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Directorate B – Environmental instruments
ENV.B.2 - Economic analyses and employment

EXPERT WORKSHOP ON VALUATION OF EXTERNALITIES FROM LANDFILL AND INCINERATION, 8 SEPTEMBER 2000

MEETING MINUTES

➤ Background

Art. 174 (3) of the EU Treaty stipulates that "in preparing its policy on the environment, the Community shall take account of [...] the potential benefits and costs of action or lack of action; [...]". On this basis, the Commission has in recent years more and more developed the tool of cost-benefit analysis to better inform decision-makers in the process of settling on new directives and regulations.

However, most studies in the field of waste have been restricted to an analysis of costs and, at best, a relatively superficial description of benefits. This is partly related to the difficulties in evaluating pollution pathways, in particular through soil and water, eventually ending up in living organisms. In other cases, we do not have the information required to define a dose-response function on specific substances or the value that society puts on the absence of specific risks or disamenities. Nevertheless, the policy maker is called to make decisions on the basis of the full range of advantages and disadvantages of a particular policy.

In this context, the European Commission has launched a study on the Economic Valuation of Environmental Externalities from Landfill Disposal and Incineration of Waste (consultant COWI). The aim of this study was to get a more complete overview of existing knowledge on those externalities for which information is relatively sparse and not readily available. This workshop served to get expert views on the information collated by COWI.

➤ Discussion of the COWI study

The applicability and the limitations of the cost-benefit methodology to evaluate waste management options

The experts agreed that cost-benefit analysis is a useful tool to bring together in a systematic way information on the advantages and disadvantages of waste management policy options. Provided that there is a clear understanding of the uncertainties involved, it can lead to more rational policy decisions. Such uncertainties are particularly pronounced for emissions from landfills and

incinerators to soil and water. They are both linked to the lack of reliable data and to methodological problems of valuation of externalities.

In particular if similar policy options are compared, these uncertainties may play a smaller role since the ranking of options remains frequently the same whether a high or a low value is chosen for a particular parameter. Economic analysis may be particularly appropriate for decisions on where to construct waste management sites. For a more global policy evaluation, such uncertainties will play a bigger role but, provided that they are well understood, a comprehensive cost-benefit analysis can assist policy decisions by explaining the implicit choices of considered options.

Detailed issues¹

- There is a **time dimension** to many of the impacts which also raise the problem of **discounting**. Many of the potential effects of landfills do not occur immediately but over a prolonged time frame. Eventually all landfills will start to leak. Although the leachate composition also changes with time, there is still a question how to value such pollution. There is an essentially ethical question on how to deal with impacts in longer time frames, how these impacts shall be reflected in discounting techniques and how the precautionary principle should be applied in this context. A number of United States studies have tried to model long term effects and could be used as a basis for further development of methodology. An additional effect may be that over a long time period the knowledge about a former landfill site may disappear while there may still be emissions, e.g. to houses built on that area.
- As the study mentions, many values will be **country, site or material specific**. Differences may occur between various sub-fractions of municipal solid waste. These variations should be well understood in more global evaluations of waste management policies.
- Many of the values identified in the study, in particularly those for emissions to water and soil are subject to **considerable uncertainties**. For leachates, there are also methods based on clean-up costs which are significantly higher than the ones identified in the study. These methods, however, do not take into account the question whether such a clean-up is actually justified by an environmental damage or not. The effects of leachate will also significantly vary according to the toxicity of landfilled waste.
- For landfills, **pathogens** might be an additional issue to consider.
- For **energy recovery**, the **alternative energy source** that is replaced by the energy recovered from incineration or landfill gas flaring is a crucial element in determining the overall valuation result. In particular, the alternative source may not be the same for electricity and heat. The choice for coal (oil for a sensitivity analysis) as made in the study may not be correct in many cases and depends on country-specific energy production patterns. Another factor which may play an

¹ This section only mentions comments in so far as they are additional to the COWI study. For a more comprehensive analysis see the study itself.

important role is the energy that may be saved through extraction and recycling of metals before or after the incineration process. Differences of thermal efficiency of various installations should be considered.

- In the case of **incineration**, the **actual emissions** may in fact be substantially lower than the emission limit values fixed in legislation (as there will be cases where these limits will be exceeded).
- The knowledge on **disamenity** effects in Europe is still relatively limited and further research is needed. In particular, there is a question whether the values for landfills can be transferred to incinerators and whether US and UK values are valid in other countries. Disamenity effects will also vary over time (construction, use, aftercare of an installation). Transport should be considered as a variable element of landfill and incinerator disamenities.
- There may be a difference in air pollution impacts from incinerators and landfill gas flaring due to different **stack heights** resulting in different dispersion patterns of pollutants.
- Damages to **water** will vary according to the **prospective use** of the water (drinking water, angling, recreation etc.)
- For climate change effects, the study has not included effects from **biogenic CO₂** as this is neutral on the long-term climate balance. There may however be arguments to consider carbon sequestration in landfills and biological-mechanical treatment.
- Depending on the context, it might be necessary to distinguish between **marginal or average effects**.
- **Averting costs** were presented as a method to evaluate whether a particular policy option is expensive or not compared to alternative options to achieve the same goal (e.g. greenhouse gas abatement).