Earth, Environmental and Life Sciences
Princetonlaan 6
3584 CB Utrecht
Postbus 80015
3508 TA Utrecht

www.tno.nl

T +31 88 866 42 56
F +31 88 866 44 75
infodesk@tno.nl

TNO report

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Survey of views of stakeholders, experts and citizens on the review of the EU Air Policy Part I: Main results

Date	29 May 2012
Author(s)	Dick van den Hout (TNO) Marita Voogt (TNO) Lorenz Moosmann (Umweltbundesamt Austria) Christian Nagl (Umweltbundesamt Austria) Wolfgang Spangl (Umweltbundesamt Austria)
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Client	European Commission Unit C.3 Industrial Emissions Air Quality & Noise Attn. Mr. Scott Brockett Avenue de Beaulieu 5 B-1160 BRUSSELS Belgium
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Executive Summary

As part of the current review of the EU's air policies, the European Commission conducted three surveys in 2011 focusing on the air quality directives *2008/50/EC on ambient air quality and cleaner air for Europe* (the 'Air Quality Directive') and *2004/107/EC on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air* (the 'Fourth Daughter Directive'). In the survey three parallel questionnaires were used, aimed respectively at the European stakeholders represented in the EU Stakeholder Expert Group on the Air Review (SEG), at air quality experts and practitioners, and at citizens interested in air quality.

The SEG is made up of the EU Member States, business associations, environmental NGOs and other stakeholders; 40 of its 75 members responded to the questionnaire. The questionnaire for experts and practitioners received 250 replies. The questionnaire for citizens was filled in by 599 respondents.

This report summarises the views expressed by the three target groups of the survey.

⇒ *It should be noted that the statements given below represent comments expressed by the respondents and do not reflect views of the authors of this report.*

I Views of members of the EU Stakeholder Expert Group on the Air Policy Review

I.i Views of the Stakeholder Expert Group as a whole

Stakeholders represented in the SEG provided a large variety of views, ideas and suggestions in their responses. The questionnaire consisted of open questions, inviting the respondents to express their views in their own words. Consequently the views could not simply be "counted" as for yes/no or multiple choice questions. The various comments brought forward by the respondents were aggregated to a set of issues. These issues are described below in an order that indicates the prominence of an issue, which was ranked according to the number of respondents contributing with one or more comments to it. It should be noted that only few issues were mentioned by a majority of stakeholders, and even then there was usually substantial variety in the particular aspect of the issue mentioned.

⇒ *In the summary of issues below, the text in bold indicates the issue; the clarification text in regular print is a collation of the individual views that contributed to the issue and should not be read as the consensus view.*

A prominent theme in the responses is the importance of the **coherence of the air quality directives with related policies and legislation, particularly between air quality standards and emission reductions under EU legislation**. The current problems in meeting the limit values for NO_2 and PM are, to a large degree, ascribed to the fact that emissions decreased less than was expected from the introduction of new EURO vehicle emission standards for road traffic and the national emission ceilings.

Stakeholders state that it is important to take uncertainties in the actual delivery of forthcoming emission measures into account when calculating the levels that may be attained in the future. The new EURO standards should better reflect the real-world emissions of road traffic. Several stakeholders propose that the Commission should in the evaluation of non-compliance with air quality standards **take into account that national, regional and local authorities have little control of Europe-wide emission measures and transboundary air pollution**. Flexibility arrangements, such as time extensions, are therefore regarded as appropriate, also for the years to come.

Stakeholders mention the **identification of the most harmful fractions of particulate matter** as one of the most important issues for the review. Current standards pertain to PM_{10} and $PM_{2.5}$ but it is not certain that measures to reduce the levels of these PM fractions in ambient air are the best way of reducing the health risks of particulate matter because measures may affect different PM fractions in different ways. Fractions mentioned as being (potentially) more health relevant are black carbon/elemental carbon (BC/EC) and ultrafine particles (UFP). Several stakeholders recommend the introduction of mandatory measurements and additional research into these fractions in anticipation of possible standards in the future, some others propose considering these fractions as alternatives for PM_{10} and $PM_{2.5}$.

Many suggestions are given on **improving and harmonising air quality assessment**. More harmonisation of the assessment methods in Member States is needed to create representative and comparable information for the whole of Europe – to avoid, for example, that exceedance at hotspots and ensuing abatement action in one Member State does not go unnoticed in another Member State. Respondents propose a **more prominent role for modelling**. Model quality can be improved and the current provisions for modelling can be made more specific. Some stakeholders, however, propose keeping modelling non-mandatory. Improvements in station density criteria and station siting requirements are proposed. Shortcomings of the reference method for PM_{10} and $PM_{2.5}$ are mentioned (no near-real time results, expensive). Some respondents would welcome the use of satellite data in future but for others the low accuracy and resolution are limiting factors for application of such data. Harmonisation with EMEP is recommended, particularly regarding measurements of PM fractions. Many suggestions are also given for **improving the quality of air quality plans in Member States**. More exchange of best practice in assessment, management and better enforcement is recommended.

There are **different views regarding the overall ambition level** to be aimed for in the revision of the directives. Some stakeholders prioritise promoting a more level playing field by harmonising the implementation of the directives in Member States and by promoting international regulations. Also greater cost-efficiency of measures and an appropriate balancing of burdens between economic sectors are deemed important by such stakeholders. Other stakeholders call for a higher level of ambition regarding health protection and stricter levels of the standards (some suggest going down to the level of the WHO guidelines) or making air quality standards more binding than they currently are.

Stakeholders provide many ideas for conducting a **thorough review process**. It should be based on up-to-date scientific information, particularly regarding the health impact of particulate matter. More realistic scenarios should be developed to investigate the attainability of air quality standards, and the uncertainties associated with the trend of real world emissions under EU emission legislation should be quantified. Stakeholder involvement in the review is important in order to judge the feasibility of policy options and many stakeholders intend to collaborate actively in the process.

Comments are given on the importance of **public information and the engagement of stakeholders and citizens** in policy development, in national and local decisions and also in the current Air Policy Review. The current requirements on public information can be extended, *e.g.* to include information on mitigation actions and sources. It could be made mandatory to inform the public immediately of limit value exceedances and action planning. Further guidance and a greater exchange of best practice is recommended. It is felt that the complexity of the set of PM standards makes communication difficult. There is considerable support for a common air quality index with simple codes for characterising overall air quality - but some respondents oppose this.

Synergies and trade-offs, particularly with climate change policy are another theme in the comments, particularly in relation to climate change policies. Air quality and climate change measures are in many respects synergetic; examples are the reduction of emissions of air pollutants by energy saving and the promotion of solar, wind, water and geothermal energy generation. Reductions of black carbon and ozone not only improve air quality but also reduce climate change. A balanced approach is needed to possible trade-offs (antagonisms) and many examples relating to climate change are given: increasing use of biomass for heat and power production, carbon capture and storage and promotion of diesel engines may lead to higher emissions of particulate matter and/or NOx; installing end-of-pipe reduction technology for improving air quality requires additional energy; mitigation of SO_2 emission reduces levels of cooling aerosol.

Some stakeholders recommend considering **further air quality objectives**, for ammonia, hydrogen sulphide, formaldehyde, odour, mercury. Dibenzopyrenes could be added as PAH markers. Standards for deposition (heavy metals) could be considered. It is also suggested that the review considers the effectiveness of the NO_2 standards for health protection.

Several stakeholders recommend considering possibilities for **simplifying the set of air quality standards**, particularly for particulate matter. A single standard per pollutant is proposed. Standards that are largely covered by related standards or standards that are met virtually everywhere could be withdrawn.

Several Member States favour **reducing the burden of implementation** by simplifying air quality assessment and reporting procedures (*e.g.* requiring only data needed for compliance checking). Obligations related to standards that are largely met could be reduced.

Some stakeholders suggest relating standards and the evaluation of exceedances more strongly to **exposure**. The concept of the Average Exposure Indicator is regarded as an important step in this direction.

Several stakeholders recommend **regulating further sources that are not yet well covered** by current air quality legislation, particularly agriculture (especially regarding ammonia emissions), small scale biomass burning, non-road mobile machinery and shipping.

There are divided views on **time extensions and other derogations**. Several stakeholders regard it highly important to keep this flexibility for locations where (possibly stricter) limit values cannot be met; others feel that flexibility is contrary to the Sixth Environmental Action Plan.

Several stakeholders propose going to 3-year standards to address exceedance of standards in **years with unfavourable meteorology** while others suggest taking extreme meteorology into account in the evaluation of exceedance.

Stakeholders suggest **merging the Fourth Daughter Directive with the Air Quality Directive**.

Regarding a question on **research relevant for the review**, more comments are given on research needs than on research results that can be used in the current review. Progress in air quality modelling has made it more feasible to enlarge the role for modelling in assessment and/or planning. It is deemed essential to use up-to-date data in the review – particularly regarding the health risks of pollutants. There are comments on the need for new techniques, *e.g.* relating to emission reduction and for better metrics for air quality objectives.

In response to a question on the **stakeholder's role in the review process**, many express their wish to collaborate with the Commission by providing experts, expertise and research results; some offer specific contributions such as holding a workshop or drafting an amendment proposal. In order to involve the stakeholders represented by the SEG members, high transparency and timely provision of information is requested.

I.ii Views of stakeholder subgroups

The forty responding SEG members provided a great variety of comments. To show how the views relate to the background of the stakeholders, the SEG has been split into four subgroups:

–Member States (27 were invited, of which 13 responded),
–Business Associations (19 were invited, of which 13 responded),
–Environmental NGOs (6 were invited, of which 5 responded),
–Other stakeholders[1] (23 were invited, of which 9 responded).

[1] Third countries, associations of regional/local administrations, various international organisations

Priorities of Member States

For Member States *solutions for exceedances that are beyond local control* and the *consistency of air quality standards with real world emission reductions under EU legislation* are prominent issues. A *thorough air policy review* is recommended – with attention to *black carbon/elemental carbon and ultrafine particles*. Some Member States suggest that *reducing the implementation burden*, *simplifying the air quality standards* and giving a *greater role to modelling* are major issues. The recommendations on the *ambition level* range widely, from tightening to relaxing air quality standards; some emphasise the importance of reducing the health impact of air pollution, others prioritise reducing the burden of air quality measures to society. A *common air quality index* receives a great deal of support, although some oppose this idea. A majority of the responding Member States propose addressing the problem of *exceedance in unfavourable meteorological years* by going to a three-year standard or introducing a derogation for extreme weather. There is considerable interest in exploring better ways of relating standards to the *exposure* of the population.

Priorities of Business Associations

Business Associations urge *caution* when considering more ambitious targets and suggest that a better *balance is made between air pollution mitigation, other societal needs, and negative effects*. The Commission should promote a level playing field by further *harmonisation of the implementation* of directives and a *cautious stance* in international negotiations. A *thorough well-informed review* is needed, based on up-to-date information, and with due attention for the *harmfulness of PM fractions*. *Consistency of the air pollution directives with legislation in other policy areas* is very important.

Priorities of Environmental NGOs

For NGOs a *high ambition level* is clearly of crucial importance. *Standards* should be set at WHO guideline levels and where possible made more binding. Standards for other harmful PM fractions should be considered. Coherence between air quality standards is to be achieved by *more stringent emission legislation* and by also regulating the emissions of *agriculture* (ammonia), *shipping*, *and non-road mobile machinery*. Due attention needs to be given to *synergies and trade-offs*, both in development and implementation of air quality legislation. *Strict and harmonised implementation* of the directives, especially regarding *air quality plans* and *public information and engagement*, must be ensured.

Priorities of Other Stakeholders

Other Stakeholders stress the importance of maintaining *consistency between EU legislation on air quality and legislation in other policy areas,* particularly local authorities also comment on the need for solutions for *situations with exceedances beyond control*. Most respondents from this diverse subgroup call for a *high ambition level* in the protection of health and environment. It is recommended that attention be given to *harmful PM fractions* in the review. *Trade-offs and synergies* with climate change policies are also important.

II Views of experts and practitioners

For experts and practitioners a questionnaire was available for filling in online. 250 replies were submitted. Of the 235 respondents who indicated their affiliation, 88 came from governmental authorities, 65 from business, 33 from NGOs and 29 from research bodies. Two-third (159) responded on behalf of their organisation, the others replied as individuals. Experts and practitioners provided a large variety of views, ideas and suggestions in their responses.

The issues raised by experts and practitioners are very much in line with those raised by the EU Stakeholder Expert Group:

- **The consistency of the Air Quality Directive with related policies and legislation,** with respect to timing and effectiveness, should be enhanced – particularly with EU emission emissions reduction legislation (which is felt to be under-delivering) and climate change policy.
- **More harmful PM fractions** should be considered in the review process. The fractions mentioned include black carbon/elemental carbon, ultrafine particles (UFP) and PM_1.
- **Consistent implementation throughout the EU**, including an improved harmonisation of air quality assessment methodology and enforcement based on effective sanctions, is important as it will help establish a more level playing field between Member States.
- Most respondents regard the EU air quality policies as **(very) ambitious**, and feel that the main **issues are reasonably or well addressed**. In the review process, **cost-effectiveness** of measures in relation to attainability and provisions for **flexibility** in relation to exceedances that are beyond the control of the responsible authorities (such as adverse weather conditions) should be taken into account.
- **Public acceptance and consensus** is needed for successful policies for air quality. Therefore, it is suggested (mainly by NGOs) that people need to be better informed about health effects and information should be readily available (*e.g.* immediate information of limit value exceedances) and understandable to the public.

In addition to the above mentioned issues, responses to the questionnaires provide the following views:

- The majority of the respondents feel that the **political priority** of air quality is low. This is seen as one of the main reasons for failures to meet the limit and target values.
- The approach of **reducing the exposure** of the general population that has been introduced for $PM_{2.5}$ is judged to be important or very important by 70% of the respondents. Setting limit values for urban background levels and binding targets for population exposure are seen as the most effective ways of strengthening the approach.
- 61% of the respondents agree or tend to agree that **modelling** should become mandatory for areas with poor air quality.
- 60% of the respondents are or tend to be in favour of introducing **a common EU air quality index** as a simple way to inform the public and give health relevant advice; 20% do not favour this idea.

- 45-55% of the respondents representing governmental organisations and business-associates feel that the **administrative burden** by the air quality Directive and the Fourth Daughter Directive in Member States is high or very high. Governmental organisations report that the greatest burden for them is the development of action plans. Business-associates give more emphasis to the assessment and implementation of action plans.
- Respondents representing governmental organisations were asked for their views on how to **lower or remove barriers for effective implementation** of the directives; most responses mentioned the need for greater harmonization of policies (emission, air quality and climate change).
- Respondents representing scientific bodies were asked for their views on **scientific and technological developments and innovations** and how they could be taken into account in the review; most responses focus on the need to follow up on health effect insights.

The most prominent differences of opinion are found between the business-associates on the one hand and NGOs and research-associates on the other. For example, most business-associates feel that limit and target values are (very) strict, that the National Exposure Reduction Target for $PM_{2.5}$ should not become legally binding, and that the list of pollutants in legislation should not be expanded; most NGO and research representatives have an opposing view. In general, business-associates claim that regulation on industry has been very stringent and that other sources, especially traffic, should now be regulated more stringently.

The messages of the experts and practitioners were found to be broadly similar to those of the Stakeholder Expert Group.

III Views of citizens interested in air quality

Also for collecting views of citizens interested in air quality an online questionnaire was used, shorter and somewhat less technical than the one for experts and practitioners. 599 replies were submitted, 90% of which on behalf of individual persons. The other 10% respondents replied on behalf of an organisation (18 relating to an NGO, 8 to business, 5 to government and 5 to research). The response was not proportionally divided over the EU Member States; the most striking was that 39% came from Italy (of which a substantial share referred to people asking for attention for dioxin pollution by industry in the Italian city of Taranto) and 16% from Belgium.

From the responses to the questionnaire it becomes clear that replies were submitted mostly by citizens concerned about air quality. Nearly all of the respondents feel that clean air is very important and 80% judges the air quality in their living environments from moderate to very bad. Only 20 to 30% of the respondents feel that they have sufficient information on air quality.

A vast majority of the respondents is in favour of making standards for particulate matter, NO_2 and ozone stricter, of requiring more monitoring stations, of requiring more information about the air quality in their neighbourhoods and of making the improvement of air quality by Member States more mandatory. 77% of the respondents feel that the EU should have more influence regarding measures taken in the Member States.

The most important issues according to the citizens are:

- Policies for specific **sources** of air pollution. Citizens are concerned most about road traffic, industry and waste incineration.
- Authorities and others who are responsible should make **more effort** to improve air quality. Stricter sanctions are seen as a good means for this purpose.
- **Public awareness and participation** should be enhanced. Some citizens think that mass media have not been used to maximum potential.
- **More harmful PM fractions** should be considered in the review process (in line with the views from experts and practitioners).

1 Introduction

1.1 Background

The European Commission is currently reviewing the EU air policies with the intention to set new long-term objectives beyond 2020. A crucial part of the review is consultation on its current policy in this area, seeking views on the strengths and weaknesses of the existing legislative framework, the progress on implementation and the best way to improve it. In 2011 three surveys were conducted focusing on the air quality directives *2008/50/EC on ambient air quality and cleaner air for Europe* (the 'Air Quality Directive') and *2004/107/EC on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air* (the 'Fourth Daughter Directive'). The survey used three questionnaires, aimed respectively at the European stakeholders represented in the EU Stakeholder Expert Group on the Air Review (SEG), at citizens interested in air quality and at air quality experts and practitioners. This report summarises the results of the three questionnaires.

1.2 Questionnaires and target groups

The three questionnaires were developed in close consultation with the European Commission. They addressed the same themes, which were in the questionnaires for the SEG and for experts and practitioners entitled as follows:

1. The identity of the respondent,
2. The Thematic Strategy on Air Pollution,
3. The approach of the air quality directives,
4. The EU air quality standards,
5. Air quality assessment,
6. Air quality management in Member States,
7. Public information and dissemination,
8. Governance,
9. Scientific and technological innovations,
10. Your most important issues,
11. Your own involvement in the review process.

The questionnaire for citizens followed this list of themes, with slightly different titles; the theme 'Scientific and technological innovations' was not included there.

The questionnaire for the members of the SEG was emailed to the SEG members as a Microsoft WORD document that allowed the respondents to reply in their own words, without any restriction. The questionnaire was circulated to the SEG on 17 June 2011 and closed on 15 October 2011. Some respondents submitted their replies after the closing date, but these could be taken fully into account in the analysis. The questionnaire was sent to 75 stakeholder organisations and 40 replies (53%) were received.

The questionnaires aimed at citizens and at experts and practitioners were made available online, the first with questions that could be answered in about five minutes, while the second, being more extensive, required 15-20 minutes to complete. Most of the questions in the online questionnaires were closed, *i.e.* the respondent was asked to tick an appropriate pre-defined answers (yes/no, multiple choice), and a few questions were open, offering the possibility to reply in free text.

The online questionnaires were open from 28 June 2011 to 15 October 2011. To the questionnaire for experts and practitioners 250 replies were submitted and 599 respondents filled in the questionnaire for citizens.

The full texts of the three questionnaires are given Part II of this report.

1.3 Methodology for the analysis

Consultation of the Stakeholder Expert Group
Most of the responding stakeholders had obviously well considered their replies and many gave quite extensive and well-phrased comments. The comments were addressed to the Commission; the analysis given in the current report is not intended to replace the Commission reading the comments.

For the purpose of the current report, we read all replies carefully. We represented the replies by sets of brief summary statements and entered these in an Excel database. Such a summary statement could represent a paragraph or a sentence. We attempted also to catch the emphasis of comment, distinguishing *e.g.* "Consider revising provision x" from "Revise provision x". Views that were very similar were represented by the same summary statement and in that case the number of contributors to it was counted. This resulted in a large number of summary statements, about hundred to several hundred per question.

These summary statements (called '*comments*') were subsequently clustered, grouping together statements with similar messages. Usually a second, sometimes even a third clustering was applied to arrive at a set of messages ('*issues*') that on the one hand gave an adequate representation of the original comments and on the other hand was compact enough to be digestible. Comments by a single stakeholder that could not be clustered with a similar other comment were designated as "Various other comments"; 10-20% of the comments, depending on the question, were in this group.

For ranking the importance of an issue, the number of stakeholders that contributed to the issue was used. In the overviews below the issues are listed according to the number of stakeholders contributing to the issue in decreasing order. The description of issues in the Executive Summary is based on a combination of the issues identified under the various themes.

For further analysis the stakeholders were divided into four stakeholder subgroups (see Annex A). The contributors to the issues were also counted per subgroups, which allowed ranking the issues for each subgroup separately. This report does not refer to individual stakeholders when describing the views.

Annex B describes aspects of the analysis procedure in more detail.

Consultations of citizens and of experts and practitioners
For the two online consultations the Commission's online IPM tool was used. It provided the software for making the questionnaires available online and for collating the replies and processing these statistically. The free text replies were all read and clustered in groups of similar messages.

1.4 Report structure

The report consists of two parts.

The Executive Summary in Part I gives an overview of the main results of the three consultations. The current introductory chapter of Part I describes the setup of the survey. The three following chapters present the main results for each of the target groups of the consultation. Some conclusions are given as the closing chapter.

The texts of the three questionnaires and detailed results are given in Part II of the report. In both parts of the report a list of abbreviations and acronyms is given as an annex.

2 Issues raised by members of the Stakeholder Expert Group on the Air Review

2.1 Introduction and reader's guide

In this chapter the main results of the questionnaire for the SEG are reported. A detailed summary of the comments given by the respondents is given in Part II of this report.

The questionnaire was sent by the Commission to 75 stakeholder organisations, of which 40 (53%) submitted a reply. Per stakeholder subgroup the response rates were (see Figure 1):

- 13 of 27 invited Member States,
- 13 of 19 invited Business Associations,
- 5 of 6 invited Environmental NGOs,
- 9 of 23 invited Other Stakeholders.

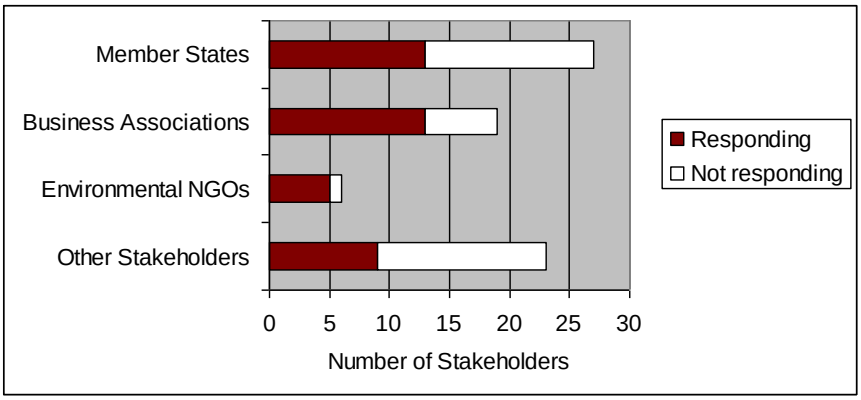


Figure 1 Response by the members of the Stakeholder Expert Group

In the tables below, clusters of similar messages are represented as 'issues' raised, as explained in Chapter 1. These issues are shown in bold print. The tables show for each issue the number of stakeholders that gave one or more comments that contributed to it and, where useful, also present selected comments to characterise the various, sometimes numerous comments in the replies that were clustered in the issue. The issues are listed in order of decreasing prominence, based on the total number of respondents contributing to the issues.

- *CAVEAT: It is important to note that **the 'Selected comments' represent a collection of individual comments**, often coming from a single stakeholder, and hence the text in regular, non-bold print does not describe views shared by the stakeholders that contributed to the issue. A detailed list of comments is given in Part II of this report.*

None of the issues was mentioned by all stakeholders, so there are no consensus views. This relates to the methodology of asking open questions on broad themes, thereby allowing respondents to bring forward only issues that are relevant to themselves.

Annex C presents the issues in a different order by ranking them for each of the four stakeholder subgroups. For Question 10, about the most important issues, this division by stakeholder subgroup is also given below in the main body of the report (Section 2.2.2).

2.2 The most important issues for members of the Stakeholder Expert Group

2.2.1 The most important issues for the Stakeholder Group as a whole

In Question 10 of the questionnaire, the SEG members were requested to present their views on the most important issues for the review of the directives. Table 1 summarises the views given.

Table 1 The most important issues raised by SEG members. The issues are numbered and listed in order of the total number of stakeholders mentioning the issue. See also the clarification in Section 1.3. The right columns show the number of stakeholders mentioning the issue or comment. All: all respondents, MS: Member States, BA: Business Associations, NGO: Environmental NGOs, OS: Other Stakeholders.

The most important issues	All	MS	BA	NGO	OS
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles. *Selected comments:* The PM fractions black carbon, elemental carbon, UFP, PM1, PM0.1 may be more health relevant than PM_{10} and $PM_{2.5}$. Black carbon is also relevant as indicator for traffic emissions and as greenhouse gas. It is recommended to investigate possibilities for including provisions for one or several of these PM fractions; these could be new air quality standards or assessment requirements in preparation of possible new regulation at a later stage. More research on the health impact of these fractions and on abatement possibilities is needed.	15	5	3	5	2
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values. *Selected comments:* Compliance with air quality standards depends to a large extent on the effectiveness and timing of emission reductions under EU legislation. Real-world emissions by road traffic turned out to be considerably higher than intended by the EURO standards. The air quality standards must be based on realistic projections of emission reductions. The new EURO standards should reflect real-world emissions. Consider flexibility options for exceedances due to unexpected failure of EU emission reduction measures. The air quality legislation should also be consistent legislation in other policy areas.	11	4	3	0	4
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4). *Selected comments:* The air quality standards provide only limited health protection; the pollution levels should be reduced to the guidelines recommended by WHO. Consider further possibilities for reducing emissions by agriculture, shipping, domestic sources, biomass combustion, non-road mobile machinery, two-stroke engines. Reconsider if current derogations are justifiable regarding health protection. Strengthen the target values for HM and PAH and consider turning them into limit values.	11	2	0	5	4

The most important issues	All	MS	BA	NGO	OS
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3). *Selected comments:* Do not set further or lower standards without ensuring that measures to achieve these are proportionate and cost-effective. The current standards for PM are very difficult to meet and should not be further tightened. The target values for HM are too strict. Balance the health benefits of measures with costs and other negative impacts to society. Investigate unintended side-effects of standards and measures. Keep the flexibility provisions, especially derogations and time extension possibilities.	11	2	8	0	1
5. Solutions are needed for exceedances that are beyond control of the responsible authorities. *Selected comments:* Ambitious air quality standards can be set if derogations are allowed where all cost-effective measure are implemented. Solutions are needed for exceedances with reasons beyond control of the responsible authority, in particular due to adverse weather conditions or transboundary fluxes.	9	6	1	0	2
6. A thorough review is needed. *Selected comments:* The review should be based on up-to-date scientific evidence. The exploration of revision possibilities should take cost-effectiveness and socio-economic impact into account. Also the effectiveness for health protection of measures triggered by air quality standards should be evaluated. When setting binding standard, a robust impact assessment is essential. Stakeholder consultation and transparency is important.	8	5	3	0	0
7. Level the playing field by harmonised implementation, burden sharing and international co-ordination. *Selected comments:* Consistent implementation throughout the EU, including a better harmonised air quality assessment methodology and enforcement based on a good sanctioning system, is important and will establishing a more level playing field between Member States. The burden of emission reductions should be shared by all relevant sectors. The Commission should be active internationally (in CLTRAP, IMO) and promote also globally a level playing field.	7	3	4	0	0
8. Reconsider the set of regulated pollutants and indicators (other than for PM, see Issue 1). *Selected comments:* It is recommended to consider air quality objectives for new pollutants: ammonia, hydrogen sulphide, formaldehyde, odour. Dibenzopyrenes could be added as PAH markers. Standards for deposition and for mercury should be considered. It is also suggested reconsidering the effectiveness for health protection of the NO_2 standards.	5	4	0	1	0
9. Modelling should have a greater role. *Selected comments:* A greater role of modelling will be very useful for air quality management and assessment (in combination with measurements). The application of models should be further specified in the provisions.	4	3	0	0	1
10. Reduce the burden of implementation in Member States. *Selected comments:* Possibilities for simplification and cost-reduction of obligations should be investigated, regarding air quality assessment (e.g. reducing requirements for HM monitoring) and reporting (e.g. requiring only data needed for compliance checking). Reduction of obligations related to standards that are largely met should also be considered.	4	4	0	0	0

The most important issues	All	MS	BA	NGO	OS
11. Simplify the set of air quality standards. *Selected comments:* The set of air quality standards is very complex, particularly for PM. Simplification should be considered, e.g. by setting only one standard per pollutant, withdrawing redundant standards or withdrawing standards for pollutants with low levels.	4	3	1	0	0
12. Include the Fourth Daughter Directive in the Ambient Air Quality Directive.	4	3	0	0	1
13. Reconsider the PM measuring methods. *Selected comments:* In view of drawbacks of the current PM reference method (no near-real time results, expensive) and related equivalence problems, it is recommended to reconsider the methodology for measuring PM.	3	1	2	0	0
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	3	1	1	0	1
15. Provide help and funding to problem areas.	2	1	0	0	1
16. Co-ordinate research and the assessment methodology with CLTRAP.	1	0	0	0	1
17. Various other comments on the most important issues	13	4	4	1	4

2.2.2 The most important issues per subgroup of the Stakeholder Expert Group

Table 2 shows the priorities per stakeholder subgroup by reordering the issues in Table 1 according to the number of members of a subgroup that mentioned the issue. For easy reference, the numbering of the issues of Table 1, ranking the issues for the SEG as a whole, is retained. The item “Various other comments on the most important issues” is not included here.

Table 2 The most important issues by subgroup of the SEG. The issues are listed in order of the total number of the subgroup mentioning the issue; the numbering of Table 1 is retained. The right column show the number of subgroup members mentioning the issue. MS: Member States, BA: Business Associations, NGO: Environmental NGOs, OS: Other Stakeholders.

The most important issues of Member States	MS
5. Solutions are needed for exceedances that are beyond control of the responsible authorities.	6
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	5
6. A thorough review is needed.	5
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values.	4
8. Reconsider the regulated pollutants and indicators (other than for PM, see Issue 1).	4
10. Reduce the burden of implementation in Member States.	4
7. Level the playing field by harmonised implementation, burden sharing and international co-ordination.	3
9. Modelling should have a greater role.	3

11. Simplify the set of air quality standards.	3
12. Include the Fourth Daughter Directive in the Ambient Air Quality Directive.	3
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4).	2
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3).	2
13. Reconsider the PM measuring methods.	1
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	1
15. Provide help and funding to problem areas.	1
The most important issues of Business Associations	**BA**
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3).	8
7. Level the playing field by harmonised implementation, burden sharing and international co-ordination.	4
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	3
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values.	3
6. A thorough review is needed.	3
13. Reconsider the PM measuring methods.	2
5. Solutions are needed for exceedances that are beyond control of the responsible authorities.	1
11. Simplify the set of air quality standards.	1
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	1
The most important issues of NGOs	**NGO**
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	5
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4).	5
8. Reconsider the regulated pollutants and indicators (other than for PM, see Issue 1).	1
The most important issues of Other Stakeholders	**OS**
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values.	4
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4).	4

1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	2
5. Solutions are needed for exceedances that are beyond control of the responsible authorities.	2
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3).	1
9. Modelling should have a greater role.	1
12. Include the Fourth Daughter Directive in the Ambient Air Quality Directive.	1
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	1
15. Provide help and funding to problem areas.	1
16. Co-ordinate research and the assessment methodology with CLTRAP.	1

2.3 Issues raised by members of the Stakeholders Expert Group by theme

Following the overview of the replies to Question 10 'Your most important issues' above, this section summarises the response to the other questions, which all related to specific themes. The presentation is similar to the one for Question 10. For these questions the ranking of issues per stakeholder subgroup is given in Annex C.

2.3.1 The Thematic Strategy on Air Pollution

Question 2 requested to present views on the Thematic Strategy on Air Pollution. Table 3 summarises the replies by the respondents of the SEG.

Table 3 Issues raised by SEG members regarding the Thematic Strategy on Air Pollution. See Table 1 for a description of the table structure.

Issues regarding the Thematic Strategy on Air Pollution	All	MS	BA	NGO	OS
1. More coherence of EU emission reductions and air quality standards is needed (see also Issue 2). *Selected comments:* The attainability of AQ standards depends on consistency with EU level sectoral emission reductions (under IED, EURO standards and ceilings of NECD and CLTRAP). EURO standards, particularly for NOx/NO_2, and the (delayed) NECD did not deliver the expected reductions. Transboundary air pollution is still too high. In compliance assessment, take into account that these matters are beyond control of responsible governments. Better coherence is urgently needed: focus on emission policy, ensure that new emission standards and ceilings reflect the real world emissions, set AQ and emission standards for the same species (NO_2, $PM_{2.5}$), attune the timelines, take uncertainties into account in the standards.	27	10	7	5	5
2. Coherence of EU legislation is important (see also Issue 1). *Selected comments:* Avoid inconsistent legislation and take related legislation into account in the review: energy, climate change, noise, biodiversity, eutrophication, transport, agriculture, urban environment, indoor AQ. Incompatibilities complicates	20	6	5	2	7

Issues regarding the Thematic Strategy on Air Pollution	All	MS	BA	NGO	OS
implementation, e.g. permits. Consult sector experts. Harmonise implementation schedules where needed.					
3. Trade-offs with climate change policy must be taken into account. *Selected comments:* Antagonisms (trade-offs) with climate change policy should be considered well: negative impacts on AQ by more biomass combustion, small-scale power generation and diesel cars, by densification of cities, by carbon capture and storage; negative impacts on climate change by energy use of end-of-pipe technology, by SO_2 reduction by shipping (reducing cooling) .	19	5	5	3	6
4. Synergies with other policies are important, particularly regarding climate change. *Selected comments:* Consider synergies with other policies, also internationally. Especially with climate change and energy policy important co-benefits are possible: energy saving, solar/wind/water/ground energy, speed reduction, district heating. Focus AQ policy on short-lived climate forcers black carbon and ozone.	19	7	2	5	5
5. Specific additional sources and sectors need to be addressed. *Selected comments:* Develop AQ legislation for sectors not yet well covered: agriculture (NH_3 limit value), emission standards for biomass burning in small (household) units, non-road mobile machinery, (maritime) shipping, hydraulic fracturing.	17	7	1	5	4
6. The review and the integrated assessment should be thorough. *Selected comments:* The review must be based on solid scientific data. More information is needed on synergies with other policy areas. Scenarios must be consistent with national and sectoral projections. Integrated assessment should include climate change policies and broader societal developments. Involve sector specialists, also to identify unintended effects of measures. Analysis of costs and benefits should be comprehensive and realistic. An integrated approach towards the N cycle is missing.	16	7	6	1	2
7. Further ambition is needed (see also Issues 9, 10, 11). *Selected comments:* The objectives of EAP6 and TSAP have not been attained; important impact remain for health, biodiversity, eutrophication, acidification. Ambitious further steps are needed. Emission reductions are needed, also for non-road mobile machinery, domestic emissions, agriculture, shipping. EU must also act ambitiously on international fora, particularly CLTRAP and IMO. Aim at more extensive ratification of CLTRAP with ceilings consistent with - possibly stricter than - NECD.	14	5	0	4	5
8. Current air policy/legislation is appropriate. *Selected comments:* The AQD, TSAP and EAP6 are consistent and have substantially helped minimising health and environmental risks by air pollution, supporting policy makers in EU Member States. The combination of AQ standards with emission ceilings and sectoral legislation is adequate, synergetic, in balance.	14	5	5	0	4
9. A good balance with other societal needs and cost-effectiveness is important (see also Issues 7, 10, 11). *Selected comments:* Focus on balancing environmental benefits with impact to economy and other societal aspects, aim at cost-effectiveness and balance between economic sectors and avoid disproportional costs.	10	2	8	0	0
10. Promote a level playing field, within the EU by ensuring implementation, and internationally (see also Issues 7, 9, 11). *Selected comments:* Focus on effective implementation in the EU and enforcement. Take international steps (regarding CLTRAP, shipping emissions, RICE industry) to promote a level playing field and avoid unintended harmful side-effects.	10	4	6	0	0

Issues regarding the Thematic Strategy on Air Pollution	All	MS	BA	NGO	OS
11. Set realistic objectives and aim at regulatory stability (see also Issues 7, 9, 10). *Selected comments:* Set achievable standards, also regarding the timetables, that can be achieved with feasible measures. Do not make major changes.	7	3	4	0	0
12. Room for subsidiary action is needed. *Selected comments:* Provide room for choices within Member States, e.g. regarding trade-offs and fuel mix, respecting the subsidiarity principle.	5	2	2	0	1
13. Various other comments on the Thematic Strategy on Air Pollution	29	8	9	5	7

2.3.2 The approach of the air quality directives

Question 3 requested to present views on the approach of the air quality directives. Table 4 summarises the replies by the respondents of the SEG.

Table 4 Issues raised by SEG members regarding the approach of the air quality directives. See Table 1 for a description of the table structure.

Issues regarding the approach of the air quality directives	All	MS	BA	NGO	OS
1. Concepts and provisions of the AQ directives are appropriate. *Selected comments:* The concepts of the AQ directives are appropriate: the overall concept, limit values (binding, providing a minimum level of protection, applying everywhere), target values, the AEI, the ERT, the focus on hotspots, flexibility, single year standards. Further provisions are not needed regarding: protecting sensitive population and real exposure.	23	10	4	5	4
2. Relate standards/provisions more to population exposure. *Selected comments:* Aim at a better relation of AQ standards to real exposure. Take the exposure time into account. Take exposure into account in compliance assessment. Hotspots not do not well represent exposure. Combating air pollution very near motorways and traffic axes is not effective for exposure reduction. Focus more on populated areas. Consider limit values for urban background and target values for hotspots. Consider an AEI/ERT for NO_2. Consider indoor exposure.	17	8	5	0	4
3. Standards can be difficult to attain/beyond control of local/regional/national authorities. *Selected comments:* Emissions being higher than expected from EU abatement measures (EURO standards, NECD) causes non-compliance with the AQ standards for NO_2 and PM_{10}. Reconsider the AQ standards, compliance is beyond reach of the responsible authorities. This also applies to O_3 because of transboundary pollution. Improvements in EU level measures should address these exceedances. Support/ flexibility in the assessment of non-compliance (as in CLTRAP) is needed.	11	5	2	0	4
4. Consider standards for averages over several years or derogations for dealing with "extreme weather" years. *Selected comments:* To address the problem of fluctuating exceedance of AQ standards due to interannual variability of concentrations and transboundary pollution, introduce multi-year standards (sliding average over 2 or 3 years) or introduce a derogation for unfavourable or extreme meteorological years.	11	8	1	0	2
5. The air quality directive/set of air quality standards is very complicated/can be simplified. *Selected comments:* The AQD is	9	6	1	0	2

Issues regarding the approach of the air quality directives	All	MS	BA	NGO	OS
(too) complicated. The set of standards is complex, particularly for $PM_{2.5}$. Reduce the number of standards, withdrawing redundant standards and standards for pollutants with low levels. Go to one standard per pollutant. The complexity is difficult to communicate to public and stakeholders.					
6. Better and more uniform implementation in Member States is needed. *Selected comments:* The implementation Member States should be improved and harmonised. Provisions on assessment, particular for station siting, should ensure that exceedance identification is similar in Member States. Better enforcement is needed.	9	3	2	3	1
7. Relate health protection standards better to the harmful constituents. *Selected comments:* Standards for PM fractions other than PM_{10} and $PM_{2.5}$, such as BC or UFP, may trigger more effective action to reduce health risks. Consider regulating these fractions, possibly starting with monitoring requirements and further research. Reconsider NO_2, as it is does not represent traffic-related air pollution well.	8	3	4	0	1
8. Flexibility should be kept. *Selected comments:* Derogation and time extension possibilities should be kept. This should apply when proportional / all measures have been taken.	8	3	3	0	2
9. Aim at coherence with other policy areas. *Selected comments:* Aim at coherence (including the timing of deadlines) with other policy areas: transport, EURO standards, climate change, eutrophication, economic development.	8	1	4	0	3
10. Consider a more important role for modelling (see also Issues 13, 15). *Selected comments:* Modelling could be given a more important role: supplementing measurements, assessing the spatial extent of pollution and exposure, for scenarios and planning. It could be made mandatory e.g. for background modelling.	7	5	0	0	2
11. Target values are not very effective/reconsider target values. *Selected comments:* Target values are difficult to implement. They do not effectively trigger measures, should be reviewed. They give policy guidance. They could be replaced by ambitious limit values with derogation options. Target values should be precursors of limit values.	7	5	0	0	2
12. Align air quality standards with the WHO guidelines. *Selected comments:* Limit values and the NERT should be lowered to WHO guideline levels.	7	0	0	4	3
13. Modelling should remain voluntary/supplementary (see also Issues 10, 15). *Selected comments:* Measuring should remain the basis for assessment, modelling should be supplementary and voluntary. Modelling is too advanced for some Member States. Models differ too much.	6	4	0	0	2
14. A thorough review is needed. *Selected comments:* A comprehensive assessment of revision options is needed, based on up-to-date information: socio-economic impact, effectiveness of derogations, effectiveness of standards, attainability of standards.	5	2	2	0	1
15. Clarify the role of modelling in compliance assessment (see also Issues 10, 13). *Selected comments:* The role of modelling, particularly in compliance assessment, should be clarified and harmonised, including how to deal with inaccuracies.	5	4	1	0	0
16. Consider further provisions for sensitive populations or guidance on this. *Selected comments:* Consider possibilities for special protection of sensitive populations, e.g. for areas with sensitive populations.	4	2	0	1	1
17. There is no need to include other pollutants in the air quality directives.	4	3	1	0	0
18. The air quality directives are too demanding. *Selected comments:* Measures and measuring efforts are too expensive.	3	2	0	0	1

Issues regarding the approach of the air quality directives	All	MS	BA	NGO	OS
Measures affect mobility bringing compliance with the standards. Derogation procedures are too complex.					
19. Minimum protection by limit values doesn't stimulate action where levels are lower. *Selected comments:* Consider ways of stimulating measures where limit values are met but health risks still exist.	2	1	0	0	1
20. Various other comments on the approach of the air quality directives	18	8	4	1	5

2.3.3 The air quality standards

Question 4(1) requested to present views on the air quality standards. Table 5 summarises the replies by the respondents of the SEG.
Question 4(2) asked stakeholders to list any additional air quality objectives or standards set at national level other than those set in Directives 2008/50/EC and 2005/107/EC that they recommend for consideration in the review. Six Member States (Belgium, France, Germany, Lithuania, Netherlands, Sweden), two Third Countries (Norway, Switzerland) and one Business Association (EUROMOT) provided information on this. The replies are given in Part II of this report.

Table 5 Issues raised by SEG members regarding the air quality standards. See Table 1 for a description of the table structure.

Issues regarding the air quality standards	All	MS	BA	NGO	OS
1. Suggestions for a good standard setting process are given. *Selected comments:* Consider costs and attainability in standard setting. Do not set new standards for PM without sufficient evidence; more research on this is needed. Improve cost-benefit analysis, review the effectiveness of standards and abatement measures.	19	4	7	4	4
2. Review the PM standards, consider addressing more harmful PM fractions, particularly black carbon, ultrafine particles. *Selected comments:* Consider the harmfulness of PM fractions other than PM_{10} and $PM_{2.5}$. Consider the finer PM fractions, particularly BC/EC and UFP. Consider BC/EC as possible standard or indicator for traffic related health risks. Prepare for future EC standards starting with monitoring requirements. Consider a standard for coarse PM. Consider risks of engineered nanoparticles.	18	5	5	5	3
3. Important contributions to poor air quality are beyond national/regional/local control. *Selected comments:* EU level emission reductions are needed to meet the air quality standards; these should be more consistent. This applies particularly to NO_2, the NERT and ozone. Consider an AQ standard for only the local contribution.	15	6	4	3	2
4. Specific suggestions on tightening standards are given (see also Issue 12). *Selected comments:* Set the air quality standards for PM, O_3, SO_2 at the level of the WHO guidelines. Add the WHO guidelines as long term objectives. Consider changing the target values for HMs and BaP into limit values.	9	2	0	5	2
5. Simplify the set of air quality standards. *Selected comments:* Simplify the set of air quality standards. Set one standard per pollutant. For PM, withdraw the PM_{10} limit values or the daily limit value. Withdraw standards that are already (largely) met: for SO_2,	9	7	0	0	2

Issues regarding the air quality standards	All	MS	BA	NGO	OS
CO, lead, some HMs. The hourly NO_2 limit value may not be needed.					
6. Air quality standards are appropriate. *Selected comments:* Limit values in combination with target values are effective. The NERT together with limit values is effective. The focus on $PM_{2.5}$ is appropriate. Keep the NO_2 limit values. Reporting on HM target values creates sufficient pressure.	9	7	1	0	1
7. Focusing on exposure is important. *Selected comments:* An exposure index is more effective than a limit value. Focus assessment and measures more on relevant exposure; include population weighting.	6	4	1	1	0
8. Reconsider the limit values of NO_2. *Selected comments:* NO_2 is not a good proxy for traffic-related air pollution, but requires more abatement effort than the more harmful PM. The USA standard for NO_2 is much less strict.	6	3	1	1	1
9. The protection by the air quality standards is limited. *Selected comments:* For PM no no-effect threshold exists, so also at levels below the limit values health impact occurs.	6	2	0	3	1
10. Derogations and flexibility are effective (see also Issue 13). *Selected comments:* Derogations are effective and needed. Keep the time extensions longer; keep these for NO_2. Consider stricter standards with restrictive derogation possibilities.	5	3	0	0	2
11. Target values are not binding and therefore not effective.	5	3	0	1	1
12. Specific suggestions on relaxing standards are given (see also Issue 4). *Selected comments:* Setting a binding standard for $PM_{2.5}$ in 2012, binding standards for NERT and ECO is too ambitious. The PM and BaP standards are too difficult to meet in time.	5	3	2	0	0
13. Do not allow derogations (see also Issue 10).	4	0	0	4	0
14. Suggestions regarding assessment of heavy metals and PAH are given. *Selected comments:* Optimise the Hg rural network by harmonisation with EMEP. Consider relaxing the assessment requirements for HM and PAH.	4	4	0	0	0
15. Reconsider the PAH/BaP provisions. *Selected comments:* Review the BaP provisions, also in view of the costs and difficulties to reduce (domestic) wood burning. Add a standard for dibenzopyrenes.	3	3	0	0	0
16. There are important uncertainties relating to the AEI. *Selected comments:* The measuring uncertainties in the AEI are large compared to the reduction targets; consider the AQUILA conclusions on this and consult Member States.	2	2	0	0	0
17. Consider regulating additional metrics (other than for particulate matter). *Selected comments:* start regulating NH_3 with measurements or a target value. Add a provision for the assessment of deposition of S and N.	2	2	0	0	0
18. Various other comments on air quality standards	17	7	4	3	3

2.3.4 Air quality assessment

Question 5(1) requested stakeholders to give their views on the provisions on assessment in the directives. Table 6 summarises the responses by the SEG members.

Table 6 Issues raised by SEG members regarding the provisions on air quality assessment. See Table 1 for a description of the table structure.

Issues regarding air quality assessment	All	MS	BA	NGO	OS
1. Further harmonisation of air quality assessment is needed (see also Issue 16). *Selected comments:* The assessment of air quality needs to be better harmonised ensuring e.g. good coverage of hotspots in all Member States, consistent station classification among Member States and a common approach for heavy metals. Suggestions for improvement are given: more guidance, exchange of best practice, better enforcement, mandatory assessment strategy documents for each zone.	10	3	2	3	2
2. Extend the use of models and improve the quality of models (see also Issue 15). *Selected comments:* While recognising the limitations of modelling, several stakeholders wish to extend the role of modelling. Modelling is useful for air quality management allowing quantifying the impact of measures. It is also useful for air quality assessment, enabling to determine areas of exceedance and the extent of human exposure. In combination with measurements modelling can lead to a more efficient assessment system. Harmonisation and improvement of modelling can be achieved by further specification in modelling provisions, guidance, exchange of experience.	9	6	0	1	2
3. Comments regarding PM measurement methods are given (see also Issue 5). *Selected comments:* The PM reference method cannot give the near-real time data required for public information. A continuous method should be considered. There are no standard measuring methods for possible new PM fractions such as BC/EC. Comments on the equivalence of PM monitors are described separately as Issue 5.	7	5	0	0	2
4. The station density requirements can be improved (see also Issue 7). *Selected comments:* Several aspects of the station density requirements are mentioned where improvement is possible.	7	4	0	0	3
5. Improve the equivalence of PM monitors. *Selected comments:* Further harmonisation of the determination of PM correction factors is needed.	5	3	1	0	1
6. Harmonise assessment methods with EMEP. *Selected comments:* Harmonisation is needed, especially for PM compounds (size fractions, time resolution), for background stations, for siting VOC stations. The EMEP reference method can be used for HMs.	4	3	0	0	1
7. The station density requirements are appropriate (see also Issue 4).	4	3	0	0	1
8. Air quality assessment is cost-effective (see also Issue 12).	4	2	0	0	2
9. Satellite data can be useful (see also Issue 10). *Selected comments:* Satellite data are useful and are already being applied for air quality assessment. See also Issue 10.	4	3	0	0	1

Issues regarding air quality assessment	All	MS	BA	NGO	OS
10. Satellite data are of insufficient quality (see also Issue 9). *Selected comments:* The resolution and/or accuracy of satellite data is currently insufficient for application in relation to the air quality directives.	4	2	0	0	2
11. Station siting requirements can be improved. *Selected comments:* Some suggestions for siting requirements for monitoring stations are given, including the provision of guidance.	3	2	1	0	0
12. Monitoring is expensive; consider possibilities for optimising or relaxing (see also Issue 8). *Selected comments:* Costs for monitoring are high, focus on improving the cost-effectiveness. Measuring VOCs and Hg is questionable.	3	3	0	0	0
13. There are problems with the reference method for PAH. *Selected comments:* A reference method for PAH is needed.	2	2	0	0	0
14. Merge the Fourth Daughter Directive with the Air Quality Directive.	2	1	1	0	0
15. Modelling should not be mandatory (see also Issue 2). *Selected comments:* Because of accuracy limitations, modelling should not be made mandatory.	2	2	0	0	0
16. No further harmonisation of assessment is needed (see also Issue 1).	1	1	0	0	0
17. Various other comments on air quality assessment	12	6	3	2	1

Annual costs for a monitoring station

Question 5(2) requested stakeholders to provide estimates of annual costs for a monitoring station (marginal costs of one additional station in an existing network, including personal costs and five year depreciation of investment costs). These estimates were asked for two types of stations:
a. an urban background station for PM (automatic method);
b. a remote background station for heavy metals and PAH.

Annual marginal costs of an urban background station for PM (automatic method)

Replies regarding an urban background station were given by 11 Member States, one Business Association and three Other Stakeholders.

- Annual operation costs cover a range from 6,500€ to 80,000€, in most cases about 30,000€.
- Annual depreciation and operation costs are between 15,000€ and 37,000€.
- The equipment itself ranges from 35,000€ (one monitor) to 150.000€ (PM10 and PM2.5 monitors, data logger, data transmission, housing, air conditioning).

The Other Stakeholders and the Business Association do not particularly stand out in their replies, compared to the replies of the Member States.

Annual marginal costs of a remote background station for heavy metals and PAH (Fourth Daughter Directive)
Replies were provided by 9 Member States, one Business Association and two Other Stakeholders.

The information provided is rather heterogeneous.

- Annual costs for heavy metals in PM10 (sampling and analysis) are in the range from 13,000€ to 16,500€.
- Annual costs for PAH in PM10 (sampling and analysis) are in the range from 17,000€ to 33,000€.
- For HM and PAH deposition a value of 19,000€ is given only by one Member State. Costs for the sum of HM and PAH in PM10 (including annual depreciation) range from 32,000€ to 56,000€.
- Total costs for the sum of HM and PAH in PM10 and their deposition (incl. annual depreciation) cover a very wide range from 10,000€ to 45,000€.
- A number of 80,500€ is given in one Member State, in this case it is not clear if this only refers to HM and PAH in PM10, or also includes deposition.
- For the equipment for HM and PAH the costs cover a range from 17,000€ to 110,000€, the latter number comprises the whole station including housing.
- Monitoring of Hg (gas phase, particulate, deposition; incl. annual depreciation) is in the range of 56,000€ to 62,000€.

Although the number of replies is relatively small, one rough conclusion is that monitoring equipment and operation are cheaper in Eastern Europe compared to Western Europe.
It has to be noted that the replies may constitute a “best guess” only and may not be based on detailed calculations. They are intended for providing a general picture only and not at providing detailed information on costs of air quality monitoring in Europe.

A detailed account of the replies is given in Part II of this report.

2.3.5 Air quality management in Member States

Question 6 requested stakeholders to give their views on the provisions on air quality management in Member States in the directives. Table 7 gives an overview of the responses.

Table 7 Issues raised by SEG members regarding air quality management in Member States. See Table 1 for a description of the table structure.

Issues regarding air quality management in Member States	All	MS	BA	NGO	OS
1. There are possibilities for improvement of AQ plans (see also Issue 7). *Selected comments:* Proposals for a more consistent approach regarding AQ plans in the EU are given: stricter criteria for the definition of AQ plans, a standardised way to project future compliance (including technological developments and the time frame), clarification of the role of modelling, requirements to quantify the effect of measures and to include synergies and trade-offs with other environmental objectives; the Commission should scrutinise the AQ plans of Member States. Measures should not focus on the immediate vicinity of the monitoring site and not aim at the short term only. Forms for reporting AQ plans are complicated and a zonal approach is not always useful. The requirements on AQ plans should minimise the administrative burden. The time for drawing up AQ plans should be shortened.	14	4	3	4	3
2. Consider synergies and antagonisms with other policy fields, particularly climate change policy. *Selected comments:* Synergies and trade-offs with other policies especially regarding climate change, should be investigated and considered, in AQ legislation as well as in the other policies. Guidance on dealing with this in Member States should be given. Reducing black carbon is synergetic. Examples of trade-offs are: biomass burning, densification of built environment, higher NOx emission by more efficient combustion, the changing balance of gasoline and diesel demands.	11	7	2	0	2
3. Action at EU or international level is more effective than local action; transboundary air pollution cannot be addressed locally. *Selected comments:* Provision of information on transboundary pollution, possibly by EEA, is important. Guidance, best practice examples and EU level policy support on dealing with transboundary pollution is helpful. Exemption from infringement in certain cases of transboundary pollution should be possible. Local action is less effective than measures at EU or national level.	10	6	2	0	2
4. Guidance and information exchange on air quality plans and measures is helpful. *Selected comments:* For harmonising and improving AQ plans, guidance on policy development and exchange of best practice examples are helpful. More information about successful measures is needed and should be shared. The adoption process for AQ plans and the relation to the Directive on Strategic Environmental Assessment should be clarified.	7	3	0	4	0
5. Short term action plans are not very effective. *Selected comments:* Short term action is less effective than medium and long term measures. They may be solely linked to alert thresholds or replaced by public information action. The administrative burden related to short term action should be reduced.	6	4	1	0	1
6. Public information and stakeholder consultation is important. *Selected comments:* Consultation with all stakeholders is important during the development of AQ plans. AQ problems and the effects of measures should be communicated.	6	0	2	4	0
7. The provisions on air quality plans are appropriate (see also Issue 1).	5	3	0	0	2
8. Various other comments on air quality management in Member States	9	5	2	0	2

2.3.6 *Public information and dissemination*

Question 7 requested stakeholders to give their views on public information and dissemination. Table 8 gives an overview of the responses.

Table 8 Issues raised by SEG members regarding public information and dissemination. See Table 1 for a description of the table structure.

Issues regarding public information and dissemination	All	MS	BA	NGO	OS
1. Improve public information with respect to specific aspects. *Selected comments:* Public information can be improved. Best practice examples of public information and guidance could be provided. More details can be included in standard public information: on mitigation actions (including possibilities for personal action), sources, trends, on allergens; data could be given on hourly basis). A common health effect "scale" can be useful.	11	5	2	0	4
2. A common air quality index is recommended (see also Issue 5). *Selected comments:* Support is given to the development of a possible common AQ index for public information. Existing indices could be harmonised to achieve this. Satellite data could be useful.	11	9	0	0	2
3. The provisions on public information are useful and appropriate.	8	4	1	0	3
4. Better access to information for the public is important. *Selected comments:* Simplification and better access to data on internet is important.	8	3	2	3	0
5. A common air quality index is not recommended (see also Issue 2). *Selected comments:* It is not recommended to develop a common AQ index for public information. Reasons are that harmonisation of existing indices is not needed and that it may reduce the quality of the information.	7	2	1	0	4
6. Inform the public also about non-compliance. *Selected comments:* It is proposed to require that information about exceedances and the follow-up is given to the public as soon as they occur.	4	0	0	4	0
7. Complexity in the legislation makes communication difficult. *Selected comments:* Complexities in the AQD are difficult to communicate. It is difficult to provide daily information on PM levels.	4	4	0	0	0
8. Various other comments on public information and dissemination	5	3	1	0	1

2.3.7 *Governance*

Question 8 requested stakeholders to give their views on public information and dissemination. Table 9 gives an overview of the responses.

Table 9 Issues raised by SEG members regarding governance. See Table 1 for a description of the table structure.

Issues regarding governance	**All**	**MS**	**BA**	**NGO**	**OS**
1. Important factors are beyond control of the stakeholders. *Selected comments:* Transboundary air pollution, insufficient emission reductions under EU legislation, particularly the EURO standards, and also unfavourable meteorological fluctuations are causing compliance problems and are beyond the control of the stakeholders.	9	6	1	0	2
2. Coherence with other policies/legislation is important. *Selected comments:* At the EU level and locally, policies should preferably address AQ and other environmental issues simultaneously. Emission limits are important. Also better cooperation with other departments and other government levels is needed, also to reduce the administrative burden.	9	1	0	3	5
3. Reduce the burden for Member States regarding assessment, reporting, development of air quality plans (see also Issue 8). *Selected comments:* The implementation of the AQD can be burdensome. Suggestions are to streamline and simplify the reporting on assessment to the Commission and the EEA, the reporting on AQ plans and to reduce the assessment burden.	8	6	0	0	2
4. The costs of measures are problematic. *Selected comments:* The costs of measures are problematic, particularly for local authorities. The complexity, insufficient cost-effectiveness of measures can also be a barrier for implementation.	8	4	2	0	2
5. Public engagement is important. *Selected comments:* Public awareness of and engagement in AQ issues in Member States and cities are important and should be highlighted. More transparency on non-compliance issues is needed.	8	3	0	4	1
6. More guidance/best practice examples is useful. *Selected comments:* More guidance on how to implement provisions in Member States' legislation, with best practice examples on assessment, could be important.	7	1	0	4	2
7. The acceptance for air quality measures can be low. *Selected comments:* There is resistance by public and other stakeholders because measures can be expensive and may affect public life, e.g. be interfering with mobility. This may substantially weaken the AQ plans.	5	1	0	0	4
8. The timeframe for preparing air quality plans is too tight. *Selected comments:* More time is needed to prepare AQ plans and involve public and other stakeholders in this.	3	2	1	0	0
9. Better enforcement by the Commission is needed.	2	0	0	2	0
10. Various other comments on governance	16	6	6	3	1

2.3.8 Scientific and technological innovations

Question 9 requested stakeholders to give their views on scientific and technological innovations. Respondents not only gave suggestions for results of innovations, but they also gave ideas on issues that need to be addressed by further research. Table 10 first lists research results that can be used in the Air Policy Review, then presents topics for further review and it closes with various other views regarding scientific and technological innovation.

Table 10 Issues raised by SEG members regarding scientific and technological innovations. See Table 1 for a description of the table structure.

Issues regarding scientific and technological innovations	All	MS	BA	NGO	OS
A. USEFUL RESEARCH RESULTS	19	7	5	2	5
A1 Consider new modelling possibilities. *Selected comments:* Implement new insights in the AQD, set minimum quality standards for modelling and take recommendations of FAIRMODE and AQMEI into account. Combine modelling with measurements, consider a new method for ship emissions, give guidance on modelling emissions and PM fractions.	2	9	5	2	0
A2 Consider new techniques. *Selected comments:* Consider techniques that have recently been developed: ways to make shipping environmentally friendly, better vehicle emission control techniques, electric/hybrid vehicles, a better concentration trend analysis method.	1	5	1	3	0
A3 Consider new results on the health impact of air pollutants. *Selected comments:* Ask WHO advice on prioritising PM fractions and sources. There is no evidence for new standards. Base health standards on the latest findings.	0	4	2	1	1
A4 Consider new metrics of air pollutants. *Selected comments:* Consider introducing: the new flux approach for ozone instead of AOT40; SOM35 for ozone; area-wide risk-assessment reporting; using critical levels (NOx, SO_2) instead of target values, a reference method for EC/OC on filters.	0	4	4	0	0
B. TOPICS FOR FURTHER RESEARCH	24	10	6	2	6
B1 Research on the effects of air pollution is needed. *Selected comments:* Research is needed on the harmfulness of PM fractions. Also on: harmful effects of air pollution on vegetation and environment; causes and effects; health risks of non-exhaust emissions; health impact on children. More funds are needed for health impact research.	3	10	4	3	0
B2 Further research on monitoring and assessment possibilities is needed. *Selected comments:* Further research is recommended on: better measurement/assessment methods, including analysis of PM fractions, cost-effective screening techniques and source apportionment; application of satellite data; a monitoring network like EEA Ozoneweb for other components.	3	9	4	2	0
B3 Address specific research topics. *Selected comments:* Specific research topics are suggested: cost-benefit analysis and ex-post assessment; harmonisation of assessment; links of AQ, climate and vegetation; source data; the World-harmonised Light-Duty Test Procedure; retrofit technologies; uncertain processes (resuspension of particles, cooling by sulphate).	1	8	2	3	2
B4 Investigate new components and metrics. *Selected comments:* Investigate metrics relevant for health, such as UPF and BC; prepare for an EC/BC limit value; fund derivation of target values for Hg and Cr deposition; investigate the impact of PAHs and HM deposition.	2	6	3	1	0
B5 Further research on mitigation possibilities is needed. *Selected comments:* More research on abatement possibilities, including the effectiveness for health risks, sectors not yet covered by the IED and	1	2	1	0	0

Issues regarding scientific and technological innovations	All	MS	BA	NGO	OS
actualisation of the BREFs.					
C. OTHER COMMENTS ON SCIENTIFIC AND TECHNOLOGICAL INNOVATIONS	3	13	4	3	3
C1 Improve access to research results. *Selected comments:* Establish a system for easy access to research results and coordinate through data sharing, workshops etc. Actively include newest research data in consultations. Provide guidance on emission inventories.	1	5	3	0	1
C2 Consider the innovation potential of measures.	0	4	2	0	2
C3 Various other comments on scientific and technological innovation	3	11	4	3	1

2.3.9 The respondent's involvement in the review process

Question 11 requested stakeholders to give their views on their own involvement in the review process. Table 11 gives an overview of the responses.

Table 11 Issues raised by SEG members regarding their own involvement in the review process. See Table 1 for a description of the table structure.

Issues regarding the involvement of the respondent in the review process	All	MS	BA	NGO	OS
1. The respondent is prepared to collaborate in the review.	14	3	7	1	3
2. The respondent can contribute experts, expertise, research results.	10	2	6	1	1
3. The respondent can involve its internal stakeholders. *Selected comments:* Several stakeholders in the SEG will consult the stakeholders that they represent or disseminate relevant information on the review process. The Commission is requested to allow time for internal consultation when providing documents for discussion.	7	2	1	2	2
4. The respondent proposes to provide a specific contribution. *Selected comments:* Stakeholders proposed hosting or contributing to workshops on PM source apportionment, modelling, health indicators, experience with soot as health indicator, the exposure reduction approach for $PM_{2.5}$, NO_2 provisions. Respondents suggested providing proposals for provisions on modelling and protection of ecosystem. A respondent proposed giving presentations on GMES and possibilities for modelling.	4	4	0	0	0
5. Transparency will facilitate collaboration with stakeholders.	4	1	3	0	0
6. Recommendations about the review process are given. *Selected comments:* Involve health experts in the review. Take the national level into account. Make no unnecessary changes.	4	2	0	2	0
7. Various other comments on the involvement of the respondent in the review process	5	2	0	2	1

3 Results of the questionnaire for experts and practitioners

This chapter summarises the 250 responses submitted for the online questionnaire for experts and practitioners. Of the respondents, 88 came from governmental authorities, 65 from business, 33 from NGOs and 29 from research associations. In contrast to the questionnaire for citizens, a majority of the respondents, two-third, replied on behalf of an organisation. Figure 2 shows the affiliation of the respondents. A large share of the respondents replying as individuals came from people with an Italian (15%), Belgian (15%), Dutch (14%) or British (14%) nationality.

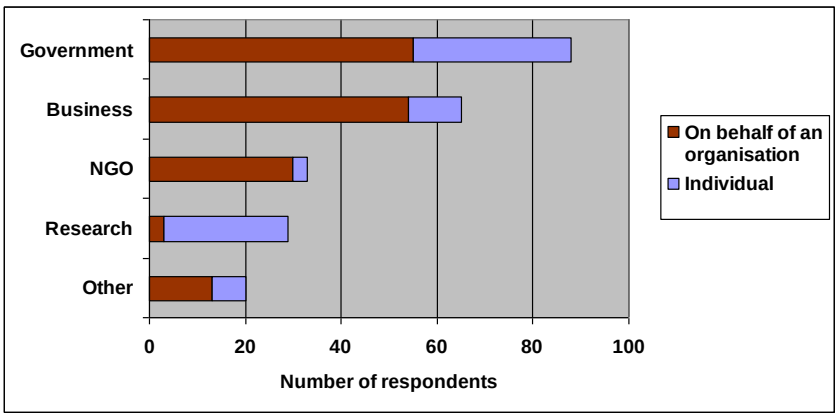


Figure 2 Affiliation of experts and practitioners responding on behalf of an organisation or as individuals

A full statistical overview of the responses is given in Part II of this report.

3.1 The Thematic Strategy on Air Pollution

The EU policies to reduce air pollution are judged by 50% of the respondents to be ambitious. 12% feel that they are very ambitious (nearly all of those replies come from business related respondents), whereas only 11% feel that they are weak or very weak. Main issues are regarded to be reasonably or well addressed.
Integrated policy development is seen as very important for the review of the Air Quality Directive, especially in relation to the National Emission Ceilings Directive (NECD), sectoral emission legislation and the EU legislation on climate change. In general, integration is judged as (moderately) important with respect to the environmental noise legislation and the Common Agricultural Policy.

3.2 The approach of the Air Quality Directives

80% of the respondents feel that the general approach is appropriate or moderately appropriate. Of those, the business-related respondents tend more to moderately appropriate, whereas other groups tend more to appropriate.
The concept of air quality management by Member States is judged by 48% of the respondents to be an area for which the concept may need changes, followed by the concept of standards (33%) and the general approach of assessment (30%).

Remarkably, 55% of the research-associates feel that the concept of standards need changes, against only 18% of the business-associates.

85% of the respondents agree or tend to agree with the concept that the Air Quality Directive defines a minimum level of protection for all citizens (limit values having to be attained throughout the EU).
The approach of reducing the exposure of the general population that is implemented for $PM_{2.5}$ is judged to be important or very important by 70%. 85% of the NGOs think this is very important, whereas most of the business-associates regard it as only moderately important. Setting limit values for urban background levels and setting binding targets for the exposure of the population are seen to be the most effective ways to achieve strengthening of this approach. However, some respondents add that binding targets can only be based on well documented epidemiological studies.
Most respondents think that the target values are (moderately) appropriate instruments for achieving a good balance between health protection and abatement costs. The NGOs are an exception, nearly half of them feel that target values are not or hardly appropriate. According to them, but also others, target values should be made more binding or changed into limit values.

The Air Quality Directive should take stronger account of meteorological variability according to 56% of the respondents, whereas 27%, of which the majority belongs to an NGO, think that it should not. The NGOs also think that the flexibility provided by the Air Quality Directive with respect to compliance for PM_{10} and NO_2 is not appropriate (79%), whereas the 63% of the total number of respondents judge it in the range of moderately to very appropriate.
42% of the respondents are in favour of expanding the list of pollutants in the legislation, 32% is not in favour of expansion and 26% does not have an opinion on this issue. The opinion strongly varies between types of organisations: 66% of the business-associates are against an expansion, whereas 61% of the NGOs and 69% of the research-associates are in favour. Governmental organisations largely reflect the overall response. Pollutants that should be considered for addition according to the respondents are presented in Table 12.

Table 12 Pollutants to be considered for addition in legislation that were mentioned most by experts and practitioners.

Pollutant	Number of times mentioned
Soot / black carbon / elemental carbon	28
Ultrafine particles	22
Heavy metals	15
PM1	12
Dioxin	10
VOCs	8
PAHs	6
Formaldehyde	6
Ammonia	6

3.3 The air quality standards

Experts and practitioners were asked to give reasons for difficulties to meet the limit values for PM_{10}, ozone and NO_2. The questionnaire suggested some reasons, but other reasons could be specified as well in the respondent's own words. Results are presented in Table 13.

Table 13 Reasons for not meeting the limit values for PM_{10}, ozone and NO_2 that were mentioned most by experts and practitioners.

Reason for not meeting the limit value	**Percentage / number**
PM_{10}	
Suggested reasons:	
Air quality plans started too late	91
Transboundary air pollution	81
Other reasons:	
Adverse meteorological conditions	20
Adverse geography	17
Lack of political will	12 (mostly NGOs)
Ozone	
Suggested reasons:	
Transboundary air pollution	91
Air quality plans started too late	47
Other reasons:	
Adverse meteorological conditions / climate change	19
NO_2	
Suggested reasons:	
Air quality plans started too late	80
Deviation of expected air quality trend	64
Other reasons:	
Real world traffic emissions are not in compliance with emission standards	26
EU measures on traffic emissions fail otherwise, e.g. EURO VI comes too late	15
Lack of political will	13 (mostly NGOs)

In the section on Air quality management in Member States, a similar question was posed with some more suggestions. Typically, there the highest score was given to "political priority of air quality is low", not only by NGOs but also by governmental organizations and research-associates.

The limit values for PM_{10} (daily means), $PM_{2.5}$ (stage 2) and NO_2 (annual mean) are seen as the most strict standards, more than the limit value for $PM_{2.5}$ (stage 1) and the target values for ozone (8 hour means and AOT40). In general, most business-associates feel that all above mentioned limit and target values are very strict, whereas most NGOs and research-associates feel that they are lenient or neutral.

Of the other standards in the Air Quality Directive, the majority is judged as neutral with respect to their stringency. “Strict” is assigned most to the 1 hour mean NO_2 limit value, the critical level of NO_2 for vegetation protection, the annual mean limit value for PM_{10}, the exposure concentration obligation for $PM_{2.5}$, the alert threshold for ozone and the target value for benzo(a)pyrene. The target value for $PM_{2.5}$ is mostly seen as very strict.

The limit value for $PM_{2.5}$ and the Exposure Concentration Obligation (ECO) will become binding in 2015. About 40% of the people feel that these limit values must be kept at the present level and 40% supports further strengthening. Percentages vary between types of organisations: most business-associates wish to keep them at their present level, most NGOs wish to strengthen them considerably (especially the limit value for $PM_{2.5}$) and most researchers want to strengthen them somewhat.
60% of the respondents agree or tend to agree that the National Exposure Reduction Target (which requires a relative improvement of air quality by 2020) should become legally binding. Again, this percentage is much lower for the business-associates specifically (32%) and much higher for the NGOs and researchers (around 85%).

3.4 Air quality assessment

The differences in assessment methods between Member States are judged to be moderate to very large. It is striking that most research-associates feel that differences are moderate, while most business-associates feel they are very large.

Most respondents (39%) think that the number of monitoring stations in their cities or regions is enough, this judgement is followed by “somewhat too few” (26%). A majority of only the NGOs claim that the number is somewhat or far too few. The main reason for too few stations according to the respondents is that the Air Quality Directive does not require enough stations. More specifically, some respondents think that high costs discourage governmental organisations to apply more stations. Others mention that hotspots require more stations.

People were asked the following question: Do you think that if areas of poor air quality exist or will come to exist in your city or region, these areas will indeed be identified as areas of poor air quality? A majority (63%) answered that it is likely or even certain that they will be identified. For NGOs this percentage was only 30%. They think that there are too many hotspots and that monitoring stations are not situated at hotspot locations. Respondents from governmental organisations and research-associates that doubt the likeliness of identification come up with another reason, stating that identification is not possible without modelling.

Most respondents (61%) agree or tend to agree that modelling should become mandatory in areas with poor air quality. This is least favoured by business-associates.

3.5 Air quality management in Member States

36% of the respondents think that measures should be taken somewhat more at the EU level instead of the national/regional or local level. 24% think that the current approach is adequate.

The Air Quality Directive is mostly judged to be moderately effective in its requirements for Member States to take action when limit values or target values are exceeded. Research-associates are the most optimistic about this effectiveness, whereas NGOs are the most pessimistic. The most likely reason for not being effective as mentioned by the respondents is the fact that the effectiveness of air quality plans is not ensured, followed by the fact that exceedances can be ignored (especially in relation to target values) and that areas of exceedance are often not identified.

The majority of the respondents feel that the political priority of air quality is low (except for the business-associates). This is seen as one of the main reasons for not meeting the limit and target values (see also Section 3.3). 35% of the respondents think that the inefficiency of the EU legislation plays a role as well. The sectors for which the legislation is judged to be inefficient mentioned most are road transport (86%), shipping (47%), non-road mobile machinery (46%) and agriculture (45%). Interestingly, the ranking by the research-associates differs. They come up with road transport (100%), followed by industry (75%). However, the number of responding research-associates was only small (9).

3.6 Public information and dissemination

Most respondents are neutral about the way the public is informed about air quality matters under the ADQ and the Fourth Daughter Directive. The governmental organizations and research-associates tend to agree more, whereas the NGOs tend to disagree. Most people who (tend to) disagree think the information is incomplete (67%) or too late (29%). Seven business-associates claim that information is not correct. Respondents could fill in other reasons for their disagreement. Five respondents feel that the information is too technical or too complicated, only two mention that the information is hard to find.

The use of air quality data generated under the Air Quality Directive and the Fourth Daughter Directive by respondents ranges from sometimes to very often. Governmental organisations are the most frequently users. They also judge the access to the data best (good to very good by 81% of them, against 57% for business-associates, 56% for research-associates and 45% for NGOs). According to the respondents, access to the data could be improved by better access facilities at websites like user friendly portals in Member States (50%) and at EU websites (40%), more active dissemination by Member States (33%) and a format or layout used EU-wide (32%). Respondents who suggest other ways to improve data access ask for immediate public communication when exceedances of the daily PM_{10} limit value take place (4) and for more detailed data (3).

Most respondents (60%) are or tend to be in favour of introducing a common EU air quality index as a simple way to inform the public and give health relevant advice. 20% of the respondents do not fancy this idea. Business-associates are the least enthusiastic about the idea.

3.7 Governance

Around 37% of the respondents feel that the administrative burden by the Air Quality Directive and the Fourth Daughter Directive in Member States is high or very high; around 13% feel that the burden is low or very low. This applies to all aspects of administration (assessment, reporting and action plans). Figures for the governmental organisations and business-associates largely differ from figures for NGOs and research-associates: high burden is mentioned by 45-55% of the former and by 15-20% of the latter. For governmental organisations, developing action plans gives the highest burden. Business-associates give more emphasis to assessment and implementation of action plans.

The respondents were asked to answer the following question: have administrations in your home country implemented all appropriate measures to comply with the limit value for PM_{10}? The answers are diverse. 44% tends to disagree or disagrees, whereas 31% tends to agree or agrees. NGOs and research-associates disagree more, business-associates agree more and governmental organisations are equally divided.

A final question was posed to respondents representing public authorities. They were asked to identify in their own words how barriers for effective implementation of the directives could be lowered or removed. 56 respondents presented their views on this subject. Table 14 presents groups of answers that were given most.

Table 14 How to lower barriers for effective implementation of the directives according to respondents that represent public authorities.

How to lower barriers for effective implementation of the directives	Number of responses
Harmonize policies and regulations (emission-immission, air quality-climate change)	10
Provide funding to local authorities	6
Define responsibilities and sanctions	5
Increase public awareness	4
Harmonise assessment by monitoring and modelling	3
Increase EU guidance on effective measures and strategies	3

3.8 Scientific and technological innovations

40% of the respondents (especially research-associates) think that one or more air quality standards should be reconsidered because of new scientific or technological advances, whereas 22% is not in favour of any changes. For a detailed overview of the specific standards that should be changed and in what way they should be changed, the reader is referred to Part II of this report. Here, changes suggested by more than 15% of the respondents who think that changes are needed, are presented:

- Limit value for nitrogen dioxide, 1 hour means (health protection): because of new insights in health risks;
- Limit value for nitrogen dioxide, annual mean (health protection): because of new insights in health risks, expected trends in future concentrations and abatement potential for air pollution sources;
- Alert threshold for nitrogen dioxide: because of new insights in health risks;
- Alert threshold for benzene: due to new insights in health risks;
- Limit value for PM_{10}, annual mean: because of new insights in health risks, measurement techniques and abatement potential for air pollution sources;
- Target value for ozone, 8h means (health protection): because of new insights in health risks.

Most respondents cannot judge whether recent scientific/technological development has made regulating the deposition of heavy metals more feasible now. Of those who can, most research-associates think that it is more feasible now, whereas most business-associates think that it is not more feasible.
Also with respect to the question whether benzo(a)pyrene should be reconsidered as a marker for carcinogenity of polycyclic aromatic hydrocarbons, most respondents do not have an answer. Of those who do, most research-associates tend to agree or agree.

A final question was posed to respondents representing scientific bodies. They were asked to present their views on scientific and technological developments and innovations and how they could be taken into account in the review. 30 respondents presented their views on this subject. Most answers are related to the health aspects of air quality. Table 15 presents groups of answers that were given most.

Table 15 Innovation relevant for the review of the Air Quality Directive according to respondents that represent scientific bodies.

Innovation	Number of responses
Focus on ultrafine particles (health relevant)	4
Focus on soot / black carbon / elemental carbon (health relevant)	2
Focus on toxic components of particulate matter	2
Focus on biological pathways of particulate matter, like oxidative stress	2
Focus on heavy metals	2
Focus on indoor air	2
Focus on synergies between air quality and climate change	2
Take into account modelling	2

3.9 The most important issues

The questionnaire suggested possible issues that may have priority in the review. The following issues were mentioned most by the respondents:
- The consistency with other policy fields (52%),
- The fractions of PM being regulated (46%),
- Stronger alignment with climate change policy (44%),
- The strictness of standards for PM (44%),

- Differences between Member States in taking action where improvement of air quality is needed (36%),
- Differences in assessment methodology between Member States (35%).

Respondents representing NGOs also come up with:
- Public participation (55% of NGOs),
- Public information (52% of NGOs),
- The strictness of standards for NO_2 (42%).

Apart from the possible changes listed in the questionnaire, respondents were invited to present their views in their own words on the most important issues for the review of the directives. 131 replies were received, which is 52% of all of the respondents, presenting a very broad range of opinions and statements. Table 16 presents the views that were provided most, grouping related views as issues. The table shows the number of respondents that mentioned the issues. For comparison, the ranking of the issue in the list based on the questionnaire for members of the Stakeholder Expert Group is also given.

Table 16 The most important issues according to experts and practitioners. The issues are numbered and listed in order of the total number of respondents mentioning the issue. For comparison the ranking of the corresponding issue in the replies to the questionnaire of the Stakeholder Expert Group is shown.

The most important issues according to experts and practitioners	**Nr of responses**	***Rank of SEG***
1. Make policies and legislation for acting on specific sources. Road traffic (19 respondents), domestic wood burning (8), agriculture (7), industry (7) and shipping (6) were mentioned most. In general, business-associates claim that regulations on industries have been very stringent and that other sources have to be regulated more stringent from now on.	**49**	-
2. Consistency between EU policies and legislation is very important. Compliance with air quality standards depends to a large extent on the effectiveness and timing of emission reductions under EU legislation. Real-world emissions by road traffic turned out to be considerably higher than expected of the EURO standards. The air quality legislation should also be consistent with legislation in other policy areas, like climate change.	**34**	*2*
3. Consider regulating other, possibly more harmful PM fractions. The PM fractions black carbon, elemental carbon, UFP, PM_1, $PM_{0.1}$ may be more health relevant than PM_{10} and $PM_{2.5}$.	**24**	*1*
4. Consistent and harmonised implementation is important and will improve the level playing field. Consistent implementation throughout the EU, including a better harmonised air quality assessment methodology and enforcement based on a good sanctioning system, is important and will establish a more level playing field between Member States.	**18**	*7*

The most important issues according to experts and practitioners	Nr of responses	*Rank of SEG*
5. Be very cautious in considering more ambitious targets and take also negative effects into account. Do not set further or lower standards without ensuring that measures to achieve these are proportionate and cost-effective. The target values for $PM_{2.5}$ are too challenging. Keep the flexibility provisions, extend the applicability concept.	**16**	*4*
6. Consider further steps to relate air quality standards and assessment better to real population exposure. Take into account indoor and workplace exposure.	**13**	*14*
7. Enhance public awareness and participation. Public acceptance and consensus is needed for successful policies for air quality. Therefore, people need to be better informed about health effects and information should be readily available and understandable to the public.	**13**	-
8. Solutions are needed for exceedances beyond control of the responsible authorities. In particular non-compliance due to adverse weather conditions or geographic circumstances needs to be addressed.	**6**	*5*

Regarding additional information the respondents were asked for, 52 replies were submitted. They range from references to publications on best techniques for industries, examples of action plans from local governments, studies on real world NOx emissions, studies into health effects of particulate matter to a suggestion how to take better account of health in the daily PM_{10} limit value through a weighted sum of concentration level and number of days.

3.10 The respondent's own role

The respondents are prepared to contribute to a better air quality mostly by using public transport, improving personal heating habits, investing in thermal isolation of their homes and buying a low emission vehicle.

4 Results of the questionnaire for citizens interested in air quality

This chapter summarises the 599 responses submitted for the online questionnaire aimed at citizens interested in air quality. Of these, 90% were given on behalf of individual persons. The other 10% respondents represented an organisation of which 18 related to an NGO, 11 to business, 5 to government and 5 to research (see Figure 3)[2]. The response was not proportionally divided over the EU Member States; the most striking was that 39% came from Italy (of which a substantial share referred to people asking for attention for the dioxin pollution by industry in the Italian city of Taranto) and 16% from Belgium.

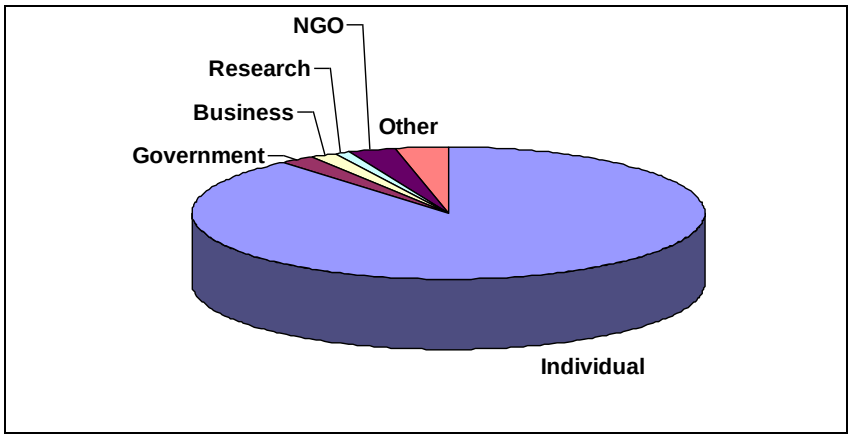


Figure 3 Response by citizens interested in air quality

A full statistical overview of the responses is given in Part II of this report.

4.1 Air quality and policy

Nearly all of the respondents feel that clean air is important, of which 83% states that it is very important. 80% judges the air quality in their living environments from moderate to very bad. Most people have some knowledge on the national and EU legislation. People with no knowledge at all or with very much knowledge are a minority (both around 10%).

4.2 The approach of the Air Quality Directive

A majority of the respondents feel that the approach of the Air Quality Directive is appropriate (40%) or very appropriate (30%). 10% thinks it is hardly or not at all appropriate.

[2] Respondents replying as individuals were not, as in the questionnaire for experts and practitioners, asked to indicate their professional affiliation.

4.3 Air quality standards

Most people are aware of the air quality standards; 9% is not aware. Only 34% feel that the standards are sufficient. Both tightening of the standards and better enforcement are seen as means to improve the sufficiency. Only few respondents come up with other possibilities of which implementing new health relevant metrics was the most common response.
The majority of respondents made their judgement with respect to the standards in general (63%), followed by particulate matter (34%), NO_2 (16%) and ozone (12%). 16% referred to other pollutants like PAHs, dioxin, SO_x, CO, benzene, ultrafine particles and soot.

4.4 Air quality measurements

Most respondents are aware of monitoring of air quality in their cities or regions. 37% feels that the number of monitoring stations is hardly or not at all appropriate for collecting representative data. 32% thinks it is moderately appropriate, whereas 25% feels it is (very) appropriate.

4.5 Air quality management in EU Member States

Nearly half of the respondents feel that Member States and regional and local authorities should not be left with the choice of an appropriate and effective combination of measures. 77% of all the respondents think that the EU should have more influence regarding measures taken in the Member States.

4.6 Being informed

Only 20 to 30% of the respondents feel that they have sufficient information on air quality. This holds for the local level as well as for the national and EU level.

4.7 Do the policies work?

Most people think that The EU policies to reduce air pollution are moderately understandable, and that the EU legislation is moderately structured and moderately effective. The number of more positive judgements was roughly equal to the number of more negative reactions.

4.8 The most important issues

The questionnaire suggested some possible changes to the Air Quality Directive. A vast majority of the respondents is in favour of more strict standards for particulate matter, NO_2 and ozone, requiring more monitoring stations, providing more information about the air quality in their neighbourhoods and making the improvement of air quality by Member States more mandatory.

Apart from the suggested changes, respondents were requested to present their views on the most important issues for the review of the directives. 230 replies were received, which is 38% of all of the respondents, presenting a very broad range of opinions, statements and complaints. Table 17 presents the views that were provided most, grouping related views as issues. The table shows the number of respondents that mentioned the issues.

Table 17 The most important issues according to citizens. The issues are numbered and listed in order of the total number of citizens mentioning the issue.

The most important issues	Nr of responses
1. Policies and legislation should aim at specific sources. Road traffic (34 respondents), industry (26, of which 17 were from citizens asking for attention for the dioxin pollution by industry in the Italian city of Taranto) and waste incineration (13) were mentioned most.	**80**
2. Increase efforts. Citizens feel that authorities and others who are responsible must make more efforts to improve air quality. Stricter sanctions are seen as a good means for this purpose.	**52**
3. Enhance public awareness and participation. Public acceptance and consensus is needed for successful policies for air quality. Therefore, people need to be better informed about health effects and information should be readily available and understandable to the public. Mass media must play a more pronounced role in this. Also, stronger tools for public participation may be helpful.	**37**
4. Focus more on health and exposure Some citizens think that the regulated indicators PM_{10} and $PM_{2.5}$ do not represent health effect appropriately. Another indicator is needed (PM_1, soot and ultrafine particles are mentioned). Apart from the indicator, some people feel that the legislation does not account enough for personal exposure.	**19**

4.9 The respondent's own role

The responding citizens are prepared to contribute to a better air quality in the same way as experts and practitioners: mostly by using public transport, improving personal heating habits, investing in thermal isolation of their homes and buying a low emission vehicle. The percentage of citizens willing to contribute is higher than the percentage of experts and practitioners.

5 Conclusion

The responses to the three questionnaires provide a collection of comments on the experiences of a wide range of stakeholders with the air quality legislation and ideas for revision of it.

Slightly more than half of the members of the SEG replied to the questionnaire. Their views and recommendations – in most cases carefully expressed and often extensively documented – constitute important input to the Air Policy Review, complementing the exchange of views with the Commission at the SEG meetings.

The messages of the SEG and of experts and practitioners were found to be broadly similar. The responding citizens emphasised the importance of further action.

As could be expected, the respondents focused much more on opportunities for improvement than on strengths of the current air quality legislation. Besides the recommendation to merge the Air Quality Directive and the Fourth Daughter Directive, there are only few critical comments on the overall principles and structure of the set of directives relating to air quality (the Air Quality Directive, the Fourth Daughter Directive, the National Emission Ceilings Directive and the sectoral emission legislation), but one of the most prominent messages is that coherence of these directives is crucial for achieving compliance with the air quality standards.

The Business Associations and Environmental NGOs tend to be more homogenous in terms of the views expressed than the Member States, who are often more divided in their views; there are only few issues that are mentioned by a majority of the responding Member States. The clearest differences are found for the ambition level regarding health protection, with on the one hand Business Associations advocating a cautious approach, taking into account the costs and other unfavourable side effects, and NGOs emphasising that major health impacts still remain and calling for more stringent requirements. Member States and Other Stakeholders were divided in this respect.

Clearly, the many suggestions for revision given by the various stakeholders, experts and citizens do not at all constitute a coherent set of revision proposals and should rather be regarded as a collection of ideas, but together they constitute an almost exhaustive set of issues and possibilities to consider in the review.

6 Authentication

Name and address of the client

European Commission
Unit C.3 Industrial Emissions
Air Quality & Noise
Attn. Mr. Scott Brockett
Avenue de Beaulieu 5
B-1160 BRUSSELS
Belgium

Names of the contributors

Dick van den Hout (TNO)
Marita Voogt (TNO)
Lorenz Moosmann (Umweltbundesamt Austria)
Christian Nagl (Umweltbundesamt Austria)
Wolfgang Spangl (Umweltbundesamt Austria)

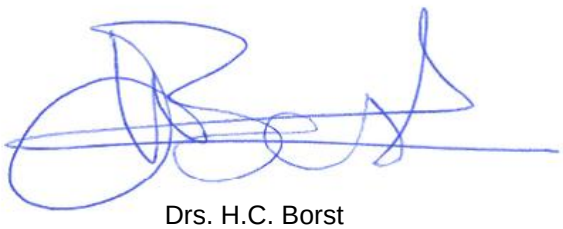
Name and signature reviewer:

Dr. M.P. Keuken

Signature:

Prof.dr. K.D. van den Hout
Project Manager

Release:



Drs. H.C. Borst
Research Manager

Annex A Members of the Stakeholder Expert Group and division in subgroups

Table 18 lists the members of the Stakeholder Expert Group on the Air Review invited to submit their views in the questionnaire. The table also shows the subdivision in four subgroups:
– 27 Member States (MS),
– 19 Business Associations (BA),
– 6 Environmental Non-Governmental Organisations (NGOs),
– 23 Other Stakeholders (OS).

Table 18 Members of the Stakeholder Expert Group on the Air Review and the subdivision in the subgroups: Member States (MS), Business Associations (BA), Environmental Non-Governmental Organisations (NGOs) and Other Stakeholders (OS). The members that have sent a response have been ticked.

SEG Member	Subgroup			
	MS	BA	NGO	OS
Austria				
Belgium	✓			
Bulgaria				
Cyprus				
Czech Republic	✓			
Denmark	✓			
Estonia				
Finland				
France	✓			
Germany	✓			
Greece				
Hungary				
Ireland				
Italy				
Latvia				
Lithuania	✓			
Luxembourg	✓			
Malta				
Netherlands	✓			
Poland	✓			
Portugal				
Romania	✓			
Slovakia				
Slovenia	✓			
Spain				
Sweden	✓			
United Kingdom	✓			
AECC (Association for Emissions Control by Catalyst)		✓		
CECE (Committee for European Construction Equipment)				

SEG Member	Subgroup			
	MS	BA	NGO	OS
CECFIC (European Chemical Industry Council)		✓		
CEMBUREAU (European Cement Association)		✓		
COPA-COGECA (European farmers-European agri-cooperatives)		✓		
ECC (European Cruise Council)		✓		
ECSA (European Community Shipowners' Association)		✓		
EGCSA (Exhaust Gas Cleaning Systems Association)				
ESIF (European Solvents Industry Group)				
EURELECTRIC (Union of the Electricity Industry)		✓		
EUROFER (European Steel Association)		✓		
EUROMETAUX (European Association of Metals)		✓		
EUROMINES (European Association of Mining Industries, Metal Ores & Industrial Minerals)		✓		
EUROMOT (European Association of Internal Combustion Engine Manufacturers)		✓		
EUROPIA (European Petroleum Industry Association)		✓		
ICOMIA (International Council of Marine Industry Associations)				
IMA (Industrial Minerals Association)				
INTERTANKO				
UEAPME (European Association of Craft, Small and Medium-sized Enterprises)		✓		
AirClim (Air Pollution & Climate Secretariat)			✓	
ClientEarth				
ERS (European Respiratory Society)			✓	
European Environment BureauEEB ()			✓	
HEAL (Health and Environment Alliance)			✓	
T&E (Transport&Environment)			✓	
AIRPARIF				
APHEKOM				
CEH/UNECE-TFRN (Centre for Ecology & Hydrology/UNECE-Task Force on Reactive Nitrogen)				
CEMR (Council of European Municipalities and Regions)				✓
CES (European Economic and Social Committee(?))				
CLTRAP (UN-ECE Convention on Long Range Transboundary Air Pollution)				✓
CoR (Committee of the Regions)				
Croatia				
EMEP				
EUROCITIES (The network of major European cities)				✓
FIA (Fédération Internationale d'Automobile)				✓
FIM (Fédération Internationale de Motocyclisme)				
Former Yugoslav Republic of Macedonia				
ICCT (International Council on Clean Transportation)				
ISEE (International Society for Environmental Epidemiology)				✓
Montenegro				✓
Norway				✓
Switzerland				✓

SEG Member	Subgroup			
	MS	BA	NGO	OS
UN-ECE Working Group on Strategies and Review				
US Mission				
WHO (Word Health Organization)				✓
WMO (World Meteorological Organization)				

Annex B Methodological aspects of the analysis of the replies by the Stakeholder Expert Group

This annex to Section 1.3 is intended to clarify the choices made in the analysis of the submissions by the SEG members.

All replies to a particular question were read by the same person and described in set of summary statements, which we call “comments”. Similar comments were clustered and described by a higher level comment that covered the original comments. This clustering was repeated if needed to arrive at a reasonable number (about 10-20) clustered statements – these are called “issues”. In order to clearly bring out the main messages, we identified and ranked issues according to the prevalence in the replies, instead of following the list of possible issues that might be considered in the reply, which were given for most questions in the questionnaire. Another reason for not following these lists was that a substantial number of respondents did not structure their replies according to these lists.

Because the main purpose of the survey was to collect views and ideas on possible improvements of the air quality directives, we did not give different weights to the comments *e.g.* according to the size of a Member State or the expertise of a stakeholder. All comments were treated irrespective of the stakeholder.

Stakeholders mentioned strengths of the legislation, but it was obvious and understandable that the main emphasis in the replies was on giving suggestions to the Commission about perceived weaknesses. Hence it could be assumed that stakeholders would not mention all provisions that they were content with. In view of this, it would not be realistic to treat the comments as in a voting procedure, where negative comments would be cancelled by positive ones. For example, some stakeholders regard satellite data useful for air quality assessment, while others commented that the quality of satellite data is insufficient. We kept both types of comments and presented them as two separate issues (together with the number of stakeholders mentioning it) and referred where appropriate to the issue describing the opposing view.

There were subjective choices in the clustering. This can be best described by giving an example. A number of comments expressed the need to further harmonise the implementation of the directives in Member States. Other comments highlighted the importance of a level playing field. It is clear that harmonisation will contribute to a level playing field and it is likely that concerns about harmonisation were motivated by the wish to have a level playing field. We could express these as separate issues, one on harmonisation and another on the level playing field, but decided to combine both aspects in a single issue and retaining both aspects in the title ‘Consistent and harmonised implementation is important and will improve the level playing field’. This combined statement has a higher number of contributing stakeholders than the two separate issues and accordingly is ranked higher. Hence the choices made in the clustering affects both the homogeneity of the contributing comments and the number of stakeholders contributing. For a balanced picture of the replies, it is important not to single out a particular issue without considering related priorities.

We prioritised the issues brought forward by the SEG members by counting the number of stakeholders contributing one or more comments to issues. An alternative method would be to count the number of comments; this would be different because some stakeholders gave several comments about the same issue. In practice we found that there were hardly differences in the ranking resulting from the two counting methods.

Because the stakeholders contributing to issues were counted per question, this resulted in a priority order for each theme addressed by a question. Question 10 asked for “Your most important issues” and hence resulted in an overall priority listing of the issues. The presentation of the responses in the main body of the report is given per question, starting with Question 10.

In the Executive Summary the description and order of issues is mainly based on Question 10 “Your most important issues”, but also some prominent issues in the replies to thematic questions that were not mentioned under Question 10 are included: the importance of considering synergies and trade-offs with climate change policy and of public information. The overall importance of the issues was estimated by first clustering the issues of all questions and then counting the related comments, using for the thematic questions an additional weight factor of one-third of the weight under Question 10. Because the major issues under Question 10 were also prominent in the replies to the thematic questions, this weighting did not much affect the prominence of the most important issues. In the Executive Summary also the replies of the questions about research results and the respondent’s own role, not mentioned as ‘Your most important issues’ under Question 10, are briefly discussed in the Executive Summary.

Annex C Issues raised per subgroup of the Stakeholder Expert Group

In the main text of this report, the issues brought forward were listed according to the number of stakeholders contributing to each issue. This annex presents the issues per stakeholder subgroup (see Annex A), in the order of the stakeholders in the subgroup contributing to the issues. The item “Various other comments” is not included here.

C1 The Thematic Strategy on Air Pollution (Question 2)

Table 19 Issues regarding the Thematic Strategy on Air Pollution by SEG subgroup. For easy reference, the numbering of Table 3 has been retained.

Issues regarding the Thematic Strategy on Air Pollution of Member States	**MS**
1. More coherence of EU emission reductions and air quality standards is needed (see also Issue 2).	10
4. Synergies with other policies are important, particularly regarding climate change.	7
5. Specific additional sources and sectors need to be addressed.	7
6. The review and the integrated assessment should be thorough.	7
2. Coherence of EU legislation is important (see also Issue 1).	6
3. Trade-offs with climate change policy must be taken into account.	5
7. Further ambition is needed (see also Issues 9, 10, 11).	5
8. Current air policy/legislation is appropriate.	5
10. Promote a level playing field, within the EU by ensuring implementation, and internationally (see also Issues 7, 9, 11).	4
11. Set realistic objectives and aim at regulatory stability (see also Issues 7, 9, 10).	3
9. A good balance with other societal needs and cost-effectiveness is important (see also Issues 7, 10, 11).	2
12. Room for subsidiary action is needed.	2
Issues regarding the Thematic Strategy on Air Pollution of Business Associations	**BA**
9. A good balance with other societal needs and cost-effectiveness is important (see also Issues 7, 10, 11).	8
1. More coherence of EU emission reductions and air quality standards is needed (see also Issue 2).	7
6. The review and the integrated assessment should be thorough.	6
10. Promote a level playing field, within the EU by ensuring implementation, and internationally (see also Issues 7, 9, 11).	6
2. Coherence of EU legislation is important (see also Issue 1).	5
3. Trade-offs with climate change policy must be taken into account.	5
8. Current air policy/legislation is appropriate.	5
11. Set realistic objectives and aim at regulatory stability (see also Issues 7, 9, 10).	4
4. Synergies with other policies are important, particularly regarding climate change.	2
12. Room for subsidiary action is needed.	2
5. Specific additional sources and sectors need to be addressed.	1

Issues regarding the Thematic Strategy on Air Pollution of NGOs	NGO
1. More coherence of EU emission reductions and air quality standards is needed (see also Issue 2).	5
4. Synergies with other policies are important, particularly regarding climate change.	5
5. Specific additional sources and sectors need to be addressed.	5
7. Further ambition is needed (see also Issues 9, 10, 11).	4
3. Trade-offs with climate change policy must be taken into account.	3
2. Coherence of EU legislation is important (see also Issue 1).	2
6. The review and the integrated assessment should be thorough.	1
Issues regarding the Thematic Strategy on Air Pollution of Other Stakeholders	**OS**
2. Coherence of EU legislation is important (see also Issue 1).	7
3. Trade-offs with climate change policy must be taken into account.	6
1. More coherence of EU emission reductions and air quality standards is needed (see also Issue 2).	5
4. Synergies with other policies are important, particularly regarding climate change.	5
7. Further ambition is needed (see also Issues 9, 10, 11).	5
5. Specific additional sources and sectors need to be addressed.	4
8. Current air policy/legislation is appropriate.	4
6. The review and the integrated assessment should be thorough.	2
12. Room for subsidiary action is needed.	1

C2 The approach of the air quality directives (Question 3)

Table 20 Issues regarding the approach of the air quality directives by SEG subgroup. For easy reference, the numbering of Table 4 has been retained.

Issues regarding the approach of the air quality directives of Member States	MS
1. Concepts and provisions of the AQ directives are appropriate.	10
2. Relate standards/provision more to population exposure.	8
4. Consider standards for averages over several years or derogations for dealing with “extreme weather” years.	8
5. The air quality directive/set of air quality standards is very complicated/can be simplified.	6
3. Standards can be difficult to attain/beyond control of local/regional/national authorities.	5
10. Consider a more important role for modelling (see also Issues 13, 15).	5
11. Target values are not very effective / reconsider target values.	5
13. Modelling should remain voluntary / supplementary (see also Issues 10, 15).	4
15. Clarify the role of modelling in compliance assessment (see also Issues 10, 13).	4
6. Better and more uniform implementation in Member States is needed.	3
7. Relate health protection standards better to the harmful constituents.	3
8. Flexibility should be kept.	3
17. There is no need to include other pollutants in the air quality directives.	3
14. A thorough review is needed.	2
16. Consider further provisions for sensitive populations or guidance.	2
18. The air quality directives are too demanding.	2
9. Aim at coherence with other policy areas.	1
19. Minimum protection by limit values doesn't stimulate action where levels are lower.	1

Issues regarding the approach of the air quality directives of Business Associations	**BA**
2. Relate standards/provision more to population exposure.	5
1. Concepts and provisions of the AQ directives are appropriate.	4
7. Relate health protection standards better to the harmful constituents.	4
9. Aim at coherence with other policy areas.	4
8. Flexibility should be kept.	3
3. Standards can be difficult to attain/beyond control of local/regional/national authorities.	2
6. Better and more uniform implementation in Member States is needed.	2
14. A thorough review is needed.	2
4. Consider standards for averages over several years or derogations for dealing with “extreme weather” years.	1
5. The air quality directive/set of air quality standards is very complicated/can be simplified.	1
15. Clarify the role of modelling in compliance assessment (see also Issues 10, 13).	1
17. There is no need to include other pollutants in the air quality directives.	1
Issues regarding the approach of the air quality directives of NGOs	**NGO**
1. Concepts and provisions of the AQ directives are appropriate.	5
12. Align air quality standards with the WHO guidelines.	4
6. Better and more uniform implementation in Member States is needed.	3
16. Consider further provisions for sensitive populations or guidance.	1
Issues regarding the approach of the air quality directives of Member States	**OS**
1. Concepts and provisions of the AQ directives are appropriate.	4
2. Relate standards/provision more to population exposure.	4
3. Standards can be difficult to attain/beyond control of local/regional/national authorities.	4
9. Aim at coherence with other policy areas.	3
12. Align air quality standards with the WHO guidelines.	3
4. Consider standards for averages over several years or derogations for dealing with “extreme weather” years.	2
5. The air quality directive/set of air quality standards is very complicated/can be simplified.	2
8. Flexibility should be kept.	2
10. Consider a more important role for modelling (see also Issues 13, 15).	2
11. Target values are not very effective / reconsider target values.	2
13. Modelling should remain voluntary / supplementary (see also Issues 10, 15).	2
6. Better and more uniform implementation in Member States is needed.	1
7. Relate health protection standards better to the harmful constituents.	1
14. A thorough review is needed.	1
16. Consider further provisions for sensitive populations or guidance.	1
18. The air quality directives are too demanding.	1
19. Minimum protection by limit values doesn't stimulate action where levels are lower.	1

C3 Air quality standards (Question 4.1)

Table 21 Issues regarding the Thematic Strategy on Air Pollution by SEG subgroup. For easy reference, the numbering of Table 5 has been retained.

Issues regarding the air quality standards of Member States	**MS**
5. Simplify the set of standards.	7
6. Air quality standards are appropriate.	7
3. Important contributions to poor air quality are beyond national/regional/local control.	6
2. Review the PM standards, consider addressing more harmful PM fractions, particularly black carbon, ultrafine particles.	5
1. Suggestions for a good standard setting process are given.	4
7. Focusing on exposure is important.	4
14. Suggestions regarding assessment of heavy metals and PAH are given.	4
8. Reconsider the limit values of NO_2.	3
10. Derogations and flexibility are effective (see also Issue 13).	3
11. Target values are not binding and therefore not effective.	3
12. Specific suggestions on relaxing standards are given (see also Issue 4).	3
15. Reconsider the PAH/BaP provisions.	3
4. Specific suggestions on tightening standards are given (see also Issue 12).	2
9. The protection by the air quality standards is limited.	2
16. There are important uncertainties relating to the AEI.	2
17. Consider regulating additional metrics (other than for particulate matter).	2
Issues regarding the air quality standards of Business Associations	**BA**
1. Suggestions for a good standard setting process are given.	7
2. Review the PM standards, consider addressing more harmful PM fractions, particularly black carbon, ultrafine particles.	5
3. Important contributions to poor air quality are beyond national/regional/local control.	4
12. Specific suggestions on relaxing standards are given (see also Issue 4).	2
6. Air quality standards are appropriate.	1
7. Focusing on exposure is important.	1
8. Reconsider the limit values of NO_2.	1
Issues regarding the air quality standards of NGOs	**NGO**
2. Review the PM standards, consider addressing more harmful PM fractions, particularly black carbon, ultrafine particles.	5
4. Specific suggestions on tightening standards are given (see also Issue 12).	5
1. Suggestions for a good standard setting process are given.	4
13. Do not allow derogations (see also Issue 10).	4
3. Important contributions to poor air quality are beyond national/regional/local control.	3
9. The protection by the air quality standards is limited.	3
7. Focusing on exposure is important.	1
8. Reconsider the limit values of NO_2.	1
11. Target values are not binding and therefore not effective.	1

Issues regarding the air quality standards of Other Stakeholders	OS
1. Suggestions for a good standard setting process are given.	4
2. Review the PM standards, consider addressing more harmful PM fractions, particularly black carbon, ultrafine particles.	3
3. Important contributions to poor air quality are beyond national/regional/local control.	2
4. Specific suggestions on tightening standards are given (see also Issue 12).	2
5. Simplify the set of standards.	2
10. Derogations and flexibility are effective (see also Issue 13).	2
6. Air quality standards are appropriate.	1
8. Reconsider the limit values of NO_2.	1
9. The protection by the air quality standards is limited.	1
11. Target values are not binding and therefore not effective.	1

C4 Air quality assessment (Question 5.1)

Table 22 Issues regarding the air quality assessment by SEG subgroup. For easy reference, the numbering of Table 7has been retained.

Issues regarding air quality assessment of Member States	MS
2. Extend the use of models and improve the quality of models (see also Issue 15).	6
3. Comments regarding PM measurement methods are given (see also Issue 5).	5
4. The station density requirements can be improved (see also Issue 7).	4
1. Further harmonisation of air quality assessment is needed (see also Issue 16).	3
5. Improve the equivalence of PM monitors.	3
6. Harmonise assessment methods with EMEP.	3
7. The station density requirements are appropriate (see also Issue 4).	3
9. Satellite data can be useful (see also Issue 10).	3
12. Monitoring is expensive; consider possibilities for optimising or relaxing (see also Issue 8).	3
8. Air quality assessment is cost-effective (see also Issue 12).	2
10. Satellite data are of insufficient quality (see also Issue 9).	2
11. Station siting requirements can be improved.	2
13. There are problems with the reference method for PAH.	2
15. Modelling should not be mandatory (see also Issue 2).	2
14. Merge the Fourth Daughter Directive with the Air Quality Directive.	1
16. No further harmonisation of assessment is needed (see also Issue 1).	1
Issues regarding air quality assessment of Business Associations	**BA**
1. Further harmonisation of air quality assessment is needed (see also Issue 16).	2
5. Improve the equivalence of PM monitors.	1
11. Station siting requirements can be improved.	1
14. Merge the Fourth Daughter Directive with the Air Quality Directive.	1
Issues regarding air quality assessment of NGOs	**NGO**
1. Further harmonisation of air quality assessment is needed (see also Issue 16).	3
2. Extend the use of models and improve the quality of models (see also Issue 15).	1
Issues regarding air quality assessment of Other Stakeholders	**OS**
4. The station density requirements can be improved (see also Issue 7).	3
1. Further harmonisation of air quality assessment is needed (see also Issue 16).	2

Issues regarding air quality assessment of Member States	MS
2. Extend the use of models and improve the quality of models (see also Issue 15).	2
3. Comments regarding PM measurement methods are given (see also Issue 5).	2
8. Air quality assessment is cost-effective (see also Issue 12).	2
10. Satellite data are of insufficient quality (see also Issue 9).	2
5. Improve the equivalence of PM monitors.	1
6. Harmonise assessment methods with EMEP.	1
7. The station density requirements are appropriate (see also Issue 4).	1
9. Satellite data can be useful (see also Issue 10).	1

C5 Air quality management in Member States (Question 6)

Table 23 Issues regarding air quality management in Member States by SEG subgroup. For easy reference, the numbering of Table 7 has been retained.

Issues regarding air quality management in Member States	MS
2. Consider synergies and antagonisms with other policy fields, particularly climate change policy.	7
3. Action at EU or international level is more effective than local action; transboundary air pollution cannot be addressed locally.	6
1. There are possibilities for improvement of AQ plans (see also Issue 7).	4
5. Short term action plans are not very effective.	4
4. Guidance and information exchange on AQ plans and measures is helpful.	3
7. The provisions on AQ plans are appropriate (See also Issue 1).	3
Issues regarding air quality management of Business Associations	**BA**
1. There are possibilities for improvement of AQ plans (see also Issue 7).	3
2. Consider synergies and antagonisms with other policy fields, particularly climate change policy.	2
3. Action at EU or international level is more effective than local action; transboundary air pollution cannot be addressed locally.	2
6. Public information and stakeholder consultation is important.	2
5. Short term action plans are not very effective.	1
Issues regarding air quality management of NGOs	**NGO**
1. There are possibilities for improvement of AQ plans (see also Issue 7).	4
4. Guidance and information exchange on AQ plans and measures is helpful.	4
6. Public information and stakeholder consultation is important.	4
Issues regarding air quality management of Other Stakeholders	**OS**
1. There are possibilities for improvement of AQ plans (see also Issue 7).	3
2. Consider synergies and antagonisms with other policy fields, particularly climate change policy.	2
3. Action at EU or international level is more effective than local action; transboundary air pollution cannot be addressed locally.	2
7. The provisions on AQ plans are appropriate (See also Issue 1).	2
5. Short term action plans are not very effective.	1

C6 Public information and dissemination (Question 7)

Table 24 Issues regarding public information and dissemination by SEG subgroup. For easy reference, the numbering of Table 8 has been retained.

Issues on public information and dissemination of Member States	**MS**
2. A common AQ index is recommended (see also Issue 5).	9
1. Improve public information with respect to specific aspects.	5
3. The provisions on public information are useful and appropriate.	4
7. Complexity in the legislation makes communication difficult.	4
4. Better access to information for the public is important.	3
5. A common AQ index is not recommended (see also Issue 2).	2
Issues on public information and dissemination of Business Associations	**BA**
1. Improve public information with respect to specific aspects.	2
4. Better access to information for the public is important.	2
3. The provisions on public information are useful and appropriate.	1
5. A common AQ index is not recommended (see also Issue 2).	1
Issues on public information and dissemination of NGOs	**NGO**
6. Inform the public also about non-compliance.	4
4. Better access to information for the public is important.	3
Issues on public information and dissemination of Other Stakeholders	**OS**
1. Improve public information with respect to specific aspects.	4
5. A common AQ index is not recommended (see also Issue 2).	4
3. The provisions on public information are useful and appropriate.	3
2. A common AQ index is recommended (see also Issue 5).	2

C7 Governance (Question 8)

Table 25 Issues regarding the governance by SEG subgroup. For easy reference, the numbering of Table 9 has been retained.

Issues regarding governance of Member States	**MS**
1. Important factors are beyond control of the stakeholders.	6
3. Reduce the burden for Member States regarding assessment, reporting, development of AQ plans (see also Issue 8).	6
4. The costs of measures are problematic.	4
5. Public engagement is important.	3
8. The timeframe for preparing AQ plans is too tight.	2
2. Coherence with other policies/legislation is important.	1
6. More guidance/best practice examples is useful.	1
7. The acceptance for AQ measures can be low.	1
Issues regarding governance of Business Associations	**BA**
4. The costs of measures are problematic.	2
1. Important factors are beyond control of the stakeholders.	1
8. The timeframe for preparing AQ plans is too tight.	1

Issues regarding governance of NGOs	NGO
5. Public engagement is important.	4
6. More guidance/best practice examples is useful.	4
2. Coherence with other policies/legislation is important.	3
9. Better enforcement by the Commission is needed.	2
Issues regarding governance of Other Stakeholders	**OS**
2. Coherence with other policies/legislation is important.	5
7. The acceptance for AQ measures can be low.	4
1. Important factors are beyond control of the stakeholders.	2
3. Reduce the burden for Member States regarding assessment, reporting, development of AQ plans (see also Issue 8).	2
4. The costs of measures are problematic.	2
6. More guidance/best practice examples is useful.	2
5. Public engagement is important.	1

C8 Scientific and technological innovations (Question 9)

Table 26 Issues regarding scientific and technological innovations by SEG subgroup. For easy reference, the numbering of Table 10 has been retained.

Issues regarding scientific and technological innovations of Member States	MS
B1 Research on the effects of air pollution is needed.	10
A1 Consider new modelling possibilities.	9
B2 Further research on monitoring and assessment possibilities is needed.	9
B3 Address specific research topics.	8
B4 Investigate new components and metrics.	6
A2 Consider new techniques.	5
C1 Improve access to research results.	5
A3 Consider new results on the health impact of air pollutants.	4
A4 Consider new metrics of air pollutants.	4
C2 Consider the innovation potential of measures.	4
B5 Further research on mitigation possibilities is needed.	2
Issues regarding scientific and technological innovations of Business Associations	**BA**
A1 Consider new modelling possibilities.	5
A4 Consider new metrics of air pollutants.	4
B1 Research on the effects of air pollution is needed.	4
B2 Further research on monitoring and assessment possibilities is needed.	4
B4 Investigate new components and metrics.	3
C1 Improve access to research results.	3
A3 Consider new results on the health impact of air pollutants.	2
B3 Address specific research topics.	2
C2 Consider the innovation potential of measures.	2
A2 Consider new techniques.	1
B5 Further research on mitigation possibilities is needed.	1

Issues regarding scientific and technological innovations of NGOs	NGO
A2 Consider new techniques.	3
B1 Research on the effects of air pollution is needed.	3
B3 Address specific research topics.	3
A1 Consider new modelling possibilities.	2
B2 Further research on monitoring and assessment possibilities is needed.	2
A3 Consider new results on the health impact of air pollutants.	1
B4 Investigate new components and metrics.	1
Issues regarding scientific and technological innovations of Other Stakeholders	**OS**
B3 Address specific research topics.	2
C2 Consider the innovation potential of measures.	2
A3 Consider new results on the health impact of air pollutants.	1
C1 Improve access to research results.	1

C9 Your most important issues (Question 10)

Table 27 Issues regarding the most important issues by SEG subgroup. For easy reference, the numbering of Table 1 has been retained.

The most important issues of Member States	MS
5. Solutions are needed for exceedances that are beyond control of the responsible authorities.	6
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	5
6. A thorough review is needed.	5
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values.	4
8. Reconsider the regulated pollutants and indicators (other than for PM, see Issue 1).	4
10. Reduce the burden of implementation in Member States.	4
7. Level the playing field by harmonised implementation, burden sharing and international co-ordination.	3
9. Modelling should have a greater role.	3
11. Simplify the set of air quality standards.	3
12. Include the Fourth Daughter Directive in the Ambient Air Quality Directive.	3
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4).	2
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3).	2
13. Reconsider the PM measuring methods.	1
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	1
15. Provide help and funding to problem areas.	1

The most important issues of Business Associations	BA
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3).	8
7. Level the playing field by harmonised implementation, burden sharing and international co-ordination.	4
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	3
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values.	3
6. A thorough review is needed.	3
13. Reconsider the PM measuring methods.	2
5. Solutions are needed for exceedances that are beyond control of the responsible authorities.	1
11. Simplify the set of air quality standards.	1
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	1
The most important issues of NGOs	**NGO**
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	5
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4).	5
8. Reconsider the regulated pollutants and indicators (other than for PM, see Issue 1).	1
The most important issues of Other Stakeholders	**OS**
2. Consistency between EU policies and legislation is very important, particularly between the real world emission reductions (road traffic emissions and NECD) and the air quality limit values.	4
3. Be ambitious and consider further possibilities to reduce emissions (see also Issue 4).	4
1. Consider regulating other, possibly more harmful PM fractions, in particular black carbon/elemental carbon and/or ultrafine particles.	2
5. Solutions are needed for exceedances that are beyond control of the responsible authorities.	2
4. Be very cautious in considering more ambitious targets and take also negative effects into account (see also Issue 3).	1
9. Modelling should have a greater role.	1
12. Include the Fourth Daughter Directive in the Ambient Air Quality Directive.	1
14. Take real population exposure better into account in the evaluation of exceedances and assessment.	1
15. Provide help and funding to problem areas.	1
16. Co-ordinate research and the assessment methodology with CLTRAP.	1

C10 Your own involvement in the review process (Question 11)

Table 28 Issues regarding the respondent's involvement in the review process by SEG subgroup. For easy reference, the numbering of Table 11 has been retained.

Involvement of the respondent in the review process (Member States)	MS
4. The respondent proposes to provide a specific contribution.	4
1. The respondent is prepared to collaborate in the review.	3
2. The respondent can contribute experts, expertise, research results.	2
3. The respondent can involve its internal stakeholders.	2
6. Recommendations about the review process are given.	2
5. Transparency will facilitate collaboration with stakeholders.	1

Involvement of the respondent in the review process (Business Associations)	**BA**
1. The respondent is prepared to collaborate in the review.	7
2. The respondent can contribute experts, expertise, research results.	6
5. Transparency will facilitate collaboration with stakeholders.	3
3. The respondent can involve its internal stakeholders.	1
Involvement of the respondent in the review process (NGOs)	**NGO**
3. The respondent can involve its internal stakeholders.	2
6. Recommendations about the review process are given.	2
1. The respondent is prepared to collaborate in the review.	1
2. The respondent can contribute experts, expertise, research results.	1
Involvement of the respondent in the review process (Other Stakeholders)	**OS**
1. The respondent is prepared to collaborate in the review.	3
3. The respondent can involve its internal stakeholders.	2
2. The respondent can contribute experts, expertise, research results.	1

Annex D Abbreviations and acronyms

AEI	Average exposure indicator
AQ	Air quality
AQD	Directive 2008/50/EC on ambient air quality and cleaner air for Europe (('the Air Quality Directive')
AQUILA	(European network of) Air Quality Reference Laboratories
BaP	Benzo(a)pyrene
BC	Black carbon
BREF	Best Available Technology Reference document
CEN	European Committee for Standardization
CLTRAP	UNECE Convention on Long-Range Transboundary Air Pollution
DD4	Directive 2004/107/EC on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air ('the Fourth Daughter Directive')
EAP6	Sixth Environmental Action Plan
EC	Elemental carbon
ECO	Exposure concentration obligation
EEA	European Environment Agency
EIONET	European Environmental Information and Observation Network
EMEP	European Monitoring and Evaluation Programme (part of CLTRAP)
EPA	Environmental Protection Agency
ERT	Exposure reduction target
EURO6	EU emission standard for road vehicles entering in force in 2014
FAIRMODE	Forum for Air quality Modelling in Europe
GMES	(European programme for) Global Monitoring for Environment and Security
HM	Heavy metals
ICAO	International Civil Aviation Organization
IED	Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control) ('Industrial Emission Directive')
JRC	Joint Research Centre of the European Commission
LRT	Long-range transport (of air pollution)
LTO	Long term objective
LV	Limit value
MS	Member State
NECD	Directive 2001/81/EC on National Emission Ceilings for certain pollutants ('the National Ceilings Directive')
NERT	National exposure reduction target
PAH	Polycyclic aromatic hydrocarbons
PM	Particulate matter
PNC	Particle number concentration
RICE	Reciprocating Internal Combustion Engine
TEOM	Tapered element oscillating microbalance (PM sampling instrument)
TSAP	Thematic Strategy on Air Pollution
TV	Target value
UFP	Ultrafine particles
VOC	Volatile Organic Compounds
WHO	World Health Organization