

# Establishing Air Quality Limit Values

## *A key element of the CAFE programme*

As part of the Commission's Clean Air For Europe programme (CAFE), the World Health Organization's (WHO) European Centre for Environment and Health has been contracted to update its guidance with respect to the health effects of fine particulates and ozone. These pollutants are foreseen as the main drivers for any further measures resulting from the CAFE programme. In the past, WHO guidance has provided important input to the process of establishing Air Quality Limit Values (AQLVs) as set forth in the various EU Air Quality Daughter Directives.

Along with the critical loads/levels established within the UN-ECE process, compliance with these AQLVs has been the policy objective of most air related regulative initiatives in the EU and wider Europe over the past decade e.g. the European Auto/Oil Programmes, the National Emission Ceilings Directive and the Gothenburg Protocol. It is clear that the establishment of AQLVs has a direct consequence on policy and the practicality/economic consequences of delivering that policy.

In this article we briefly explore the importance of the AQLV setting process within the context of the ongoing CAFE programme. In particular, we examine how it fits within the Integrated Assessment Modelling (IAM) framework that is designed to underpin the programme.

### **Risk assessment and risk management**

The WHO, in publishing its guidance, recognises that risk assessment is, by its very nature, 'single issue' focused, therefore a subsequent and separate 'risk management' process is required to account for the other important factors in our 'multi-issue' world<sup>1</sup>. Here is a quote from the preface to their most recent published guidelines:

<sup>1</sup> *Although reference is made to various additional factors to be accounted for in the setting of Air Quality Limit Values in the EU Air Quality Framework Directive, the WHO provides much more comprehensive guidance by devoting a complete chapter to the subject.*

*'It should be emphasised, however, that the guidelines are health-based or based on environmental effects, and are not standards per se. In setting legally binding standards, considerations such as prevailing exposure levels, technical feasibility, source control measures, abatement strategies, and social, economic and cultural conditions should be taken into account.'*<sup>2</sup>

It is vital that we understand the importance of what the WHO are saying here. Their guidance is based on a 'risk assessment' of a given pollutant. As such it provides important data on the relationship between exposure level and risk. However, in taking these data forward to the establishment of binding limit values many other practical and societal factors need to be accounted for. It is interesting to note that among these the WHO themselves recognise the importance of economic factors.

The elimination or marginalisation of such economic considerations is perceived within some stakeholder communities as the 'environmental high ground' but does this stand up to close examination? In light of the many problems facing society, how is the legislator to fulfil his responsibility to ensure that societal monies are spent in a way that maximises overall health/environmental benefit to society?

One response to this concern has been the growing use of studies that attempt to place a monetary valuation on the benefits. Here, if the valuation of benefits equals or exceeds the cost of delivering them, 'it must be justified'. Beside the enormous uncertainties attached to it, this process has, in the past, largely failed to develop the 'marginal cost' vs. 'marginal benefit' relationship vital to the risk management process, i.e. what is the cost/benefit ratio for each increment in benefit?

<sup>2</sup> *Preface to Air Quality Guidelines for Europe, Second Edition, WHO Regional Publications, European Series, No. 91*

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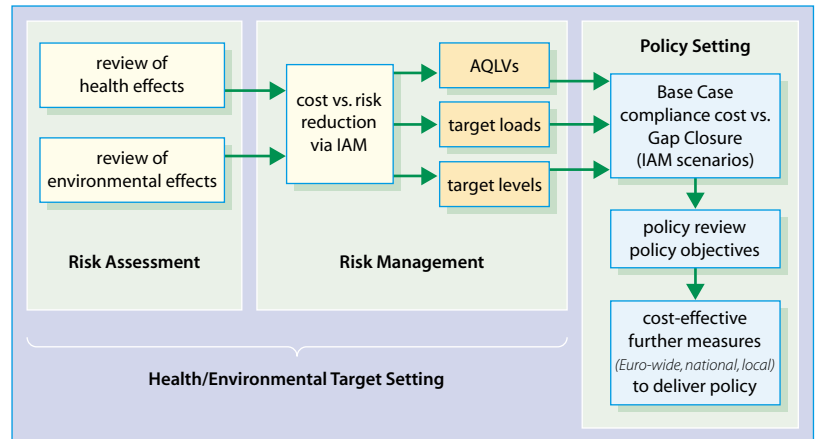
Furthermore, the process is 'single issue' focused and therefore fails to address the key question of whether a much greater benefit would derive from spending this money on a different problem. The availability of Integrated Assessment modelling tools within the CAFE programme offers a much more robust alternative.

### Integrated assessment modelling in the risk management process

To be in a position to judge wisely whether or not to act or at what point it would be better to stop spending on one issue and address another, it is vital that the relationship between cost and the reduction in the level of risk is properly understood. Figure 1 provides an Industry perspective on how the Integrated Assessment Modelling capabilities available within the CAFE process could be used to provide such input to the risk management process. Clearly, in setting an AQLV or a Target Load/Level, the legislator needs to know at what point costs climb steeply for little further reduction in 'risk'. This is especially important for pollutants for which the WHO have not established a threshold of effect. Importantly, in this process it is not necessary to enter into the very uncertain waters of seeking to place a monetary value on the reduction in risk.

### The role of established AQLVs in subsequent attainment policy

It is important to recognise that AQLVs, when they have been established via a risk management process, express in concrete terms the level to which the legislator believes a given risk should be controlled. In other words, a policy that delivers concentrations below the



AQLVs is not appropriate since it infringes the risk management judgements that underpin it, i.e. when to stop spending on a given risk. This is why the policy setting step shown in Figure 1 is separate from the risk management step and is designed to deliver (or make substantial progress in delivering) the AQLVs or Critical Loads/Levels in a cost-effective manner.

### Conclusion

In line with the WHO, CONCAWE believes that establishing revised AQLVs (or Critical Loads/Levels) within the CAFE programme needs to include a separate 'Risk Management' step based on the risk assessment guidance from the WHO. This step can be facilitated by the use of the Integrated Assessment Modelling capabilities available within the programme to provide essential data on the relationship between cost and risk reduction. However, once revised AQLVs or Critical Loads/Levels have been established, the achievement of these targets should be the basis for policy.

**Figure 1**  
*Key stages in CAFE process*