"Innovation Systems and Development Strategies for the Third Millennium"

Innovation and sustainability in economic development

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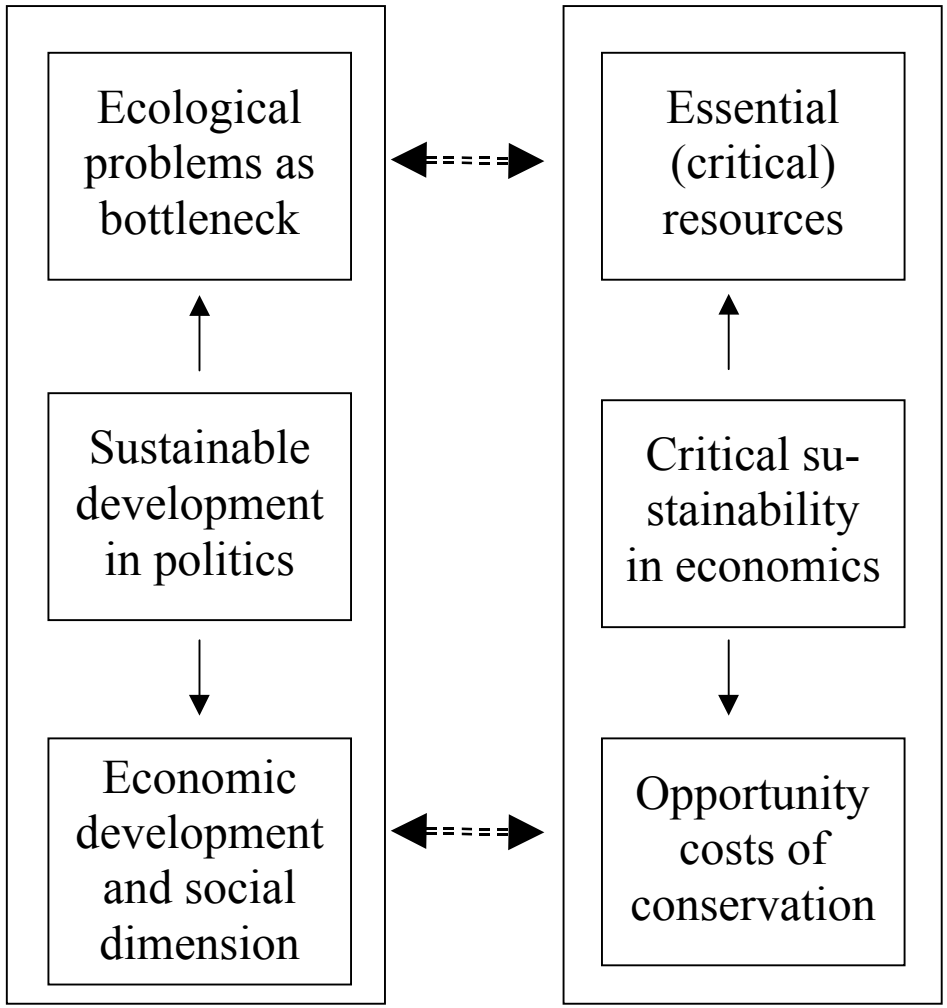
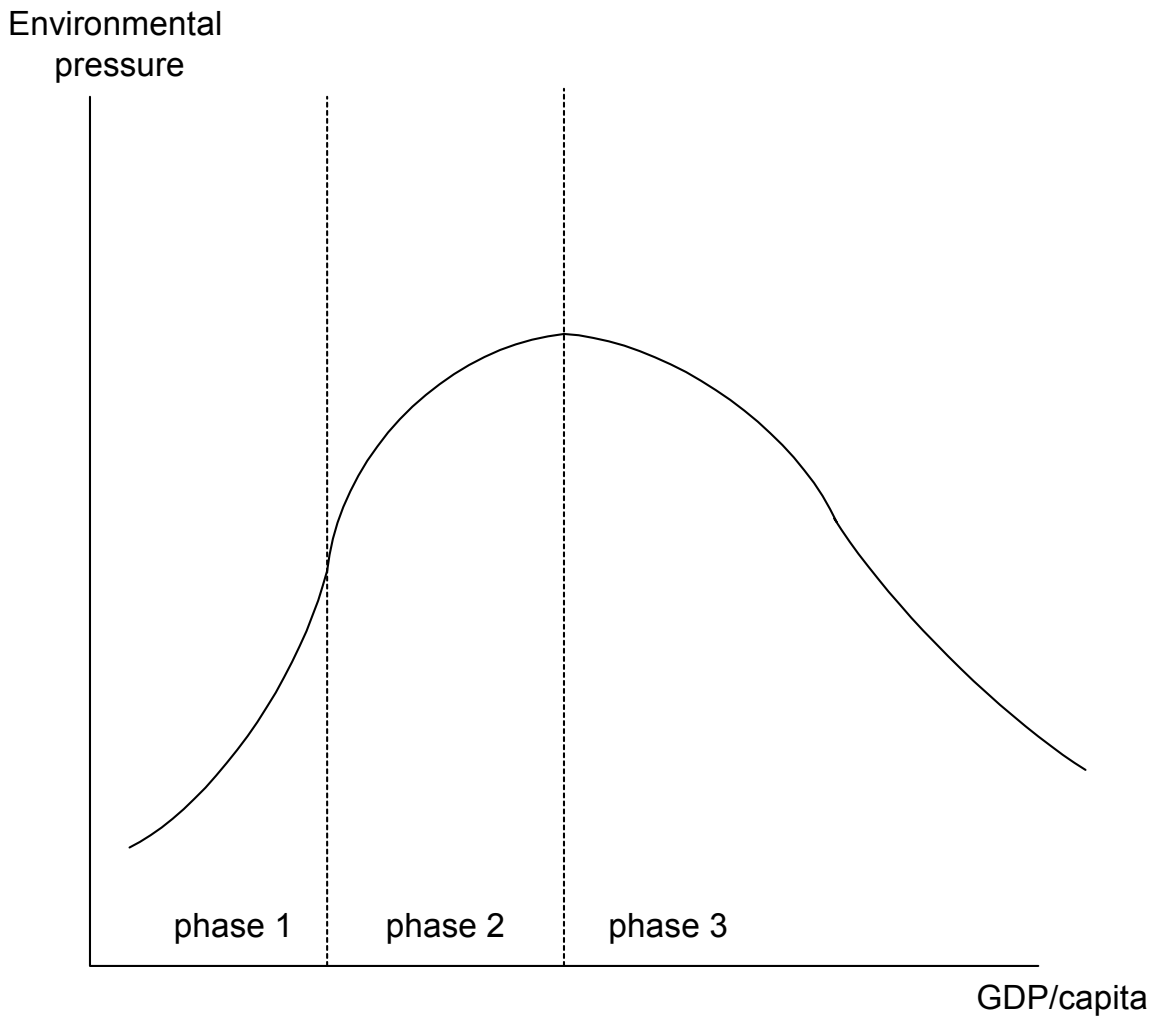
Overview

- Interpretations of sustainability
- economic development and sustainability in the North
- innovation strategies for sustainability
- role of innovations for sustainability in the South
- conclusions and outlook

Political and economic interpretation of sustainability



Environmental Kuznets Curve

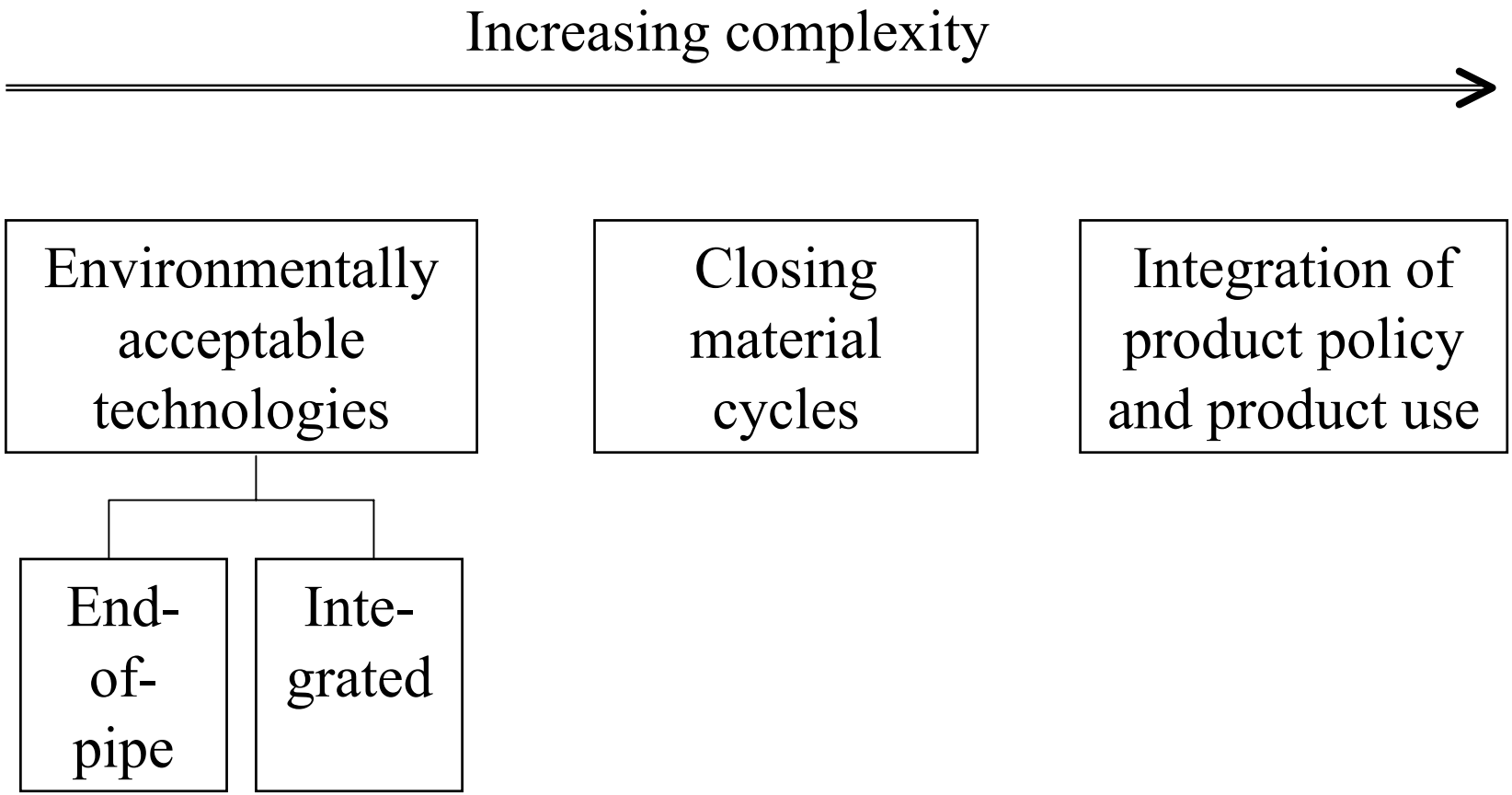


Environmental Kuznets Curve

- Mixed empirical results
- different factors influencing EKC
  - behaviour and institutions
  - technological progress
  - structural change

  => *systems of innovation*
- conclusions
  - EKC less valid for sustainability problems
  - no „natural“ effect, policies necessary to foster sustainability innovations

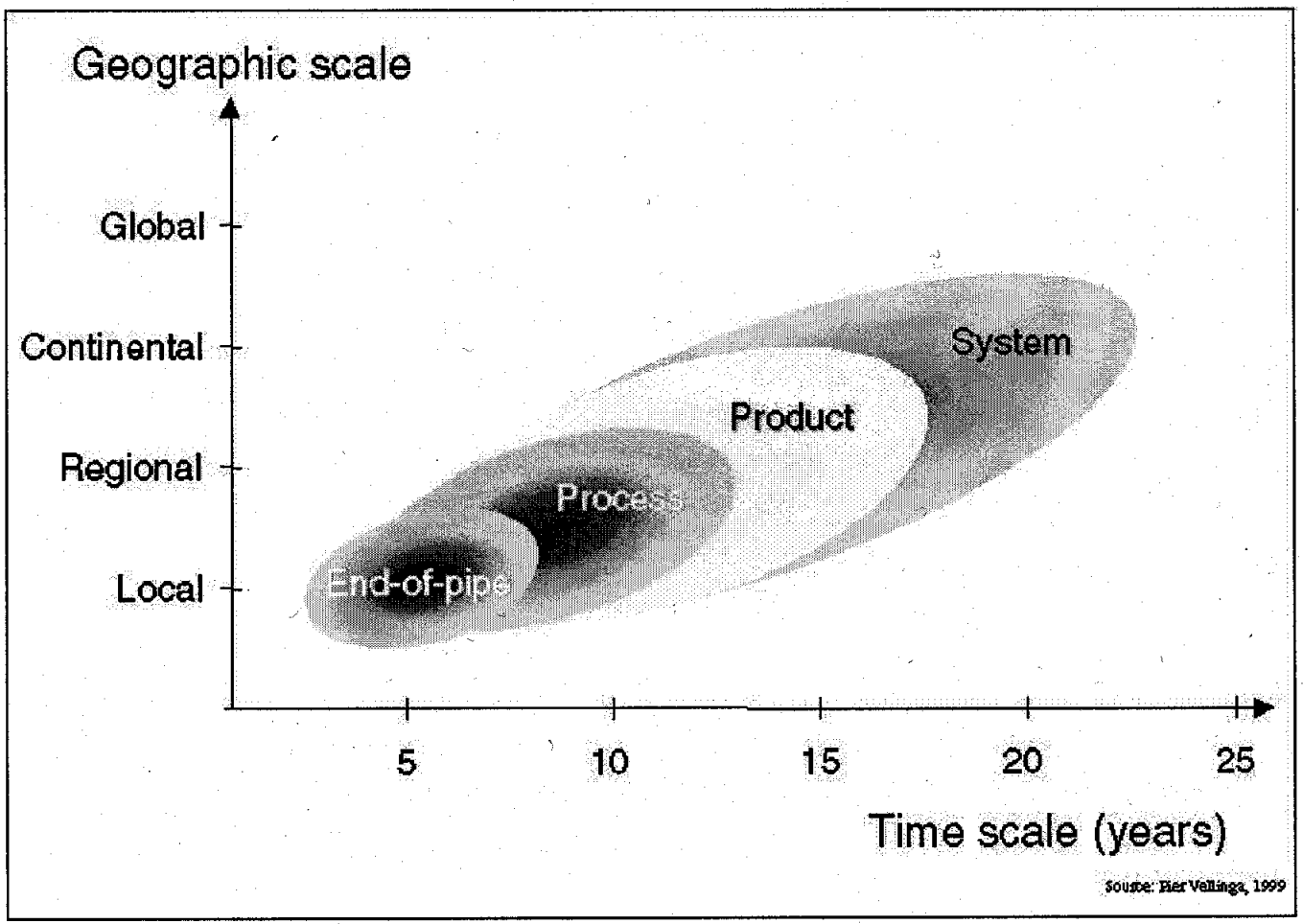
Innovation strategies for sustainability



Implications of sustainability strategies

- Address fundamental strategic decisions of companies => risks and chances
- High importance of lead markets and learning processes
- Changing patterns of institutions and behaviour => co-evolution of subsystems

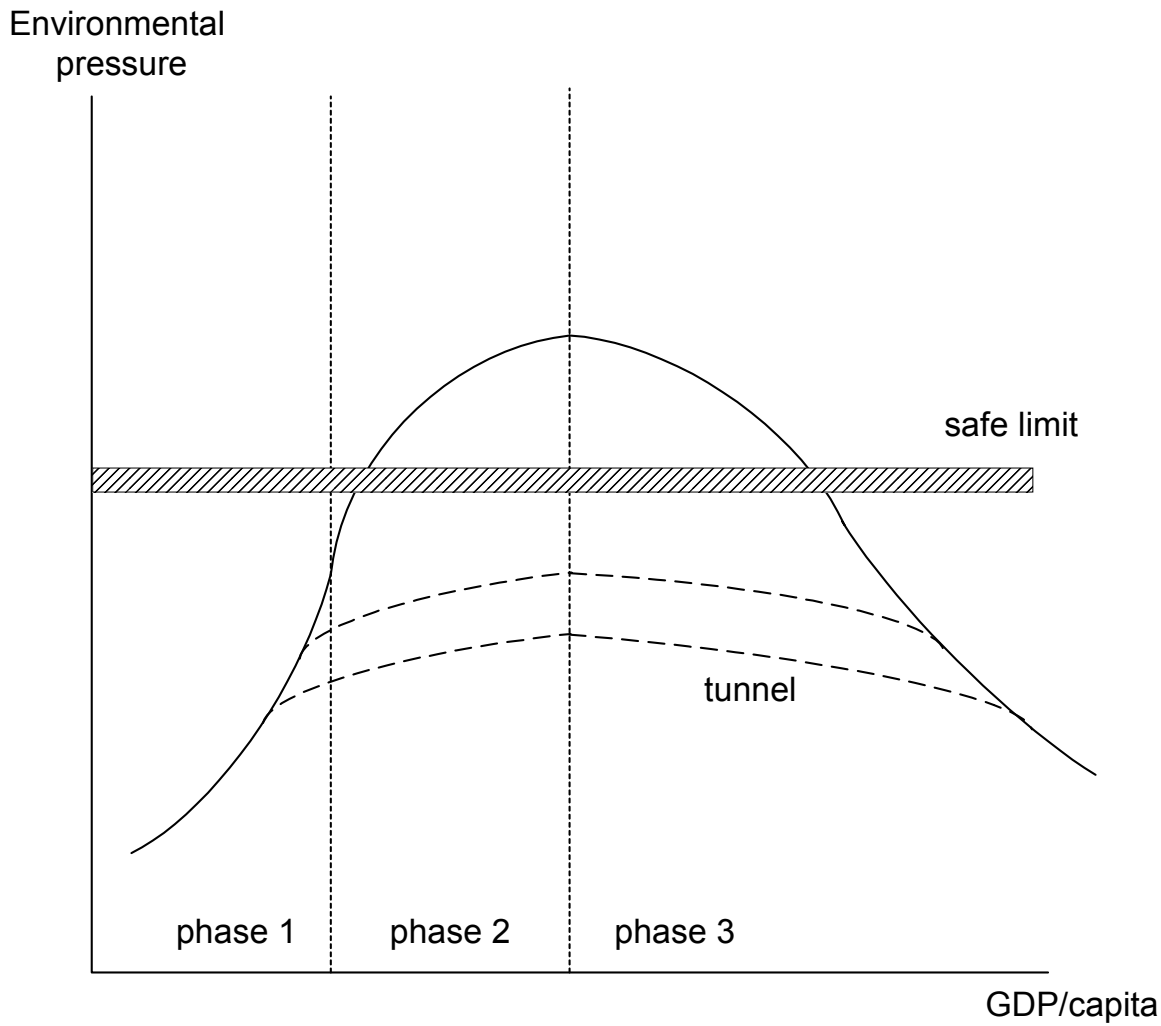
Time scale and geographic scale for societal responses



Three scenarios for the South?

- Tunneling through the Environmental Kuznets Curve?
- lead markets for sustainability innovations?
- advantages in overcoming path dependency?

Tunnelling through the Environmental Kuznets Curve?



Tunnelling through the Environmental Kuznets Curve?

- Application of late comer advantage concept
- Problems
  - ECK might not exist in the North
  - Reallocation of „dirty‘‘ industries
  - Absorptive capacity, learning important
- Perpetuation of existing dependencies

Lead markets for sustainability in the South?

- Deficiencies with regard to typical lead market demand conditions
- Very high problem driven pressure
- Natural requirements for technical functioning ?
- Favourable policies and regulations?
- Understanding of system of sustainability innovations necessary

Path dependencies

- Technological lock-in, e.g. in energy and water industry
- political lock-in: power of losers prevail
- social lock-in: no co-evolution of social system

Conclusions

- Technological progress and structural change are key for reconciling economic development and sustainability
  => systems of innovation important
- different innovation strategies for sustainability with increasing importance of learning effects and co-evolution of subsystem
- innovation system which first masters these complex tasks gains competitive advantages
- policies necessary which lead to integration of environmental and innovation policies
- no clear picture for the South: possible scenarios range from perpetuating dependencies to gaining advantages

Research agenda

- Functioning of a system of sustainability innovations
- existing bottlenecks and potential policies for sustainability lead markets in the south
- analysis of lock-in situations and comparison between countries/regions/continents
- performance and importance of a system of sustainability innovation in comparison to other factors

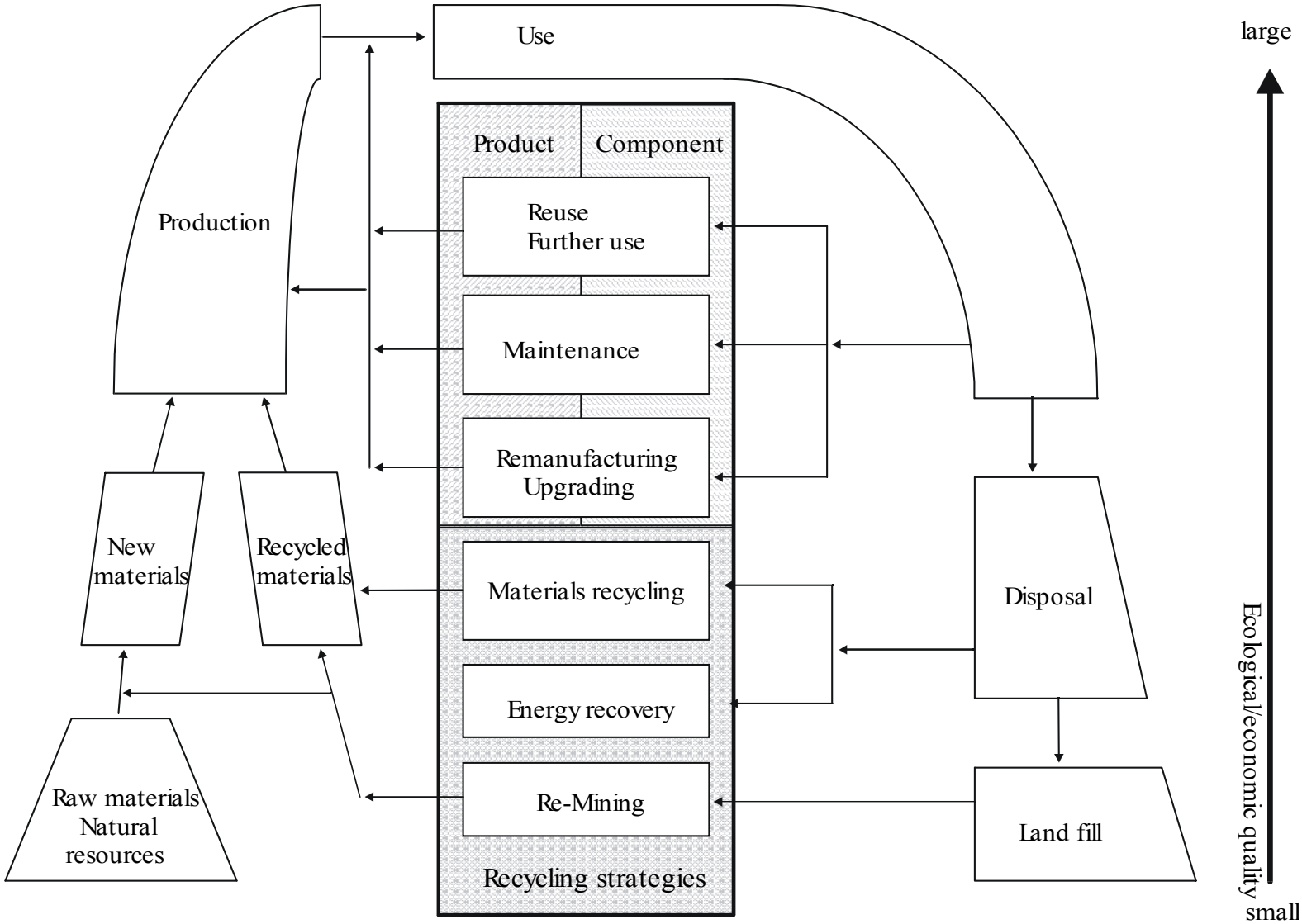
interpretations of sustainability

- Politics
  - tension between short term economic development and long term needs
  - ecological sustainability as bottleneck for long term needs
  - specification of targets in conventions, declarations

- critical sustainability concept in economics
  - preserve essential resources
  - not all environmental problems are sustainability problems
  - consider opportunity costs of conserving essential resources

- relationship between economic development and ecological sustainability

Strategies for closing material loops



Winners and losers of sustainability innovations