Sustainable port development profitable?

Assessing the value of sustainable development in ports: a case study

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What is sustainable port development?

• Sustainable development for the Port of Amsterdam (Smart port)
  – growth without harming quality of water, soil and air
  – efficient land use
  – creating more jobs
  – more (sufficient) incomes for the port
  – citizens of Amsterdam become even more proud and appreciative of their port area.

• Question: How to develop the port based on sustainable growth?
How to develop a sustainable port development strategy?

• Sustainable port development is balancing:
  – environmental impact
  – employment / economy
  – financial revenues
  – support of / co-operation with third parties

• Socio-economic cost benefit analysis (CBA) can support decision making by:
  – making the discussion objective: overview of all arguments
  – comparing arguments on equal terms (€)
  – optimising investments (direct link with positive effects)

• Result: sustainable port development strategy based on co-operation with partners (business, environment, community)
Case study: Port of Amsterdam, Westpoort area

• Unique co-operation between Port of Amsterdam and environmental parties:
  – Milieufederatie Noord-Holland
  – Milieucentrum Amsterdam
  – Kontakt Milieubeheer Zaanstreek
  – Stichting Noordzeekanaalgebied Sterk, Schoon en Slim (initiative)
Case study: Port of Amsterdam, Westpoort area

Method: comparing two distinct growth strategies for the port

- growth in current activities (food, traditional energy) combined with new activities (bio-energy, containers, distribution)
- growth in more sustainable activities (bio-energy, hydrogen, recycling, cradle-to-cradle) & keeping strategic reserve (temporary nature development)
How did we value all effects?

**Socio-economic cost-benefit analysis**

1. Describe the expected developments for each alternative

2. Determine all (future) effects of the alternatives for Amsterdam area:
   - costs (investment, exploitation, maintenance)
   - financial benefits (leases, port dues, etc.)
   - effects on environment & safety (emissions, noise, etc.)
   - effects on port users (shippers) & economy (consumers)

3. Translate effects in value (€) using index numbers

4. Sum all effects
How did we value environmental impacts?

Example for bio-energy production:
• Costs: development & exploitation of site, quays, infrastructure

• Benefits:
  – Leases, port dues
  – Effect on CO₂ reduction (compared to traditional energy production)
  – Effects on local emissions (CO₂, SO₂, NOx, PM10, CH₄)
  – Effects on employment (jobs, etc)
  – Effect on other transport flows (congestion)

• Value of emissions (accepted standards):
  – e.g. CO₂ €20 / ton (2010) – €70 / ton (2040)
Why is CBA a good instrument for strategic choices?

• Advantages:
  – creates overview and structures arguments
  – objective weighing of effects (vs. MCA)
  – effects can be added
  – relation between effects and necessary investment is clear

• Challenges: quantify all effects, assumptions, etc.

• Effect: CBA
  – helps to translate vision into effects
  – helps objective discussion between different parties
  – helps optimising investments
Is sustainable port development economically wise?

• Both strategies: benefits for society higher than the costs

• Important positive effects on environment, especially for bio-energy and hydrogen production

• Conclusion: good potential for more sustainable activities in the Port of Amsterdam

• When the ‘market’ is ready for alternative energy the Port of Amsterdam can facilitate these activities profitably (financially & socially)

• Recommendations: Market study & knowledge development on bio-energy & hydrogen production