

# Evaluating the Cost-Effectiveness of Environmental Policies: Theoretical Aspirations and Lessons from European Practice for Global Governance

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**Eduard Interwies**

**InterSus – Sustainability Services**

**Co-authors: Benjamin Görlach (Ecologic) &  
Jodi Newcombe (URS Australia Pty Ltd)**

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# Background project

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- Carried out for the EEA by Ecologic & eftec with support from IVM
- Task: Survey of mainly ex-post cost-effectiveness analysis of EU environmental policies
  - Legal requirements in EC law
  - Guidelines and manuals for ex-post CEA
  - Examples of applied ex-post CEA
- Final reports and literature database at:  
<http://www.ecologic.de/projekte/3ea/panacea/>
- “add-on” here: relevance for global scale?

# Cost-effectiveness analysis explained

- A CEA seeks to identify the activity, process or intervention that minimizes resource use to achieve a given, desired result
- The cost-effectiveness of a policy option is calculated as annualized costs divided by a quantified measure of the physical effect.
- Interpretation of effectiveness depends on policy target - can be pressures or impacts
- Cost concepts: narrower or broader

# Cost-effectiveness analysis explained

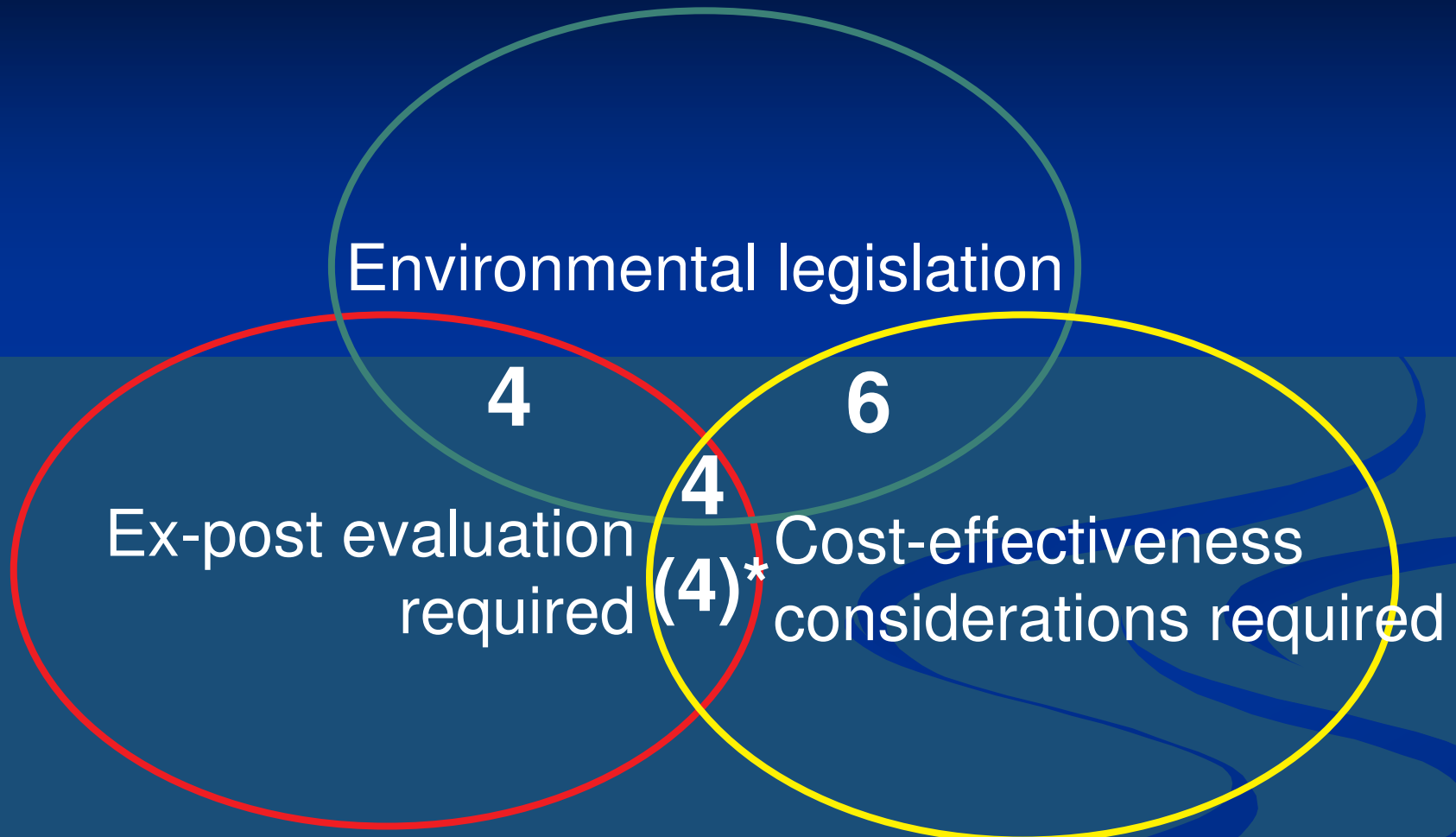
- Cost-effectiveness can be assessed both ex-ante and ex-post
- CEA is distinct from Cost-Benefit Analysis:
  - CEA = achieve a given objective at least cost
  - CEA does not ask whether objective is worth achieving / a policy is justified (as a CBA would)
- Drawback: CEA most applicable for single-dimension objectives: challenge for assessing policies
- With multiple side-effects / co-benefits / spillovers, CEA is less suited

# C-E requirements in EU legislation

Limited! 18 legislative items, 4 types of requirements:

- Environmental legislation requiring ex-post CEA (or evaluation with cost-effectiveness aspects):  
4 items (e.g. Directives on renewable energy, national emission ceilings: see paper)
- Non-environmental legislation (with environmental impact) requiring ex-post CEA:  
4 items
- Environmental legislation requiring ex-ante CEA (or evaluation with cost-effectiveness aspects):  
6 items
- Environmental legislation requiring ex-post evaluation, but not (necessarily) cost-effectiveness: 4 items

# C-E requirements in EU legislation



\*only most relevant for the environment



# Existing guidelines and manuals

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- Academic literature tends to focus on CBA: CEA is mentioned in passing, little attention
- 44 guidance documents reviewed
- Some tailored guidance on CEA for specific policies, e.g. WFD - but: all ex-ante
- Some general guidance on policy evaluation, not necessarily focused on economic tools
  - European Commission: DG Budget, DG Regions, SecGen guidance on Impact Assessment
  - UK: Green Book on appraisal & evaluation
  - NL: Wegwijzer Evaluatieonderzoek (“Guidance for ex post evaluation research”)



# Existing guidelines and manuals

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- Many useful elements in different documents, together provide good insights on ex-post CEA - but none that has it all.
  - General focus on ex-ante assessment
  - Work on ex-post evaluation does not address cost-effectiveness in detail
  - Few documents specific on environmental policy
  - Little emphasis on real-life difficulties
  - Good examples found esp. in NL, UK, [US]

# Case studies of applied ex-post CEA

- Non-exhaustive selection of (mainly) European (mainly) ex-post CEA
- 88 studies surveyed, 17 analyzed in-depth
  - e.g. biodiversity management in Scotland
  - US evidence on CFC phase-out
  - CO<sub>2</sub>-based taxes in European countries
  - IMPOL studies on Large Combustion Plant Dir., Municipal Waste Incineration Dir., EMAS
  - Dutch Manure and Fertilizer Policy

# Lessons learnt from Case Studies

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- Diversity of topics covered
- Diversity of methods and shortcuts applied:
  - Few studies have applied discounting
  - Importance & difficulty of defining a baseline
  - Sensitivity testing only in some cases
  - Marginal abatement cost taken as proxy for compliance cost
  - Effects on national economy often blended out
  - Results presented in qualitative form

# Summary: CEA in environmental policy

- Ex-post evaluation is not a new thing - but assessment of the cost-effectiveness of environmental policy is fairly novel in EU
  - Some experiences in UK, NL
  - Little on EU level so far
  - Few cases where ex-post CEA is an institutionalized part of the analysis
- Ex-post CEA traditionally applied to projects rather than policies & programmes

# Challenges and issues in ex-post CEA

- Causality between policy measures and observed effects / blend out other influences
- Data gathering - much more difficult ex-post unless monitoring existed up front
- Moving up to higher (spatial/temporal) scale of analysis: dealing with greater uncertainty
- Other issues:
  - Which cost types to consider (private / economic)
  - Effectiveness as to intermediate or final goals (pressures / impacts)

# Global governance & CEA

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- **Economic dimension of environmental policies at the global level: increasing relevance for acceptability of policies, since:**
  - conflict between economic development & cost of environmental regulations and
  - (alleged) negative impacts on economic development and competitiveness
- **Precautionary principle: stronger relevance, leading to potential policy action also where the extent and distribution of negative impacts is uncertain → economic assessments?**

# Global governance & CEA

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At the same time: potential importance of economic evaluation is much lower when assessments are conducted at more aggregated (global) level:

- institutional arrangements much weaker, thus increasing uncertainties about implementation of a possible agreement by the countries;
- (besides some OECD countries) countries around the globe do not fulfill the institutional, capacity and data/information requirements for systematic policy evaluations



# Global governance & CEA – contd.

- Lack or (or weak) institutions in international environmental governance for overseeing implementation of possible policy evaluation;
  - Spatial distribution of a policy's compliance costs & social / competitiveness impacts on countries (with different development levels): particular concern --> global-level negotiations strongly linked to national political priorities; limited space for overall economic evaluation results
- In general, lessons learned on CEA of policies from the EU can not be directly projected to global level

# Conclusions: EU/regional scale

- Ex-post CEAs differ in scope, level of detail and methodological rigor
- No single “common approach” to ex-post CEA across countries or policy issues
- Ex-post evaluation requires clear targets and good data - both difficult to find ex-post
- Guidance required for “real-life solutions”: methodological shortcuts to deal with time pressure, political desires, data gaps etc.

# Conclusions: EU/regional scale

- Link needed to the EU Commission procedure for impact assessments
- Integrating C-E assessments into the policy process (rather than up-front only?)
- Ex-ante regulations/assessments need to define issues, monitoring and reporting requirements with view to ex-post assessment
- Need to learn from ex-ante / ex-post discrepancies!

# Conclusions – global scale

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- Even if direct transferability is not given:
  - Relevance for other regions/countries
  - Insights on CEA theoretical questions based on EU experiences (e.g. which costs?), but adapted to stronger disparities at global scale (e.g. equity weighting: costs counted differently depending on income level of countries / individuals?)
  - Lessons from flexibility in how to reach a target (decentralization)? E.g. EU emissions trading scheme
  - Insights on what elements does an ex-ante evaluation need to comprise in order to enable ex-post evaluations

# Thank you for your attention!

Eduard Interwies  
InterSus – Sustainability Services  
Chodowieckistr. 2, D-10405 Berlin, Germany  
Tel: +49-30-44736342  
[interwies@intersus.eu](mailto:interwies@intersus.eu), [www.intersus.eu](http://www.intersus.eu)