

# Preface

The book reports in a handy but systematic way an extended survey across many European countries on the research activities and the current air quality plans at regional and local level. This allowed us to develop an Integrated Assessment Modelling (IAM) framework, to catalogue current approaches and to guide their implementation and evolution.

Integrated Assessment (IA) air pollution tools bring together data on pollutant sources (emission inventories), their contribution to atmospheric concentrations and human exposure, with information on emission reduction measures and their respective implementation costs. At the continental scale, such tools have been developed in the recent years to tackle these issues in a structured way. At the local/urban scale, however, only few IA systems have been developed and they have generally been used for non-reactive species. Thus, their application to suggest optimal policies to reduce secondary pollutants (i.e. those created in the atmosphere through chemical reactions of primary pollutants and currently those more affecting the air quality in European cities) has still relevant limitations.

The survey was performed within the APPRAISAL project ([www.appraisal-fp7.eu](http://www.appraisal-fp7.eu)) one of the projects of the 7th EU Framework Programme that analysed the situation and perspective of air pollution management in Europe. In particular, APPRAISAL's survey was aimed at understanding the degree at which the Integrated Assessment approach to air quality problems is adopted by regional authorities, on the one side, and researchers, on the other. More precisely, it involved the following:

- a review of the modelling methodologies in place across EU member states to identify sources and to assess the effectiveness of emission reduction measures at all scales (including downscaling of impacts to city level which are a main concern with respect to compliance with the requested limit values),
- a review of the methodologies to assess the effects of local and regional emission abatement measures on human health,
- a review of monitoring data and complementary methodologies, e.g. source apportionment, to identify their potential synergies in a general integrated assessment frame,

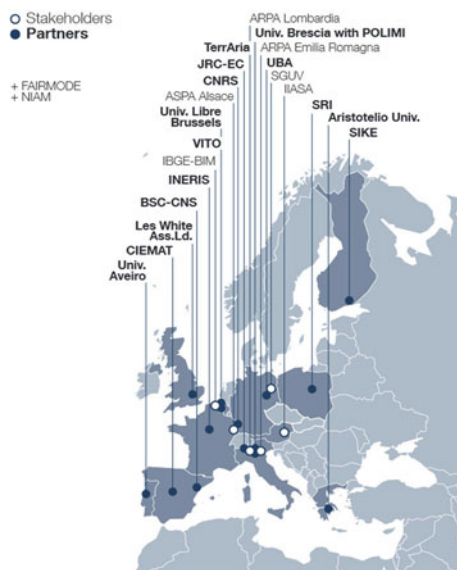
- a review of the techniques used to evaluate the robustness and uncertainties of the assessment,
- an analysis of the emission abatement policies and measures planned at regional and local scales,
- their synergies/trade-offs with the measures implemented at the national scales (e.g. national emissions ceilings or national climate change programmes).

These tasks have been performed by defining a common and structured format, i.e. by designing a database and populate it, clearly specifying the meaning of all keywords in order to guarantee a uniform understanding across all countries and applications. A collaborative multiple user tool has been implemented to allow all involved agencies to fill the questionnaire through a Web application.

The project has been the result of the cooperation of 16 research groups in nine different European countries (see Figure) with the contribution of six stakeholders (local environmental authorities of different EU regions), and with the collaboration of FAIRMODE (the Forum for air quality modelling in Europe, <http://fairmode.jrc.ec.europa.eu/>) and NIAM (Network for Integrated Assessment Modelling, <http://www.niam.scarp.se/>) initiatives.

The project lasted from 2011 to 2014 and was coordinated by the University of Brescia, Italy.

The material produced by all the project activities is available online on the project website. The content of this book is largely drawn from the project deliverables.



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