

## **Informal document on costs of inaction on air pollution**

### **Prepared by the Task Force on Integrated Assessment Modelling**

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This short informal document on the costs of inaction on air pollution is prepared by the Task Force on Integrated Assessment Modelling (TFIAM) and responds to item 2.1.7 of the 2020–2021 workplan for the implementation of the Convention (ECE/EB.AIR/144/Add.2). The informal document is a preamble to a coming report with the purpose to encourage future ratification and implementation of Air Convention protocols, primarily the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone. The preparation of this guidance document was made available through the funding from the Norwegian Ministry of Climate and Environment (contract nr. 12/3850-92).

A presentation of this document and supporting work can be given to the 58<sup>th</sup> Working Group on Strategies and Review for consideration. Due to COVID-related delays it is expected that the final document can be ready for discussion at the 59<sup>th</sup> Working Group on Strategies and Review, and a revised version could be adopted at the 41<sup>st</sup> session of the Executive Body.

### **Introduction**

Since in the 1960-ies, economists have developed methods to monetize adverse ecosystem and human health effects caused by poor air quality. Although early, and partly biased, attempts showed that costs of reducing emissions far exceeded the benefits, it is by now well established that the situation is the opposite in almost all cases. Failure to act on improving air quality is thereby imposing an avoidable cost on society.

The damage costs for society of poor air quality comes in two main types: Market costs and non-market costs. Poor air quality can cause production losses by reducing the number of days we can go to work, financial resources available for investments and the harvest size of forests, crops and vegetables. Mitigating the negative effects of poor air quality also consumes societal resources, such as health care sector expenses. Finally, non-market costs occur since poor air quality reduce our quality of life, both through sickness, preterm death and poorer environmental quality.

In preparing this informal document and the coming report, the best available knowledge on damage costs of air pollution has been reviewed and synthesized. There are by now well-established estimates of damage costs of air pollution and costs of inaction. There are also estimates on damage costs per pollutant and per sector. Numerical values vary, but to the best of our understanding the variation origins mostly from differences in methods. Below we present key messages and future priorities.

### **Key messages**

**1. In more than half of the UNECE countries (30 of 56) the current monetized damage to health and ecosystems due to ambient air pollution corresponds to more than 5% of GDP. In 10 countries, the damage costs correspond to more than 10% of GDP.**

The largest part of the damage estimates consists of reduced life expectancy, followed by morbidity costs (e.g. hospital admittance, sickness leave, medicines costs) and damage to ecosystems. The monetized damage is – as a percentage of GDP - in the eastern part of the UNECE region significantly higher than in the western part.

**2. Benefits of action: due to existing policies the monetized damage up to 2030 is expected to be reduced by ~20%**

The implementation of national emission reduction obligations and current emission limit values for vehicles, installations, NRMM and products will reduce damage costs. The expected damage reduction will (as a percentage of GDP) be higher in the western part of the UNECE-region due to implementation of stricter legislation.

**3. Costs of inaction: up to 12% of the monetized damage in the EMEP region in 2030 could be avoided by additional policy actions**

Applying technically feasible measures (not entailing high costs) could reduce the monetized damage by 4%. If applying all measures regardless of costs (MTFR) – 12%. Especially in the eastern part of the UNECE-region there is a large potential to reduce the costs of inaction. About 10% of these costs of inaction consist of labor productivity losses.

**4. The abatement costs (the costs of taking action) are significantly lower than the costs of inaction**

The benefits of actively reducing emissions are generally higher than costs. As an example, abatement costs of available additional actions in EU-27 are more than 20 times lower than the benefits from avoided damage. In most countries the costs of policy measures are even lower than just the labor productivity gains.

**5. The ‘damage cost approach’ is a useful tool to assess the external costs new infrastructure or installations, but requires further development**

To support decisions on new projects, permits or legislation, several countries apply damage costs per unit of emission, to quickly scan the potential additional damage to health and ecosystems from those activities and to decide if additional air pollution measures are required and proportional. Often these assessment tools only look at local or national damage, while transboundary damage is omitted. A comprehensive assessment would require including all external effects.

## **Future priorities**

Since monetization of ecosystem and human health effects provide a unique opportunity to facilitate communication between environmental and financial policy makers it is useful and important to increase utilization of estimated damage costs of poor air quality.

It is however important to continue developing methods and expand on existing results. As examples, most estimates are made for western Europe and North America, whilst the largest costs of inaction are in Eastern Europe. Also, several known effects of poor air quality have yet to be monetized: biodiversity damages, stroke, eutrophication are few examples. It is also important to develop methods so that economic valuations of climate change are more readily comparable with economic valuations of air pollution. This is

needed so that one can add the climate change dimension of air pollution when estimating costs of inaction and benefits of action.