organic waste	Later	Later	Later	At once	Later
Biotreatment technology	Later	No	Later	At once	No
<i>Equipment</i>					
- Compactor	At once	Later	At once	At once	At once
- Vehicles	Later	At once	No	No	No
- Shredder	Later	No	Later	Later	Later
- Sieve	Later	No	Later	Later	No
Leachate pond	At once	At once	At once	At once	At once
Leachate treatment	Later	At once	Later	Elsewhere	Elsewhere
Stormwater pond	No	No	No	At once	No
Gas collection	Later	Later	Later	Later	Later
C&D	Later	Later		At once	

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- We still require disposal capacity. However, much less.
 - Disposal is not the main objective for landfills.
 - Landfills → waste management centers (industrial park)
 - In legislation LF≠LF
 - Waste management methods which are available for other waste companies are available also for landfills.
 - Integration of disposal activities into waste management system is required
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But the landfills already exist!

What is their future?

- Landfilling activities will include production, not only disposal.

Material
recycling



Sorting,
separating,
processing.

Bio-
treatment



Quality
composting,
MBT,
contaminated
soils.

Energy
recovery

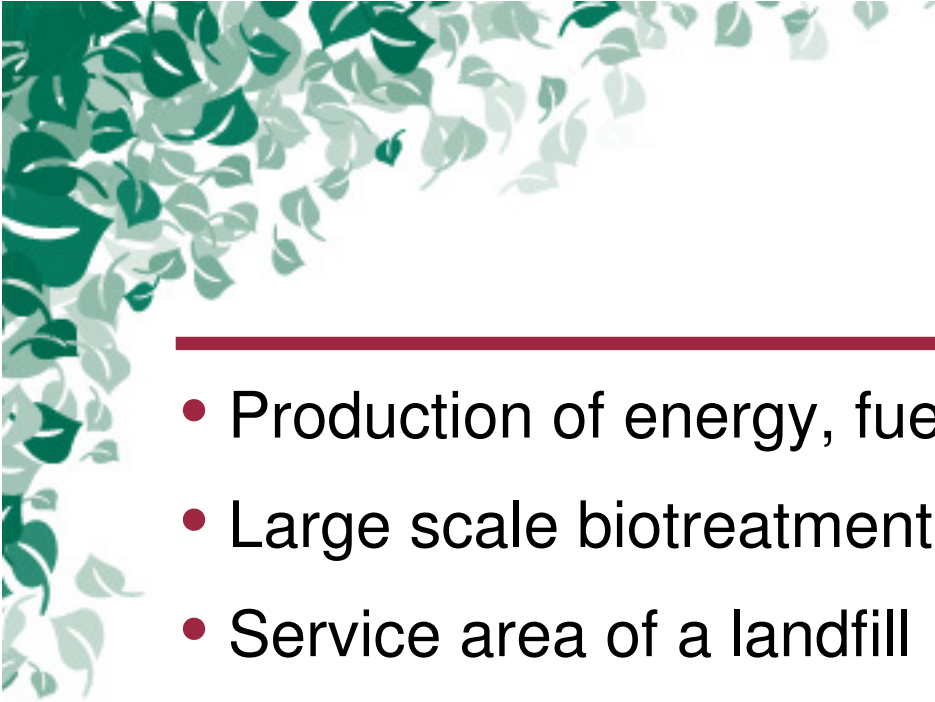


RDF production,
storage of fuel,
recovery of
bioenergy.

Final
disposal



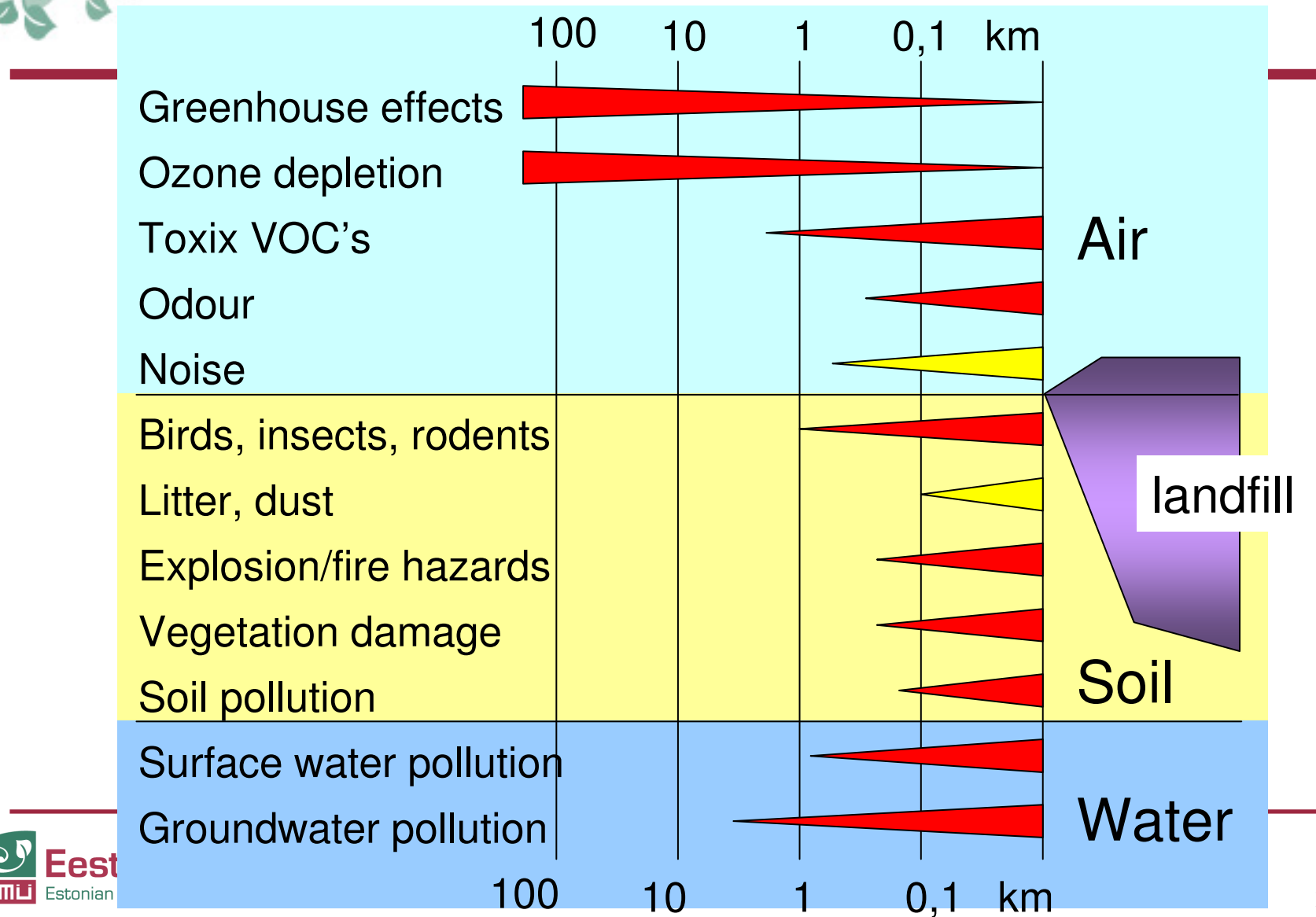
Restwaste disposal,
temporary disposal,
landfill mining,

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- Production of energy, fuels and materials (Torma, Uikala)
 - Large scale biotreatment (Tallinn)
 - Service area of a landfill
 - Specialisation
 - Off-site activities, e.g. transportation, processing. logistics & others, also on demand (Väätsa)
 - Off-site premises (daughter companies closer to the producer (Paikuse-Paikre)
 - Storage of various wastes (Tallinn)

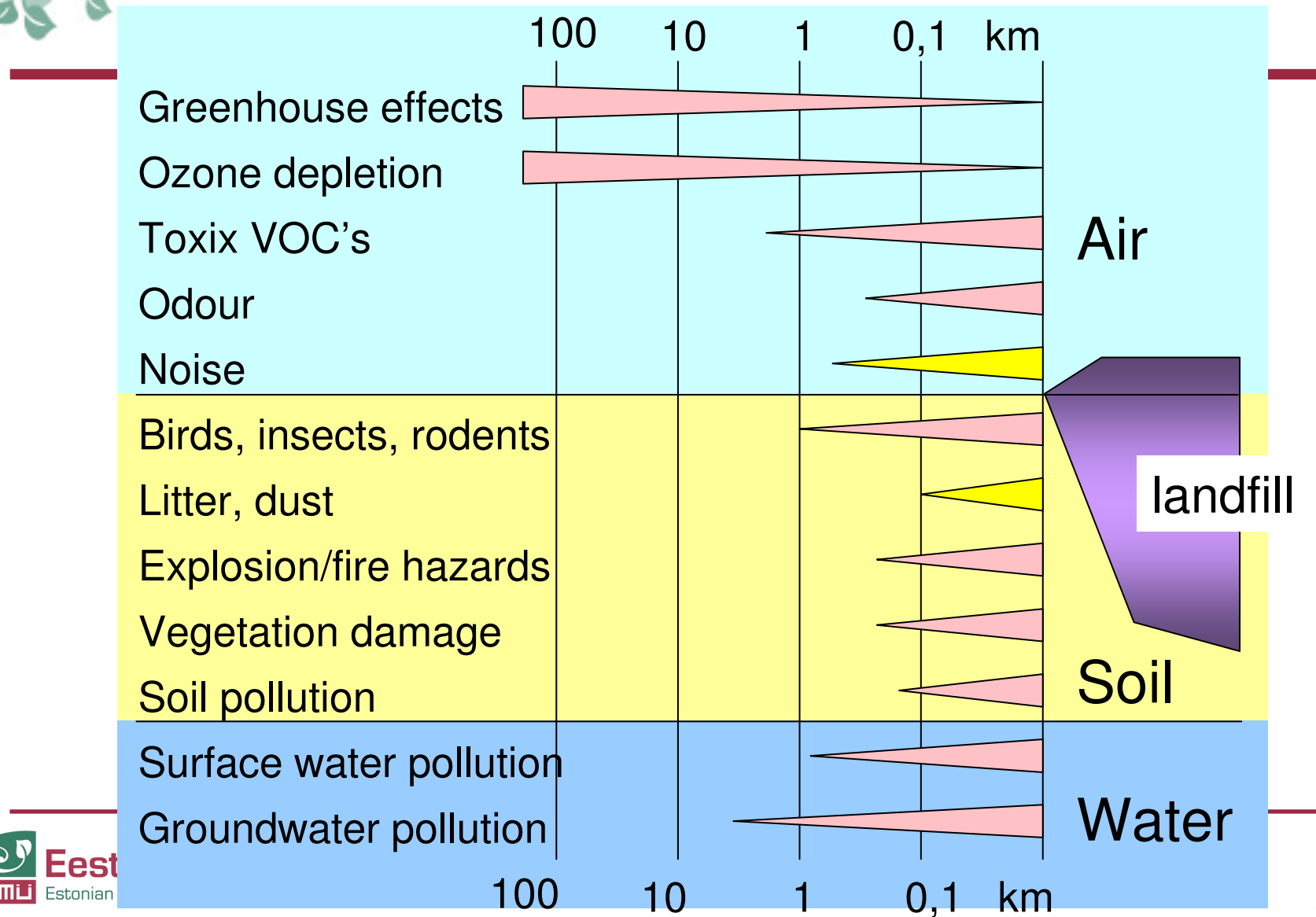


Did we forget the true objective of
landfill 'revolution'?

Landfill is not a business unit in itself...



It should be working for better environment!





Thank you!

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