

AIR & THE ECONOMY

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Air pollution has a high human, environmental and economic cost. It is estimated that in 2010 the cost of air pollution to health alone amounted to between €330 and €940 billion in the EU. Therefore action is needed to abate the effects of air pollution. The cost of abatement can be measured against the overall health, welfare, ecological, and economic benefits of air pollution control.

Cost benefit analyses

Cost-benefit analyses (CBA) have been carried out to inform the revision of the National Emissions Ceilings (NEC) Directive. The studies investigated the health benefits from reduced exposure to particulate matter (PM_{2.5}) and ground-level ozone (O₃), and compared these with the estimated costs for additional pollution control measures [1,2]. The analysis looks into three scenarios:

Scenario A

Baseline: levels of emissions in 2025 and 2030, assuming full implementation of already adopted EU and national legislation and before any revision of the NEC Directive [3, 4].

Scenario B

Commission proposal: provides the basis for the revised NEC Directive as proposed by the European Commission in December 2013.

Scenario C

Maximum technically feasible reductions (MTFR): gradual phase-in of currently available emission abatement techniques.

There is a fourth plausible scenario, though it wasn't considered by the Commission.

Scenario D

Maximum Possible Reductions: this scenario would go beyond MTFR and include structural policies, such as increased cycling, public transport or energy efficiency. This would help achieve the World Health Organisation's recommended levels.

FACTS AND FIGURES

Benefits and costs of stricter national emission ceilings



REDUCE ANNUAL HEALTH DAMAGE

Moving from scenario A to scenario B would reduce annual health damage costs in 2030 by €40-140 billion in the EU, while scenario C would provide health benefits valued at €58-207 billion.



ANNUAL HEALTH IMPROVEMENTS

Annual health improvements of moving from scenario A to scenario B include avoiding 59,000 premature deaths, 20,000 respiratory hospital admissions, 44,000 cases of chronic bronchitis, and 60 million restricted activity days.



BENEFITS COSTS

The cost of moving from scenario A to scenario B was estimated at €3.3 billion per year in 2030, while scenario C was estimated to cost €50 billion/yr. If expressed as a percentage of GDP in 2030, the cost for scenario B is equivalent to 0.02%, and for scenario C 0.32% as an average for the whole EU.



HEALTH BENEFITS ALWAYS EXCEED THE COSTS

- In scenario B health benefits exceed costs by a factor of 12 (lowest health valuation) and 42 (highest health valuation).
- In scenario C health benefits are up to four times higher than the costs.

It should be noted that these monetised benefits cover only human health impacts - they do not include the value of reduced damage to ecosystems, agricultural crops, materials or the cultural heritage. Nor do they include for example less chronic effects of ozone on health.



COSTS ARE OVERESTIMATED

Current estimates of the cost of implementing EU air quality policies are calculated using the GAINS computer model and are based primarily on technical “end-of-pipe” abatement measures [5]. This means that a number of structural measures and behavioural changes are not included, in spite of the fact that some of these measures can reduce emissions at zero or low net cost, and many of them will also reduce emissions of greenhouse gases. Examples of such measures include those aimed at improving energy and transport efficiency, fuel switching, increased use of renewable sources of energy and greening of the agricultural policy.

In addition, the cost estimates are based on existing available technologies and current cost data, which mean that innovation and improvement in abatement techniques that can be expected to take place up to 2030 are not accounted for.

BENEFITS ARE UNDERESTIMATED

The CBAs used so far to evaluate EU air pollution control policies clearly underestimate the benefits of air pollution control. This is because the monetised benefits generally do not include reduced damage to ecosystems and cultural heritage. Nor do they include the full range of health benefits. Some of them include reduced damage to agricultural crops and modern materials, but these estimates are limited by the shortage of data on, for example, stock-at-risk, exposure-response functions and valuation [5].



IT PAYS TO CUT AIR POLLUTION IN EUROPE

Despite the fact that current CBAs systematically overestimate the costs and underestimate the benefits of air pollution control, virtually all such analyses carried out at EU or European level to date show that monetised benefits far exceed

costs. Moreover, CBA studies on air pollution prepared for the European Commission have repeatedly shown that benefits exceed costs even when going for the highest level of ambition of technical emission control (scenario C).



AIR POLLUTION CONTROL WORKS

A retrospective study has shown that the economic benefits of air pollution control between 1970 and 1990 in the United States were 42 times greater than its costs [6]. More recently, the U.S. Environmental Protection Agency estimated that the annual benefits of reducing air pollution under the 1990 Clean Air Act amendments will reach approximately \$2,000 billion in 2020 and save 230,000 people from early death in that year alone [7]. The costs for that same year were estimated to amount to \$65 billion. In other words, the benefits exceed the costs by more than 30 times.



RECOMMENDATIONS

- The overall level of ambition for the EU’s air pollution policy proposals must be guided by the objective of the EU’s 6th and 7th Environmental Action Programmes, i.e. to achieve “levels of air quality that do not give rise to significant negative impacts on and risks to human health and the environment.” Because current CBAs systematically overestimate the costs and underestimate the benefits, they should be used to provide additional information, not for determining levels of ambition.
- CBAs should include calculations of the cumulative health benefits that show how benefits accumulate over time, and how much higher the benefits will be if action to control emissions is taken earlier rather than later. This would provide important additional information to policy-makers when deciding on target years for e.g. the revised NEC Directive and for additional source-sector measures.
- While investigating the “marginal cost versus marginal benefits” of air pollution abatement may provide some additional information for decision-makers, this approach is clearly not acceptable for establishing suitable levels of ambition. The reason being that it focuses solely on those air pollution impacts that can currently be monetised and totally disregards the damage air pollution causes to natural ecosystems, crops, materials and cultural monuments.

More information

- EU air pollution policy review 2011-2013:
http://ec.europa.eu/environment/air/review_air_policy.htm
- US economic analyses of the Clean Air Act:
<http://www.epa.gov/air/sect812/economy.html>

For footnotes, please refer to separate reference sheet and to the EEB website.