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A Conceptual Framework for Life Cycle Thinking in Transitions Toward Sustainable Waste Management

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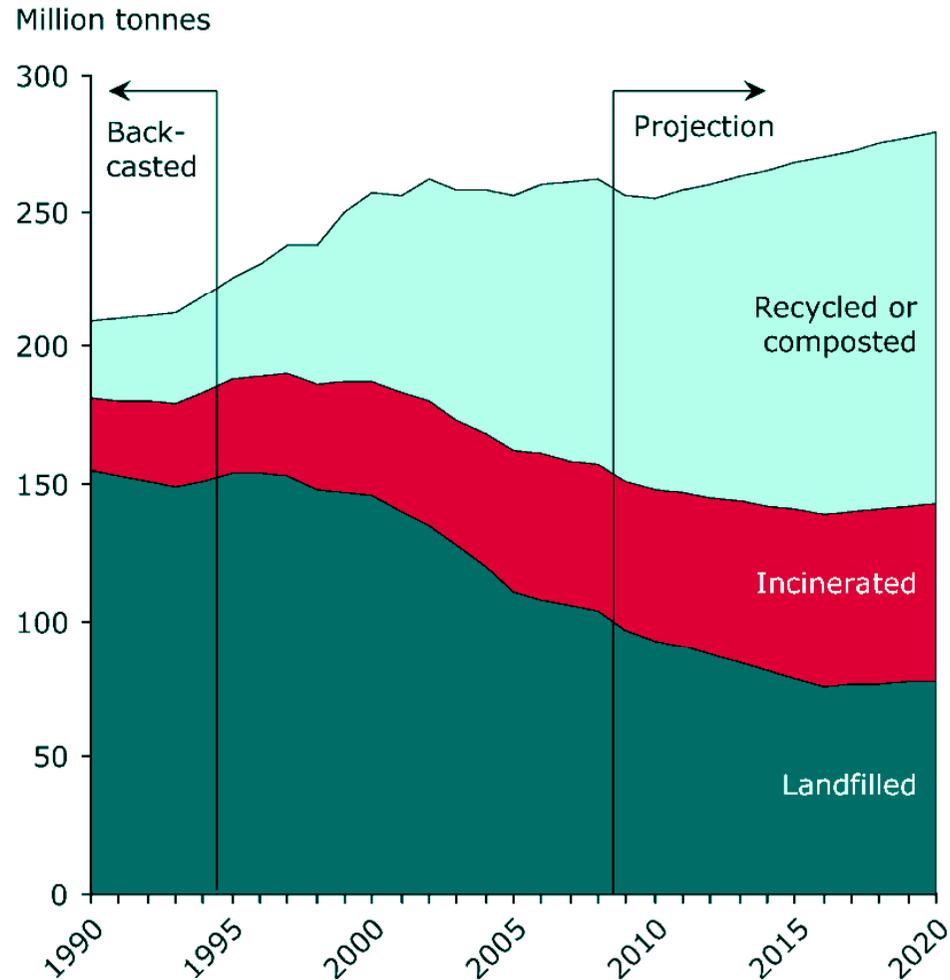
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Background

- Overall amount of waste is increasing

Trends and outlook for management of municipal waste in the EU-27



Source: EEA 2010



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Background

- Toward sustainable waste management
 - Societal changes are required
 - Economic
 - Cultural
 - Technological
 - Institutional
 - In the context of environmental developments
 - How is action coordinated?
 - Aim: to make progress in understanding how Life Cycle Thinking can be used to aid the coordination of a transition toward sustainable waste management
-

Conventional Principles

Conventions: collective agreements, tacit or explicit, which allow agents to coordinate their activities (Boyer and Orléan 1994)

Great Ocean Road - Australia



Photo: Mat Connolley, 2006

"The right-hand traffic diversion"



Photo: Jan Collsiöö, 1967

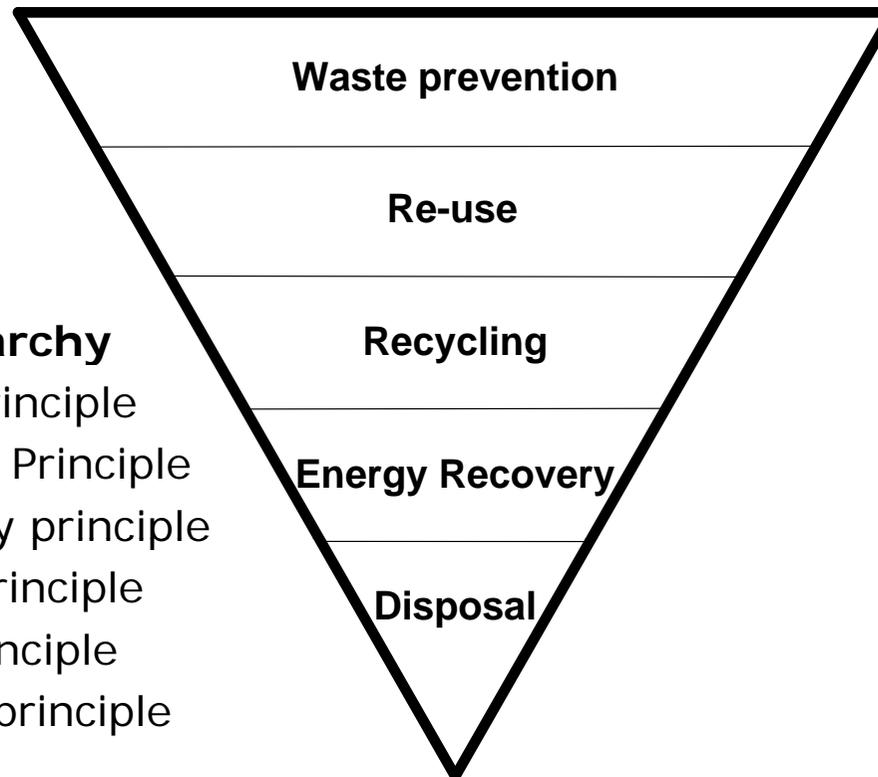


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Conventional Principles

Conventional Regimes: *"moment in time and space during which a given human community is behaving according to several principles which orient individuals' behaviours within the community."*



- **Waste hierarchy**
- Free trade principle
- Polluter Pays Principle
- Precautionary principle
- Prevention principle
- Proximity principle
- Subsidiarity principle

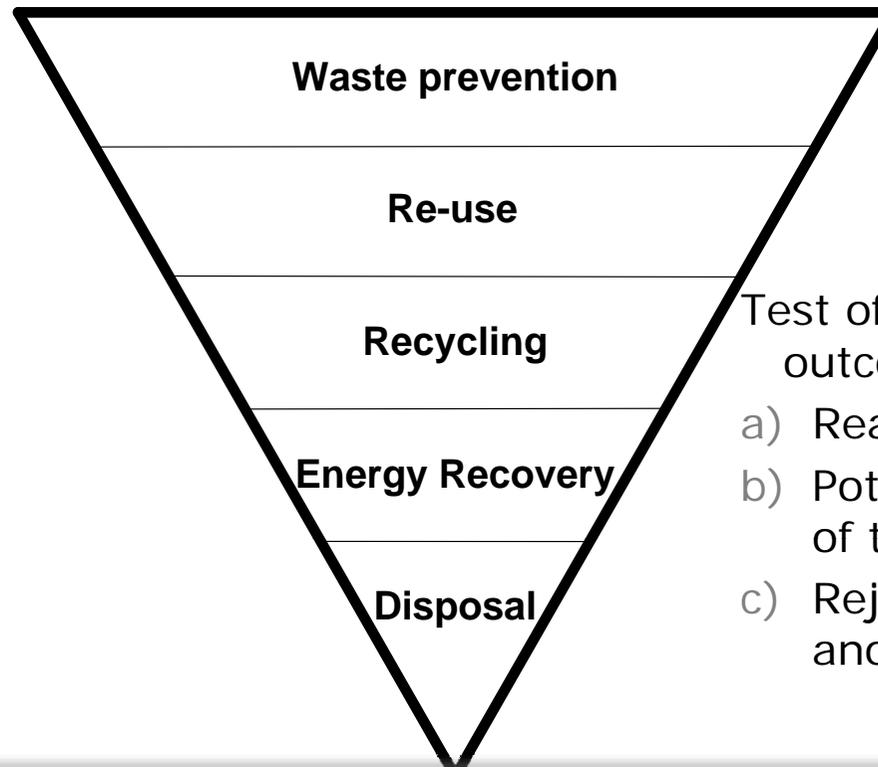


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Conventional Principles

Evolution : Regimes are regularly submitted to moments where the conventional principles are challenged



Test of principles with 3 potential outcomes:

- a) Reaffirmation of the principle
- b) Potential evolution/modification of the principle
- c) Rejection and replacement by another principle

Municipal Responsibility --→ Polluter Pays --→ Extended Producer Responsibility

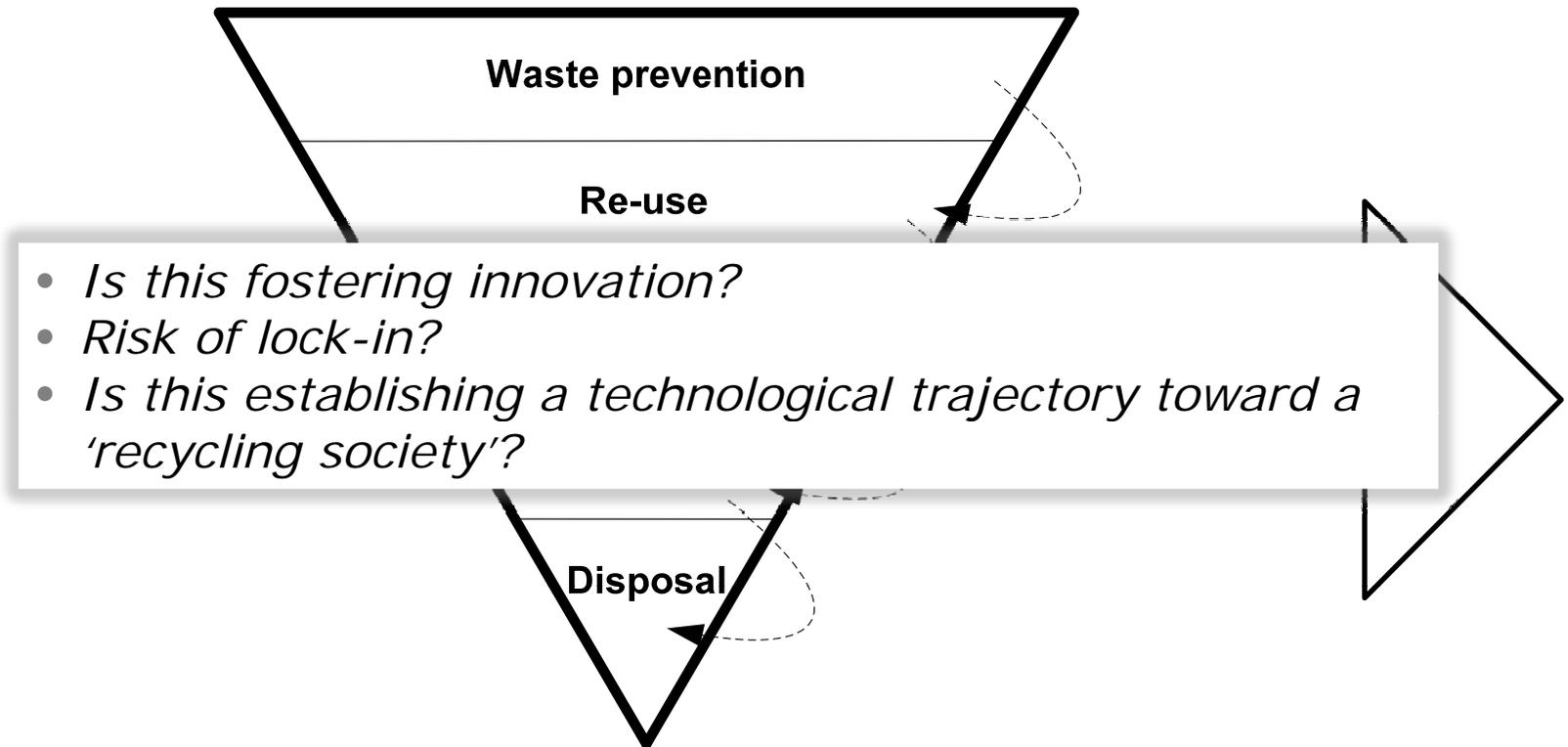


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Current Application of LCT in Waste Management

*“The following waste hierarchy shall apply as a **priority order** in waste prevention and management legislation and policy...”*



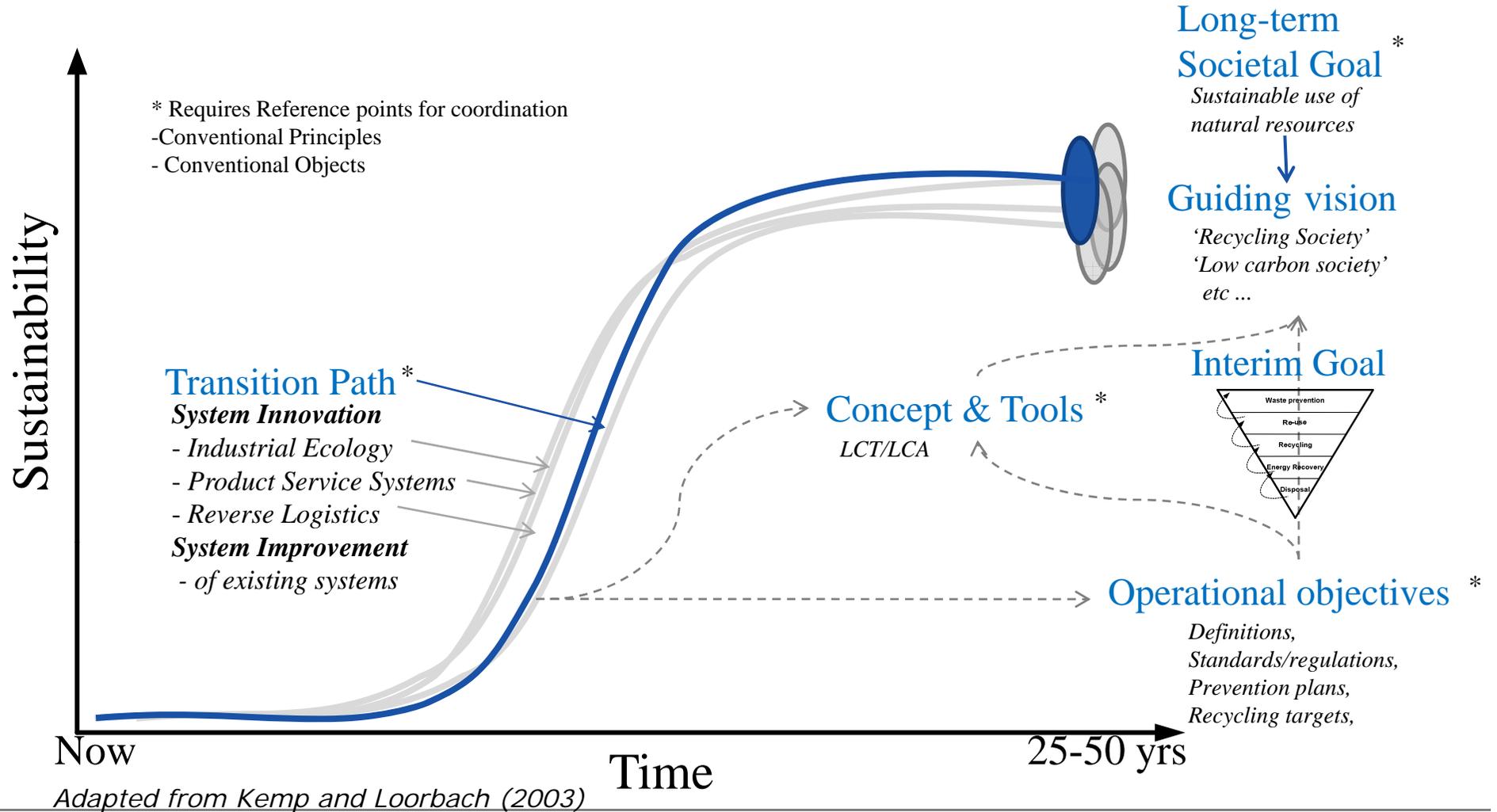
*“... This may require specific waste streams departing from the hierarchy where this is **justified by life-cycle thinking** on the overall impacts of the generation and management of such waste.” (2008/98/EC)*



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LCT in Waste Management Transitions

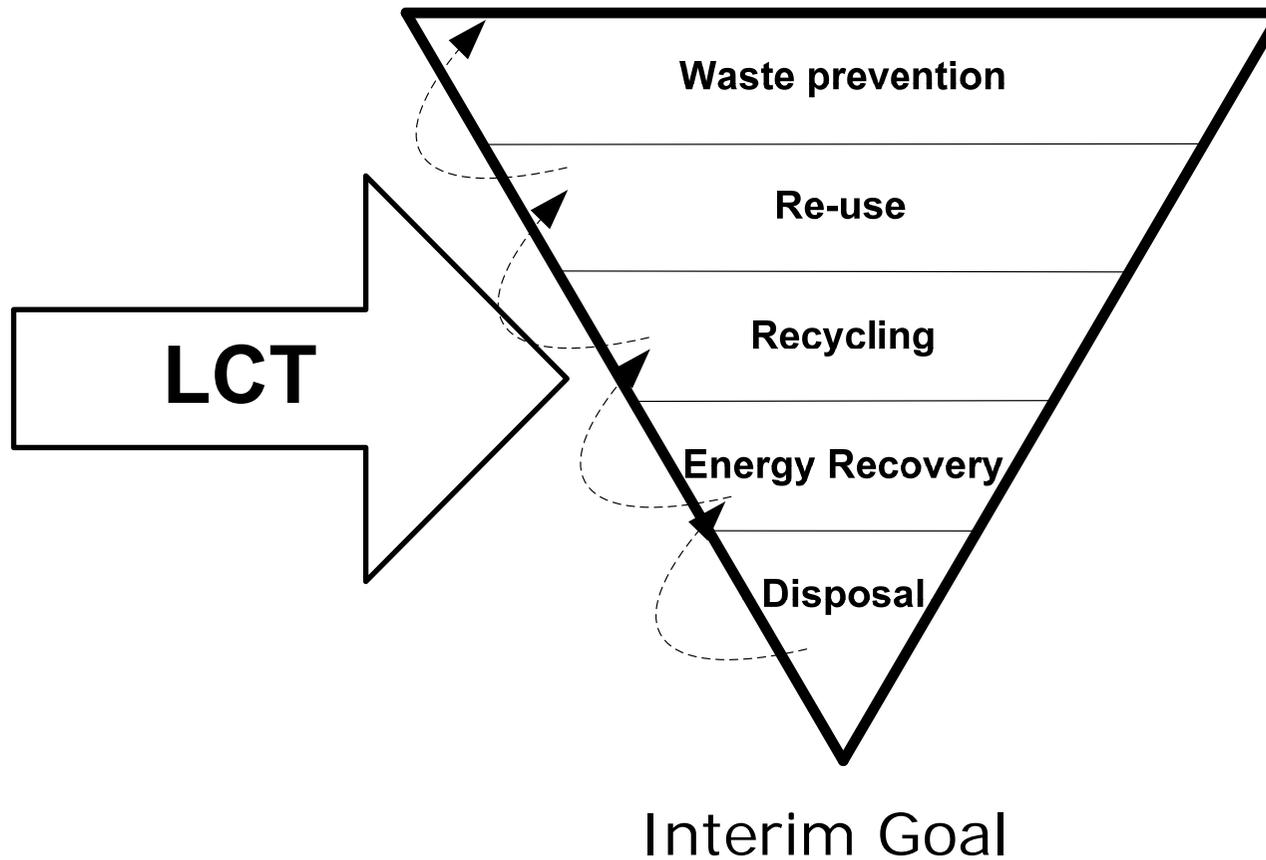




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Application of LCT in the context of Transitions





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Conclusions

1) Life Cycle Thinking based analysis as a test of the waste hierarchy

- Reaffirmation
- Modification
- Rejection and Replacement

1) System Improvement:

Improving the efficiency of societal functions

- Life Cycle Thinking based analysis as an eco-design tool for secondary raw material supply chains
 - Supporting a technological trajectory congruent with the transition vision
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Conclusions

3) System Innovation:

Large scale transformations in the way societal functions are fulfilled

- Life Cycle Thinking based analysis for assessment of the function of waste management systems
 - Functional unit of the treatment of waste in a defined space and time
 - Allowing for the change in waste flows
 - Influence of waste prevention
 - Life Cycle Thinking aiding in coordination
 - Logics of Life Cycle Thinking
 - Life Cycle Management
 - Life cycle reporting
-

Thank you for your attention

References

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