

Sustainable innovation

What kind of challenges and opportunities may companies expect?

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Is it feasible for Society to keep activities as if nothing is enough, nor too much?



The reality shows:

Resource depletion

Pollution & wastes increasing

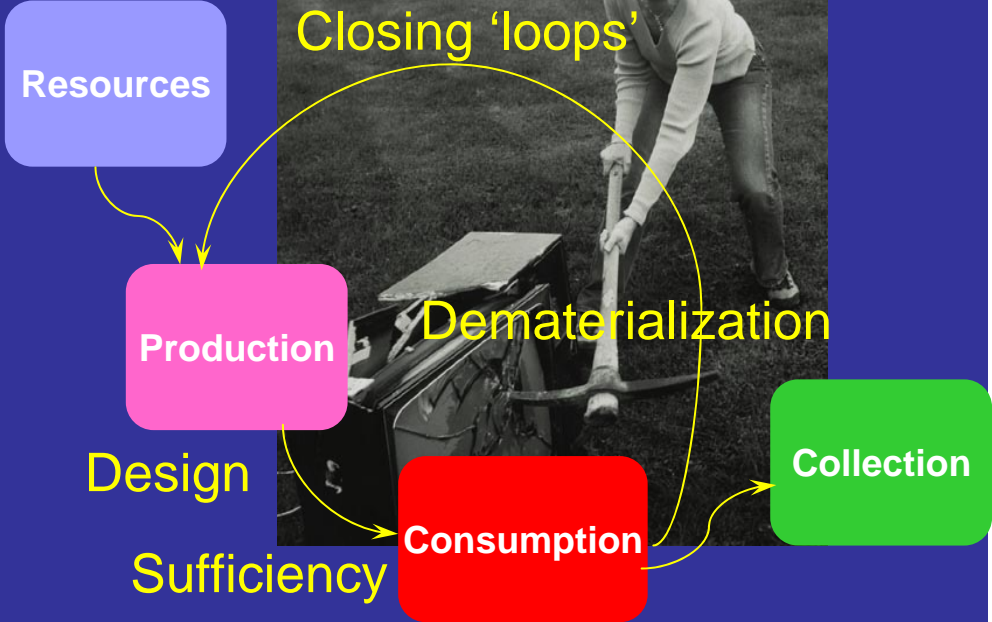
Overconsumption

Requires: Much better performance!



New way of thinking...

...and acting!

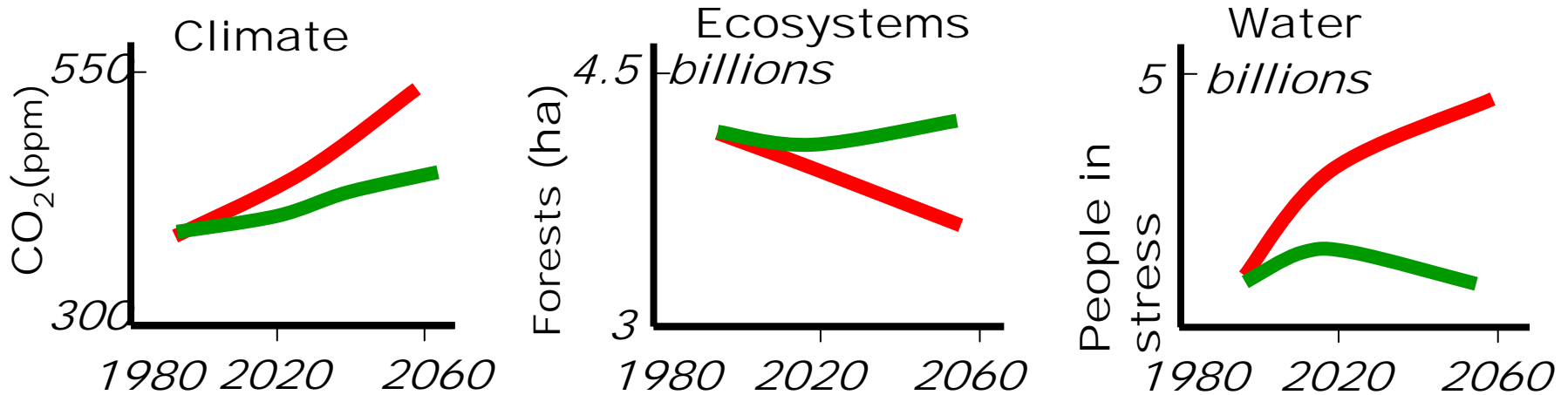


Source: Adapted from Brattebo (2005)

Stages & Levels of analyses

- “Dilution”, “Control”, “Reduction (source)”, “Prevention” ...;
- The system (the integration scale: macro> meso> micro), and lifecycle thinking, beyond supply chains;
- From short to long term (strategic thinking)
- Cost effective pollution reduction
- Internalization of environmental costs
- Continuous improvements (e.g. ISO 14000/ EMAS)
- Market based regulatory approaches
- Sustainable production-consumption patterns

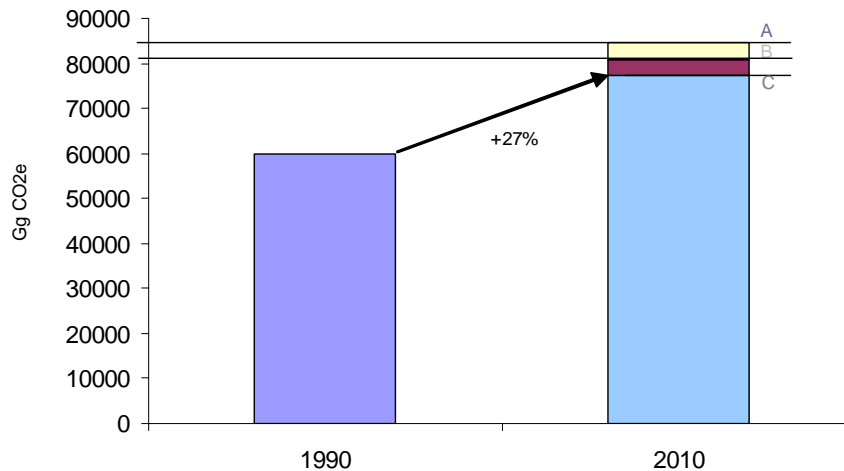
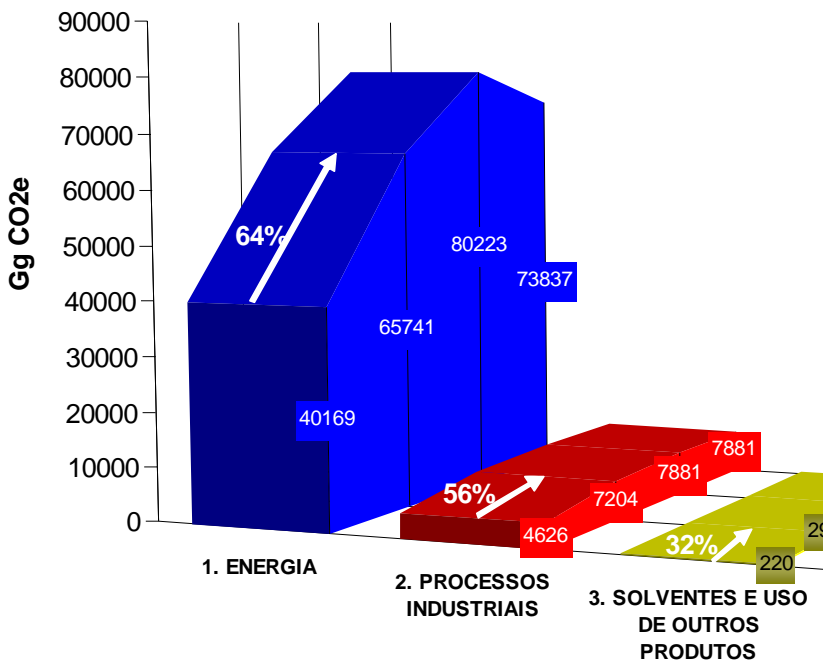
The scale of change



OECD indicators are reflecting many significant environmental challenges to be faced up at different levels, e.g.: **The climate change, and the waste generation**

Análise do compromisso de cumprimento do PQ, no ano médio 2010.
(PNAC, 2006)

Balanço nacional



A - Balanço Líquido de Emissões GEE Cen Referência: 84608 Gg CO₂e
 B - Balanço Líquido com medidas adicionais: 80921 Gg CO₂e
 C - Quantidade atribuída (1/5): 77194 Gg CO₂e

Défice para cumprimento: 3727 Gg CO₂e

2020 Cenário Baixo
 2020 Cenário Alto

2010
 1990

Fonte: Prog^a Nacional de Alterações Climáticas - PNAC 2006 (RCM 104/2006, 23 Ago)



Crucial to consider:

- _ The context framing the solution
- _ The dialogue & negotiation process
within more sustainable strategies

Sustainable Production-Consumption

How to change the patterns?

Regulatory approach (focus on producers):

_ Dir 2002/96/EC + 2003/108/EC (WEEE - waste from electronics and electronic equipment): Encourages waste prevention by the collection, reuse, recycling or other forms of recovery, and attempts to extend the regulations to imported products

PT: DL 230/2004 (10 Dez)

_ Dir 2002/95/EC (RoHS - restriction of hazardous substances): bans the trade of any new equipment containing Hg, Pb, Cd, Cr₆₊, polybrominated biphenyls, or polybrominated diphenyl ethers.

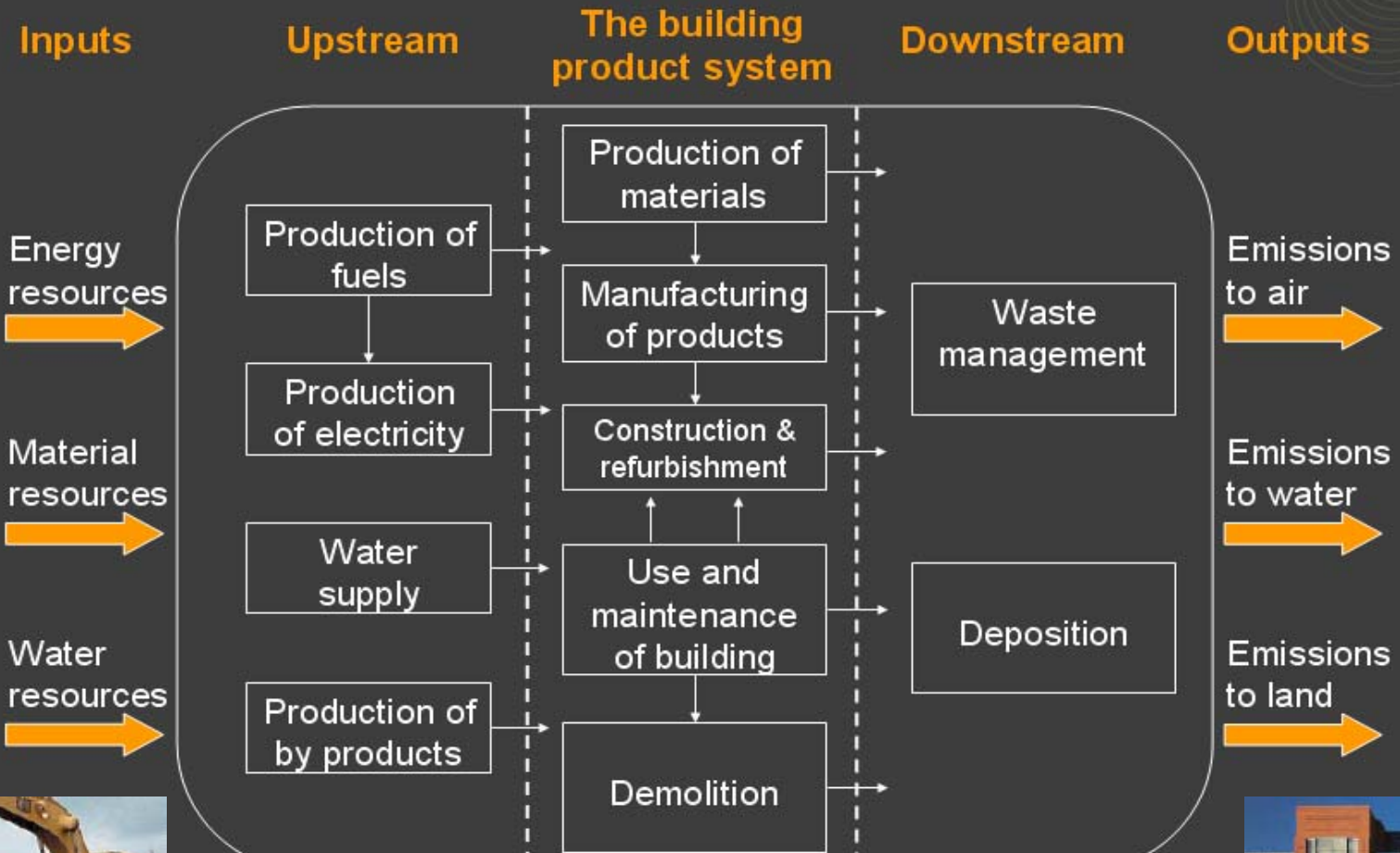
_ EuP Dir 2005/32/EC "Regulating innovation through DfE in end-use electronics and electrical products" encouraging design for disassembly, reuse, repair and recycling (+ EC label)



EU Integrated Product Policy (IPP)

- **Goal of EIPRO project:** Identify products with the greatest potential for environmental improvement
- **EU consumption end products:** divided into almost 300 product categories
- **Priority consumption areas identified:** food & drinks, transport, and housing, which account for only 1/3 of the product groups analysed, but together are responsible for 70-80% of the environmental impacts of private consumption, though covering 55% of consumption expenditure.

LCA and construction



What?

Where?

How?

Who?

When?

Innovation!

Strategic elements

- **Optimizing resources use;**
- **Closing the material cycles and minimizing emissions;**
- **Dematerializing activities;**
- **Reducing and eliminating the dependency on non-renewable energy resources.**

ETAP (<http://ec.europa.eu/environment/etap>)

Sector of intervention

Integrated approach: e.g. Intersectoral, transports, construction, Fe & Non-Fe Metals, Chemicals, Textiles, Extractive, Other;

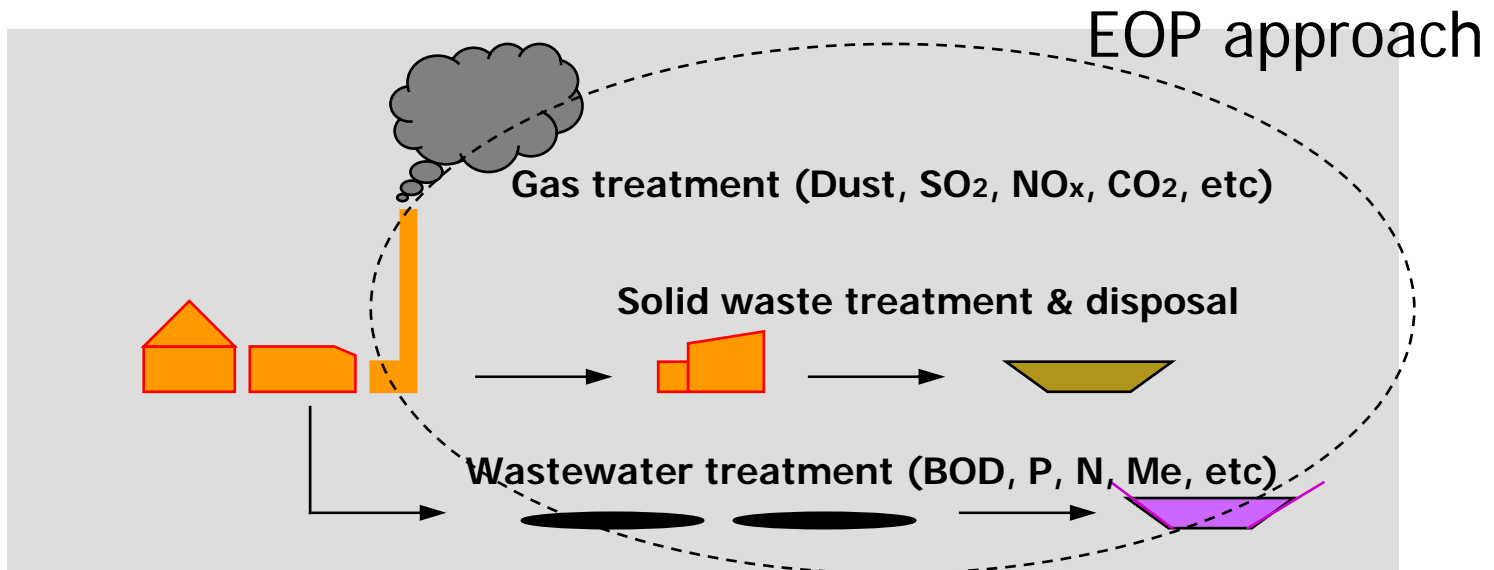
Resource management: e.g. Waste/ Recycling & Processing; Forestry & Agriculture; Water/ Sustainable use; Energy saving & Renewables;

Pollution management: e.g. Air/ Prevention & Reduction of pollution; Mitigation of noise pollution; Soil/ Prevention & Remediation of pollution; Waste minimisation & Disposal; Water sanitation;

Analytical, monitoring, forecasting: e.g. Lab, PLant or Remote sensing technology; Wheather forecasting; Environmental monitoring

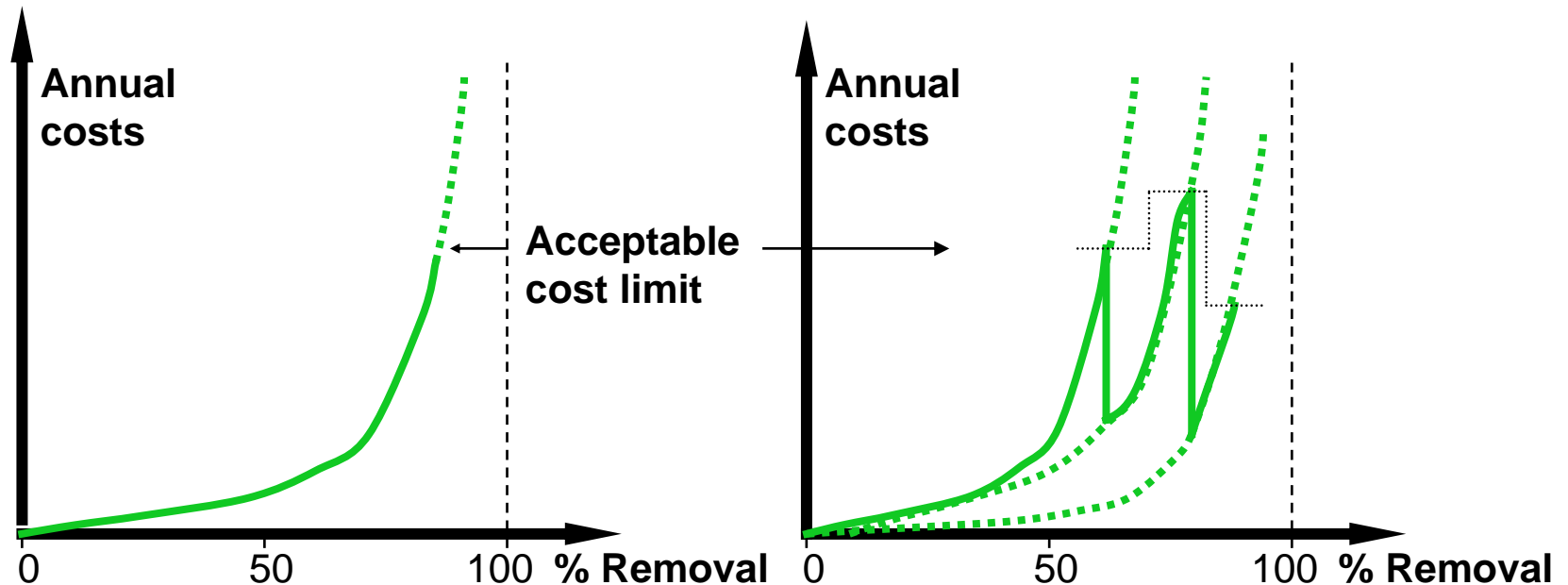
ET Case 1 – Traditional approach

- Environmental control and remediation technologies dominate
- Strategies: Compliance with regulation and standards (the permitting process)



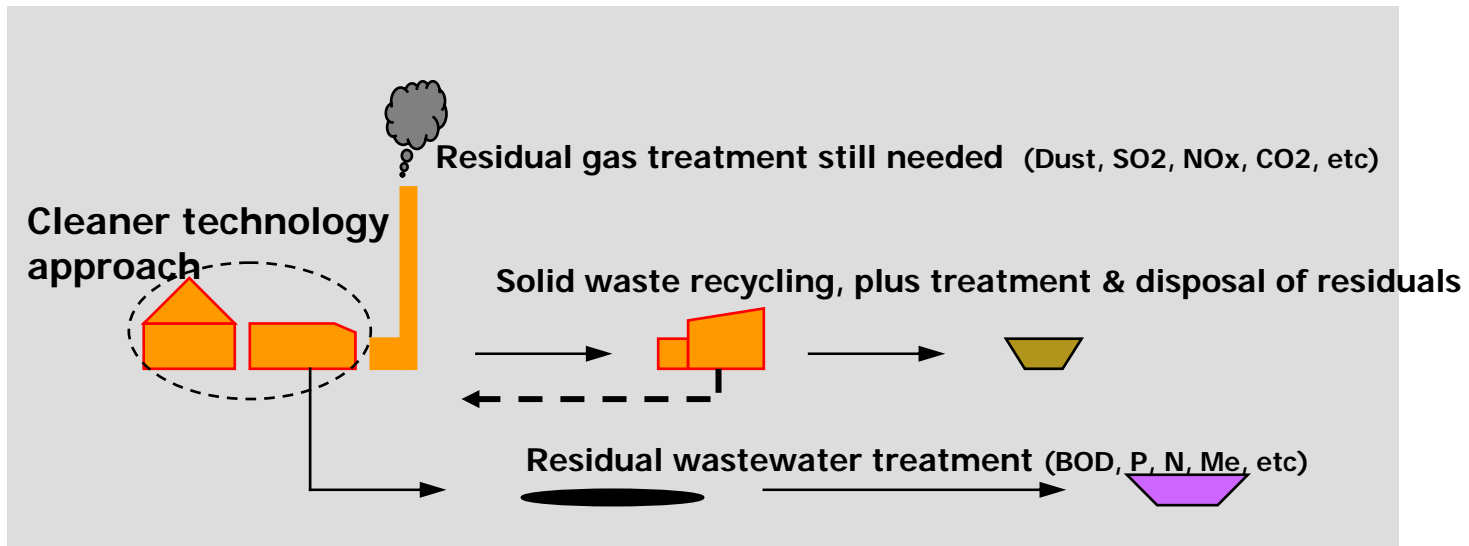
Cost or Investment?

Annual costs of eop technology (in general) increase exponentially with removal efficiency; **Higher efficiency demand** motivates the use of the next generation of environmental technology, followed finally by a generation of prevention options.



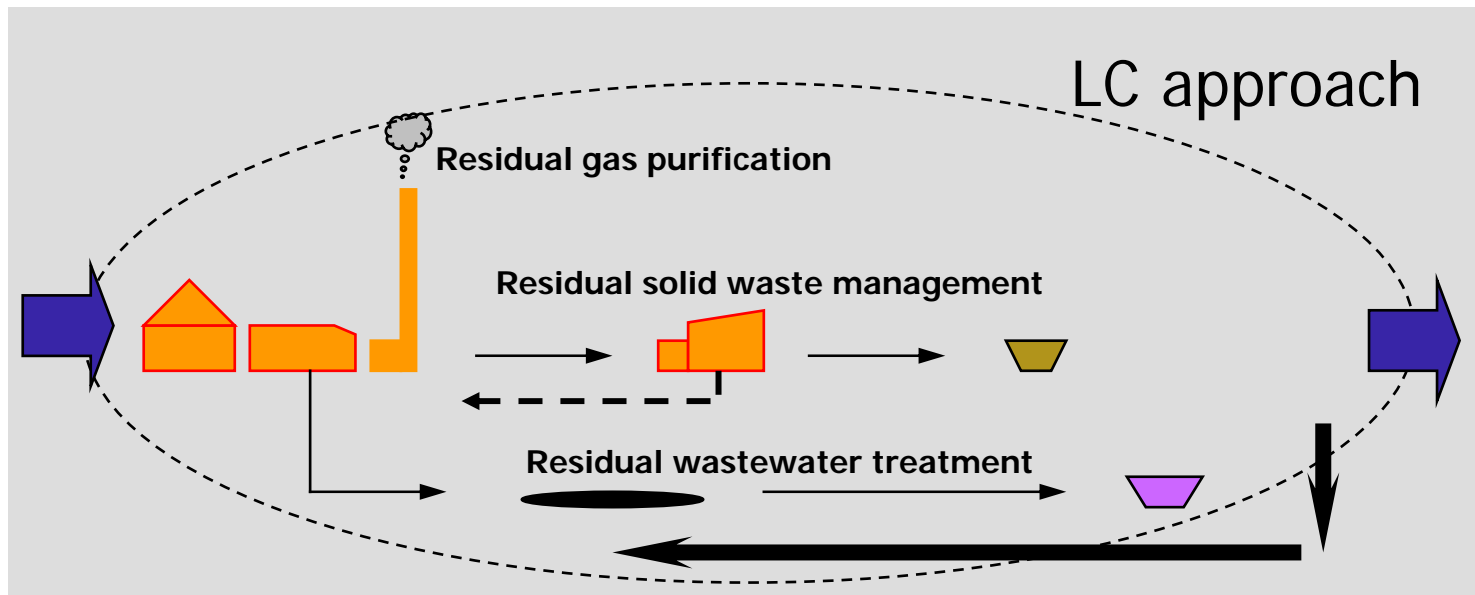
ET Case 2 – Preventive approach (production oriented)

- Focus on a cleaner production, balanced with local recycling and eop treatment of residual wastes
- Strategy: Low waste production (...seldom using LC perspective)



ET Case 3 – Lifecycle oriented preventive approach

- Prevention technologies focusing on the lifecycle qualities of products (from raw materials to end-of-life management), in balance with closed and open-loop recycling, and eop management.
- Strategy: LC perspective - Perform more sustainable production



Conclusions

- Different challenges (from legal compliance to business opportunities)
- Scoping innovation on a system and LC basis
- Include sustainable innovation in your agenda
- Contextualise solutions
- Facilitate dialogue and negotiation

Thank you!

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