European Union Network for the Implementation and Enforcement of Environmental Law

Improving Air Quality

Supporting IED Implementation
Industry & Air Expert Team
2022–2024

Date of report: 20.10.2024

Report number: 2022(I)WG8

Funded by the European Union

IMPEL is funded by a "FRAMEWORK PARTNERSHIP AGREEMENT" with European Commission DIRECTORATE-GENERAL FOR ENVIRONMENT - LIFE PROGRAMME (ENV.E.4/FPA/2022/001 – IMPEL)

Introduction to IMPEL

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) is an international non-profit association of the environmental authorities of the European Union (EU) Member States, and of other European authorities, namely from acceding and candidate countries of the EU and European Economic Area (EEA). The association is registered in Belgium and its legal seat is in Brussels, Belgium.

IMPEL was set up in 1992 as an informal Network of European regulators and authorities concerned with the implementation and enforcement of environmental law. The Network's objective is to create the necessary impetus in the European Community to make progress on ensuring a more effective application of environmental legislation. The core of the IMPEL activities concerns awareness raising, capacity building and exchange of information and experiences on implementation, enforcement and international enforcement collaboration as well as promoting and supporting the practicability and enforceability of European environmental legislation.

During the previous years IMPEL has developed into a considerable, widely known organisation, being mentioned in a number of EU legislative and policy documents, e.g. the 8th Environment Action Programme that guide European environmental policy until 2030, the EU Action Plan: "Towards a Zero Pollution for Air, Water and Soil" on Flagship 5 and the Recommendation on Minimum Criteria for Environmental Inspections.

The expertise and experience of the participants within IMPEL make the network uniquely qualified to work on both technical and regulatory aspects of EU environmental legislation.

Information on the IMPEL Network is also available through its website at: www.impel.eu

Title of the report:	**Number report:**
Improving Air Quality	2022(I)WG8
Authors: Matilda CUCU, Project Manager, Romania Oliver WOLF, Deputy Project Manager, Germany Metah BEIJERING, The Netherlands Carlos FARIA, Portugal Nina JANDRIC, Croatia Elizabeta MIFKA, Croatia Shpat NIVOKAZI, Kosovo Jola PROKO, Albania Zuzana BIENSKA, Slovakia (until 12/2023) Richard GOULD, United Kingdom (until 12/2023) In addition, several other IMPEL members contributing to our work during the project meetings.	**Report adopted at IMPEL General Assembly Meeting**: 28-29 November 2024 Budapest **Total number of pages: 67** Report: 49 Annexes: 18

Executive Summary

This project, reactivated at the end of 2022, aimed to analyse air quality at the level of the member states and the methods of improving air quality through close knowledge of both industrial directive and the ambient air quality directives.

If at first, the working group focused on the literature review, then the conception of a questionnaire became the most effective tool in identifying through the respondents of the member countries, the challenges and critical points both from the point of view of the permit writers and the field inspectors. So the following report and the associated factsheets set out the findings of an IMPEL working group relating to four issues related to the air quality.

The working group used a survey and a questionnaire, the latter includes a set of questions, while the former is both the set of questions and the process of collecting, aggregating, and analysing the responses from those questions.

The following summarises the outputs for each topic.

1. Industrial pollution regulation
2. Air pollution
3. Air quality monitoring
4. Air quality management

Disclaimer

This report is the result of a project within the IMPEL network. The content does not necessarily represent the view of the national administrations or the Commission.

Quotation

TABLE OF CONTENTS

1 PURPOSE OF THE PROJECT 7

1.1 Background 7

1.2 Procedures / Work Program 8

1.3 Acknowledgements 9

2 METHODOLOGY OF THE SURVEY 10

3 RESULTS 12

3.1 Characterization of the Respondents 12

3.2 Air Pollution 13

3.3 Air Quality Monitorng 35

3.4 Air Quality Management 41

4 CONCLUSIONS AND RECOMMENDATION 46

4.1 Key shortcomings and gaps within EU Air Quality Legislation 46

4.2 General Conclusions 47

4.3 Improvements 49

5 ANNEX 50

5.1 Questionaire 50

TABLE OF FIGURES

Figure 1 Members of Working Group Improving Air Quality 9
Figure 2 Participating Member States and the Number of their Responses 12
Figure 3 Total Number of IPPC installations by Member State (end 2013), Data from 12
Figure 4 Diagram for Question Q1 13
Figure 5 Diagram for Question Q4 16
Figure 6 Diagram for Question Q5 17
Figure 7 Diagram for Question Q7 19
Figure 8 Diagram for Question Q8 20
Figure 9 Diagram for Question Q9 21
Figure 10 Diagram for Question Q11 22
Figure 11 Diagram for Question Q12 23
Figure 12 Diagram for Question Q14 24
Figure 13 Diagram for Question Q15 25
Figure 14 Diagram for Question Q16 26
Figure 15 Diagram for Question Q17 27
Figure 16 Diagram for Question Q18 28
Figure 17 Diagram for Question Q19 29
Figure 18 Diagram for Question Q20 30
Figure 19 Diagram for Question Q21 31
Figure 20 Diagram for Question Q22 32
Figure 21 Diagram for Question Q23 33
Figure 29 Diagram for Question Q36 34
Figure 22 Diagram for Question Q26 38
Figure 23 Diagram for Question Q27 39
Figure 24 Diagram for Question Q30 40
Figure 25 Diagram for Question Q31 41
Figure 26 Diagram for Question Q33 42
Figure 27 Diagram for Question Q34 43
Figure 28 Diagram for Question Q35 44

1 Purpose of the Project

1.1 Background

In 2019 the European Commission has launched the so called European Green Deal with the aim of transforming the EU into a fair and prosperous society, with a modern, resource-efficient, and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.

Industrial production processes account for a considerable share of the overall pollution in Europe due to their emissions of air pollutants, discharges of wastewater and the generation of waste. Achieving a climate neutral and circular economy requires the full mobilisation of industry. It takes 25 years – a generation – to transform an industrial sector and all the value chains. To be ready in 2050, decisions and actions need to be taken in the next five years.

Clean air is essential to our health and to the environment. However, due to human activities causing polluting emissions, air quality has deteriorated considerably. These activities are notably linked to industry, energy production, domestic heating, agriculture and transport.

Air pollution is the number one environmental health problem in the EU. It causes serious illnesses such as asthma, cardiovascular problems and lung cancer, and vulnerable groups are affected the most. Air pollution also damages the environment and ecosystems through excess nitrogen pollution and acid rain. It is also costly for our economy, as it leads to lost working days and high healthcare costs.

The “Improving Air Quality” project seeks to investigate the implementation of EU Directives, specifically the Air Quality Directive (2008/50/EC), which focuses on ambient air quality and cleaner air for Europe, and the Industrial Emissions Directive (2010/75/EU), which aims to ensure integrated pollution prevention and control for industrial emissions. European regulators of industrial production are responsible for the proper implementation of European environmental legislation. In these directives and the related best available techniques conclusions, the emissions of critical substances like nitrogen compounds, fine particles, volatile organic compounds, sulphur dioxide, benzene, persistent organic pollutants and heavy metals are limited. Unfortunately, despite the ambitious limit values the concentrations of these substances and their secondary products in the air are still too high in many European areas. Especially in urban areas with a mixture of industrial background concentrations and road traffic emissions, the situation is still detrimental for the human health.

As part of the IED Implementation Project, a sub-group called “Improving Air Quality” was reactivated at the end of 2022. This group aims to identify and address various interrelated interpretational issues regarding air quality at the Member State level. The focus of their work has been to identify challenges and key gaps in understanding, with the goal of fostering a common understanding and promoting best practices in air quality management.

The subgroup gathered answers from IMPEL MS respondents for the following topics:

1. Industrial pollution regulation
2. Air pollution
3. Air quality monitoring
4. Air quality management

1.2 Procedures / Work Program

The subgroup conducted a survey of the project containing questions to Member States (MS) about a range of interconnected interpretational issues related to air quality level. The aim was to develop a common understanding of these issues and develop good practice based on the answers of the questionnaire, like for example Permit Issuing Challenges:

- One issue encountered during the issuance of permits is the occasional lack of compatibility between directives, such as the misalignment in definitions between IED and AQMS pollutants. Additionally, it would be beneficial to ensure that, when setting EU-level Emission Limit Values (ELVs), consideration is given to the assurance of compliance with air quality standards specified by AQMS.
- Time frame for revising the BREF/BATC documents: The state of the art evolves faster than is reflected in the BREF or BATC documents. Authorities struggle with discrepancies between the applicable European law and the newer techniques when granting permissions. If newer techniques are not yet included in BREF/BATC documents, their applicability and terms of usage need to be defined individually. Sometimes, limit values of the existing European law cannot be easily transferred onto newer techniques due to considerable differences between older and newer techniques. Both examples results in non-uniform conditions in member states.
- The process of implementing European legislation into national laws is time-consuming, exacerbated by the extensive existing national legislation. Several years elapse before adapted national laws come into force. The requirement for installations to comply with new conditions within four years after BATC publication accelerates the adaptation process, effectively reducing the impact of prolonged national legislation timelines. Consequently, authorities are compelled to swiftly update permit conditions, while operators face time constraints to adapt installations to meet the new requirements

The subgroup team has developed good practice examples that could be used to further develop the Doing the Right Things (DTRT) Guidance, which contains guidance and factsheets from other previous and related, IMPEL projects dealing with issues of industrial regulation.

Work on the factsheet involved gathering of data on that topic through various means such as face-to-face meetings, online monthly meetings on Teams, questionnaire, survey. Finally, factsheets were produced to summarise

the outcome of the previous work in a manner which could be read as either as a stand-alone document or as part of the DTRT Guidance.

Working Group Meetings included:

- Ghent (BE) (part of Supporting IED Implementation project meeting) – October 2022
- Bucharest (RO) – May 2023
- Stuttgart (DE) (part of Supporting IED Implementation project meeting) – October 2023
- Freiburg (DE) – May 2024.

1.3 Acknowledgements

The project team would like to acknowledge the contribution of various people from several regional and national authorities who have contributed towards the data and discussions required for this project. Another word of thanks goes to IMPEL members and participants of the Industry and Air Expert team for their input and continuous support in producing the factsheets as project deliverables.

Figure 1 Members of Working Group Improving Air Quality

2 Methodology of the survey

The main goal of this survey was to gather comprehensive information regarding the level of implementation of air quality and air pollution directives across the European Union (EU). The focus is on identifying the issues faced by the regulators, permit writers, and inspectors in implementing and enforcing these policies. Additionally, the survey sought to identify other issues affecting air quality in the EU and propose possible solutions.

Several EU directives that are of central relevance to the topic were taken into account in the preparation of this survey. These directives provide legal frameworks and guidelines that enable data to be collected and analysed in line with the objectives of the European Union. The most important directives used in this context include:

- Directive 2008/50/EC, on ambient air quality and cleaner air for Europe;
- Directive 2004/107/EC, relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air;
- Directive 2010/75/EU, on industrial emissions (integrated pollution prevention and control);
- Directive (EU) 2016/2284, on the reduction of national emissions of certain atmospheric pollutants;
- The Revision of the Ambient Air Quality Directives (setting a zero pollution objective for air by 2050).

The survey focused on regulators, permit writers, and inspectors from various EU member states, recognizing their essential role as key stakeholders in the implementation and enforcement of European environmental legislation. Their expertise and perspectives are invaluable for developing effective policies and ensuring compliance with established environmental standards.

To thoroughly investigate the complex issues surrounding air quality and pollution control, the survey was organized into five distinct chapters, comprising 44 questions. This structure facilitates an in-depth exploration of specific topics, ensuring that every aspect of air quality management is comprehensively covered. The five chapters of the survey are as follows:

1. **Background information**: This chapter gathers basic information on the participants, such as position, institution, and country.
2. **Industrial pollution**: This chapter collects information on the effectiveness of existing EU legislation to improve air quality, identifies the main sources of industrial air pollution, and assesses the effectiveness of environmental permit processes and emission control strategies.
3. **Air pollution**: This chapter focuses on sources of air pollution other than industrial pollution.
4. **Air quality monitoring**: This chapter assesses the adequacy of current air quality monitoring practices and data accessibility.

5. **Air quality management**: This chapter collects information on the effectiveness of national air pollution control plans and air quality maintenance plans, as well as actions taken in response to complaints.

3 Results

3.1 Characterization of the Respondents

For an introductory assessment, the participating member states and the number of their responses were determined. A total of 23 responses were received from 16 different member states. Comparing the participating member states with the states that have the most IPPC installations (Integrated Pollution Prevention and Control) - namely Germany, France, Italy, Spain, the United Kingdom, and the Netherlands - it was noted that all but Italy and Spain provided responses. However, the number of responses from these countries was relatively low. This discrepancy highlights an area for further exploration, as it raises questions about the engagement levels of key countries in the survey related to air quality and pollution control.

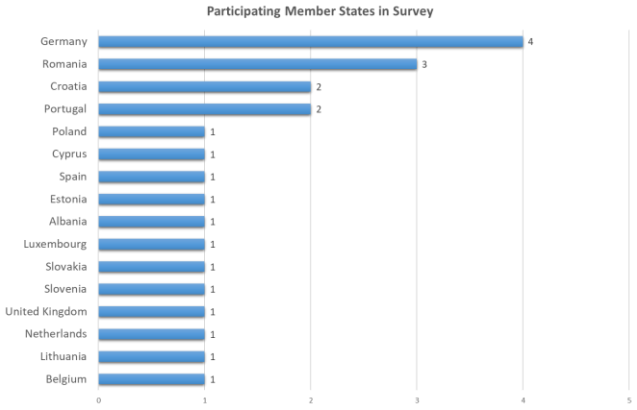

Figure 2 Participating Member States and the Number of their Responses

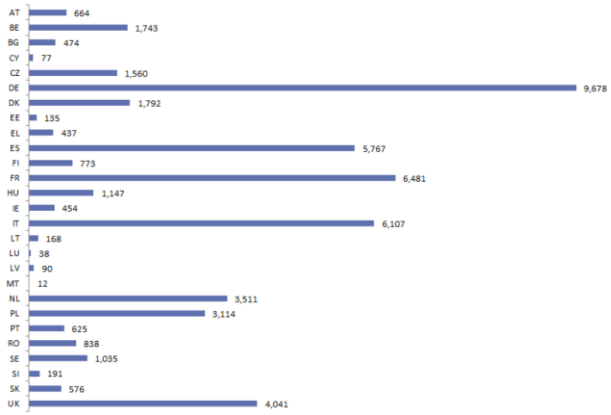

Figure 3 Total Number of IPPC installations by Member State (end 2013), Data from [1]

[1] Assessment and Summary of the Member States' Implementation Reports for the IED, IPPC Directive, SED and WID; IPPC Directive Final Report – Prepared by Amec Foster Wheeler Environment & Infrastructure, UK Ltd, March 2016

3.2 Air Pollution

This chapter focuses on the various sources of air pollution that do not originate from industrial activities. Both natural and anthropogenic emissions that can contribute to the deterioration of air quality are considered. These include traffic emissions, agricultural practices, domestic heating and the use of chemicals in everyday life. In addition, the effects of these sources of pollution on the environment and public health are analysed in detail in order to promote a comprehensive understanding of air pollution problems in non-industrial contexts.

3.2.1 Q1 In your opinion, is the European legislation effective in improving air quality?

The responses show a quite mixed opinion on the effectiveness of European legislation in improving air quality. While some respondents consider the measures to be positive and effective, as they have led to a noticeable reduction in pollutants and an improvement in overall air quality in certain regions, others express concerns about the actual implementation and enforcement of these laws. Critics point out that despite existing regulations, air quality remains inadequate in some cases. It is also noted that regional differences and economic factors can influence the effectiveness of the laws. Overall, the results reflect different perspectives that consider both successes and challenges in air quality regulation through European legislation.

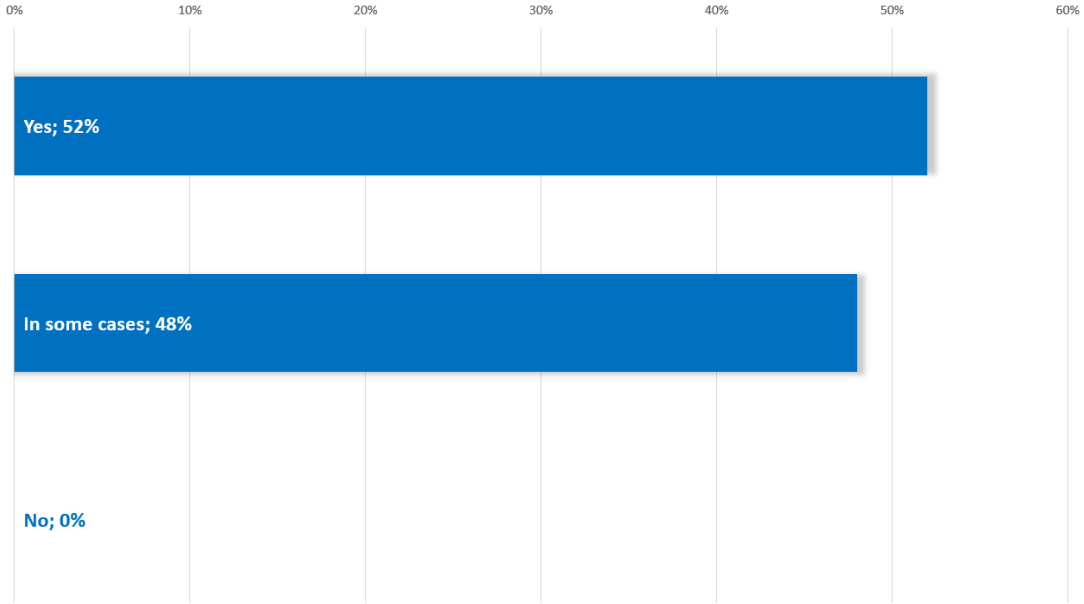

Figure 4 Diagram for Question Q1

3.2.2 Q2 In your opinion what are the main shortcomings and gaps within air quality EU legislation?

The analysis of the participants' feedback identifies several significant challenges and deficiencies in the current air quality regulatory framework:

1. Complexity and Implementation Challenges: The multitude of regulations related to air quality creates complexity, particularly with varying limit values across sectors. Strict limits apply to a small number of industrial sites, while many other plants face weaker standards.

2. Need for a Level Playing Field: It is essential to advocate for more binding parameters and aligned monitoring methodologies to ensure consistency across sectors.

3. Discrepancy Between Targets and Implementation: Often, air quality standards are not met due to a gap between ambitious targets and the actual implementation of necessary measures. Existing legislation is seen as too slow to effect meaningful change.

4. Unregulated Pollutants: Current legislation does not adequately address all air pollutants, particularly ultrafine particles.

5. Climate Change Considerations: There is insufficient consideration of climate change impacts on air quality, such as increased ground-level ozone.

6. Shipping and Aviation Regulation: Air pollution from shipping and aviation remains inadequately regulated.

7. Non-Exhaust Emissions: EU regulations do not fully address emissions from non-exhaust sources, such as tire wear and brake dust.

8. Agricultural Impact: The role of agriculture in air pollution is underrepresented, with a lack of effective measures targeting emissions from manure and fertilizers.

9. Inconsistent Monitoring: Discrepancies in monitoring and reporting practices among member states hinder the collection of up-to-date air quality data.

10. Limited Authority for Local Authorities: The legislative framework does not empower local authorities sufficiently to address air pollution effectively at the regional level.

11. Odor Pollution Legislation: The EU framework lacks clarity regarding odor pollution, with poorly defined responsibilities for local communities.

12. Weak Enforcement: Some provisions lack specificity, and enforcement of EU legislation is inadequate in certain countries.

13. Guidance on Improvement Measures: There is a notable absence of guidance on optimal air quality improvement measures, complicating efforts to enhance air quality.

14. Lifetime Regulations for Installations: The lack of rules governing the lifetime of installations has led to discrepancies in emissions, particularly between older and newer facilities. Suggestions include establishing a maximum technical lifetime of 20-30 years for installations.

15. Bureaucratic Burden: The extensive monitoring and reporting requirements are overwhelming for local authorities, detracting from their ability to address more immediate environmental concerns.

16. Permit Issuing Challenges: Issues with permit issuance arise from misalignment between directives and a need for consideration of compliance with air quality standards when setting EU-level emission limits.

17. BREF/BATC Revision Periods: The pace of technological advancement often outstrips updates in BREF and BATC documents, leading to discrepancies in regulatory compliance and necessitating individual assessments for newer techniques.

18. Need for Guidance on Improvement Measures: There is a lack of comprehensive guidance and resources regarding effective air quality improvement measures.

3.2.3 Q3 How many industrial installations are there in your county/region?

Unfortunately, the responses to this question are not suitable for further analysis due to a lack of clarity and consistency. The feedback collected includes findings relating to both Industrial Emissions Directive (IED) installations and non-IED installations, resulting in a mix of information that makes it difficult to utilise. For example, the Romanian data refers specifically to IED installations at district level, which is a highly specialised subset of installations and does not provide a comprehensive overview of the actual type and number of installations across the country.

In contrast, Slovenia reported 8000 installations, a figure that very likely includes both IED and non-IED installations across the country (see Figure 2). Such differences can lead to distortions in comparative analyses and hinder the development of uniform policies that aim to achieve effective environmental regulation. Furthermore, these inconsistencies in the data reflect the different administrative structures and operational frameworks in the individual countries and the authorities in which the reporters work.

In order to improve data quality and the comparability of future analyses, it is important to establish standardised definitions and criteria.

3.2.4 Q4 Choose the main pollutants in your region/county.

Particulate matter (PM10 and PM2.5), nitrogen dioxide (NO2) and nitrogen oxides (NOx) are the most frequently mentioned air pollutants, accounting for 61% of mentions. These figures illustrate not only the widespread presence of these air pollutants, but also their potentially significant health effects on the population.

Particulate matter is particularly known for its ability to enter the respiratory tract, which can lead to a variety of health problems, including respiratory disease, cardiovascular disease and even premature mortality. PM2.5, the smaller particles, are particularly dangerous as they can penetrate deep into the lungs and even into the bloodstream.

Nitrogen dioxide and nitrogen oxides are also significant pollutants, mainly from traffic emissions and industrial processes. They can lead to respiratory problems, a deterioration in lung function and increased allergic reactions. They also contribute to the formation of ozone at ground level, which further impairs air quality and harbours additional health risks.In addition to these major pollutants, other harmful substances are also noted by a significant number of respondents. Carbon monoxide (CO), often associated with vehicle emissions and indoor burning, poses serious health risks. Ammonia, a contributor to particulate formation, and ozone, a secondary pollutant formed through photochemical reactions, are also of concern. Sulphur dioxide (SO2), primarily originating from industrial processes and burning fossil fuels, is similarly acknowledged for its detrimental effects on both health and the environment.

While the focus is predominantly on the aforementioned pollutants, several others are mentioned less frequently. These include lead, which is primarily related to past use of leaded gasoline and industrial emissions; polycyclic aromatic hydrocarbons (PAHs), which can arise from incomplete combustion; non-methane volatile organic compounds (VOCs), which originate from various industrial and consumer products; benzo(a)pyrene, a specific PAH known for its carcinogenic properties; hydrogen sulphide (H2S), often associated with natural sources and industrial activities; and benzene, a well-known carcinogen found in petroleum products.

The varying levels of concern regarding these pollutants reflect both their prevalence in urban environments and their associated health risks, underscoring the need for ongoing public awareness and regulatory measures to mitigate air quality issues.

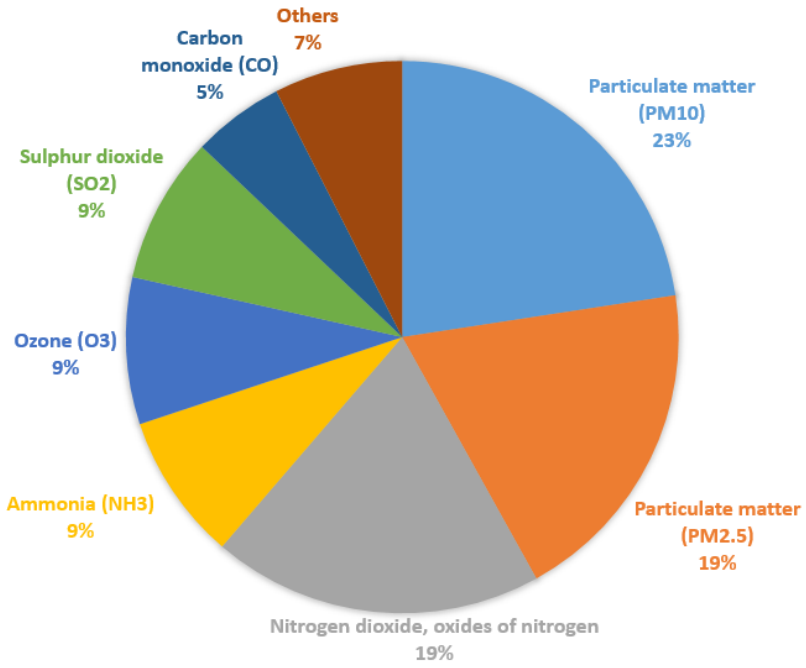

Figure 5 Diagram for Question Q4

3.2.5 Q5 Is the environmental permitting process effective in preventing/mitigating air pollution?

The majority of responses, 84% to be exact, indicate that the environmental permitting process is seen as effective in preventing and mitigating air pollution. This positive assessment reflects respondents' confidence in the mechanisms that contribute to the authorisation of activities that can release potentially harmful emissions into the atmosphere.

Environmental authorisation ensures that companies and operating sites must meet certain standards and requirements before they can start or continue their activities. This process often involves extensive assessments of potential environmental impacts, analysing best available techniques (BAT) and setting emission limits.

The high approval rate shows that many experts consider the implementation of strict regulations and proper monitoring by authorities to be crucial for maintaining air quality. Permitting procedures should not only serve to minimise exposure to harmful emissions, but also ensure that potential risks to public health and the environment are adequately addressed.

Overall, the high approval rate shows that the environmental permitting process is seen as effective, but also offers room for improvement and adaptation to continue to effectively address the challenges of air pollution.

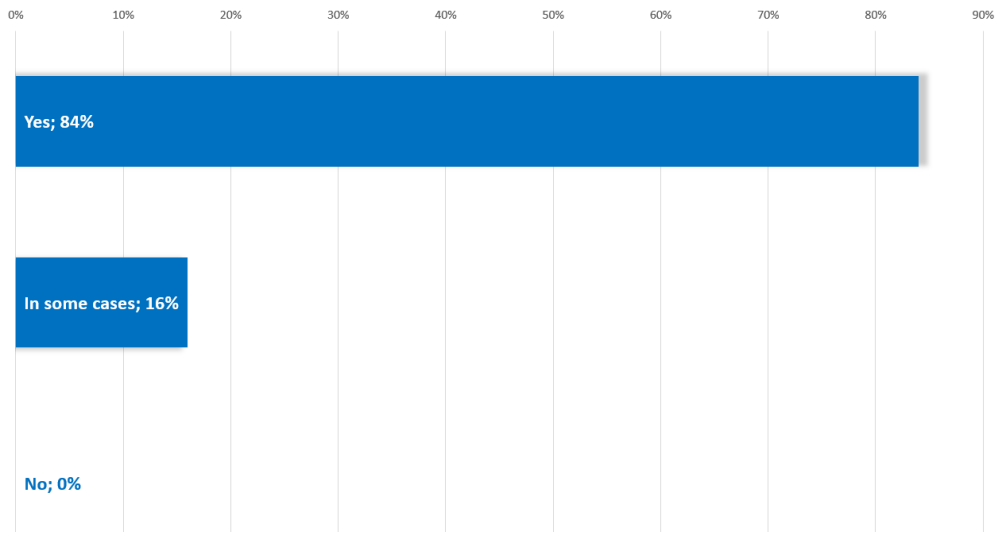

Figure 6 Diagram for Question Q5

3.2.6 Q6 Is the environmental permitting process effective in preventing/mitigating air pollution? If you answered "no" or "in some cases" please specify.

1. Outdated mandatory rules: The current mandatory rules on air emissions are considered outdated and no longer up to date.
2. Non-compliance by some companies: There are companies that do not comply with environmental requirements, which highlights the need for improved implementation and verification.
3. Complaints despite permit compliance: There are cases where operators, although operating in accordance with their permits, still receive complaints.
4. Challenges posed by new BAT conclusions and outdated BREF documents: The introduction of new BAT conclusions brings challenges, especially in combination with outdated BREF documents, which is particularly evident in sectors such as iron and steel. In addition, many older plants are in operation in some regions.

3.2.7 Q7 Are there installations operating without the proper environmental permits in your county/area?

The responses gathered from local authorities reveal a varied perception concerning the presence of installations operating without the necessary environmental permits in the county or area. A notable 60% of the responding authorities report that there are no such installations, suggesting a belief that the majority of facilities within their jurisdiction are in compliance with established environmental regulations. This confidence may reflect the effectiveness of current monitoring and enforcement strategies, as well as positive experiences with regulatory adherence among local businesses.

In contrast, 40% of authorities recognize that there are indeed installations operating without the proper permits. This acknowledgment points to a significant level of awareness regarding ongoing non-compliance issues within the community. These authorities may be influenced by various factors, including reported incidents, complaints from residents, or inspection findings that highlight the challenges in enforcing environmental regulations. Such recognition underscores the reality that while many businesses may strive to comply with regulations, some may fall short, potentially posing risks to environmental quality and public health.

The split in perceptions among local authorities suggests a need for further investigation and action to address these discrepancies. It highlights the imperative for ongoing vigilance in regulatory enforcement and community engagement. To strengthen trust and ensure that all installations adhere to environmental standards, it may be beneficial for authorities to implement more robust inspection protocols and improve communication with the public regarding compliance efforts. Increased transparency about enforcement actions and public reporting of environmental assessments could help bridge the gap between perceptions and reality, ultimately fostering a more informed and proactive community stance on environmental protection.

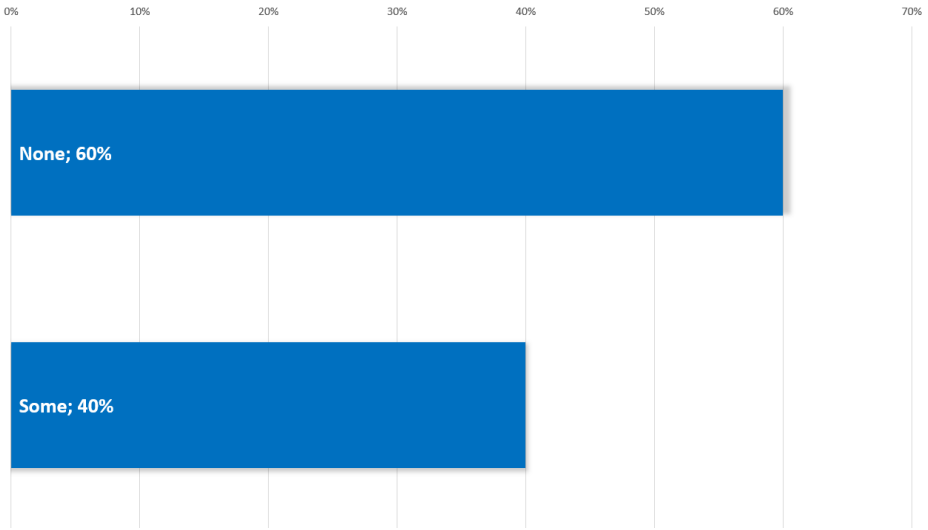

Figure 7 Diagram for Question Q7

3.2.8 Q8 Are there installations operating without the proper environmental permits in your county/area? Which sectors are they from?

The feedback indicates that the installations operating without the required environmental authorisations are mainly from the waste treatment and storage sectors. This category is in first place and is mentioned more frequently than the others.

In second place are intensive poultry and pig farming businesses, followed by the energy industry and energy production. These three most frequently mentioned sectors together account for an impressive 55% of the responses.

The high number of notifications for these specific sectors suggests that there may be a significant discrepancy between actual practice and the required authorisations in these industries. Particularly in the area of waste treatment and storage, this could indicate that existing regulations are not being adequately enforced or that there may be a lack of awareness and training for operators to apply for the necessary permits.

Intensive livestock farming is not only a challenge from an environmental perspective, but also raises questions about animal welfare standards and the potential impact on the local environment. In the energy industry, which is often the focus of environmental policy discussions, unauthorised practices could lead to significant environmental impacts, which can endanger both the environment and the health of local residents.

Overall, this analysis of feedback indicates that there is an urgent need for action in these key sectors to raise awareness of environmental compliance and ensure that the necessary permits are applied for and complied with to ensure sustainable development and environmental protection.

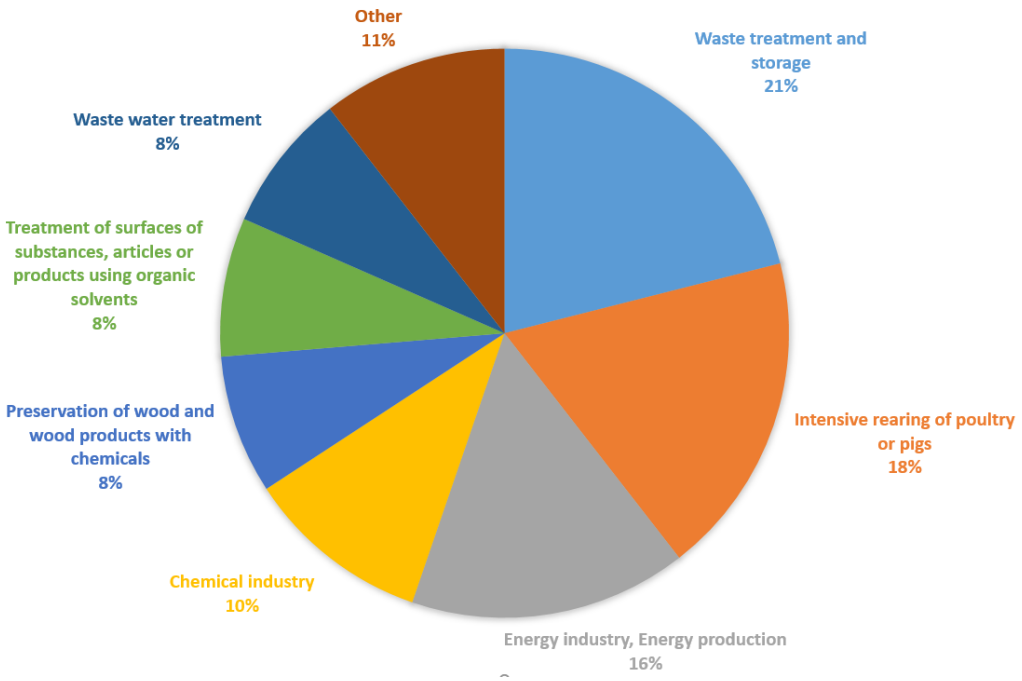

Figure 8 Diagram for Question Q8

3.2.9 Q9 Are the conditions imposed by environmental permits or specific legislation to prevent and mitigate air pollution appropriate?

The majority of respondents believe that the conditions imposed by environmental permits or specific legislation to prevent and reduce air pollution are considered appropriate. This positive assessment indicates that many respondents have confidence in the existing regulations and believe that they are effective in improving air quality.

However, a smaller percentage of respondents believe that the conditions are only considered appropriate in certain cases. This could indicate that there are specific situations or circumstances where the existing regulations may not be sufficient or achieve the desired results. This differentiation could be due to different experiences or perspectives of respondents, who may have experienced different impacts of air pollution in certain regions or under certain conditions.

A minority of respondents expressed a negative view, stating that they felt the conditions imposed were inappropriate. This critical view could be due to concerns about the effectiveness of the regulations, their enforceability or possibly a feeling that the regulations are not strict enough to ensure the necessary action to combat air pollution.

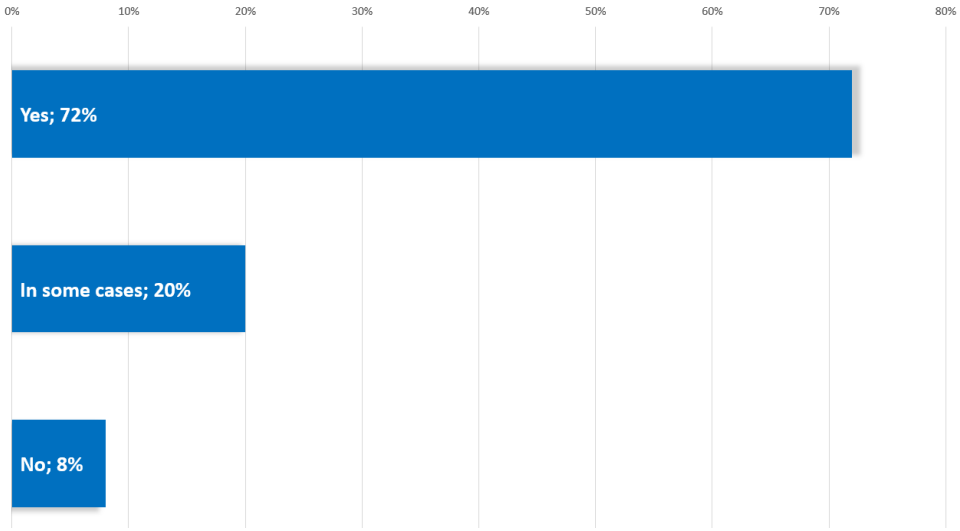

Figure 9 Diagram for Question Q9

3.2.10 Q10 Are the conditions imposed by environmental permits or specific legislation to prevent and mitigate air pollution appropriate? If you answered "no" or "in some cases" please specify

The analysis of responses from participants who expressed doubts about the effectiveness of environmental permits and legislation in mitigating air pollution revealed several key themes. These answers have been organized into the following topics:

1. Strict limits: In some cases, the limits for certain pollutants are considered too strict, while in most cases they are considered appropriate.
2. Effectiveness of ambitious permit conditions: It is recognised that a permit system is effective in preventing and reducing air pollution, provided that the relevant permit conditions are sufficiently ambitious.
3. Complaints despite compliance with permits: There are cases where operators, although operating in accordance with their permits, still receive complaints.
4. Innovation and health protection concerns: Following on from a previous response (Q7), a lack of innovation is pointed out and it is perceived that the air quality regulations are insufficient in terms of health protection.
5. Lack of specific conditions for specific sectors: It is noted that there are no specific conditions for the wood industry and waste water treatment plants.
6. Problem with fugitive emissions: While limit values have been set for emissions from chimneys, fugitive emissions are a problem in some cases.
7. Need for further regulation: The need for additional regulation is highlighted, particularly with regard to diffuse emissions and odours.

3.2.11 Q11 Are the limit values for air emissions imposed by environmental permits or specific legislation appropriate?

The majority of respondents, namely 88%, believe that the limits set for air emissions imposed by environmental permits or specific legislation are appropriate. This high approval rate suggests that respondents have confidence in the effectiveness of these limits as a tool for regulating emissions and believe that they help to protect both the environment and public health.

In contrast, a smaller percentage of 12% of respondents expressed the view that these limits are inappropriate. This critical perspective could reflect various factors, such as concerns about strict compliance or calls for existing limits to be reviewed and adapted to new scientific evidence or technological developments.

Overall, the results reflect a predominantly positive picture of the appropriateness of air emission limits, while the minority of 12% show signs of criticising the existing regulations. These differing views are important for the continuous improvement of the legal framework and for raising awareness of the challenges associated with air quality in the region.

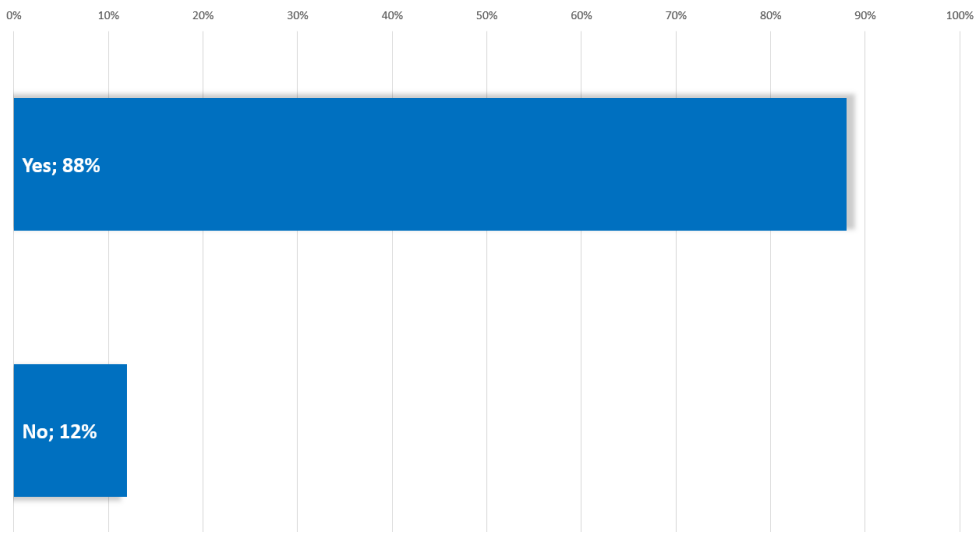

Figure 10 Diagram for Question Q11

3.2.12 Q12 Do operators comply with these limit values?

A large majority of operators, 96%, are believed to be complying with air emission limits, according to the survey. This suggests that there is a high level of confidence in operators' ability and willingness to adhere to environmental regulations. However, a small minority of 4% expressed concerns about compliance, possibly due to personal experiences or a lack of trust in the operators' compliance culture. It is important to take these concerns seriously as they can highlight potential issues in the monitoring system. To address these different perspectives,

transparent and comprehensive monitoring of emissions along with regular reporting and communication with the public is necessary. A proactive approach to ensure compliance can help boost public confidence in operators' adherence to emission limits and mitigate any doubts or uncertainties.

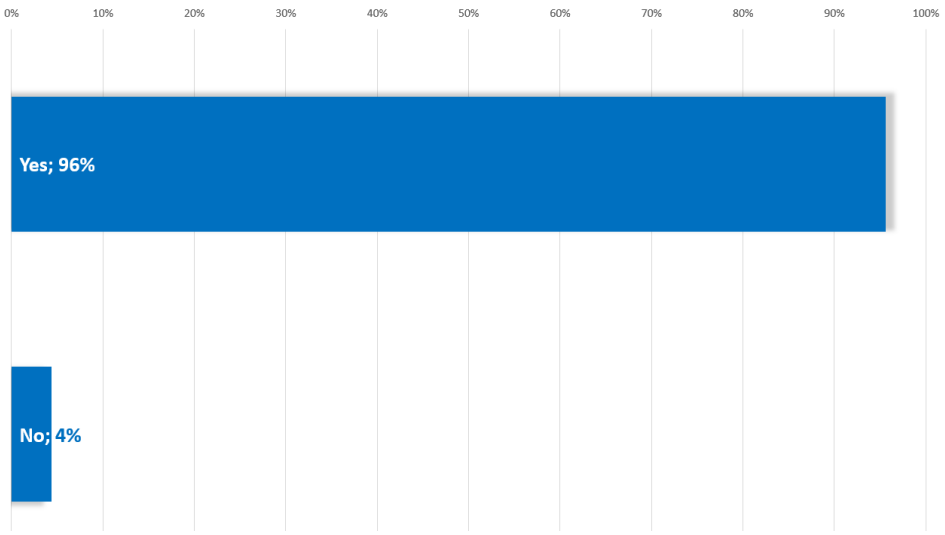

Figure 11 Diagram for Question Q12

3.2.13 Q13 Do operators comply with these limit values? If you answered "no" mention the cause.

The feedback on this question can be summarised as follows:
Although the majority of operators comply with the specified limit values, there are isolated cases of non-compliance, which are often due to the use of outdated technologies or low-quality fuels. Some operators do not comply with the limits set out in environmental permits or specific legislation. If the permit only refers to local general legislation, this could be less demanding. In contrast, a permit that takes into account specific emission limit values (ELVs) in addition to the local general legislation could be more challenging. However, it is not exceptional for emission levels to be exceeded.

3.2.14 Q14 Are the best available techniques (BAT) adequately considered in the environmental permits?

According to a survey, the majority of respondents (80%) believe that Best Available Techniques (BAT) are adequately considered in environmental authorisations, highlighting their confidence in the existing permitting processes and regulations aimed at minimizing environmental impacts and protecting air quality. Another 12% of respondents believe that BAT is generally taken into account when approving environmental measures, but there may be variations in implementation in some cases. In contrast, a small minority (4%) express concerns about the possible inadequate consideration of BAT in environmental authorisations, possibly based on specific incidents where prescribed techniques or standards were not met. The opinions of this minority are important in identifying potential gaps in the authorisation process that need further investigation. Overall, while there is generally positive assessment of the integration of BAT into environmental permits, there is still room for improvement in terms of harmonized application and monitoring of these techniques across different sectors. Ongoing dialogue on the effectiveness and compliance with BAT could raise standards and better achieve environmental objectives.

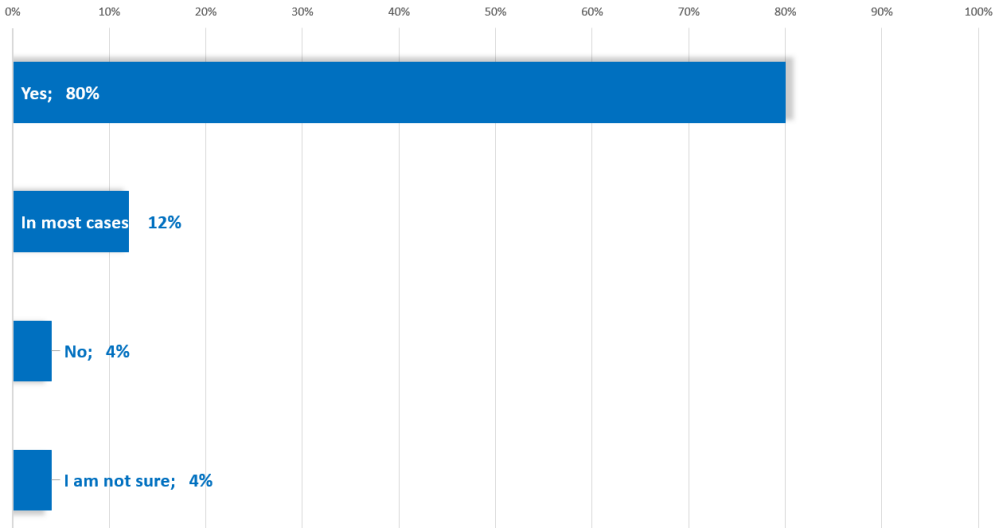

Figure 12 Diagram for Question Q14

3.2.15 Q15 Do the holders activity employ the BAT?

The majority of respondents, 68%, believe that businesses successfully use Best Available Techniques (BAT) to promote greener practices and improve air quality. However, 4% of respondents expressed uncertainties about the actual application of BAT in certain cases. Another 16% indicated that BAT is used in most cases, but there may be occasional exceptions. Additionally, 4% of respondents stated that BAT is not applied at all times or only partially applied, possibly due to cost, technical feasibility, or lack of incentives. Overall, the assessment reflects a predominantly positive view of BAT implementation, while acknowledging the challenges and uncertainties that need to be addressed. One proposed solution is to increase owner awareness of the benefits of full implementation and implement measures to support and promote the use of BAT in practice.

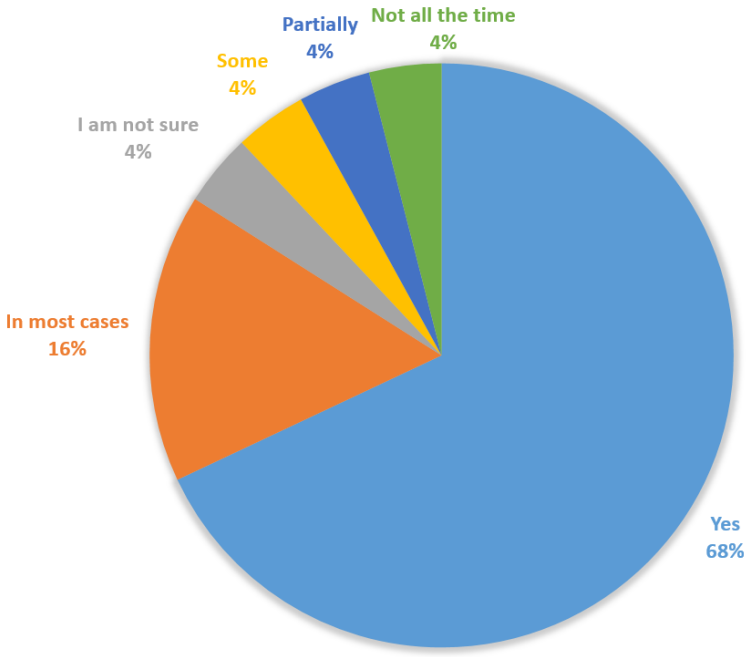

Figure 13 Diagram for Question Q15

3.2.16 Q16 Is emission monitoring adequately considered in the environmental permitting process/ procedure?

The overwhelming majority of respondents, 88%, believe that emissions monitoring is adequately addressed in the environmental permit process. Only a small percentage of 4% state that this is the case in most cases, while a further 4% are unsure, stating: 'Yes and no, we are still learning.' There are also another 4% who believe that the consideration of emissions may not be sufficient. These results show that while there is a broad consensus on the appropriate consideration of emissions, there is also room for improvement and a more intensive examination of this topic.

To summarise, most respondents have a positive view of the consideration of emissions monitoring within the environmental permitting process, while smaller groups express both concerns and uncertainties that point to areas that require closer consideration and possible improvement.

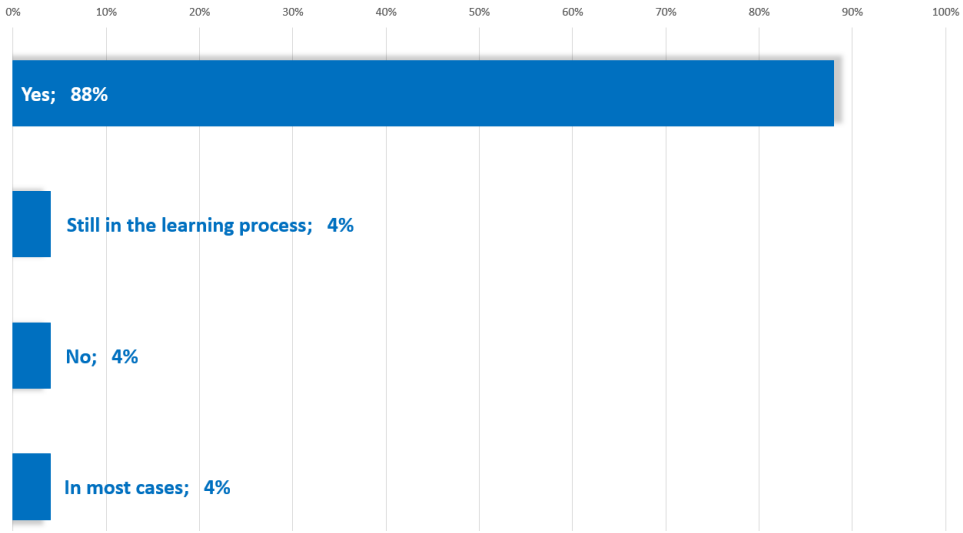

Figure 14 Diagram for Question Q16

3.2.17 Q17 Do companies comply with emissions monitoring obligations?

A majority of respondents, specifically 50%, believe that companies are generally fulfilling their obligations to monitor emissions. This indicates that there is a fundamental trust in the compliance of companies. At the same time, however, a significant 42% say that there is partial compliance, indicating that there may be shortcomings in some areas.

In addition, a small percentage of 4% say that there is compliance in most cases, suggesting that in certain situations the regulations are actually being followed. However, 4% of respondents also explicitly point out that some operators do not fulfil their obligations to monitor emissions.

These results illustrate a differentiated picture: While a generally positive assessment of compliance prevails, there are also legitimate concerns about full compliance. This suggests that not only increased monitoring and control is needed, but also measures to raise awareness and support companies to ensure full compliance with emissions monitoring requirements. Ultimately, this could lead to an overall improvement in environmental performance and greater confidence in the regulatory framework.

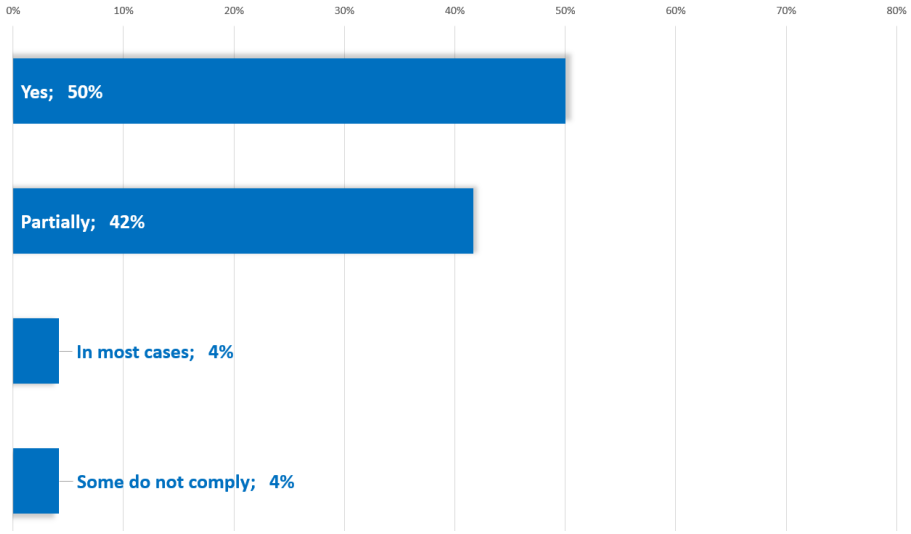

Figure 15 Diagram for Question Q17

3.2.18 Q18 Are the environmental inspections able to ensure compliance with the conditions imposed by the environmental permits or specific legislation?

The majority of respondents, 67% to be precise, believe that environmental inspections are able to ensure compliance with the conditions imposed by environmental permits or specific legal requirements. This high level of agreement indicates that many respondents have confidence in the effectiveness of inspections and see them as a key tool for ensuring compliance.

However, there is also a significant number of respondents, 24%, who state that the effectiveness of inspections is only partial. This could indicate that in certain cases either the inspection methods themselves or the companies' ability to respond to the results of the inspections could be improved. An even smaller percentage of 8% commented that inspections are effective in most cases, suggesting that there are at least some situations where the inspection procedures actually have a positive impact on compliance.

In addition, there was one comment noting that it takes time for some facilities to comply with permit requirements, particularly given the monitoring procedures in place. This comment may suggest that the time required to become compliant plays an important role and may contribute to influencing the perceived effectiveness of environmental inspections. It is clear that while many consider inspections to be effective, challenges and timing issues also need to be considered to ensure full compliance.

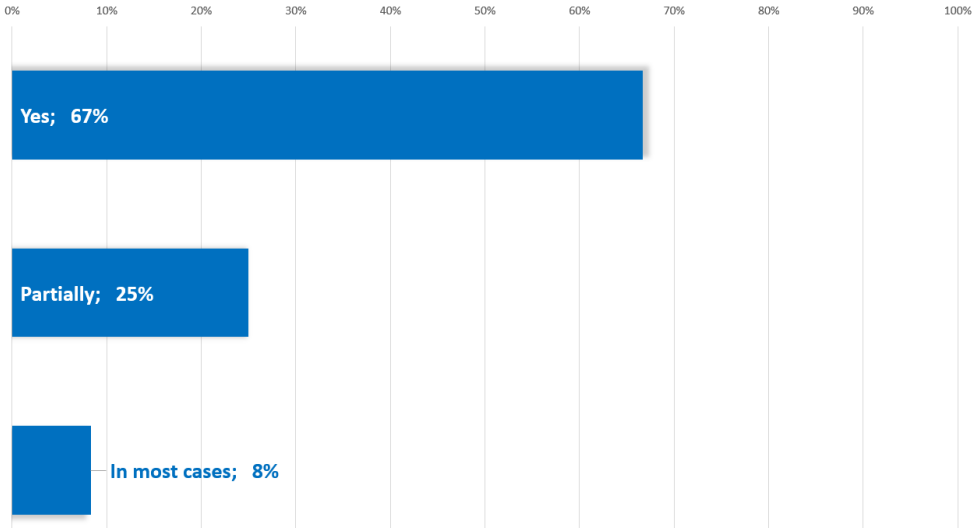

Figure 16 Diagram for Question Q18

3.2.19 Q19 What are the main sources of air pollution in your region/county?

The main sources of air pollution identified in the responses given are primarily road transport, domestic heating and industrial activities. These three areas are identified as the largest contributors of air pollutants, indicating the significant role of the transport sector as well as energy production and industrial production in the region.

Another significant factor is agriculture, which also contributes significantly to air pollution. This could be due to various practices, such as the use of fertilisers and pesticides, emissions from livestock farms and soil cultivation.

In addition to these dominant sources, other factors that contribute to air pollution are also mentioned, albeit to a lesser extent. These include air transport and shipping, which are mentioned less frequently as the main causes but are nevertheless important sources. The transport of dust by sandstorms is also a notable aspect,

especially in regions prone to such meteorological phenomena. Furthermore, construction sites and landfills, especially the emission of hydrogen sulphide (H2S), play a role in the overall discussion on air pollution sources.

Although the frequency of mentioning these other sources is lower, they are still important to gain a comprehensive understanding of air pollution in the region or county in question. Taking all of these sources into account is crucial in order to develop targeted measures to reduce air pollution and sustainably improve air quality.

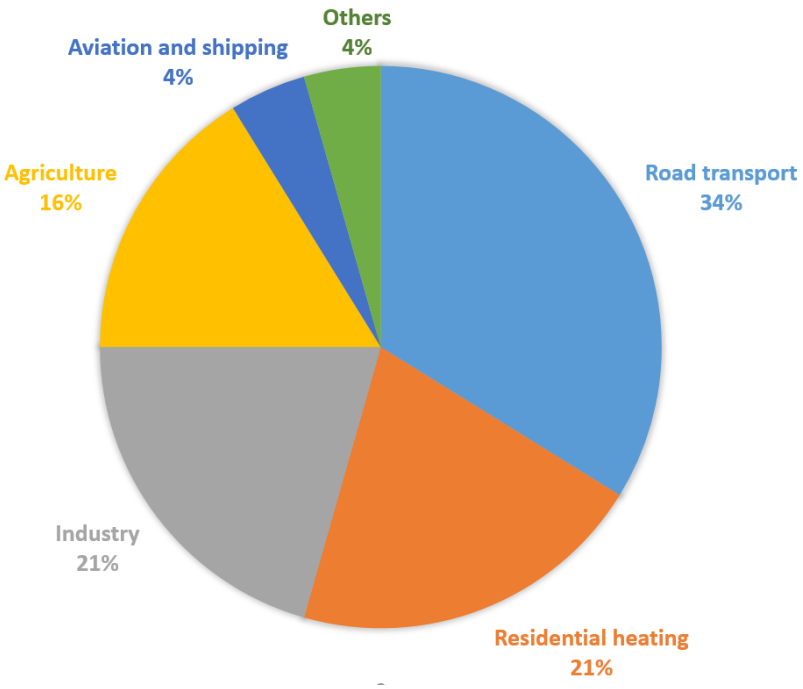

Figure 17 Diagram for Question Q19

3.2.20 Q20 Is the monitoring of atmospheric pollutants, considered in Directive 2008/50/EC on ambient air quality and cleaner air for Europe sufficient?

The majority of respondents, specifically 75%, believe that the monitoring of air pollutants as set out in Directive 2008/50/EC on ambient air quality and cleaner air for Europe can be considered sufficient. This confidence in the existing monitoring mechanisms suggests that many respondents consider the measures to be effective in ensuring air quality and minimising health risks.

However, a notable 25% of respondents expressed the opinion that the current monitoring procedures are not sufficient. This scepticism could be due to various factors, such as the perception of insufficient data, the need for additional monitoring stations or specific measures to combat air pollution.

The presence of a significant minority questioning the effectiveness of monitoring indicates that there is room for improvement. The differing views on the appropriateness of the Directive highlight the complexity of the issue of air quality and emphasise the need to both evaluate the existing framework and make adjustments where necessary to meet the challenges of air pollution. A more comprehensive discussion of respondents' opinions and concerns could help to develop targeted measures to improve air quality monitoring

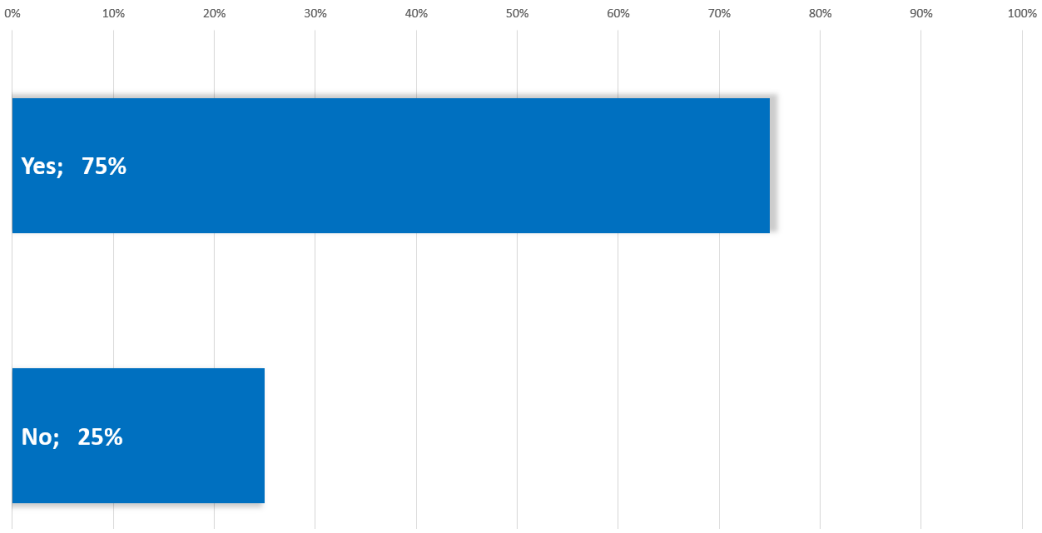

Figure 18 Diagram for Question Q20

3.2.21 Q21 Which of the following air pollutants should also be considered in monitoring/regulation in the ambient air quality monitoring/regulation in the future?

The pollutants most frequently proposed for consideration in future air quality monitoring and regulation include, in particular, ultrafine particles, black carbon (soot) and ammonia. These substances are considered particularly relevant as they can have significant impacts on human health and ecological systems.

In addition, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) are also mentioned, albeit to a lesser extent. These compounds are also significant as they are associated with a variety of health and environmental risks.

A smaller percentage of respondents identified specific pollutants that should also be integrated into future monitoring strategies. These include hydrogen sulphide, mercaptans, odour particles and dust deposition. These mentions illustrate that there is a heterogeneous range of pollutants that have potentially harmful effects on air quality and should therefore be considered in future monitoring programmes.

The variety of pollutants proposed emphasises the complexity of the problem of air pollution and the need to develop a comprehensive monitoring system capable of identifying and regulating the most relevant and dangerous pollutants. Such measures could make a decisive contribution to sustainably improving air quality and minimising health risks for the population.

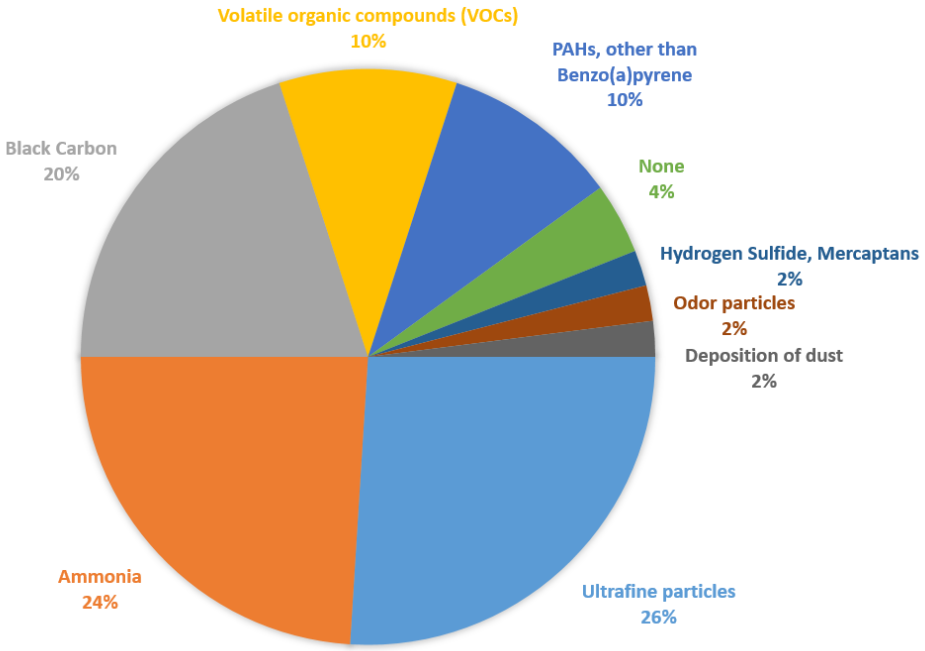

Figure 19 Diagram for Question Q21

3.2.22 Q22 Are the national commitments to reduce emissions for 2030 respected in your country?

The feedback on national emission reduction commitments for 2030 shows that an overwhelming majority of respondents - 64% in total - believe that these commitments will be met in their respective countries. This positive assessment indicates that many respondents have confidence in the measures being taken by governments to achieve the climate targets set.

However, there is also a notable 27% who feel that commitments are only partially being met. This view could indicate that, in the perception of these respondents, progress is being made, but not to the extent required to fully meet the climate targets set.

In addition, a small percentage of 5% of respondents express uncertainty about the actual level of compliance. This perceived uncertainty could indicate a lack of transparency or information that affects confidence in the data or progress.

Finally, a further 4% of respondents state that they believe commitments are not being honoured. These critical voices suggest that there may be realistic challenges in public perception that could jeopardise the effective implementation of climate targets.

In summary, opinions on national emission reduction commitments for 2030 are characterised by a majority believing in compliance, while at the same time significant concerns and uncertainties are expressed by other parts of the respondents. These different perspectives can provide valuable insights into the current challenges and progress in realising the climate targets.

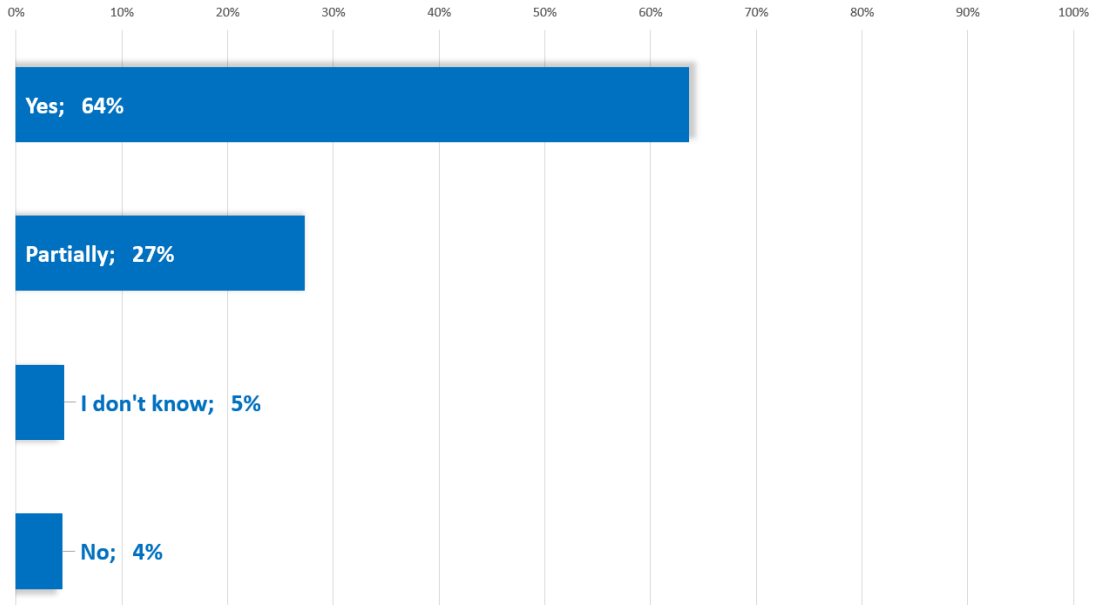

Figure 20 Diagram for Question Q22

3.2.23 Q23 Does the public have access to adequate information about local air quality?

Participant responses indicate a strong consensus, with an overwhelming majority of 96% of respondents agreeing that the public has sufficient information on local air quality. This high level of agreement suggests that many respondents feel that existing information provision is effective and accessible, indicating that authorities are able to communicate relevant data and information successfully.

However, a small percentage of 4% of respondents expressed the view that the public does not have sufficient information on this topic. This divergent opinion could indicate specific deficits in the dissemination of information, be it in terms of quality, availability or accessibility of data.

The fact that a minority but still significant number of participants express concerns about the information situation should be taken seriously. This could indicate that there may be a gap between existing information provision and the needs of the public. The different perceptions of respondents emphasise the need to evaluate and, if necessary, adapt communication strategies to ensure that all members of the community have access to the necessary information on air quality.

Overall, while the majority of respondents believe that there is sufficient information available, it would still be valuable to consider the perspectives of those who see a need for improvement in order to promote a more comprehensive and inclusive information policy.

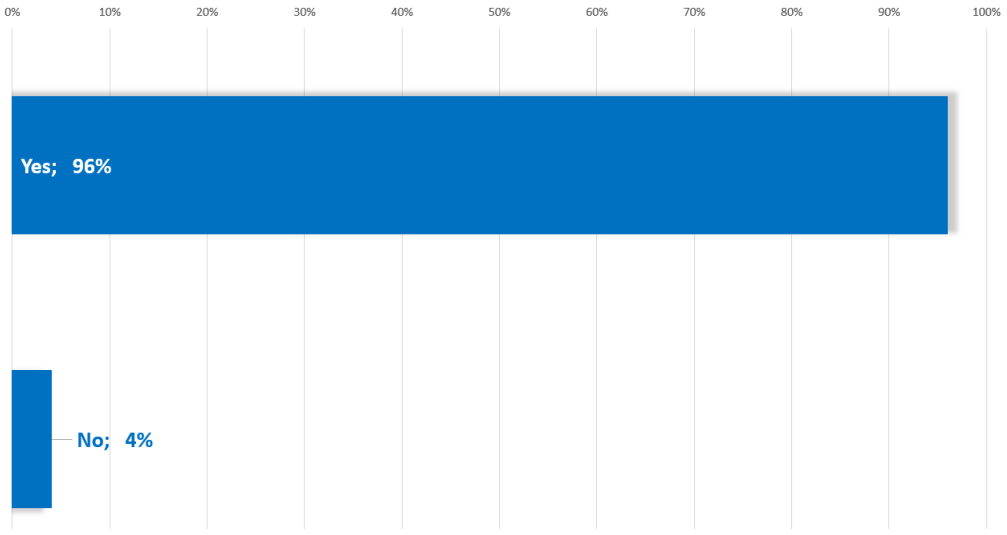

Figure 21 Diagram for Question Q23

3.2.24 Q36 Indicate the main sectors from where you get the most air pollution complains?

The analysis of the survey results reveals that industry is most frequently cited as the source of complaints about air pollution. In 35% of the responses, it is identified as the cause. The significant response rate allows the conclusion that industrial activities are perceived as a major cause of air pollutants. This can be attributed to emission-intensive production processes and potential deficits in compliance with environmental standards.

Road traffic and agriculture are also cited as major sources of air pollution. In 23% of the responses, road traffic is cited as a source of air pollution, while agriculture is identified in 21% of cases. The results show that both the transport sector and agricultural practices, such as the use of fertilizers and animal husbandry, have a significant impact on air quality.

In 10% of the responses, heating in residential buildings is cited as the source of air pollution complaints. This leads to the conclusion that private heating methods, in particular the use of fossil fuels, can also contribute to air pollution.

Furthermore, 8% of the responses cite other unspecified sources, suggesting that a number of less identified factors also contribute to air pollution.

The aviation and shipping sectors are comparatively rarely associated with the problem of air pollution in the public perception. This can be deduced from the fact that only two percent of the responses indicate these sectors as the cause of air pollution. This leads to the conclusion that these industries have a smaller influence on local air quality than the previously mentioned sectors, or that the public is less informed about the emissions from these sectors. Overall, the analysis highlights the multitude of sources of air pollution and the need to adequately take these into account in future strategies to improve air quality.

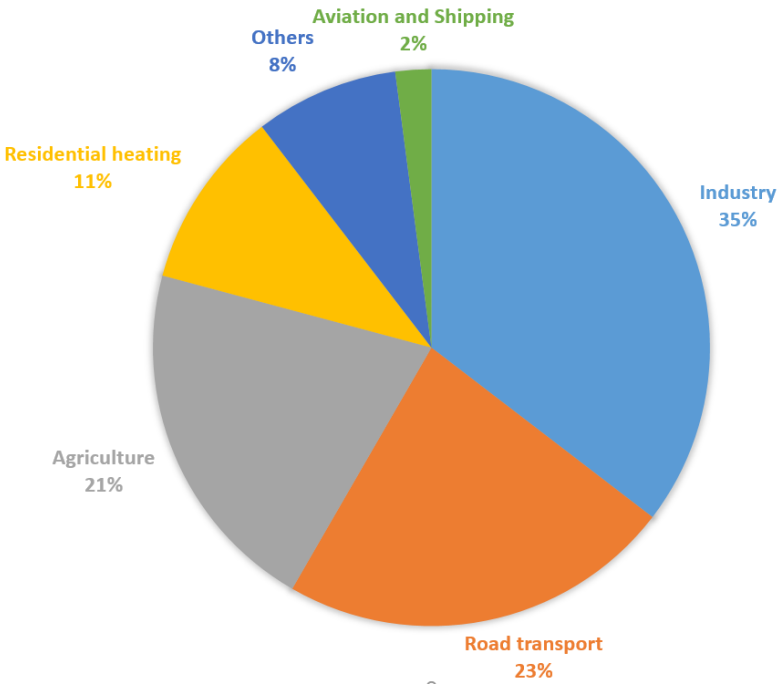

Figure 22 Diagram for Question Q36

3.2.25 Q37 For these sectors, how many complaints (approximately) per sector do you receive (if available) per year?

Unfortunately, the responses to this question are not suitable for further analysis due to a lack of clarity and consistency (see 3.2.3). The responses collected include results from the district level, which represents a very specific subset of complaints and does not provide a comprehensive overview of the actual nature and number of complaints, to nationwide data. Such differences can lead to distortions in comparative analyses. Furthermore, these inconsistencies in the data reflect the different administrative structures and operational frameworks in the individual countries and authorities in which the rapporteurs work.

In order to improve data quality and the comparability of future analyses, it is important to establish standardised definitions and criteria.

3.3 Air Quality Monitorng

This chapter analyses the effectiveness of current air quality monitoring practices and assesses the accessibility of the related data. The existing monitoring systems are analysed in terms of their effectiveness, accuracy and reliability. It also analyses the extent to which the data collected is accessible to public and government agencies and how this information can be used to improve air quality management strategies. Another aspect is the discussion of the challenges associated with data collection and dissemination, as well as the identification of best practices that can contribute to the optimisation of air quality monitoring. The aim is to create a sound basis for future improvements in air quality monitoring and to ensure that all relevant stakeholders have the necessary information to make informed decisions.

3.3.1 Q24 Does the public have access to adequate information about local air quality? If you answered "yes", please put the link here.

Country	Link
Albania	https://www.akm.gov.al
Belgium	https://www.vmm.be/lucht/actuele-luchtkwaliteit
Croatia	https://iszz.azo.hr/iskzl/
Croatia	https://iszz.azo.hr/iskzl/godizvrpt.htm?pid=0&t=0
Cyprus	http://www.airquality.dli.mlsi.gov.cy
Estonia	https://www.ohuseire.ee

Country	Link
Germany (NRW)	https://www.lanuv.nrw.de/umwelt/luft/immissionen/aktuelle-luftqualitaet/
Germany (NS)	https://www.umwelt.niedersachsen.de/startseite/themen/luftqualitat/lufthygienische_ueberwachung_niedersachsen/aktuelle_messwerte_messwertarchiv/
Germany (BW)	https://www.lubw.baden-wuerttemberg.de/luft/messwerte-immissionswerte
Germany	https://www.umweltbundesamt.de/en/data/air/air-data,
Lithuania	https://oras.old.gamta.lt/cms/index
Luxembourg	https://environnement.public.lu/fr/loft/air/mesures.html
Netherlands	https://www.luchtmeetnet.nl/
Poland	https://powietrze.gios.gov.pl/pjp/current
Portugal	https://qualar.apambiente.pt/
Romania	https://www.calitateaer.ro
Slovakia	https://www.shmu.sk/sk/?page=1&id=oko_mapy
Slovenia	http://rte.arso.gov.si/zrak/kakovost%20zraka/podatki/
Spain	https://www.euskadi.eus/web01-a2ingai2/es/aa17aCalidadAireWar/estacion/mapa?locale=es
United Kingdom	https://uk-air.defra.gov.uk/

3.3.2 Q25 In what ways could access to adequate information be improved?

1. **Centralized and Uniform Environmental Database:** Establish a centralized and uniform "environmental database" similar to https://udo.lubw.baden-wuerttemberg.de to consolidate information for public access from various sources.
2. **Utilize EU Registry Portal:** Advocate for the use of the EU registry portal (e.g., https://industry.eea.europa.eu) by the European Environment Agency (EEA) to improve information accessibility, providing a single platform for all relevant data.

3. **Enhance Alert Dissemination:** Strengthen the dissemination of alerts, ensuring they are more robust and accessible through mainstream channels to enable citizens to take timely preventive measures.
4. **Improved Media Dissemination:** Enhance the dissemination of air quality information through media channels to reach a broader audience.
5. **Expansion of Compounds and Health Information:** Include more compounds and comprehensive information on health effects in the available datasets.
6. **Focus on Odour Information:** Address the specific issue of odours by incorporating relevant data and information in public records.
7. **Regular Public Engagement:** Conduct regular public information sessions, debates, and meetings involving industry and local governments to keep citizens informed.
8. **Online Information and Discussions:** Improve access through internet platforms by providing online information and facilitating open discussions and lectures via websites.
9. **Real-Time Air Monitoring App:** Real-time air monitoring app for mobile phones, enhancing accessibility to monitoring results.
10. **Local Municipalities' Contribution:** Encourage local municipalities to share information and links on regional websites, recognizing that citizens often seek information on local web pages and information sites.
11. **Consideration of Forecasting:** Explore the possibility of incorporating forecasting elements to enhance predictive information for the public.

3.3.3 Q26 Are the data from other independent monitoring networks taken into account for public information?

The majority of responses, 48% to be precise, indicate that data from other independent monitoring networks is not taken into account for public information dissemination. In contrast, a remarkable 35% stated that such data is actually used for public information provision. Some respondents used phrases such as ‘if necessary’ and ‘partially’, which indicates a certain flexibility or conditional consideration.

In addition, one interviewee mentioned a specific situation where data from operators' monitoring stations is available in the public system, while continuous monitoring data is not. This indicates that there may be differences in the accessibility of data depending on the monitoring sites and the underlying procedures.

A small percentage of respondents also expressed uncertainty, stating that they do not know whether data from independent networks is included in public information policy. This lack of clarity could indicate a lack of transparency or information regarding the use of such data. Overall, it can be concluded that despite the existing information offerings, there is room for improvement in data utilisation and availability in order to provide the public with more comprehensive and transparent information on air quality.

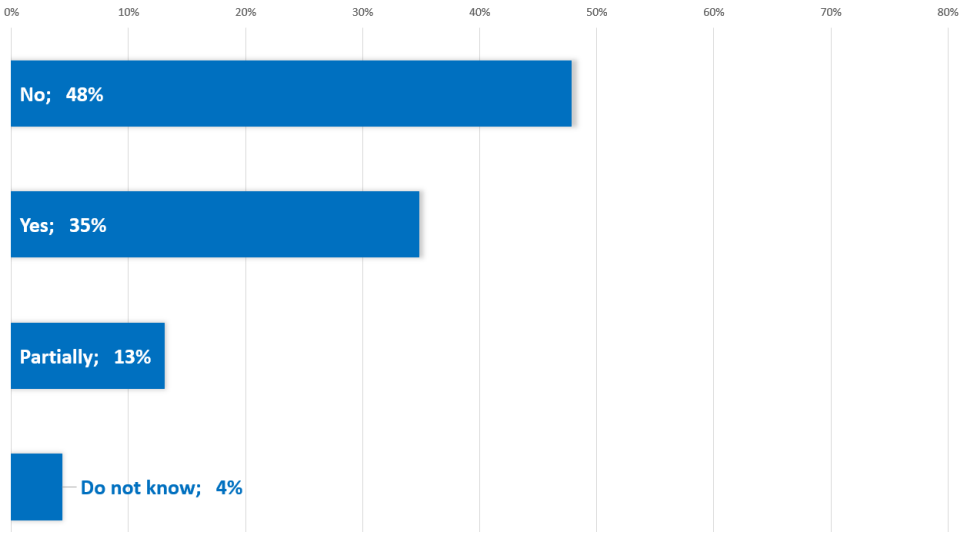

Figure 23 Diagram for Question Q26

3.3.4 Q27 Do Non-Governmental Organisations (NGOs) have an impactful role in air quality legislation?

An overwhelming majority of respondents, 77% to be exact, expressed the belief that non-governmental organisations (NGOs) play a significant role in air quality legislation. This assessment underlines the awareness of the influence that NGOs can have on political decisions and legislative measures through their activities, lobbying and awareness-raising campaigns. The voices of these organisations often help to shine a spotlight on environmental issues and raise awareness of the challenges of air pollution among the public and decision-makers.

A smaller proportion of respondents, 5%, recognise some impact of NGOs, but point out that this impact may be limited due to certain regulatory frameworks and judicial reviews. These responses suggest that while these individuals value the role of NGOs, they have concerns about the effectiveness of NGO work, particularly with regard to structural barriers that could limit their engagement. These could be legal requirements or the required legal procedures, which can often be complex and hinder the directive of NGOs in certain cases.

A smaller proportion of respondents, around 18%, were explicitly negative about the impact of NGOs in air quality legislation. These opinions could be due to different perceptions, such as the relationship between NGOs and state institutions or the perception that NGOs have too little influence in legislation. This scepticism could also be due to the view that government measures and scientific findings play a more decisive role in the formulation of air quality guidelines than the contributions and demands of civil society.

Overall, the results reflect a differentiated picture of perceptions regarding the role of NGOs in air quality legislation. While a significant proportion of respondents recognise that NGOs have an important voice, there are also questions and concerns about the scope and actual opportunities that NGOs can have in this complex and often regulatory environment.

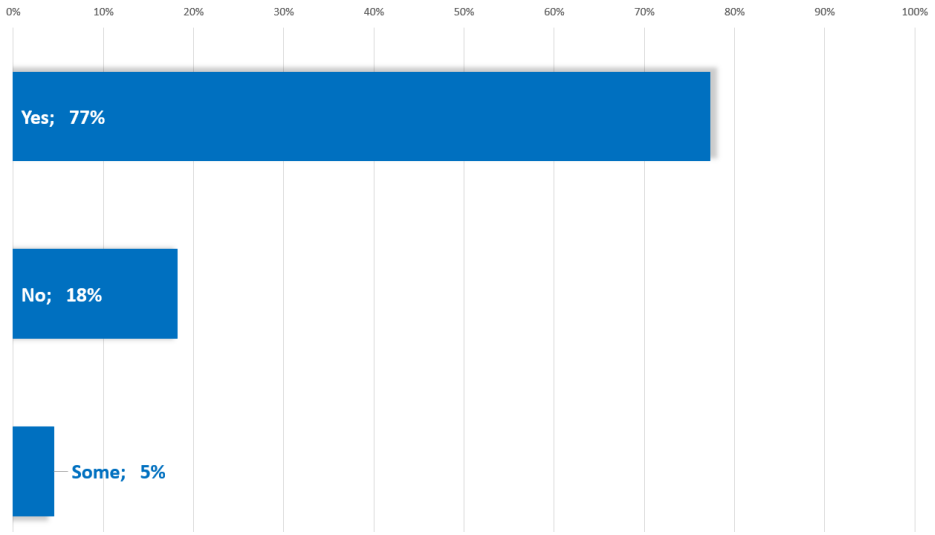

Figure 24 Diagram for Question Q27

3.3.5 Q28 Is the monitoring carried out through the resources of the member state's own laboratories/drones or are the operators obliged to monitor through independent laboratories?

The prevailing feedback indicates that air quality monitoring is mainly carried out by public or subcontracted laboratories using reference methods, while private operators rely on independent laboratories to monitor emissions from their installations. It is important to note that air quality monitoring measures the pollutants present in the environment, while emission monitoring focuses on the pollutants released directly from specific installations. In some cases, such as when there are doubts or complaints, inspectors can rely on the expertise of public laboratories for further verification. Some interviewees pointed out that while many air quality monitoring stations are managed by the public sector, others are operated by private entities, as required by environmental permits for facilities such as refineries or incinerators. These private stations must meet the same quality standards as the public ones and the data is published jointly, even if it is not always clear on the website whether a station is public or private.

3.3.6 Q29 What can be done when air monitoring stations do not record data/have technical problems?

1. Regular Inspection, Maintenance, and Quality Assurance
   Conduct systematic inspections and preventive maintenance to enhance quality assurance. Address technical issues promptly to ensure continuous data recording and accessibility. Notify relevant authorities within 24 hours of any malfunctions, and arrange for replacements by accredited laboratories if issues persist. Establish a maintenance program to prevent problems and facilitate quick repairs, ensuring timely resolution of any technical challenges.

2. Higher Density of Measuring Stations
   Implement multiple monitoring stations in the same area to create a dense air monitoring network. Incorporate data from private monitoring installations and have reserve stations, along with independent laboratories, involved in the monitoring process.
3. Combination of Monitoring and Modeling
   Employ a blend of monitoring and modeling data for comprehensive analysis.
4. Manual Measurements by Local Laboratories
   Enable local laboratories to conduct manual measurements as needed.
5. Validation Rules and Data Publication Protocol
   An automated system publishes data within 2 hours of collection, applying validation rules to scrutinize the information during this period. If data abnormalities arise, it may be temporarily withheld from publication. A qualified expert will validate the data thoroughly within the same or the following day before official release. Any technical issues impacting data accuracy will also be communicated to the public via the website to ensure transparency.

3.3.7 Q30 What can be done when air monitoring stations do not record data/have technical problems? Are there legal provisions in this sense?

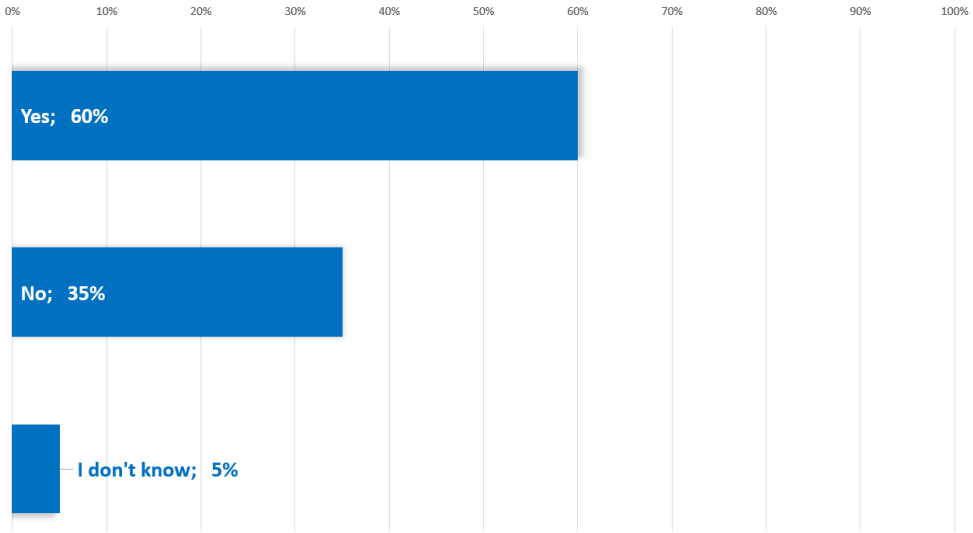

Figure 25 Diagram for Question Q30

3.4 Air Quality Management

This chapter collects information on the effectiveness of national plans to control air pollution and maintain air quality. In particular, it focuses on the evaluation of the measures implemented to reduce air pollutants and ensure consistent air quality. In addition, the responses to citizen complaints regarding air quality will be analysed to understand how this feedback feeds into policy-making processes. It analyses the strategies pursued by Member States to address the challenges of air pollution and the efficiency and transparency of their implementation mechanisms. The aim of this chapter is to provide a comprehensive overview of current air quality management practices and to identify potential areas for improvement and additional measures.

3.4.1 Q31 In the National Air Pollution Control Programme, the Member States set out how they intend to achieve emission reduction commitments. Does your country adopted and implemented national air pollution control programme?
Q32 If so, are the national air pollution control programme effective?

The majority of respondents, 89%, believe that national programmes to control air pollution are effective. In contrast, a smaller percentage of 11% expressed a contrary opinion. This strong support for the programmes indicates that many respondents have confidence in the measures to improve air quality and combat air pollution.

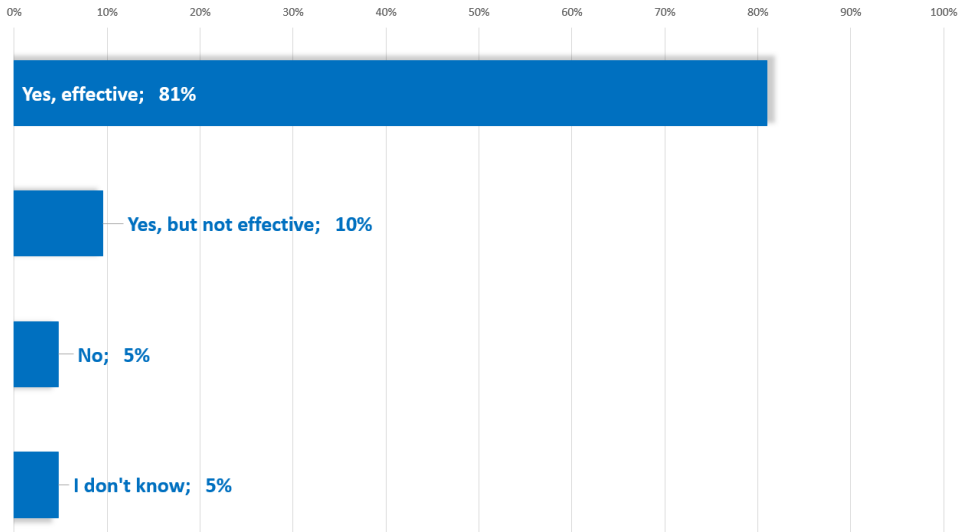

Figure 26 Diagram for Question Q31

3.4.2 Q33 Does your region/county drawn up any of the following plans?

The respondents' answers make it clear that both integrated air quality plans and air quality maintenance plans are regularly developed and implemented. These plans play a central role in the systematic monitoring and improvement of air quality in the respective regions.

In contrast, the use of short-term plans is mentioned less frequently, indicating that such measures may not be prioritised to the same extent or are less widespread. This observation could indicate that long-term planning and the integration of comprehensive strategies in air quality monitoring are considered more important to achieve sustainable improvements.

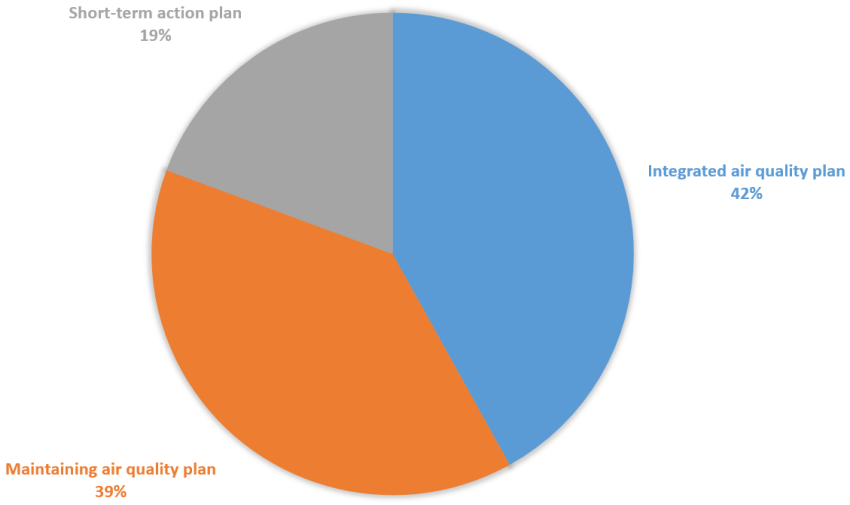

Figure 27 Diagram for Question Q33

3.4.3 Q34 Air quality maintaining plan is the set of measures which the holder/holders activity should take so as to maintain the levels of pollutants below the limit values, or, where appropriate, target values. Does Your county/region adopted it?

The majority of respondents, 16 out of 22, stated that an air quality management plan had been adopted in their county or region. This high level of agreement suggests that a significant proportion of the region is actively taking action to monitor and improve air quality. The existence of such a plan can be seen as an indicator of the commitment of local authorities and communities to reduce air pollution and protect public health and the environment.

In contrast, 6 of the respondents answered 'No', signalling that no such air quality management plan exists in their county or region. These divergent answers raise important questions: These regions may lack the necessary resources, political will or awareness of the importance of structured air quality monitoring. This could also indicate different priorities in environmental policy or specific challenges that prevent these regions from developing an air quality management plan.

The fact that one third of the responses do not have such plans indicates potential gaps in air quality monitoring that may be important for public health and the environment. In order to improve air quality in these regions, it would be useful to further investigate the reasons for the lack of a management plan. Targeted awareness raising and support could help to raise awareness of the need for air quality measures and drive the development of such plans.

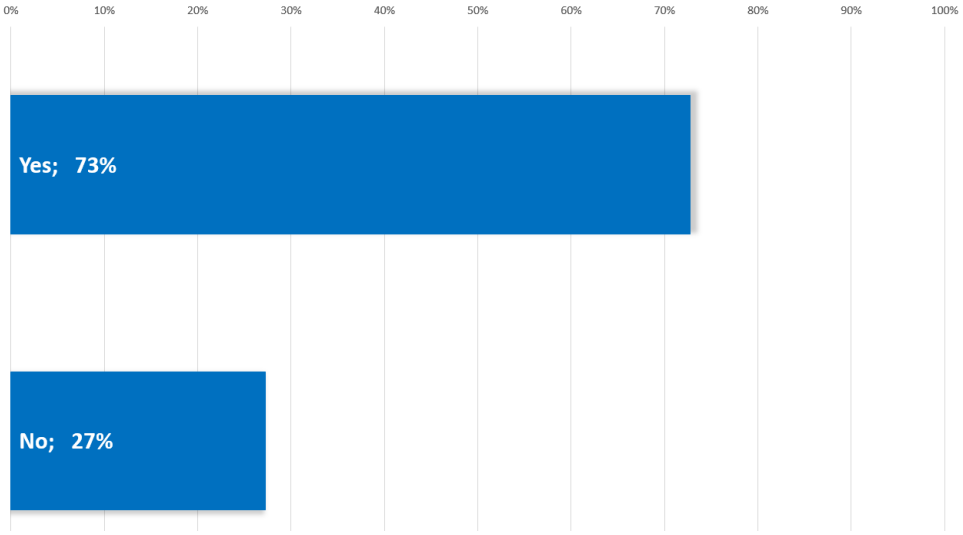

Figure 28 Diagram for Question Q34

3.4.4 Q35 If you answered "yes", does it contains measures to keep the level of pollutants below the limit values, respectively below the target values?

The majority of respondents, specifically 15 out of 17, stated that their air quality management plan includes measures aimed at keeping pollutant concentrations below the set limits or target values. This high approval rate indicates that most of the respondents are actively addressing the issue of air quality and developing strategic approaches to reduce air pollution and protect public health.

In contrast, 2 of the respondents answered 'No', signalling that their air quality management plan does not contain any corresponding measures. These divergent responses could indicate different resources, priorities or approaches to air quality planning. It is possible that these two participants either do not have the necessary information or resources to implement such measures, or that they are pursuing other strategies that may not be aimed at meeting the set limit values.

However, the overall positive feedback from the majority raises the question of what specific challenges or obstacles the two negative respondents may be experiencing. In order to gain a more comprehensive picture of the situation, it would be useful to further investigate the reasons for the lack of appropriate measures in the air

quality management plans of these two respondents. This could provide valuable insights for future improvements and the development of more effective air quality monitoring and control strategies.

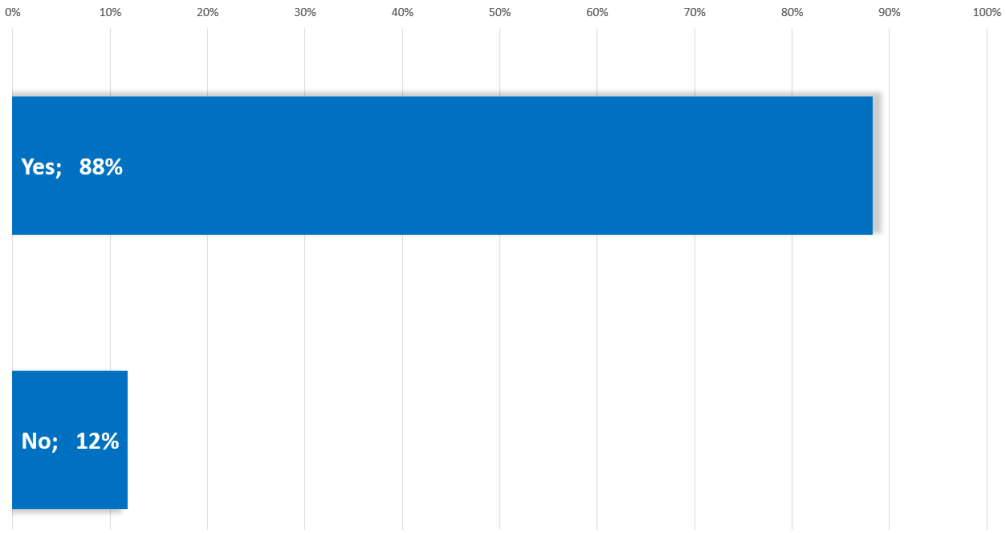

Figure 29 Diagram for Question Q35

3.4.5 Q38 What are the actions in case of complaints?

1. Investigation
   Thoroughly process every complaint by informing the system operator and conducting an investigation or site visit to verify its legitimacy. If legal regulations are violated, appropriate measures will be enforced to ensure future compliance. Inspections will be conducted, compliance letters sent, and complainants notified of the actions taken. This may include action plans to reduce pollutants or odors, additional monitoring, and oversight procedures.

2. Verification of Monitoring Requirements
   Operators required to monitor air pollutant emissions and found non-compliant must undertake the necessary monitoring. If exceedances are detected, appropriate corrective measures will be implemented, which may include changes to gas effluent treatment and exhaust systems.

3. Data Verification and Notification of Relevant Authorities
   Pollution levels will be verified using laboratory methods to identify polluters, who will then be reported to the relevant authorities for necessary actions. Air quality data will be checked, and local Environmental Protection Agencies will be contacted to identify pollution sources and address complaints. Complaints will be submitted to the Inspectorate for further review.

4. Legal Actions by Environmental Organizations
   Historically, some environmental organizations have initiated lawsuits against clean air plans.

5. Emission Reduction and Penalties
   Measures to reduce emissions to permissible levels will be implemented promptly. Inspectors may impose penalties if compliance issues persist.

6. Emergency and Non-Emergency Procedures
   Emergency procedures will be activated when necessary, involving fire services, police, or spill control agencies. In non-emergency situations, inspectors will reach out to industries to inquire about any ongoing incidents, or, depending on the complaint, may attend the site. Required measures will be implemented and followed up on, with a prompt (usually brief) response provided to the complainant.

3.4.6 Q39 You can tell us here if you want to bring up something else that we haven't been able to consider in the survey.

- Relevant Air Quality Documentation: For air quality information in Romania, visit ANPM (www.anpm.ro/calitatea-aerului-inconjurator).
- Need for Innovation in BREFs: There is a pressing need for more innovation in the Best Available Techniques Reference Documents (BREFs) for industrial emissions, particularly for older installations. Many of these facilities in Europe and the Netherlands currently meet less stringent requirements. Additionally, the revision cycle for BREFs, which is supposed to occur every 8 years, is not being met, posing a significant issue.
- Response Options in Surveys: When responding to questionnaires, an option for "don't know" or "not within the competence of the respondent" should be included to capture accurate feedback. Input was sought from various stakeholders, including permit issuers, legislators, and environmental agencies, ensuring a broad perspective beyond just supervisory views.
- Shared Competences in Portugal: In Portugal, air quality assessment and management responsibilities are divided among the Portuguese Environment Agency (APA), the Regional Development and Coordination Commission (CCDR), and the regional directorates of the Autonomous Regions (DRA).

4 Conclusions and Recommendation

4.1 Key shortcomings and gaps within EU Air Quality Legislation

As the survey shows, there are several shortcomings and gaps existing within the EU air quality legislation:

1. Implementation and Enforcement: While the EU has established comprehensive air quality standards, the enforcement of these regulations at the national and local levels can be inconsistent. Some member states may lack the necessary resources or political will to implement the laws effectively, leading to ongoing air quality issues.

2. Monitoring and Reporting: There are often gaps in the monitoring and reporting of air quality data. In some regions, monitoring stations may be insufficient or poorly maintained, resulting in incomplete or inaccurate data. This can hinder the ability to assess compliance with air quality standards and to identify pollution sources.

3. Health Impact Considerations: Current legislation may not fully account for the latest scientific findings on the health impacts of air pollution. For instance, emerging research on the effects of particulate matter and other pollutants at lower concentrations may not be adequately reflected in existing standards.

4. Sector-Specific Regulations: While there are general air quality standards, specific sectors such as transportation, agriculture, and industry may not be sufficiently regulated. This can lead to significant emissions from these sectors that contribute to poor air quality.

5. Public Engagement and Awareness: There is often a lack of public awareness and engagement regarding air quality issues and the legislation designed to address them. Greater transparency and communication from authorities could empower citizens to advocate for better air quality and hold governments accountable.

6. Flexibility and Adaptability: The legislative framework may not be flexible enough to adapt to rapidly changing environmental conditions or emerging pollutants. As new challenges arise, such as those posed by climate change, the legislation may need to be updated more frequently to remain effective.

7. Integration with Other Policies: Air quality legislation is sometimes not well integrated with other environmental and public health policies. A more holistic approach that considers air quality in the context of climate change, urban planning, and public health could lead to more effective outcomes.

Addressing these shortcomings and gaps would require a concerted effort from EU institutions, member states, and stakeholders to ensure that air quality legislation is robust, enforceable, and responsive to emerging challenges.

4.2 General Conclusions

Effectiveness of European legislation in improving air quality

Complexity and Implementation Challenges: The existing regulatory framework is overly complex, complicating practical implementation.

Discrepancy Between Targets and Implementation: There is a notable gap between ambitious air quality targets and the actual measures taken to achieve them.

Unregulated Pollutants: Current legislation does not address all air pollutants, particularly ultrafine particles.

Inadequate Consideration of Climate Change: The impact of climate change on air pollution, such as increased ground-level ozone, is insufficiently considered in the legislation.

Insufficient Regulation of Shipping and Aviation: European legislation does not adequately regulate shipping and aviation, contributing to air pollution.

Neglect of Non-Exhaust Emissions: Non-exhaust emissions, including particulate matter from tire wear and brake dust, are not fully addressed by the legislation.

Limited Focus on Agricultural Impact: The legislation inadequately tackles the contribution of agriculture to air pollution, particularly from manure, fertilizers, and livestock emissions.

Inconsistent Monitoring and Reporting: There are inconsistent monitoring and reporting practices among member states, hindering access to up-to-date air quality data and timely alerts to the public.

Insufficient Power for Local Authorities: Local authorities are not sufficiently empowered to address air pollution at the regional level.

Lack of Legislation on Odor Pollution: There is no clear regulatory framework for managing odor pollution.

Weak Enforcement in Some Countries: While some countries have general air quality provisions, enforcement mechanisms are often weak.

Need for Robust Enforcement: There is a strong need for more effective enforcement of existing legislation to ensure emission reductions are achieved.

Main sources of air pollution in Europe

Respondents identified the primary sources of air pollution in their regions as road transport, industry, agriculture, and residential heating.

A significant majority (67%) of respondents believe that environmental inspections effectively ensure compliance with the conditions set by environmental permits and relevant legislation.

Monitoring and air quality information

While most respondents consider the monitoring of atmospheric pollutants to be adequate, there is a recognized need for increased monitoring of ultrafine particles, black carbon, ammonia, and other air pollutants.

Additionally, enhancing the accessibility of air quality information for the public is essential.

Non-governmental organizations (NGOs) can contribute to improving air quality by advocating for stronger legislation and enhanced monitoring efforts.

Air quality control plans

Many countries have implemented national air pollution control programs, and most respondents view these programs as effective.

Integrated air quality plans and ongoing air quality management strategies are frequently developed; however, short-term action plans are less common.

Plans for maintaining air quality should include measures to ensure that pollutant levels remain below specified limits or target values

4.3 Improvements

To summarise, although European air quality legislation is generally considered good and effective, some improvements need to be made. These include the need to

1. **Simplification and Implementation**: Streamline the legislation for easier application and improved effectiveness.
2. **Expanded Scope:** Include more air pollutants, particularly ultrafine particles, in the regulatory framework.
3. **Climate Change Impact**: Integrate considerations of climate change into air quality management.
4. Regulation of Shipping and Aviation: Enhance regulations specifically targeting emissions from these sectors.
5. **Non-Exhaust Emissions**: Address emissions that arise from sources other than fuel combustion, such as tire wear and brake dust.
6. **Agricultural Impacts**: Increase the focus on the contributions of agriculture to air pollution.
7. Monitoring and Reporting: Standardize air quality monitoring and reporting practices to ensure consistency.
8. **Public Information**: Improve monitoring and information dissemination to the public regarding air quality.
9. **Local Authority Empowerment**: Provide local authorities with the resources and authority to address regional air pollution issues.
10. **Odor Pollution Framework**: Establish a clear regulatory framework specifically targeting odor pollution.
11. **Strengthened Enforcement**: Enhance enforcement mechanisms in certain countries to ensure compliance with air quality standards.

These recommendations aim to enhance the effectiveness of existing legislation and improve air quality across Europe.

5 Annex

5.1 Questionaire

AIR QUALITY QUESTIONNAIRE

Supporting IED Implementation - WG8 Improving air quality

Dear colleauges,

This questionnaire is carried out by the "WG8 - Improving Air Quality", IED subgroup.

The Improving Air Quality subproject aims to focus on improving air quality by better implementation of the IED Directive and other EU Directives on Air Quality. European regulators of industrial production are responsible for the proper implementation of European environmental legislation. In these directives and the related best available techniques conclusions, the emissions of critical substances like nitrogen compounds, fine particles, volatile organic compounds, sulphur dioxide, benzene, persistent organic pollutants, and heavy metals are limited. Unfortunately, despite the ambitious limit values, the concentrations of these substances and their secondary products in the air are still too high in many European areas. Especially in urban areas with a mixture of industrial background concentrations and road traffic emissions, the situation is still detrimental to human health.

The purpose of the survey is to collect information about the implementation level of improving air quality (challenges, best practices, inspection policies). The desired outcome of the project is to identify problems of the permitters and inspectors in the implementation of these obligations in their daily work. The problems may be different for the different substances and for different sets of underlying national legislations. Your answers will help identify air quality problems in IMPEL countries and highlight best practices in permitting and controlling air pollution.

We would be very grateful if you could spread the questionnaire in your country to get their individual views.
If you have any document(s), preferably in English, that you could share, please provide the link(s), or if not available on the internet, please send to the provided email address.

Thank you so much for your support!

DEADLINE: Please fill in the questionnaire no later than **14th October 2023**.

If you have any comments, questions or feedback, please do not hesitate to contact the

working group leader: Matilda Cucu (matilda.cucu@impel.eu)

The QUESTIONNAIRE in pdf version; might be useful for you, prior to its completion:

* This form will record your name, please fill your name.

BACKGROUND INFORMATION

1. Your name (first name, surname) *

2. Email Address *

3. Country *

4. Institution *

5. Role (Inspector-Permit Writer-Other) *

Industrial pollution-REGULATION

6. In your opinion, is the European legislation effective in improving air quality?

- ◯ Yes
- ◯ No
- ◯ In some cases

7. In your opinion what are the main shortcomings and gaps within air quality EU legislation?

8. How many industrial intallations are there in your county/region?

9. Choose the main pollutants in your region/county.

- [ ] Nitrogen dioxide,oxides of nitrogen (NO2, NOx)
- [ ] Sulphur dioxide (SO2)
- [ ] Particulate matter (PM10)
- [ ] Particulate matter (PM2.5)
- [ ] Carbon monoxide (CO)
- [ ] Benzene
- [ ] Ammonia
- [ ] Ozone
- [ ] Other

10. Is the environmental permitting process effective in preventing/mitigating air pollution?

- ◯ Yes
- ◯ No
- ◯ In some cases

11. If you answered "no" or "in some cases" please specify.

12. Are there installations operating without the proper environmental permits in your county/area?

- ◯ None
- ◯ Some
- ◯ Plenty

13. Which sectors are they from?

- ☐ Energy industry, Energy production
- ☐ Petroleum refining
- ☐ Production and processing of metals
- ☐ Mineral processing industry
- ☐ Chemical industry
- ☐ Waste treatment and storage
- ☐ Intensive rearing of poultry or pigs
- ☐ Treatment of surfaces of substances, articles or products using organic solvents
- ☐ Preservation of wood and wood products with chemicals
- ☐ Waste water treatment
- ☐ Other

14. Are the conditions imposed by environmental permits or specific legislation to prevent and mitigate air pollution appropriate?

- ◯ Yes
- ◯ No
- ◯ In some cases

15. If you answered "no" or "in some cases" please specify.

16. Are the limit values for air emissions imposed by environmental permits or specific legislation appropriate?

- ◯ Yes
- ◯ No

17. Do operators comply with these limit values?

- ◯ Yes
- ◯ No

18. If you answered "no" mention the cause.

19. Are the best available techniques (BAT) adequately considered in the environmental permits?

- ◯ Yes
- ◯ No
- ◯ Other

20. Do the holders activity employ the BAT?

- ◯ Yes
- ◯ No
- ◯ Other

21. Is emission monitoring adequately considered in the environmental permitting process/ procedure?

- ◯ Yes
- ◯ No
- ◯ Other

22. Do companies comply with emissions monitoring obligations?

- ◯ Yes
- ◯ No
- ◯ Partially
- ◯ Other

23. Are the environmetal inspections able to ensure compliance with the conditions imposed by the environmental permits or specific legislation?

- ◯ Yes
- ◯ No
- ◯ Partially
- ◯ Other

Air Pollution

24. What are the main sources of air pollution in your region/county?

- [ ] Industry
- [ ] Road transport
- [ ] Residential heating
- [ ] Agriculture
- [ ] Aviation and shipping
- [ ] Other

25. Is the monitorisation of atmospheric pollutants, considered in Directive 2008/50/EC on ambient air quality and cleaner air for Europe (*sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene, carbon monoxide and ozone*), sufficient?

- ◯ Yes
- ◯ No

26. Which of the following air pollutants should also be considered in monitoring/regulation in the ambient air quality monitoring/regulation in the future?

- [ ] Ultrafine particles
- [ ] Black Carbon
- [ ] Volatile organic compounds (VOCs)
- [ ] Ammonia
- [ ] PAHs (Polycyclic aromatic hydrocarbons), oher than Benzo(alpha)pyrene
- [ ] None
- [ ] Other

27. Are the national commitments to reduce emissions for 2030 respected in your country?

- ◯ Yes
- ◯ No
- ◯ Partially
- ◯ Other

Air Quality Monitoring

28. Does the public have access to adequate information about local air quality?

- ◯ Yes
- ◯ No

29. If you answered "yes", please put the link here.

30. In what ways could access to adequate information be improved?

31. Are the data from other independent monitoring networks taken into account for public information?

- ◯ Yes
- ◯ No
- ◯ Other

32. Do NGOs have an impactful role in air quality legislation?

- ◯ Yes
- ◯ No
- ◯ Other

33. Is the monitoring carried out through the resources of the member state's own laboratories/drones or are the operators obliged to monitor through independent laboratories?

34. What can be done when air monitoring stations do not record data/have technical problems?

35. Are there legal provisions in this sense?

- ◯ Yes
- ◯ No
- ◯ Other

Air Quality Management

36. In the National Air Pollution Control Programme, the Member States set out how they intend to achieve emission reduction commitments. Does your country adopted and implemented national air pollution control programme?

- ◯ Yes
- ◯ No

37. If so, are the national air pollution control programme effective?

- ◯ Yes
- ◯ No

38. Does your region/county drawn up any of the following plans?

- ☐ Integrated air quality plan
- ☐ Maintaining air quality plan
- ☐ Short term action plan

39. Air quality maintaining plan is the set of measures which the holder/holders activity should take so as to maintain the levels of pollutants below the limit values, or, where appropriate, target values. Does your county/region adopted it?

- ◯ Yes
- ◯ No

40. If you answered "yes", does it contains measures to keep the level of pollutants below the limit values, respectively below the target values?

- ◯ Yes
- ◯ No

41. Indicate the main sectors from where you get the most air pollution complains?

- ☐ Industry
- ☐ Road transport
- ☐ Residential heating
- ☐ Agriculture
- ☐ Aviation and Shipping
- ☐ Others

42. For these sectors, how many complaints (approximately) per sector do you receive (if available) per year?

43. What are the actions in case of complaints?

OPEN FEEDBACK

44. You can tell us here if you want to bring up something else that we haven't been able to consider in the survey.

TERM AND CONDITIONS

45. Do you accept IMPEL's Terms and Conditions? *

- ◯ Yes, I have accepted the terms and conditions in IMPEL privacy policy (https://www.impel.eu/en/privacy-policy)
- ◯ No, I don't accept the terms and conditions in IMPEL privacy policy. I will inform the IMPEL Secreteriat via Email (info@impel.eu) of my objections