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Air Quality - Overview

1 Introduction and Overview

This Section of the Handbook deals with EC legislation in the Air Quality sector. It contains an introductory overview of the sector followed by individual fiches for selected pieces of legislation. The fiches are presented according to their TAIEX numbering.

1.1 EC Policy

In 1992, the EC set itself the objective of laying the foundations in the last years of this century for achieving sustainable development in the next century. The long term goal, to transform the European economy into one whose development would be sustainable for generations to come, was set out in the 5th Environmental Action Programme 'Towards Sustainability'. The general approach and strategy is to set longer term objectives and focus on a more global approach.

The Action Programme covers five 'Target Sectors' (Industry, Energy, Transport, Agriculture and Tourism) and focuses on seven 'Themes and Targets'. Of these themes and targets, the following five are linked, to a greater or lesser extent, to air quality:

- Climate change;
- Acidification and Air Quality;
- Urban Environment;
- Waste Management; and
- Protection of Nature and Biodiversity.

A number of principles are shared by the EC air quality legislation that has been formulated. These are described in Box 1 below.

Box 1 EC Principles for Air Quality Management

- **For ambient air quality standards (limit values and guide values):**
  - Effects-based approach. Ambient air quality standards (limit values and guide values) for pollutants are set according to their scientifically observed or estimated effects on human health and/or on the environment and are not based on the technological or economic feasibility of achieving them.
  - Universality. The same standards apply in general throughout the EU. There are however provisions for special zones (e.g. for nature protection).
  - Practicality. The difficulty of achieving compliance with standards within a short time leads to the recently-introduced concept of Margins of Tolerance or (in earlier legislation) timescales for compliance.

- **For product control, material handling, and emissions standards:** Technologically and economically feasible standards (but not always easy to achieve).

- **Increasingly stringent standards over time:**
  - Technologies not specified (to stimulate innovation, but borne in mind in setting standards);
  - Best Available Techniques This principle seeks a balance between using state of the art techniques (including technology) to minimise emissions, and practical considerations such as the cost.

- **Polluter Pays.** The potential polluter should in general bear the costs of pollution prevention and control measures as well as remediation. In the context of air quality management, this means that potential emitters of air pollutants should bear the full costs of carrying out their activities in an environmentally sound manner i.e. taking air quality (and other issues) into account.

- **Integrated approach.** Measures taken to reduce air pollution at one point or in one area should not lead to an increase in air pollution elsewhere, or to an increase in pollution of another environmental medium (based on the principles of Integrated Pollution Prevention Control (IPPC)).

- **International approach.** The international, trans-boundary, nature of air pollution is recognised in two respects. Firstly, Member States are not expected to achieve, independently, satisfactory air quality in respect of pollutants originating from outside their territory. Secondly, Member States are required to take into account the effects of their own emissions on other countries even when those emissions have no significant adverse effects within their own frontiers. Member States having a common border are expected to consult each other, when necessary, regarding air quality.

- **Communication and information.** Member States are required to inform the Commission about air quality issues in their territory and (in more recent legislation) to inform the public.

1.2 EC Legal Instruments

The core of the air quality legislation comprises thirteen Council Directives and three Council Decisions. These instruments may usefully be grouped into (a) product control and material handling, (b) ambient air quality standards (limit values and guidelines), (c) ambient air quality assessment and management; and (d) monitoring and information exchange (see Box 2).

The legislation in the air quality sector is concerned with:

- establishment and maintenance of air quality which does not adversely affect human health or the environment, partly by setting limits on levels of specified pollutants in ambient air, together with requirements for monitoring and reporting on pollution levels;

- control of emissions from particular types of sources, by regulating the storage and transport of petrol, coupled with limits on the lead and sulphur content of fuels; and

- ratification and implementation of relevant international conventions and protocols to which the Community and its Member States are parties.

Box 2 Legislation Considered in the Air Sector

Ambient air quality assessment and management:
· The Air Quality Framework Directive, 96/62/EC.

Ambient air quality standards (limit values and guidelines):
· The Directive on Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter and Lead in Ambient Air, 99/30/EC. This Directive will repeal the following directives:
  · The Sulphur Dioxide Air Pollution Directive, 80/779/EEC;
  · The Lead in Air Pollution Directive, 82/884/EEC; and
  · The Nitrogen Dioxide Air Pollution Directive, 85/203/EEC.

Product control and material handling:
· The Directive on emission of VOCs due to use of organic solvents, 99/13/EC;
· The Directive on to the Quality of Petrol and Diesel Fuels 98/70/EC;
· The Directive on Emissions from Engines to be Installed in Non-Road Mobile Machinery 97/68/EC;
· The Directive on the Sulphur Content of Liquid Fuels, 93/12/EEC, as amended by 99/32/EC;
· The Directive on VOC Emissions resulting from Storage and Distribution of Petrol, 94/63/EC; and
· The Council Decision on the Montreal Protocol (Depletion of the Ozone Layer), 88/540/EEC.

Monitoring and information exchange:
· The Tropospheric Ozone Pollution Directive, 92/72/EEC;
· The Council Decision on Monitoring of CO2 and other Greenhouse Gases, 93/389/EEC; and
· The Council Decision on the Protocol on Long-Term Financing of EMEP, 86/277/EEC.

The first of the daughter directives under the Air Quality Framework Directive, the Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter and Lead in Ambient Air Directive (99/30/EC) is now in force. It will repeal most of the provisions of the three directives regulating the levels of sulphur dioxide, lead and nitrogen dioxide in air by July 2001, and the rest of the provisions of the directives by January 2005 (for the directives on sulphur dioxide and lead) and January 2010 (for the directive on nitrogen dioxide). Candidate Countries are therefore advised to take steps towards implementing the requirements of the daughter directive rather than those of the earlier three directives even though these are still in force.

In order to ensure the implementation of these policies and standards, most of the legislation lays down requirements for planning, regulation and enforcement. The legislation dealing with air quality standards and monitoring (including the Air Quality Framework Directive) sets the framework for identifying and prioritising air quality planning needs, whilst the legislation dealing with the control of vehicle and petrol emissions and fuel content lays down more regulatory controls (such as prohibitions on the use of certain types of fuels).

There are EU legal instruments covering other environmental sectors that must be taking into account when implementing legislation regulating air quality. The main legal instruments are set out in Table 1 below.

Table 1 Summary of Key Interrelationships between EC Legislation in the Air Sector and other EC Legislation in the Environmental Acquis

Related Sector Legislation	*Relevance*
Horizontal	
Environmental Impact Assessment Directive (85/337/EEC)	Requires an EIA for new projects which are judged to have a significant impact on the environment
Waste Management	
Municipal waste incineration (existing installations) (89/429/EEC)	Set emission limit values for other pollutants, not specified in the Directive taking account of their potential harmful effects and of BATNEEC.
Municipal waste incineration (new installations) (89/369/EEC)	
Hazardous waste incineration (94/67/EC)	Sets emission limits for hazardous waste incinerators. Includes emissions to air of various pollutants, including some not covered by ambient air quality standards.
Industrial Pollution Control	
Integrated Pollution Prevention and Control (IPPC) (96/61/EC).	Implements the policy of taking integrated measures for the prevention and control of pollution. Requires permits for prescribed activities. These permits must impose emission limits required under air sector directives. Some Member States integrate this process with the EIA process required by Directive 85/337/EEC.
Large combustion plants (88/609/EEC, amended by 94/66/EC). This directive will be repealed by the IPPC Directive.	Sets emission standards for energy generating plants with a thermal input of 50MW or more. These restrictions are additional to any imposed by air sector directives.
Seveso Directive (96/82/EC)	Aims to prevent major accidents involving dangerous substances and to limit their impacts on people and the environment. Such accidents often cause major air pollution incidents.
Chemicals and Genetically Modified Organisms	
The Asbestos Directive (87/2I7/EEC)	Requires measures to prevent and reduce emissions of asbestos into the air.
Ozone-depleting substances Regulation (No. 3093/94). This is likely to be replaced by proposal COM (1998) 398	Sets out the procedures for the Commission's implementation of Council Decision 88/540/EEC (see fiche entitled "The Decision on the Montreal Protocol").

2 Development of a Sectoral Strategy and Implementation Plan

The Implementation Management Checklist, presented in Section 2.4 of the Introductory Section of the Handbook, provides an overall framework for preparing a strategy to implement the legislation contained within this sector. The following text focuses on key issues pertinent to this sector, which are developed in the remainder of this section. Further guidance on implementation is provided in the fiches for individual legal instruments.

The air quality sector consists of a diverse body of legislative instruments, which form complementary strands within an overall framework. The principal tasks are concerned with:

- Designating competent authorities at both national and regional/local levels;

- Introducing statutory ambient air quality standards and alert thresholds. Central government will need to set standards and incorporate them either in primary or secondary legislation. The various directives on air quality standards allow Member States to set more stringent standards than those contained in the directives. For example, in areas with ecologically sensitive sites, more stringent air quality standards may be required in order to protect such sites. Member States may also wish to set air quality standards for different averaging periods or for pollutants not covered by the directives. There will, therefore, be a need for scientific advice on what standards should be set, based on knowledge of standards in other countries and health considerations, and what is technically realistic in relation to emission standards (as opposed to ambient air quality standards). Such advice may come from government institutes, scientific advisors or independent consultants;

- Establishing and co-ordinating an ambient air quality monitoring and assessment programme (see section 4.2);

- Reporting annually to the Commission and the public on the results of ambient air quality monitoring (see section 5.4);

- Putting in place a system to ensure that the public is notified when alert thresholds are exceeded;

- Preparing plans to improve air quality in areas where it does not meet the ambient air quality standards. This will be a task for central government in co-ordination with local authorities. Plans will need to focus on areas of poor air quality and will need to identify major emission sources, preferably by setting up an emissions inventory. Operators and suppliers of major emission sources (whether industry, household boilers or motor vehicles) and local authorities will need to be consulted, to determine technically and financially realistic approaches to reducing emissions to prescribed standards. There can be a certain amount of overlap between the measurements and the plans. Plans to deal with serious and obvious breaches of air quality limit values may be prepared even before all measurements have been completed, provided that it is certain that it will not be necessary to re-formulate any of the plans after more information has been obtained. This consideration applies mainly to significant local sources of air pollution;

- Implementing plans for improving air quality. The competent authority must maintain an overseeing role in relation to the results of air quality monitoring and modelling and the permitting process. Achieving compliance with air quality standards is likely to be brought about through the use of legislation, economic instruments, education and voluntary agreements. It will also require co-operation between the competent authorities and operators in the private sector. The competent authority will need to monitor the success of the various approaches, in order that they can be adjusted as and when necessary;

- Setting and implementing technical and emissions standards for different classes of emitters such as motor vehicles, industry, domestic boilers etc. (see Section 4.1 of the Overview);

- Implementing regulations on the composition of automotive and other fuels;

- Undertaking permitting and enforcement of standards (see Sections 5.2 and 5.3 of the Overview);

- Ratifying the Vienna Convention for the protection of the ozone layer and the Montreal Protocol on substances that deplete the ozone layer; and

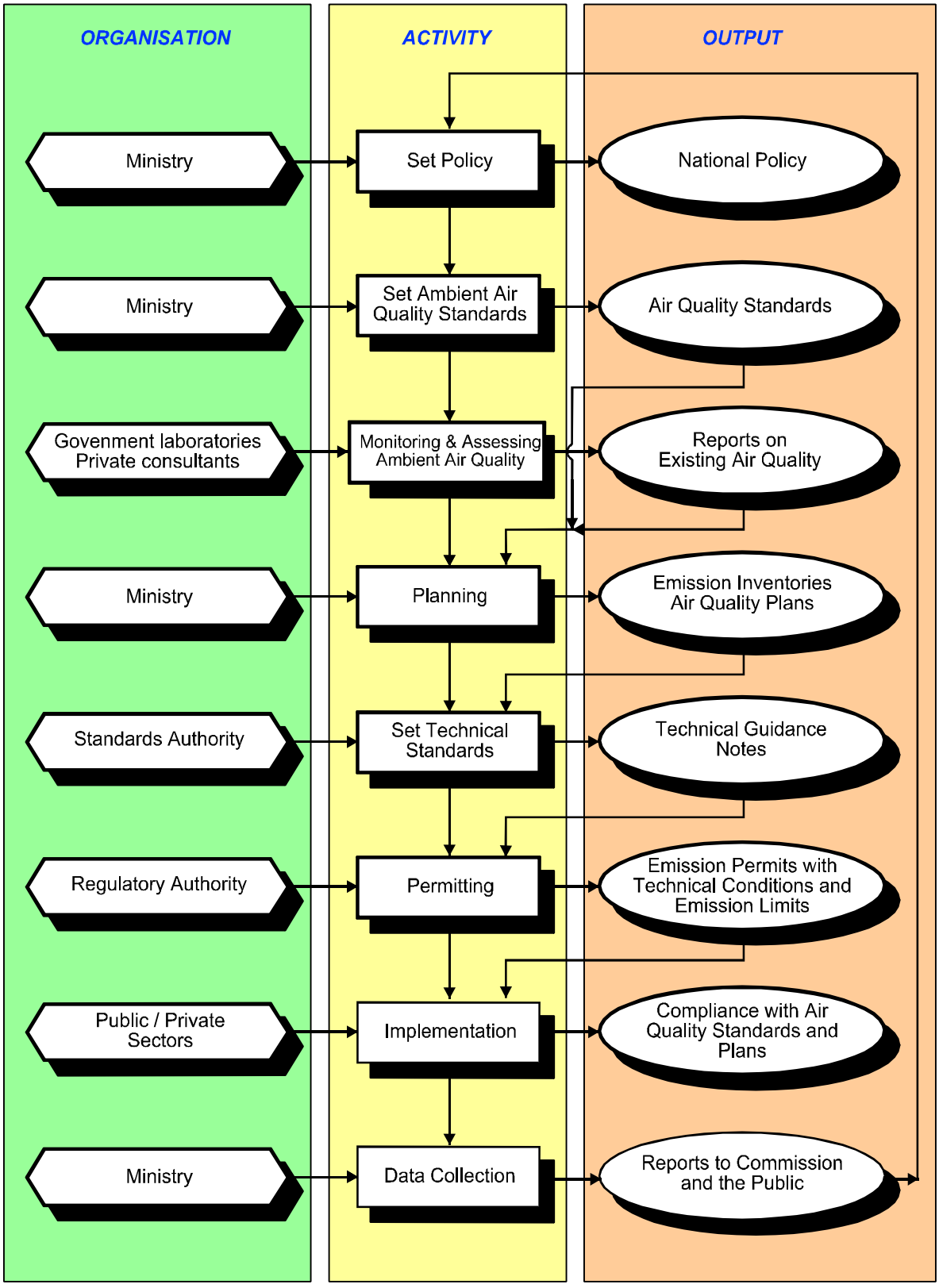
- Maintaining an inventory of greenhouse gas emissions and preparing a national programme for limiting anthropogenic emissions (this requirement relates to the implementation of the UN Framework Convention on Climate Change, to which the individual EU Member States are all parties).

The government will also need to set overall policy within the context of the EC directives, for example, establishing the role that taxation or other fiscal measures will have in implementing air quality objectives. In addition, the instruments concerned with product control, materials handling and emissions standards for mobile sources will require action, including significant expenditure, by industry and the public to bring about compliance.

The strategy needs to carefully consider the relationship between ambient air quality criteria and emission limits from individual sources. There is likely to be a role for emissions inventories and dispersion modelling to establish the inter-relationships and enable air pollution priorities to be identified. Modelling enables not only the contribution of different sources to existing air pollution levels to be quantified, but also an estimate to be made of the benefits from reducing specific emissions at source.

A process flow chart identifying the sequence of activities and responsibilities involved in implementing the directives in the air quality sector is shown in Figure 1. Communications have not been shown, since they are involved with most, if not all, tasks. In practice, the roles of the standards authority and the regulatory authority are likely to be combined within an environmental protection agency, which will also be involved in planning and data collection. It is not possible to show all the organisational options on a single flow chart, and the actual model adopted will depend upon the existing institutional structures in place.

Figure 1: **PROCESS FLOW CHART**



3 Institutions and Relevant Parties

3.1 Stakeholders

A large number and great variety of stakeholders have an interest in, or may be affected by, air quality issues. The principal stakeholders, and their roles in the process of developing and implementing a sectoral strategy to achieve compliance with EC policies and legislation on air quality, are identified in Box 3 below.

3.2 National Government Institutions

National governments are ultimately responsible for achieving and maintaining compliance with EC policies and legislation on air quality issues. They have a duty and an obligation to secure compliance in a manner and within a programme either stipulated in the relevant EC instrument, or agreed with the responsible EC institution.

Typically the primary responsibility for achieving and maintaining compliance is delegated to a single national institution e.g. a Ministry, Department or government Agency with responsibility for the environment. The lead Ministry should identify and appoint the competent authority (or authorities) required to take responsibility for functions prescribed in the legislation. The lead Ministry must ensure that the competent authorities have the required legal powers and resources (financial, technical, and logistical) to meet their obligations. Competent authorities are discussed further in Section 3.3 below.

Other ministries or departments in national government will inevitably need to be involved in some way at various stages in the planning and implementation process, depending on the Directive or Decision concerned, e.g. Ministries with responsibilities for energy, transport, industry, agriculture, tourism, labour and finance.

The lead Ministry (usually the Ministry with responsibility for the environment) should identify which other ministries, national government agencies and bodies need to be involved and given competence in the process of planning and implementing EC air quality legislation. For example, the development of an air quality management strategy to carry out the tasks described in Section 2 is likely to require technical inputs from other government organisations such as local authorities, a national standards or accreditation institute, a national meteorological institute and existing public regulatory bodies. The role and input of each type of organisation to be involved must be carefully identified and agreed between the lead ministry and the organisation concerned.

Box 3 Principal Stakeholders and their roles in the air quality sector

Stakeholders	**Roles**
Central Government (e.g. a Ministry or Department)	➔ Implementation and maintenance of compliance with EC policies and legislation on air quality. Determine national policy on the environment, energy, transport etc. Transpose and implement legislation. Set technical standards. Determine fiscal incentives or taxes.
Environmental and other agencies working on behalf of central government (e.g. regulatory authority; national standards or accreditation laboratory; meteorological office; institute responsible for vehicle type approvals; regular vehicle testing and roadside vehicle inspections; fuel testing agencies), occupational health and safety authorities	➔ Provision of planning, regulation and technical assistance. Industrial and pollution control. Monitor weather, collect data on meteorological conditions and air quality, compile data inventories, and modeling. Measurement and accreditation services.
Police and customs authorities	➔ Control import and export of goods e.g. ozone-depleting substances.
Public utilities	➔ Use fuels. Emitters of air pollution and green house gases.
Regional and local government	➔ Traffic management. Regulation of emissions from small sources. Undertaking local air quality assessment including monitoring. Evaluation of trading standards e.g. checking fuel quality and possibly ozone-depleting substances.
Industry and commercial organisations involved in: metals and mining; chemicals; production/processing/distribution of fuels e.g. petroleum, fuels for power generation, industrial, transport (vehicular) and domestic use, including petrol and petrol additives (e.g. tetra-ethyl lead); power generation; products e.g. domestic heating appliances, refrigeration and air-conditioning equipment, motor vehicles and pollution abatement technology; waste collection and disposal.	➔ Significant emitters of air pollutants and green house gases. Provision of pollution control equipment. Provision of waste management and disposal services.
Consultants	➔ Advise the private and public sector.
NGOs, media and trade unions	➔ Representing the public or workers' interest or specialists or experts in the field of air quality.
Public including motorists, householders	➔ Significant emitters of air pollutants and green house gases. Able to chose vehicles, fuels, heating systems, and purchase of goods e.g. refrigerators.
Research institutions, academic and other	➔ Research on e.g. pollution abatement technology, climate change, or depletion of the ozone layer

3.3 Competent Authorities

Some of the required technical expertise may already exist in one or more agencies or authorities in the Candidate Country. However, in some areas, the expertise or sufficient staff resources may not be readily available.

Existing public bodies that may have suitable characteristics include environmental protection agencies and local authorities. There may be a need to define working relationships between different bodies in order to fulfil legislative requirements or alternatively to bring together expertise presently existing in different bodies. New roles may be created for specialist staff, requiring training or recruitment.

Competent authorities can be appointed for one or more functions across several environmental sectors. For example, the drafting of legislation and regulations may be undertaken, or at least co-ordinated by, a single body. Again in the area of regulation, various directives across the environmental sectors require permitting of installations and their emissions to air. Therefore consideration should be given to the interaction between the competent authorities appointed in the air quality sector, and those operating in other sectors, particularly waste, water and industrial pollution control. These functions would fall naturally to an integrated Environmental Protection Agency. There may also be a role for local authorities in the management of air quality.

The closest form of integration for cross-sectoral competent authorities would be provided either by a single national body, or by regional bodies operating under the same management system. This type of structure would help to avoid duplication in many areas and provide economies of scale through shared facilities and resources. Alternatively, a sectoral approach could be adopted, but mechanisms would be required to ensure close co-operation and co-ordination between the different sectoral authorities. Most countries have found integrated Environmental Protection Agencies provide the most effective regulators of pollution sources.

Competent authorities with strategically important roles or requiring specialised technical expertise should be established at the national level in order to provide consistency of approach and make efficient use of scarce resources. Examples are functions for legal work (analysis and drafting), national planning, and setting technical standards. Where local experience or local accountability is important, competent authorities can be established at the regional or local level for example in local planning, permitting and inspection of facilities. In the air sector, intergration of functions at local level between the Environment Agency and local authorities is an important consideration.

3.4 Regional and Local Government

The role of regional and local government in the context of air quality management is important for two reasons. Most countries have a tiered administrative structure in which certain powers are devolved to the regional (county, département, Länder) or local level of government (local planning authority or municipality). This decentralisation is stronger in federal countries, but exists elsewhere, and usually includes at least some air quality management functions, for example those relating to road traffic and domestic heating boilers. Consequently, the implementation of central government functions would not in itself be sufficient to implement EC requirements on air quality. Certainly, some air quality issues are most easily and efficiently detected and resolved at local level.

EC legislation does not stipulate the division of powers and responsibilities between national, regional and local administration. However, it is logical for some functions (for example, setting technical standards) to be undertaken at national level and others (for example, inspection of small air pollution

sources) to be undertaken at local level. A range of tasks between these two extremes could be undertaken either nationally or locally.

Where regional or local government takes on more than one role, there is a potential for conflicts of interest to arise. This could happen where local government has responsibility for certain air quality regulation tasks and also for operating communal facilities such as district heating schemes or waste incineration facilities.

Some countries may have a large number of small municipalities with individual responsibility for managing air quality. These may be too small to achieve the high standards demanded by EC legislation, either because they do not have relevant specialist staff or technologies, or because they are mainly affected by air pollution from beyond their boundaries. In this case, inter-municipal co-operation can be very beneficial in achieving geographical groupings with enough mobile and stationary air quality sources to make co-operation cost-effective.

If the regional approach is to be promoted, the existing policy, legal and administrative framework governing local government bodies needs to be reviewed to ensure that there is an adequate basis for inter-municipal co-operation. It is necessary to examine carefully the nature of any forms of voluntary agreements, joint ventures or associations between local government bodies to ensure that issues such as resource sharing and liability are addressed appropriately.

3.5 Private Sector Involvement

Private sector organisations may have a variety of interests in air quality management, for example:

- potential emitters of pollutants to air (the predominant case);
- manufacturers or service providers requiring clean air to conduct their business;
- providers of other air quality management-related services (measurement and control equipment related to ambient air quality and emissions to air);
- investors in facilities; and
- developers of new materials, methods and technologies.

A modern trend in environmental enforcement is to increase the use of private organisations in testing, sampling and analyses. For example, vehicle roadworthiness testing is undertaken by private sector enterprises in several EU countries. In these cases, the private sector enterprises must be accredited and their operations monitored by government authorities. In some countries, former government laboratories and contractors undertaking ambient air quality monitoring have been transferred to the private sector.

The private sector may be able to provide valuable finance and offer substantial improvements in efficiency in privatised industries and utilities which own or operate stationary or mobile sources (e.g. power stations, passenger or freight transport). Experience in some countries has shown that separating polluters from regulatory authorities, where both are publicly owned, can lead to more effective regulation and enforcement in relation to polluting emissions. Any successful programme of privatisation will need to be accompanied by an effective system of regulation (enforcement). All entities must be regulated under the same terms, regardless of their ownership and administration.

3.6 Communication and Consultation

Planning and implementation of air quality management legislation will require co-ordination between government, competent authorities and other stakeholders. Consequently, communications are important for effective implementation of the legislation.

During the development of an air quality strategy, a communication programme should be conducted whereby the views and opinions of interested and affected parties are solicited by National Government in order to assess the acceptability and practicability of all aspects of air quality legislation and the proposals for its implementation. Parties which should be consulted, at least initially, include all those listed as stakeholders. For example, it is common in the EU for national governments to consult industry on new standards or regulations. This provides industry with an opportunity to inform government about the potential impact of the proposals on the viability of their business, provide technical advice which may not be available to government, for example on the practicalities of procedures or techniques, and to start planning for the introduction of the new regime.

Once an air quality management strategy has been determined, clear lines of communication are needed between the competent authorities to support the roles and activities of the various bodies involved.

Government will also need to continue a dialogue with interested parties such as industry, NGOs and the public, for example to update guidance notes on control of emissions to air, encourage emitters to improve their performance, and disseminate information on existing, revised or new government air quality management policies and legislation.

In the longer term, achieving compliance with the EU's principles of air quality management may require changes in values and attitudes to the environment by different entities within government, industry and consumers. A programme should be developed for education and raising awareness. As an example, NGOs can be expected to contribute positively to public debate on air quality and should be encouraged to do so. In the UK, for example, a leading specialist NGO, the National Society for Clean Air and Environmental Protection maintains a website with support from the Department of Environment, Transport and the Regions' Environmental Action Fund.

Public consultation forms another element of communication. Several directives specifically require Member States to make information available to the public.

4 Technical Issues

4.1 Adoption of Technical Standards

To ensure a uniform approach, national technical standards must be adopted. These should comply with the requirements of EC directives regulating emissions from motor vehicle fuels and from industrial facilities and activities into the air (see Industrial Pollution Control section of the Handbook). Standards need to take account of best practice in the country and elsewhere, and of economic constraints on the operators of emission sources. In some cases, national authorities have discretion to determine the technical standards that are to be applied, provided that the standards adopted are at least as stringent as those contained in the directives and that the intended result is achieved. In other cases (for example, the directives relating to the composition of motor vehicle fuel), the directives specify exact standards and there is no discretion for more stringent standards to be adopted, since variations between Member States would interfere with the functioning of the Single Market.

4.2 Monitoring Ambient Air Quality

Accurate information on existing air quality is the starting point for effective management and planning of air quality improvements, where they are needed, and for maintaining air quality, where it is already satisfactory. Monitoring can be undertaken by government laboratories, private consultants, local authorities or meteorological institutes. In most cases, funding will be provided from central government. Central government will need to retain a role in defining and approving the monitoring strategy, in particular the location of monitoring stations and the monitoring procedures to be used, and in ensuring quality control/assurance. Modelling techniques may also be used to assess existing air quality, since models can calculate the concentration of pollutants from a source of known characteristics at hundreds of locations for the same cost as a single set of measurements. However, although the Air Quality Framework Directive allows the use of modelling techniques it does not provide any further details on what techniques should be used and on modelling procedures. The Commission intends to publish guidance documents to aid Member States to implement the provisions of the acquis.

Careful selection of monitoring equipment is essential. Reference measurement methods for each pollutant are currently (or have been developed by CEN (e.g. EN 12341 for the measurement of PM_{10}). A primary requirement is that the principle of operation should permit compliance with the limit and guide values laid down in the directives to be assessed. This means that detection limits and averaging times must be suitable. Likely future needs for monitoring, in terms of shorter averaging periods and/or lower detection limits, should be borne in mind. These may be related to human health and other environmental effects reported in the literature. The need to use data for purposes other than the estimation of compliance, e.g. the assessment of air quality in relation to health effects, the dispersion of pollutants and the validation/calibration of models, should also be borne in mind. Other important factors to be considered in the selection of monitoring equipment are:

- ease of use;
- expandability (mainly for data processing equipment);
- reliability;
- durability;
- compatibility with any existing hardware or software;
- availability of training and documentation (including circuit diagrams); and
- availability of spares, warranties and after-sales services (maintenance and possibly calibration).

It is advisable to ensure that the data processing and storage systems used for all monitoring have sufficient capacity to deal with all likely future requirements for running and fixed means. This should include sufficient provision for raw data storage at the sites themselves for at least several days of monitoring, and preferably several weeks, in case the telecommunications linking the sites with a central control and data storage facility break down.

Meteorological data, especially wind speed and wind direction, and if possible solar radiation and air temperature, should be obtained in order to trace high levels of relevant pollutants back to their sources. These data are not specifically required by the directive, but are essential formodelling and useful in identifying sources of pollutants, which may originate outside the Member State itself.

4.3 Quality Assurance

Important decisions will be made on the basis of measurements and assessments of ambient air quality (made by direct monitoring or by modelling) and of measurements of emissions. These decisions may relate to expenditure on further monitoring or assessment and, more significantly, on air pollution abatement or prevention at the planning or later stages.

At a smaller scale, measurements of the quality of samples of fuel and of the performance of individual vehicles will determine whether or not they are acceptable. This too will have an impact on costs incurred by the owners.

It is therefore essential that all such procedures are subject to objective and independent quality assurance. The criterion of being objective (which may be achieved in part by being independent) is essential in maintaining the confidence of the public, of the owners and operators of other potential sources and of other Members States that EC and national legislation is being fairly and consistently applied.

5 Regulation and Enforcement

5.1 Overview

Laws and regulations governing air quality are not in themselves sufficient to ensure their success. In order to be effective, such measures must be implemented and enforced, which in turn requires that adequate systems, procedures and resources are deployed.

The regulatory function consists of four primary tasks:

- setting standards for ambient air quality and for emissions to air from specified sources;
- the issuing of licences or permits for certain activities which cause emissions to air;
- monitoring and inspecting activities to ensure that licence or permit conditions are being adhered to; and
- taking enforcement action in cases of non-compliance.

5.2 Authorisations and Permitting

A variety of potential sources of air pollution need to be subject to one form of licensing, permitting or approval system or another. The type of system that applies should depend mainly on the type of source involved. Some Member States integrate the control of air emissions with the permitting required under this Directive. The authorisation and permitting system should be an integral part of the system established for the implementation of the IPPC Directive.

Permitting of fixed emission sources will usually be undertaken by the national environmental protection agency, but responsibilities may be divided between the agency and any local branches it may have (dealing with large emission sources) and local authorities (dealing with small sources, including domestic emissions). The division should be clear, and should be made on the basis of the type of source involved, the scale (expressed in terms of the rate of energy or material inputs), and the type of materials being processed. Where local authorities have a responsibility, it is advisable to issue clear technical guidance at a national level in order to ensure a uniform approach throughout the country. In larger countries with many large emission sources, it may also be advisable to issue guidelines to the officials who are responsible for the permitting of such sources.

Vehicle type approvals need to be handled by a testing laboratory and implemented as part of the national vehicle registration process. Regular motor vehicle emission testing will be handled as part of regular vehicle roadworthiness checks. Where roadworthiness checks are not already in place, arrangements will need to be made for testing centres to be set up and for the integration of testing procedures with vehicle licensing.

In some countries, certain sources of air pollution are only allowed to operate when air quality is sufficiently good; this approach is used in Paris, where only low-emission motor vehicles (registered with a green disc) are allowed to operate on days when air pollution levels are high.

Checks on the composition of imported fuels will be implemented by customs authorities, which need to be provided with sufficient information and testing facilities. The quality of fuels manufactured in the Member State itself, and vehicle fuels on retail sale, will also need to be tested, which may, for example, be done by local authority inspectors, typically trading standards officers.

5.3 Monitoring, Inspection and Enforcement

As with the permitting regime, the monitoring, inspection and enforcement regimes to ensure compliance with the requirements of EU legislation in this sector, must be an integral part of the regimes to ensure compliance with the requirements of the IPPC directive. A requirement to ensure that ambient air quality standards are not breached may be included in the operating licence issued to a stationary potential pollution source. In practice, however, attributing a breach of such a standard to a particular source may not be straightforward, because it may be difficult to obtain adequate meteorological and background data as evidence against a particular operator.

Operating licences can therefore usefully include limits on the rate of emission of one or more pollutants of concern and indeed, for some sources and pollutants, must do so in order to ensure compliance with EC directives. Operating licences may include a requirement for operators of sources to carry out, or to have carried out on their behalf, monitoring of emission rates. Such monitoring must be carried out within a quality assurance regime to ensure that the data obtained are valid.

The type of monitoring required must be appropriate to the nature and size of the source and the pollutant under consideration. In certain cases, non-continuous (intermittent or "spot check") monitoring at intervals of some months may be satisfactory. This would be appropriate especially where the process operating parameters are reasonably constant over time and the pollutant (e.g. a heavy metal) is of concern to human health in terms of its long term average, not peak, concentration. Where a process varies significantly over time in its potential emissions to air (e.g. a batch process with raw materials which may vary significantly in quality) or where the pollutant can affect human health or the environment in the short term (e.g. sulphur dioxide), then continuous monitoring may be necessary. In certain cases, parameters measured in order to control the process (for example, oxygen levels or fuel quality) may be used as surrogates (substitutes) for measuring emission rates. The competent authority will need to ensure, as part of the inspection procedure, that monitoring is being carried out to an acceptable standard and that the emission rates are within the limits specified in the licence.

If there is any breach of a licence, the competent authority will need to have at its disposal an appropriate range of options to ensure compliance. These may range from unofficial warnings to formal requests for improvement in performance (regarding monitoring procedures or emission rates or both) to closure of the plant and/or prosecution. A graduated approach, with enforcement options chosen to suit the magnitude of the breach, compliance records is probably the best. The inspector or inspection team needs to have a thorough technical understanding of the process, in order to be able to understand any technical problems encountered by the operator and to evaluate the proposed solutions in terms of timescale, practicality and cost.

It maybe useful to separate the technical inspection function of the competent authority from an enforcement function. This will help to allow the technical inspectors to maintain a good working relationship with the operator and to avoid the strain on the relationship that the inspectors' being directly responsible for a closure notice or for a prosecution might cause.

5.4 Data Collection and Reporting

Complete and efficient data collection and reporting are essential components of air quality management. Most Directives impose a duty to report to the Commission on their implementation, and in the case of Directives requiring air quality monitoring to be undertaken, to report the results and the degree of compliance to both the Commission and the public. The format of this reporting is specified by Directive 91/692/EEC on standardising and rationalising reports on the implementation of certain directives relating to the environment, which amends the reporting requirements in original directives.

Competent authorities will need to ensure that reporting is undertaken in accordance with the requirements of this directive.

Data should be subject to quality control before they can be accepted as part of an archive of data, which can then be used for the analysis of high pollution episodes or the detection of trends in air quality over time. Where data need to be supplied rapidly (for example, to warn the public regarding ozone levels) it may be impossible to complete all the quality assurance procedures. Where this occurs, the data should be accompanied by a statement to this effect.

Data on emission rates from sources (and surrogate data such as traffic flows) are also of value, for example in building up a picture at the national and regional level of the causes of high pollution episodes. Major stationary sources should be required, under the terms of theirlicences to operate, to obtain, check, store and supply to the authorities data on their emissions.

There are also provisions in some directives for informing other Member States about certain technical issues relating to transboundary air pollution, and for consulting each other about it.

A summary checklist of the main types of reporting requirement is given in Box 4.

Box 4: Checklist of the main types of reporting requirements

- Provisions of national law adopted in the field of each directive;
- Technical measures adopted to comply with directives;
- Authorities designated to undertake approvals under provisions of directives, and the equipment approved by them;
- Derogations permitted under directives and applied;
- Use of economic instruments in accordance with the provisions of directives;
- Ambient air pollution levels which exceed specified limit or target values;
- Methods used to assess ambient air quality, including sampling sites and analysis methods;
- Proposals to set ambient air quality standards additional to those contained in directives;
- Reports on levels of air pollution throughout the territory of the Member State;
- Immediate publicity concerning any exceedances of pollutant alert thresholds.

6 Priorities and Timing

6.1 Prioritising the Implementation Tasks

Candidate Countries must agree a timetable for transposing all of the EC legislation into national legislation with the Commission. However, consideration should be given to prioritising the order in which the various items of legislation are transposed and implemented.

Legislative Considerations

Within the air quality sector, implementation of the Air Quality Framework Directive (96/62/EC) must be given a high priority, as this provides the structure and foundation for daughter legislation. Implementation of the air quality framework legislation should be carried out in conjunction with implementation of key legislation in other sectors e.g. IPPC, waste and reporting directives.

Legislation with international implications should also be given a high priority, for example the Council Decision on the Montreal Protocol (Depletion of the Ozone Layer) 88/540/EEC. In practice, many of the actions necessary to implement these items of legislation will already have been taken, following ratification of the relevant international conventions. Where conventions have been ratified, compliance is mandatory from that time, so that Candidate Countries have to implement them independently of the timetable for accession.

Cost-effectiveness

Legislation intended to implement measures which have the ability or potential to achieve the greatest environmental benefits per unit of cost or expenditure, should usually be given a higher priority than legislation with lower anticipated cost-benefit ratios. However, legislation which is likely to require major investments in new facilities should not be ignored or postponed, as the Candidate Countries will need to plan for their development, financing, and construction, and prepare the public and industry for the eventual introduction of this legislation.

A key consideration for cost-effectiveness is phasing the implementation of directives, so that industries have a defined time period to respond to the new requirements. This allows investment to be focussed on particular pollution “hot spots” in the early stages of implementation. Implementation of Directive 99/30/EC lends itself particularly to this approach, as major reductions in ambient concentrations of SO_2 and particulates can often be achieved by addressing a small number of major pollution sources.

A further cost-effectiveness issue is that some directives are scheduled to be replaced by more stringent ones. Where this is the case, it is usually more cost-effective to move directly to the more stringent standards, applying these to new installations, while scheduling implementation of the existing directive as a lower priority.

Economic Considerations

The costs of many of the directives fall almost exclusively on industry or the public at large rather than government. In these cases, it is beneficial to implement the directives in a phased manner, with their provisions applied to all new facilities from day one but to existing facilities from a fixed date in the future. This greatly reduces negative economic impacts, as many existing facilities will be upgraded for purely economic reasons during the intervening period.

In the case of the directives on emissions from mobile sources, vehicle manufacturers need a period of several years to adapt their products to the new regulations, if they are to compete successfully with manufacturers whose vehicles already comply. Older vehicles are replaced by new models as part of normal economic activity, with the result that over ten years or so, the whole vehicle fleet will be upgraded, without high costs falling on existing vehicle owners.

Environmental Considerations

In setting ambient air quality standards, any zones that require special environmental protection should be identified, to avoid new or continued damage to sensitive ecosystems. Such protection may be needed to maintain biodiversity. Similarly, zones where it is considered necessary to limit or prevent a foreseeable increase in air pollution in the wake of development, especially urban or industrial, must be identified.

The Framework Directive requires Member States to measure the ambient air quality in specified areas (including "agglomerations" i.e. urban areas). These areas should be given the highest priority because in general it is within them that air quality problems are likely to be greatest and where human exposure is also greatest. To avoid the waste of resources and the production of potentially misleading erroneous data, monitoring should not be carried out before quality assurance procedures have been designed and put in place. All data used for assessment purposes must be quality assured, because of the high potential expenditure which may hinge on such results. From the results of these initial monitoring activities, other areas where limit values may be exceeded or where it is unlikely that they are exceeded can be identified, and monitoring or other forms of assessment undertaken where necessary. It is not necessary to carry out monitoring or even modelling of ambient air quality throughout the territory, but it must be assessed. This assessment must clearly be objective but need not be time-consuming. It could, for example, be based on data on stationary emission sources, on population and on transport and on comparisons with the results from other areas where more detailed assessments have been carried out.

Planning should be carried out as a first priority in any areas where air quality needs to be improved i.e. where prescribed limit values are exceeded. If there are many such areas, prioritisation could be carried out on the basis of the number of people exposed in each area and the magnitude of the difference between the limit value and the actual ambient level in that area. In many cases, modelling can be used to predict the effect of different emission reduction scenarios and to assist in the selection of the most acceptable solution. Models will need to be based on up-to-date and accurate inventories of emissions. Acceptability of the possible solutions will need to be judged against national, regional and, or, local criteria which may be expressed in terms of cost-effectiveness, social factors (such as employment) and, or, speed of implementation.

The setting of technical standards (e.g. for emissions monitoring or fuel quality measurements) and the formulation of the corresponding quality assurance procedures needs to be carried out before such standards are published or imposed on sources or other entities which need to be regulated. International standards should be referred to and used wherever possible, to save time and resources and to ensure acceptability by the Commission, by other countries and by the public. Technical standards should be well publicised among stakeholders so that all of them are aware of the future regulatory climate in which they will operate. For example, those operating sources without a permit should be made aware at the earliest possible opportunity of the standards with which they will be expected to comply in due course.

Where a significant number of sources are being operated without permits or without satisfactory permits, they need to be brought under the control of the competent authority and some degree of prioritisation to do this may be necessary. Large sources that are thought both to be exceeding

emissions standards and to be causing breaches of ambient air quality standards in highly populated or environmentally sensitive areas should clearly be given the highest priority. The early publication of technical standards and the official issuing of them to all sources to which they could apply, together with a timescale for action, could help to achieve compliance at an earlier date than might be achieved by initially approaching sources on an individual basis with a view to giving them a permit or requiring them to make improvements.

Implementation of those measures to improve air quality or to prevent deterioration which are centred on stationary or mobile sources should be prioritised, if necessary, in a fashion similar to that used for permitting. Implementation should be required only where quality assured results for emissions or for air ambient air quality show that it is necessary. Stationary sources may typically need up to about five years to implement changes without excessive costs. Changes in the emissions from mobile sources other than those obtained by changes in fuel quality may take even longer, depending on the legal and economic penalties and incentives employed. The effects of implementing changes should therefore be viewed against the likely future, as opposed to the present, air pollution background due to other sources.

Data collection must, as a minimum, be sufficient to satisfy Commission requirements. An early review of the amount of data on ambient air quality and on emissions which is likely to be generated should assist in planning the means by which it will be archived and accessed. Data collection will occur at all stages of the approximation process.

6.2 Timescales

It is not possible to give specific guidance on the dates by which the Candidate Countries must, or may be able to, implement and comply with EC air quality legislation. Some indications are provided in the directives that stipulate the transposition periods within which Member States must have implemented and complied with the legislation. However, these periods may not provide appropriate indications of the transposition periods that will apply to Candidate Countries. Timetables will need to be agreed between the Candidate Countries and the European Commission, taking into account the level of existing development of air quality management and the costs involved.

Implementation tasks which will tend to be especially time-consuming are:

- Monitoring and assessing ambient air quality;
- Identifying facilities within the priority areas whose problems need to be addressed through the national strategy;
- Implementation of improvements at facilities and in mobile sources.

Some improvements will need to be phased, for example the mandatory introduction of three-way catalytic converters on motor vehicles depends on the prior availability of unleaded fuel. Hence directives relating to fuel quality need to be transposed prior to those relating to vehicle emissions.

There may be instances where implementation of a specific requirement cannot be achieved by the date of accession, for example due to the long lead times associated with planning, financing and constructing certain types of air pollution abatement facility. Candidate Countries must be in a position to negotiate appropriate transitional arrangements with the Commission, such as extended periods for implementing, and achieving compliance with, specific requirements of EC legislation. The need for any transitional arrangements should be identified and taken into account when developing the air quality strategy and implementation plan.

7 Economic and Financial Issues

7.1 Introduction

This section provides guidance on economic and financial issues relating to the implementation of the EC legislation on air quality. The first two sub-sections indicate the types of costs that will be incurred during implementation, while the last two sub-sections discuss cost recovery and the use of economic tools. Examples of unit costs related to specific items of legislation are provided in the fiches where appropriate.

7.2 Main Cost Areas

The main costs imposed by the legislation in the air quality sector will be those incurred by:

I. Establishing and maintaining a network of air quality monitoring stations and associated quality assurance equipment, and reporting the monitoring results. These costs will be borne by central government.

II. Preparing emissions inventories of greenhouse gases and pollutants that significantly affect air quality. These costs will be borne by central government.

III. Preparing plans and programmes to achieve compliance with ambient air quality limits. These costs will be borne by central government.

IV. Compliance with emission limits and technical requirements required under the directives, or by the implementation of plans and programmes designed to improve ambient air quality. These costs will be borne by the polluters themselves (industry, householders, motorists etc).

Whilst the costs of (I), (II), and (III) will be considerable, the costs of (IV) will be many times higher.

Few studies on the costs of implementing EC legislation in the CEECs have been undertaken. A study by the Danish Environmental Protection Agency[1)] estimated that the total investment required for flue gas treatment in the CEECs was DKK 220 billion (EUR 29 billion), of which approximately DKK 140 billion (EUR 18.6 billion) was allocated to SO_2 treatment and some DKK 80 billion (EUR 10.6 billion) for NO_x treatment. This study excluded investment in the transport sector which were thought to be considerable. Ozone related investments were estimated to be DKK 0.8 billion (EUR 0.1 billion), and were not considered to be significant. EDC[2)] estimated total investment for abatement of SO_2, NO_x and particulates at combustion plants to be EUR 48.2 billion for the CEECs, varying between EUR 0.7 billion for Estonia to EUR 13.9 billion for Poland. In one of the projects funded by DISAE estimated compliance costs for several environmental sectors in Latvia[3)] the capital cost for implementing the Directive on VOC Emissions (94/63/EC) was estimated at EUR 22.8 million, while the capital cost of implementing the Air Quality Framework Directive was put at EUR 0.9 million.

[1] DEPA 1997. EU's udvidelse mod øst - miljømæssige perspektiver. Miljøstyrelsen.
[2] EDC, 1997. Compliance Costing for Approximation of EU Environmental Legislation in the CEEC.
[3] DISAE Project LAT-103. Development of the Latvian Approximation Strategy and Programme. 1998. Halcrow.
[4] Agriconsulting Europe, 1998. Costing and Financial Analysis of Approximation in Environment.

In the case of Poland, a DISAE mini-project (POL-101)[4] on the costing and financial analysis of environmental approximation has been carried out. The estimates relating to vehicles were based on a fleet of 9.6 million vehicles in 1996 rising to a projected 18.7 million vehicles in 2010 (an increase of 95%). The cumulative capital investment cost of compliance with the directives relating to emissions from motor vehicles was estimated as EUR 0.7 billion in the year 2000, EUR 4.2 billion in 2005 and EUR 10.9 billion in 2010. This last estimated investment cost for 2010 is about 43% of the estimated total for investment in environmental approximation in Poland, excluding the nitrates and IPPC directives, of EUR 25.4 billion by 2010. For the same years, the annual (operating) cost of compliance was estimated as EUR 0.4 billion, EUR 1.3 billion and EUR 2.6 billion respectively. This last estimated annual cost for 2010 is about 48% of the estimated total annual cost for environmental approximation in Poland, namely EUR 5.3 billion, in that year.

The case of Estonia provides a useful additional example from a smaller Candidate Country. The DISAE mini-project EST-101/1 on the Estonian approximation strategy[5] provided estimates relating to vehicles. These estimates were based on a fleet of 0.5 million vehicles in 1997, rising to a projected 0.8 million vehicles in 2010 (an increase of 53%). The cumulative capital investment cost of compliance with the directives relating to emissions from motor vehicles was estimated as EUR 0.05 billion in the year 2000, EUR 0.25 billion in 2005 and EUR 0.61 billion in 2010. For the same years, the annual (operating) cost of compliance was estimated as EUR 0.03 billion, EUR 0.08 billion and EUR 0.13 billion respectively.

7.3 Institutional Development

Implementation of the air quality directives will require staff training. Without sufficient and suitably trained staff, systems for air quality monitoring,modelling, management, planning, regulation and enforcement cannot be effectively implemented. It is therefore important to ensure that adequate budgets are provided to enable the responsible institutions to perform their functions effectively. Salaries need to be set at levels that enable staff with the necessary experience and training to be attracted and retained, taking account of the competition for such staff from the private sector. A training needs assessment should be carried out to ensure that, once staff are recruited and working, any skills deficiencies can be remedied within a reasonable period of time.

Human resources are required for:

- Developing and setting environmental and technical standards and guidelines;
- Air quality management strategy development and implementation planning at central and local levels;
- Issuing of licenses, permits, or approvals;
- Supervision, monitoring, and inspection of facilities and activities which have a potential for pollutant emissions to air;
- Initiating and pursuing enforcement actions; and
- Data collection, analysis and reporting.

It is not possible to generalise on the costs of establishing the institutional structure, which will depend on the size of country, the degree of industrialisation, the choice of organisational structure and local salary levels. These costs will be borne by central government, or in some instances, by local government, but some of these may be recovered from source operators.

[5] DISAE Project EST-101/1: Approximation Strategy and Institutional Support. 1998. AgriConsulting.

7.4 Facilities

The major costs of implementation will fall on source operators, who will need to pay for emission abatement equipment, either to upgrade existing plant or to install new plant. Finance needs to be raised for capital investment and any recurrent costs incurred during operations. Ultimately, the full costs of facility provision and operation should be recovered from customers and clients (purchasers or users of goods, materials, services and energy). Finance may derive from the private or public sectors (for example, from "green funds") or a mixture of the two, depending on national policies for the ownership of facilities and for the improvement of the environment.

7.5 Application of Other Economic Tools

The use of economic tools or instruments in environmental policy has long been promoted by economists as a (potentially) more efficient way of achieving environmental goals. The major advantage of economic tools is that, in theory, they incorporate environmental concerns and costs directly into the market price mechanism, and therefore possess all the efficiency properties of competitive market pricing. The efficiency of economic tools, however, depend crucially on (a) the flexibility and effectiveness of other related environmental policy instruments (b) marginal cost differentials for different air quality management/air pollution abatement options.

One of the issues that should be considered is whether revenue generated through economic tools should be ring fenced for environmental purposes or go into the general national budget. In Denmark a tax is imposed on carbon dioxide emissions. The revenue from the tax goes into the national budget. In Sweden, on the other hand, a tax is imposed on emissions of nitrogen dioxide from certain plants. The money goes into a separate fund which is paid back to the owners/operators of the plants in proportion to the energy produced by the plants and the reduction in emissions from the plants.

Two examples of economic tools are:

- Product Charges (or Input Charges), which are added to the price of certain goods, materials, services and energy which are considered to cause adverse effects on air quality during their production, use or disposal. Taxes on vehicle fuel can be viewed as being partly of this type; and

- Tradeable permits, which could be used for control of CO_2 emissions, in conjunction with a carbon tax. These would require a sophisticated control mechanism.

In some instances, there may be a role for economic instruments to re-allocate some of the costs borne by polluters. Differential taxation as a tool to encourage the use of unleaded fuel as been successfully adopted in some EU countries. Similarly, energy taxes and/or tradeable permits can be used to achieve reductions in greenhouse gas emissions.

Taxes can also be levied on industry according to the emission levels of specified air pollutants. Financial subsidies are available in some countries for implementing emission reductions, for example in France through the Agency for Environment and Energy (ADEME) and financing companies (SOFERGIES).

The costs of emission permitting and associated enforcement can be recovered from polluters by charging fees for issuing and renewing permits.

8 Summary of Key Issues

Achieving and maintaining compliance with EC policies and legislation on air quality management presents a major challenge to the Candidate Countries which, in order to minimise the associated administrative burden and costs, needs to be managed in a systematic and cost-effective manner. With this in mind, the governments of the Candidate Countries should endeavour to focus their efforts and actions on addressing those issues and requirements which are fundamental to the implementation of the legislation in this sector, in particular by ensuring that:

- Air quality management and regulation is effectively integrated with that for other environmental sectors such as water, noise and waste, preferably through a single environmental protection agency and a single legal instrument;

- Quality assured assessment of ambient air quality is undertaken as a prelude to formulating a strategy for air quality improvements, and mapping/inventory of sources;

- A comprehensive plan (air quality management strategy) is drawn up for improving and maintaining air quality, addressing all pollutants of concern and focussing on issues of immediate concern in terms of complying with air quality criteria;

- Arrangements are put in place for the effective involvement and participation of all other bodies or interest groups which have a significant role or function to perform in relation to air quality management;

- Adequate provision is made for monitoring, regulation and enforcement of the legislation, regulations, permits and licenses. In particular, sufficient human and technical resources need to be allocated to enable all functions to be properly performed;

- Record keeping and reporting is performed to meet the requirements of the directives and to inform the public; and

- The air quality management plan is regularly reviewed and updated to ensure that it remains relevant to the key issues of concern.

A well prepared, integrated strategy provides the means by which these and all other significant issues relating to air quality management can be systematically identified and addressed. A checklist of the key questions that should be considered in preparing and implementing such a strategy is presented in Box 5 below.

Box 5 Checklist of Key Questions to be Considered in Preparing and Implementing an Air Quality Management Strategy

Have key actors and stakeholders been identified for each Directive or Decision and discussions held between them, especially on the choice of competent authority (- ies)?

For each Directive or Decision, have suitable administrative, technical, legal and financial arrangements been made? In particular:

· has a competent authority been appointed which is appropriate in terms of its technical expertise, its relationships with other governmental and non-governmental bodies, its enforcement powers and its authority to report to the Commission?

· has a competent authority been appointed which is appropriate in terms of its technical expertise, its relationships with other governmental and non-governmental bodies, its enforcement powers and its authority to report to the Commission?

- have appropriate institutions to carry out air quality assessment (including monitoring), modelling, the compilation of inventories and independent quality assurance in all these areas been identified and appointed?
- have all the necessary laws, regulations etc been passed to allow the CA to carry out its functions as required under each Directive or Decision (including international protocols)?
- have any necessary additional air quality or related standards been regulated for?
- have sufficient financial resources for all the necessary activities, including staff recruitment and training, been allocated?

For each pollutant which requires air quality assessment (especially monitoring):

- have suitable quality assurance procedures been set up for all stages and activities?
- is technical advice available?
- is monitoring being carried out at suitable locations?
- have suitable arrangements for data handling and storage been made and implemented?

Have all significant existing and potential future air quality problems been identified and , where possible, prioritised?

- are the plans based on emissions inventories, modelling results or other objective and verified data?
- have the plans been reviewed, discussed and agreed on at an appropriate local, regional and/or national level with key stakeholders?
- have all technical and economic options been reviewed?
- have all social and economic effects been considered?
- are the plans based upon feasible techniques(e.g. BATNEEC)?

Have all the consultation, public information and reporting requirements of each Directive or Decision been fulfilled? In particular:

- have consultations been held with adjoining Member States where necessary?
- have technical representatives been appointed to the Commission where necessary?
- have details of the implementation of each Directive or Decision been given to the Commission?
- has the Commission been informed, if necessary in advance, of any alternative methods?
- is the Commission being given the results of air quality assessment, including monitoring?
- are efficient means of rapidly informing the public when necessary being used?
- is an efficient means of generating reports for the Commission and the public being used?

The Air Quality Framework Directive

Official Title: Council Directive 96/62/EC on ambient air quality assessment and management (OJ L 296, 21.11.96)

TAIEX Ref. No.: 11

1 Summary of Main Aims and Provisions

The Directive aims to set the basic principles of a common strategy which:

- define and establish objectives for ambient air quality in the EU;
- assess ambient air quality in the EU using common methods and criteria;
- produce adequate information on ambient air quality and ensures its availability to the public; and
- maintains ambient air quality where it is good and improves it in other cases.

2 Principal Obligations of Member States

2.1 Planning

- Designate competent authorities and other bodies to implement the requirements of the Directive (Art. 3).

- Designate zones and agglomerations covering the whole territory (Art.2).

- Undertake a series of representative measurements, surveys or assessments to obtain preliminary data on the levels of specified pollutants in the air (Art. 5).

- In areas where there is a risk of air quality limit values being exceeded, draw up action plans to ensure that the levels are not exceeded, for example by controlling activities (such as motor vehicle traffic) that contribute to the air pollution (Art. 7).

- Draw up list of zones and agglomerations where the level of pollutants is higher than prescribed limit values plus margin of tolerance as well as of those between the limit value and the margin of tolerance (Art. 8).

- Draw up list of zones and agglomerations where the levels of pollutants are below prescribed limit values (Art. 9).

- Draw up plans or programmes to ensure that the limit values are complied with within a specified time limit (Art. 8).

- In zones and agglomerations where levels of pollutants are lower than air quality limit values, ensure that the levels of pollutants are maintained below those limit values, and preserve the best ambient air quality compatible with sustainable development (Art. 9).

2.2 Regulation

- Take measures to ensure compliance with limit values (Arts. 7 and 9).

2.3 Monitoring

- Assess ambient air quality throughout the territory (Art. 6).

2.4 Information and Reporting

- Inform the public of:
    - cases where the air quality alert thresholds are exceeded (Art. 10);
    - competent authorities and bodies responsible for implementing the directive (Art. 3); and
    - plans and programmes for attaining limit value in zones where prescribed limit values have been exceeded (Art. 8).

- Where there is a risk of air quality limit values being exceeded following significant pollution originating in another Member State, consult with that Member State with a view to finding a solution (Art. 8).

- Report to Commission on:
    - competent authorities and bodies responsible for implementing the directive (Art. 11);
    - national standards, criteria and techniques that are more stringent than Community standards or that relate to pollutants not covered by Community legislation (Art. 4);
    - lists of zones and agglomerations drawn up pursuant to Articles 8 and 9 (Art. 11);
    - methods used for the preliminary assessment of air quality (Art. 11);
    - cases where limit values and alert thresholds are exceeded, and reasons for the occurrence (Arts. 10 and 11);
    - plans and programmes adopted pursuant to Article 8, and (every three years) progress in implementing the plans or programmes (Art. 11);
    - measures taken to attain target value for zone that exceeds that set by the Commission (Art. 4);
    - transposition, with texts of the main provisions of national law adopted in the field covered by the directive (Art. 13); and
    - every three years, information on reviews of the levels in zones and agglomerations referred to in Articles 8 and 9 of the Directive (Art. 11).

3.2 Additional Legal Instruments (to be renumbered and/or placed somewhere else in the text)

A number of other legal instruments are relevant to the Air Quality Framework Directive and should be borne in mind when implementing it. These instruments may be grouped into the areas of (a) product control and material handling, (b) emissions standards for stationary sources, (c) emissions standards for mobile sources, (d) ambient air quality standards (limit values and guidelines) and (e) monitoring and information exchange. In the sections below, all instruments are to be taken as Directives, except where otherwise stated.

(a) Product control and material handling:

- Quality of petrol and diesel fuels (98/70/EC and 93/12/EEC);
- Lead content of petrol (85/210/EEC, amended by 87/416/EEC);
- VOC emissions from storage and distribution of petrol (94/63/EC);
- VOC emissions due to the use of organic solvents (99/13/EC);
- Marketing and use of certain dangerous substances and preparations (76/769/EEC, as amended);
- Prevention and reduction of environmental pollution by asbestos (87/2I7/EEC);
- Ozone-depleting substances (Council Regulation 3093/94 - this is likely to be replaced by proposal (COM (1998) 398));
- Council Decision 88/540/EEC requiring Member States to ratify the Montreal Protocol and notify the European Commission that they have done so.

(b) Emissions standards for stationary sources:

- Municipal waste incineration (existing installations) (89/429/EEC);
- Municipal waste incineration (new installations) (89/369/EEC);
- Hazardous waste incineration (94/67/EC);
- IPPC (96/61/EC) which will replace the directive on Air Pollution from Industrial Plants (84/360/EEC as amended by 91/692/EEC);
- Large combustion plants (88/609/EEC, amended by 94/66/EC);
- Seveso (96/82/EC);
- Directive 1999/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations.

(c) Emissions standards for mobile sources:

- Light duty motor vehicle emissions (70/220/EEC, amended by 74/270/EEC, 77/102/EEC, 78/665/EEC, 83/351/EEC, 88/76/EEC, 88/436/EEC, 89/458/EEC, 89/491/EEC, 91/441/EEC, 93/59/EEC, 94/12/EEC, 96/44/EEC and 96/69/EEC);
- "Auto-Oil" Proposal COM/96/0163 (COD) for an amending directive on emissions covered by Directive 70/220/EEC;
- Roadworthiness test for emissions (96/96/EC, which replaced 92/55/EC, which had amended Directive 77/143/EEC);
- Diesel emissions (soot) (72/306/EEC, amended by 89/491/EEC and 97/20/EEC);
- Diesel engine emissions (88/77/EEC, amended by 91/542/EEC and 96/1/EEC);
- Emissions from non-road mobile machinery (97/68/EC).

(d) Ambient air quality standards:

- Limit values and guide values for sulphur dioxide and suspended particulates in ambient air (80/779/EEC amended by 89/427/EEC and 91/692/EEC);
- Limit value for lead in ambient air concentrations (82/884/EEC amended by 91/692/EEC);
- Limit and guide values for nitrogen dioxide in ambient air (85/203/EEC amended by 91/692/EEC).

These three directives will be repealed and replaced by Directive 99/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.

(e) Monitoring and information exchange:

- Tropospheric ozone monitoring network (92/72/EC);
- Decision 93/389/EEC for a monitoring mechanism for Community CO_2 and other greenhouse gas emissions;

- Decision 86/277/EEC on the conclusion of the Protocol to the 1979 Convention on long range transboundary air pollution on long-term financing of the programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP);
- Decision 96/511/EC on a questionnaire on air pollution;
- Decision 97/101/EC on the exchange of information and data from networks and stations measuring ambient air quality within Member States;
- Access to Environmental Information (90/313/EEC).

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the checklist below. They are organised in chronological order of implementation wherever possible.

THE AIR QUALITY FRAMEWORK DIRECTIVE – KEY IMPLEMENTATION TASKS	
1	**Planning the Implementation**
1.1	Identify key actors and stakeholders and arrange discussions between them, especially on the choice of a competent authority and the identification of likely "hot spots" (areas where air pollution is worse).
1.2	Designate a competent authority to implement the requirements of the directive. The responsibilities of the authority would include: · Assessing ambient air quality; · Approving measuring devised; · Ensuring accuracy of measurements; · Analysing assessment methods; · Co-ordinating quality assurance programmes; · Ensuring compliance with the air quality standards, including the role of local authorities; vehicle approval and inspection authorities; fuel producing industries; trading standards organisations; pollution licensing bodies and other ministries; and · Arrangements for reporting on air quality monitoring and on the implementation of the directive.
1.3	Establish a system to divide the territory into zones and agglomerations, and prepare list of zones and agglomerations. This should include zones for ecosystem protection (against SO_2 pollution) and for the protection of vegetation (against NO_x pollution).
1.4	Establish a system to designate zones or agglomerations for the purpose of assessing ambient air quality.
1.5	Once limit values and alert thresholds for pollutants have been set by the Commission, introduce regulations to implement them in the Member State.
1.6	Establish a system for collection information on ambient concentrations of the relevant pollutants. The system should enable information to be regularly updated and made available to the Commission, the public and appropriate organisations. Information should include: · the occurrence of pollutant levels which exceed the limit value (or exceed the limit value plus the margin of tolerance), the periods when such levels occurred, the reasons for the exceedance and the plans to achieve compliance with the limit value (this is an irregular task); · any exceedances of the target value for ozone (this is an irregular task); · the methods used for the preliminary assessment of air quality (this is a single task); and · standards set for any other pollutants, and any measures adopted which are more stringent than those specified by the Directive (this is a single or infrequent task).

2	**Monitoring**
2.1	Establish ambient air quality monitoring programme. This should include sampling and analytical methodologies, and could include modelling techniques to supplement monitoring.
2.2	Define the locations at which monitoring for preliminary assessment is to be undertaken.
2.3	Set up suitable quality assurance and technical advice and guidance for the air quality assessment/monitoringprogramme, to include third party accreditation for the analytical services.
2.4	Where there are no representative measurements for all zones and agglomerations, undertake a preliminary assessment of air quality.
2.5	Carry out preliminary assessment of air quality throughout the territory of the Member State. This is to be done by monitoring in agglomerations and in zones where limit values are approached or exceeded.
3	**Plans and Programmes**
3.1	Prepare and implement action programmes to reduce pollution in the short-term, when limit values or alert thresholds are in danger of being exceeded.
3.2	Draw up a list of zones and agglomerations in which the levels of pollutants are above the limit values (including a list of zones and agglomerations in which the levels of pollutants are between the limit value and the limit value plus the margin of tolerance).
3.3	Prepare and implement integrated plans covering all the pollutants concerned, for improving air quality and attaining the limit value within a specified time limit.
3.4	Draw up a list of zones and agglomerations in which the levels of pollutants are below the limit values, and take measures to maintain the best ambient air quality in these zones which is compatible with sustainable development.
4	**Information and Reporting**
4.1	Prepare an annual report for the Commission and the public stating the zones and agglomerations in which air quality levels are exceeded, and those in which they are not exceeded (this is a regular task).
4.2	Prepare a report every three years informing the Commission and the public of the observed or assessed levels of air pollution in zones and agglomerations throughout the territory of the Member State (this is a regular task).
4.3	When the alert thresholds are exceeded, inform the public immediately by means of television, radio and newspapers, and report to the Commission within three months (this is an irregular task).
4.4	Report to the Commission the texts of the provisions of national law adopted to implement thedirective (this is a single task).

3.2 Phasing Considerations

The required financial resources need to be estimated and allocated before any other activities can start.

A quality assurance system should be set up before devoting resources to atmospheric dispersion modelling and to monitoring, in order to ensure that these activities produce results of known reliability. Technical training, support and guidance should accompany the quality assurance system.

In most cases, monitoring at a given site needs to be carried out for at least a year before the results from it can be considered to be valuable. A monitoring programme should therefore be set up as soon as possible after the precise monitoring requirements have been identified and financial resources have been made available. Clearly, a basic initial monitoring programme can be expanded in the light of assessment results. Ideally, the locations of monitoring sites should be determined on the basis of modelling results.

Where ambient monitoring is already being carried out, it should be reviewed at national level to evaluate the extent to which each monitoring site complies with the requirements of the Directive. This review should take into account at least the location of each site, the method(s) used and the pollutant(s) monitored. Some sites may perhaps not comply with the requirements of the Directive: consideration should however be given to continuing operation of some or all of such sites, with upgrading where possible, in order to identify any long-term trends in air quality.

In any case, only after quality assured assessments of air quality have been produced should plans and programmes be drawn up. Implementation of these plans andprogrammes will be the most expensive and time-consuming part of achieving compliance with the directive. The likely approximate time periods are considered in the fiches dealing with individual pollutants. There can be a certain amount of overlap between the assessments and the plans andprogrammes: plans to deal with serious and obvious breaches (exceedances) of air quality limit values may be prepared even before all assessments have been completed, provided that it is certain that it will not be necessary to re-formulate any of the plans after more information has been obtained. This consideration applies mainly to significant local sources of air pollution.

4 Implementation Guidance

The directive focuses on the maintenance and improvement of air quality with respect to the following thirteen pollutants, of which the first six are to be studied at an initial stage:

1. sulphur dioxide;
2. nitrogen dioxide;
3. fine particulate matter such as soot;
4. suspended particulate matter;
5. lead;
6. ozone;
7. benzene;
8. carbon monoxide;
9. poly-aromatic hydrocarbons;
10. cadmium;
11. arsenic;
12. nickel; and
13. mercury.

The directive does not itself specify any air quality thresholds. These are to be set out in "daughter" directives. The first of which is now in force - Directive 99/30/EC relating to limit values forsulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air. The thresholds will take the form of a number of different values whose purposes are defined in the directive:

- a "limit value";
- a "target value";
- an "alert threshold"; and
- a "margin of tolerance".

The directive allows Member States to set more stringent limit values than those adopted by the Commission, and the competent authority needs to decide whether this should be done. If the Member State proposes to set limit values or alert thresholds for pollutants not covered in the directive, the competent authority must inform the Commission first, so that consideration can be given to the need to act at a Community level.

Planning

- At the earliest stage of implementation it is necessary to identify key actors and stakeholders who will be involved in or impacted by the implementation of the directive. Discussion and consultation with them should focus on issues such as the choice of a competent authority, and identifying areas where air pollution is likely to be high. Identification of, and initial discussion with all potential stakeholders will help to achieve the most efficient path to approximation, to avoid costly errors (for example, in drafting legislation and regulations and in setting up institutions) and to encourage the co-operation of stakeholders in complying with the national legal instruments.

- The competent authority would probably be the ministry with responsibility for environmental protection or the national environmental protection agency. The authority needs to be able to take a nation-wide view of the issues, co-ordinate nation-wide actions, and report on a nation-wide basis. It is important to have effective co-ordination between the competent authority with primary responsibility for the implementation of this directive, and that responsible for implementation of the IPPC directive

Example of Institutional Set-up in Member States

In one Member State (F) a national air council advises the government on the best means to improve air quality. This council includes representatives of various stakeholders, including national, regional and local government, industry, consumers, NGOs and bodies that carry out air quality monitoring. An environmental economist is also appointed to the council.

In another Member State (P) local air management commissions, set up in five cities with particular pollution problems, carry out air quality assessments, draw up action plans, assess the effectiveness of programmes already implemented and disseminate information to the public. Their action programmes are funded and approved by a combination of the regional environmental agency and the relevant municipalities and industrial associations.

- The appropriate institution (or institutions) to undertake air quality assessment for the thirteen listed pollutants may be a government laboratory, a regional or local authority, a private company, or a combination of these.

Examples of Monitoring Practice in a Member State

In one Member State (UK) the institution which carries out monitoring is a former government laboratory, which has been privatised. In another Member State (P), monitoring is undertaken by the local air management commission in cities where such a body has been created, or by the regional environmental directorate elsewhere.

Assessment and Classification

- When defining the locations at which preliminary assessment is to be undertaken, it should be noted that the directive requires that the preliminary assessment of air quality should include all "zones and agglomerations" (an agglomeration being a zone with a population exceeding 250,000 or with a high population density). In general, monitoring sites should include a mixture of different types of sites such as urban, rural and industrial zones. It is not necessary for all pollutants to be monitored at all stations. In allocating resources to monitoring, priority could be given to a monitoring network for pollutants 1 to 6 as numbered in sub-section 4.1, whilst other pollutants could be monitored at a smaller number of sites. The minimum number of sampling points required for each zone or agglomeration will be given in the "daughter" Directives.

- The purpose of the preliminary assessment of air quality is to obtain representative values by means of measurements, surveys or assessments of the concentrations of the thirteen pollutants,

prior to the implementation of the daughter directives. Moreover its results may be used for the designation of zones and agglomerations. A preliminary assessment may perhaps not be required from Candidate Countries, because the original requirement for this was related to a fixed timetable for the Commission to propose limit values and alert thresholds.

- The assessment of air quality throughout the territory of the Member State is to be done by monitoring in agglomerations and in zones where limit values are likely to be reached or exceeded. The directive allows for a mixture of monitoring and modelling, or modelling only, to be used to assess air quality in zones where concentrations are less than prescribed levels, lower than the limit value.

- The assessment/monitoring programmes may be conducted by the competent authority, or by one or more other organisations appointed for the purpose, either from the public or the private sector. In either event, a third party should be appointed to verify the monitoring methodology and to provide independent accreditation of the assessment (modelling, sampling and analytical) techniques used.

Examples of Monitoring Practice in Member States

In one Member State (F) monitoring of ambient air quality is solely the responsibility of local authorities. In another Member State (S) the municipality operates monitoring sites within cities, while the government operates rural background sites. In a third Member State (UK), the main national monitoring network is the responsibility of the government, while local authorities carry out additional localised monitoring. In a fourth Member State (P), local commissions conduct monitoring in five cities, (while regional directorates are responsible for other areas). In a fifth Member State (DK), the national network is the responsibility of the National Environmental Research Institute, an independent body that is part of the government.

- A variety of monitoring (sampling and analysis) and other assessment techniques (modelling) will be appropriate for the thirteen different pollutants covered by the directive. The monitoring techniques required would depend on the way in which the air quality limit values are expressed (e.g. whether short-term averages or percentiles are needed, or only long-term averages). Continuous monitoring provides the most complete method of analysis, but there is also likely to be a role for simpler methods such as diffusion tubes, which can monitor long-term average concentrations of sulphur dioxide and nitrogen dioxide at many sites at a relatively low cost. Mobile laboratories can be valuable in providing indicative baseline data, including identifying suitable locations for fixed monitoring stations. It is undesirable to move fixed stations, because that makes it much more difficult to evaluate reliably trends in air quality over time. Ideally, the locations of fixed monitoring stations should be determined by modelling, which itself can be done relatively quickly, in a matter of weeks, once input data are available.

- The directive allows assessment of air quality to be undertaken partly or wholly by modelling or other objective estimation techniques in zones where pollutant levels are below levels, lower than the limit value, which are set by the Commission. This is likely to provide a more economical approach than comprehensive monitoring, since models can calculate air quality at hundreds of sites at a lower cost than that for a single set of measurements. However, calibration of results from modelling techniques will require some monitoring to be undertaken for all pollutants.

Examples of Practice in a Member State

In one Member State (UK) a 1995 Environment Act requires every local authority to undertake a comprehensive review of current and likely future air quality and to assess whether or not air quality standards

and objectives are being complied with and will be complied with in the future. If the local authority can conclude from this first (screening) stage that the objectives of the National Air Quality Strategy will be met in its area by 2005, then no further action is required. If the authority cannot reach that conclusion for one or more pollutants then it must carry out further screening. The authority must use data frommodelling and/or monitoring to estimate the highest likely concentrations and the locations where these will occur. Doing this identifies whether or not there is a significant risk of an air quality objective not being achieved. If there is no significant risk, then no further action is required. If, however, there is seen to be a significant risk, then more sophisticated and detailed assessment using modelling and/or monitoring (but probably both) is required. This allows a more reliable prediction to be made, and a decision to be made on whether or not it is necessary to set up one or more Air Quality Management Area (AQMAs) and, if so, where they should be. For each pollutant of concern, a detailed emission inventory and modelling of the extent, location and frequency of potential exceedances of the objectives may be needed. If an AQMA is set up, then a further assessment of air quality within the next 12 months is required, together with a written Action Plan. The results of the assessments and the Action Plan are to be publicly available.

Overall, the philosophy is that the complexity and detail of the approach used should be consistent with the risk of exceeding the air quality objective. Because much of this work has been innovative, fourteen local authorities were chosen to take part in a pilot study in 1996 to 1997, to test the procedures they were required to follow and the guidance provided to them by the Member State Government. The work is still at an early stage. It imposes a considerable burden on local authorities and requires them to be involved in techniques such as modelling and the more sophisticated forms of monitoring, in which some of them are not experienced. Local authorities are concerned they will not have enough resources, in terms of both money and suitably skilled and available personnel, to carry out the work. The timescales being imposed by the Government are seen to be short.

There have been some specific technical difficulties, some of which are likely to apply to further work in local air quality management, for example: lack of meteorological data (for use in modelling) from meteorological measurement sites close, and, relevant to the "hot spots": this is especially true where "street canyons" are involved; concerns about how to choose appropriate locations for monitoring and for consideringmodelled concentrations; difficulties in obtaining suitable emissions data for emissions inventories, whether by measurement in chimneys or from details of materials (such as solvents) purchased; sensitivity ofmodelled results to the model used; and sensitivity of monitoring results (especially for PM_{10}) to the sampler used. There have also been administrative difficulties, e.g. in gaining access to suitable sites for monitoring; getting planning permission to build an enclosure for a monitoring station; getting equipment supply companies to submit tenders correctly; and gaining appropriate assistance from within the local authorities themselves in using software for models and inventories. Some local authorities in adjoining areas combine resources to solve problems (which the Government encourages them to do and requires in certain cases), or use local resources (e.g. universities) to carry out some of the work. The Government is issuing guidance to assist the local authorities and has set up a telephone helpline run by an environmental consultancy under contract.

Plans and Programmes to Achieve Compliance

- Candidate Countries should keep fully up to date with all proposed new relevant EU legislation and should take such legislation into account in formulating their action plans. It is advisable to review the action plans whenever new EU legislation is proposed or considered and in any case every 12 months. This will help Candidate Countries to efficiently manage the tasks involved in the adoption of new air quality standards.

- In the event that monitoring shows areas in which the limit values for specified pollutants in air are exceeded, achieving compliance will require a number of different approaches.

- Firstly, the principal sources of atmospheric pollution leading to theexceedance need to be identified. Sometimes this can be done by correlating measured concentrations and wind direction. These will almost certainly be different in the case of each pollutant, but in general may include industry, power stations, road vehicles and domestic boilers. It may be necessary to set up detailed

emission inventories to supply input data to models used to evaluate various plans or scenarios to improve or maintain air quality.

- Ozone is a special case amongst the pollutants covered by the directive in that it is a secondary pollutant, formed from the action of sunlight on precursors (mainly volatile organic compounds and oxides of nitrogen). The reactions by which ozone is formed take place over a period of days and are influenced by emissions of primary pollutants over scales of many hundreds ofkilometres. It therefore follows that co-operation between Member States is required to address the causes of ozone pollution.

- Plans and programmes to bring pollutant concentrations below limit values will need to adopt a number of approaches. They need to be integrated, in the sense that all pollutants of concern are addressed, and also need to ensure that account is taken of the need to protect other environmental media such as land and water from increases in pollution. Plans andprogrammes must be carefully prepared because they will entail high costs during their subsequent implementation.

- The types of mechanism that may be used to reduce pollution emissions include:
    - Controlling or suspending polluting activities (for example, motor vehicle traffic) to control pollution levels during short-term events when limit values or alert thresholds for pollutants are in danger of being exceeded;
    - Regulation of either emission levels or the type of installations allowed, using either existing or new legislation;
    - Economic incentives, such as differential taxation or subsidies, to encourage reductions in emissions, for example through fuel substitution; and
    - Closure of installations that cannot meet the emission standards necessary to comply with ambient air quality limits.

Examples of Practice in Member States

In two Member States (UK, S), local authorities have the power to ban cars from city centres in case of severe pollution episodes. This power has yet to be used in either country. One of these countries (UK) has recently introduced a discount on the flat-rate vehicle tax on cars, for cars with engines below a certain capacity.

In another Member State (F), local authorities have the power to ban selectively vehicles which do not have a "green disk". The least polluting models of car are entitled to these disks, currently about 30% of the vehicle fleet. This power is easier to use, and has the added advantage of encouraging motorists to switch to less polluting cars, yielding lower pollution levels year-round.

- There is likely to be a division of responsibilities for the control of different emission sources. In many countries, control of stationary industrial sources is divided between a national authority, typically the environmental protection agency, which has responsibility for IPPC and regional or local authorities. Domestic boilers and some other combustion appliances are likely to be regulated by the Department of Industry, and there may also be a role for the Ministry of Finance in establishing economic subsidies for appliance replacement. Control of the emissions from mobile sources is likely to be organised at national level for type approvals, with national organisation and local testing stations for inspections and tests. Fuel quality inspections need to be carried out at local level. Control of traffic is likely to be done at the local level. There is a need for the various agencies involved in achieving compliance to work together, and for their respective contributions to be co-ordinated by the competent authority. This co-ordinating role should include setting emission standards for different classes of polluters, which the individual authorities will be expected to enforce. The responsibilities of different organisations must be clearly set out, agreed upon and fulfilled.

Information and Reporting

- Details of assessment methods, modelling results and monitoring results should be made available to the public and to the Commission as soon as possible. However, care must be taken to ensure that the quality assurance status of results (e.g. "checked" or "unchecked") is included with them. This is especially applicable where information is published, for example on the Internet, on a daily basis.

- In general, the Internet and text pages on televisions are useful, rapid and cost-effective media for informing the public. In emergencies, both television and radio should be used.

5 Costs

The following checklist describes the types of cost which are likely to be incurred to implement the directive. Further explanation is given below the checklist.

Checklist of the Types of Cost Incurred to Implement the Directive

Initial set-up cost:
- consultation with key actors and stakeholders (incurred by national government and others);
- establishment of the competent authority, CA (incurred by national government);
- devising quality assurance systems and procedures (incurred by CA);
- provision of training (incurred by CA);
- preparing initial technical guidance documents (incurred by CA);
- setting up a public information and warning system (incurred by CA).

Capital expenditure:
- setting up a network of air quality monitoring stations and associated quality assurance equipment for assessment and classification (incurred by CA and possibly by some local authorities,LAs);
- implementation of improvements to industrial sources (changing materials, processes and/or adding abatement technology) (costs incurred by the owners of the sources).

On-going running costs:
- updating and improving technical guidance documents and/or telephone helpline (incurred by CA);
- maintenance of network (repairs, spares, consumables, rental of sites, power) (incurred by CA, and possibly by some LAs);
- analysis of samples (incurred by CA, and possibly by someLAs);
- maintenance of quality assurance facilities (incurred by CA and possibly by someLAs);
- compiling and checking of results from modelling and monitoring (incurred by CA, and possibly by some LAs);
- preparation and updating of plans and programmes (also inventories and modelling for scenarios) (incurred by CA, possibly by some LAs and possibly by any major industrial sources);
- fiscal incentives to use less polluting materials and equipment (incurred by national government and possibly by LAs);
- maintenance of a public information system (incurred by CA, possibly by someLAs);
- production of reports for the Commission (incurred by CA).

- The initial set-up costs will be incurred chiefly by the national government, mainly through the competent authority once it has been appointed. Some time costs are likely to be incurred by other key actors and stakeholders in attending meetings and reviewing documents. The total initial set-up costs are likely be relatively low.

- Carrying out assessment and classification will incur both capital and on-going costs. They will be incurred by the competent authority or by the government agency charged with undertaking the monitoring and possibly also by local authorities, depending on the exact arrangements for financing assessments. This is true whether or not a consultant is employed to carry out the practical work. Costs will probably be greater than the initial set-up costs but much less than any compliance costs incurred in modifying fuels or stationary sources. They will depend on the number of agglomerations and of pollutants of concern and on the complexity of terrain (for modelling). Costs for modelling on a local scale are likely to be in the very approximate region of the capital costs of one multi-pollutant monitoring station.

- The main costs of assessment and classification will be in setting up and maintaining a network of air quality monitoring stations and associated quality assurance equipment and tasks. The main

capital cost will be the purchase and siting of continuous monitoring stations, together with staff training. The main on-going (running) costs will be for the maintenance of the stations, for the supply (and analysis where necessary) of diffusion tubes, filters and otherconsumables, for mains electrical power and for the collation and checking (for quality) of results.

- The preparation of plans and programmes to achieve compliance with air quality limits and to maintain air quality where it is already good will incur costs for the competent authority and possibly also for local authorities, depending on the exact arrangements for making plans. Work on inventories, the modelling of different abatement (emissions control) scenarios and the subsequent development of plans may be carried out by consultants. Evaluations will also probably need to be made of the technical and economic feasibility of achieving emission reductions from particular emission classes, to ensure cost-effectiveness.

- Some costs in planning reductions of their emissions may be incurred by major industrial sources of air pollution. Overall costs for the preparation of plans andprogrammes will probably lie in the low to medium range.

- The costs of achieving compliance will be borne by polluters and/or by taxpayers through national and local taxation to fund fiscal incentives (e.g. subsidies). The overall costs for implementation will be relatively high. The polluter pays principle should be applied here. In general, plans should be made to maximise the mass of pollutant emission abated per Euro invested, except where local pollution problems are of prime importance.

- The costs of achieving compliance by emitters of pollutants that causeexceedances of air quality limit values will probably be the major single cost of compliance. These costs should be borne by the polluters themselves (industry, householders, motorists etc). In some Candidate Countries, this may require the “Polluter Pays” principle to be incorporated into national legislation. In some instances, there could be a role for subsidies or other economic instruments to re-allocate some of these costs to the taxpayer through the national government.

- The costs of reporting, providing information and consulting are likely to be comparatively low. They will be incurred by the competent authority and possibly also by local authorities, depending on exact arrangements for monitoring and assessment. There is room for cost savings by using efficient reporting methods.

The Tropospheric Ozone Pollution Directive

Official Title: Council Directive 92/72/EEC on air pollution by ozone (OJ L 297, 13.10.92)

TAIEX Ref. No.: 15

1 Summary of Main Aims and Provisions

The purpose of the directive is to establish a harmonised procedure for monitoring levels of ozone in the air, and for exchanging information and informing the public about air pollution by ozone. It requires Member States to establish an ozone monitoring network and to warn the public when specified threshold levels of ozone in the air are exceeded. Daughter directives under the Air Quality Framework Directive will progressively replace the provisions of the Directive.

2 Principal Obligations of Member States

2.1 Planning

- Designate a body to forward information to the Commission, to co-ordinate implementation of the Directive, and to participate in consultations on photochemical air pollution (Arts. 2 and 7).

- Designate a laboratory / laboratories responsible for evaluating methods of measurement used at national level in relation to that set out in the Directive (Art. 4).

2.2 Monitoring

- Organise, at national level, inter comparisons between laboratories taking part in the collection and analysis of data (Art. 4).

- Establish measuring stations in specified areas and, using the methods of sampling and analysis prescribed by the directive (or equivalent methods), measure concentrations of ozone in the air (Arts. 3 and 4).

2.3 Information and Reporting

- Inform the public where specified threshold levels of ozone are exceeded (Art. 5 and Annex IV).

- Report to the Commission on:
    - the body designated for the purposes of implementation of the directive (Art. 2);
    - methods used to determine ozone concentrations (Art. 4);
    - geographical information relating to the measuring stations (Art. 4);
    - results of measurements, including cases where threshold levels of ozone are exceeded (Arts. 4 and 6);
    - measures taken to comply with the directive (Art. 9); and
    - transposition with texts of the main provisions of national law adopted in the field covered by the directive (Art. 9).

- Report to the European Environment Agency on results of measurements, including cases where prescribed threshold levels of ozone are exceeded (Art 6).

3 Implementation

3.1 Key Tasks

Although not a daughter directive of the Air Quality Framework Act, this directive should be implemented as an integral part of the Framework Directive. The Commission has published a proposal for a new Directive on ozone (COM (1999) 125 Final). Reference should therefore be made to the Key Tasks section of the fiche on the Framework Directive. This section will only set out tasks that are specific to this directive.

THE TROPOSPHERIC OZONE POLLUTION DIRECTIVE – KEY IMPLEMENTATION TASKS	
1	**Planning the Implementation**
1.1	Designate a competent authority to implement the requirements of the directive. In general, these requirements are: • Harmonised procedures for air quality monitoring, for information exchange and for informing and warning the public regarding ozone; • Designation of one or more laboratories for evaluating the monitoring method used at national level in relation to the reference method; • Organisation of intercomparisons between bodies (laboratories) carrying out monitoring (data collection and analysis); • Arrangements for reporting on ozone monitoring and on the implementation of the directive.
1.2	Set air quality standards or equivalent (e.g. thresholds) for ozone in ambient air.
1.3	Introduce programmes to reduce ozone pollution.
2	**Monitoring**
2.1	Establish ozone monitoring programme. Programme should include: • Criteria to site monitoring stations; • Establishment of sufficient monitoring stations to gather data on a national basis; • Analytical and sampling methodologies.
2.2	Set up system for carrying out inter-comparisons of laboratories taking part in the monitoring programme.
2.3	Carry out monitoring and compile and check the results.
3	**Reporting and Consultation**
3.1	Inform the Commission of: • the transposition of the directive (laws, regulations and administrative provisions) (this is a single task); • the body designated as the competent authority (this is a single task); • the results of any indicative monitoring used to determine the locations of the monitoring stations (this is a single or infrequent task); • the results of routine monitoring, with specified details of periods when the health protection and vegetation protection threshold values were exceeded (this is a regular task); • occasions when population information or warning thresholds are exceeded, with details (this is an irregular task); • results of routine monitoring and occasions when population information or warning thresholds were exceeded, from the period before the directive came into force (this is a single or task); • the method(s) used for monitoring (sampling and analysis) (this is a single or infrequent task); • if the method(s) used for monitoring differs from the reference method, proof that it (they) produces equivalent results (this is a single or infrequent task); • the geographical co-ordinates of the monitoring stations, a description of the areas they cover and the site-selection criteria (this is a single or infrequent task).
3.2	Participate in consultations on photochemical air pollution organised by the Commission. These must involve the competent authority and can involve other bodies (this is an irregular task).

3.2 Phasing Considerations

As mentioned above, the work to be done in implementing this directive will be an integral part of the work to implement the Air Quality Framework Directive and must certainly be co-ordinated with it. In addition, the Commission has published a new Directive Proposal on ozone in ambioent air (COM (1999) 125 Final).

4 Implementation Guidance

The directive specifies threshold concentrations of ozone in the atmosphere above which the public must be informed and warned about health risks. It does not specify limits or targets which Member States must ensure are not exceeded, although the potential for the Commission to impose these exists under Article 8 and is reinforced by the Air Quality Framework Directive. Therefore a draft for a proposed ozone daughter directive, setting ozone target values to be achieved within a given period, is being completed by the EC. The purpose of this present directive is to establish a harmonised procedure for monitoring ozone, and, following on from this, to warn the public of potential health threats and to exchange information between Member States and the Commission. Any further actions are to be proposed by the Commission on the basis of the results of the first few years of monitoring.

Threshold values are listed in Annex I of the directive. These are expressed in $\mu g/m^3$ of ozone, at standard pressure and a temperature of 293K. Two thresholds require action, in the form of public information; the other two require only notification to the Commission. The thresholds are:

- Health Protection (110 $\mu g/m^3$ over four specified 8-hour periods each day);
- Vegetation Protection (either 200 $\mu g/m^3$ over 1 hour or 65 $\mu g/m^3$ over 24 hours);
- Population Information (180 $\mu g/m^3$ over 1 hour);
- Population Warning (360 $\mu g/m^3$ over 1 hour).

Ozone is a secondary pollutant, i.e. it is formed in the troposphere primarily from a complicated series of chemical reactions, initiated by sunlight, between various precursor pollutants, chief among which are nitrogen oxides, volatile organic compounds (VOCs) and carbon monoxide. Measures taken to reduce levels of ozone must focus on emissions of its precursors.

The fact that nitrogen oxides contribute to several distinct environmental problems such as acidification, eutrophication and particle formation complicates the development of international strategies to combat tropospheric ozone. Ozone formation should therefore not be addressed in isolation: current international initiatives treat ozone, regional acidification and eutrophication simultaneously. Any resulting policy on emissions control is necessarily optimised for all environmental effects, and the effect on tropospheric ozone levels may be reduced because of these competing demands including, but not restricted to, tropospheric ozone. A reduction solely in nitrogen oxides (NO_x) emissions could lead to increases in ozone concentrations, because near emission sources NO_x can destroy ozone. By contrast, it appears probable that reductions in VOC emissions will always lead to reductions in ozone concentrations.

Implementation of the specific requirements of this directive and the related directives identified in Section 2.5 "Additional Legal Instruments" will be influenced by, and must be tailored to, the present status, needs and conditions concerning air quality assessment and management in general and ozone pollution and monitoring in particular, in each Candidate Country.

Planning Implementation

- At the earliest stage of implementation it is necessary to identify key actors and stakeholders who will be involved in transposition, implementation and enforcement of the directive and arrange discussions between them and, or set up working groups, especially on transposition of the directive into national law and the choice of a competent authority. It would be advisable to designate the competent authority with responsibility implementing the Framework Directive, as the authority with responsibility for the implementation of this directive. The authority needs to be able to take a nationwide view of the issues, co-ordinate nationwide actions, and report on a nationwide basis.

- The key actors and stakeholders are, chiefly, the ministries with responsibility for environmental policy, the environment agency responsible for pollution control; the institutes responsible for air quality monitoring, modelling and meteorological measurements; private consultancies; and measurement accreditation services (private or governmental).

- The competent authority must ensure that the requirements of the directive are met and in particular that monitoring is carried out and results are checked and reported. It may be necessary to provide additional powers for the competent authority to bring about compliance with the directive, for example in warning the public, where these do not already exist under other legislation.

- The appropriate institution (or institutions) to undertake air quality monitoring for ozone may be a government laboratory, a regional or local authority, a private consultant or a combination of these.

Monitoring

- The competent authority will need to ensure that there is appropriate quality assurance for all monitoring work. To support this, it will be necessary to prepare and issue detailed technical advice and guidance, to ensure a full understanding of the objectives, philosophy and requirements of the directive. This is probably best done as part of the technical guidance issued in relation to the Air Quality Framework Directive.

- The directive specifically requires the designation of one or more laboratories to evaluate the monitoring method used at the national level in relation to the reference method.

- The monitoring programmes may be conducted by the competent authority, or by one or more other organisations appointed for the purpose, either from the public or the private sector. In either event, a third party should be appointed to verify the monitoring methodology and to provide independent accreditation of the monitoring (sampling and analytical) techniques used. This task should normally be given to an organisation that is not itself involved in monitoring. The competent authority will usually be the most logical choice, provided that it has the expertise. Failing that, the competent authority could appoint an independent accreditation body to carry out this task.

- The competent authority must organise intercomparisons (i.e. assurance) of laboratories undertaking the actual monitoring.

Example of Practice on Ozone Monitoring from a Member State

In one Member State (UK), air pollution monitoring was originally carried out by government laboratories, which have subsequently been privatised and now carry out monitoring under government contracts funded by the Department of the Environment, Transport and the Regions (DETR). In addition, monitoring is also undertaken by local authorities, which have separate responsibilities to achieve the air quality goals set by the National Air Quality Strategy for the year 2005, using their own financial resources.

The main ozone monitoring sites in this country are among the 108 sites used for the national automatic monitoring programme. Ozone is measured at 71 sites (52 sites out of the total of 89 urban sites and all of the 19 rural sites) which are also used to measure levels of other pollutants. About 35 of the urban sites and 16 of the rural sites are fully funded by the DETR, the other half are operated by local authorities (or site owners) with quality assurance, public information and archiving facilities being provided by the DETR. Sub-consultants are responsible for site management and preliminary data scaling at the DETR sites, and a government agency (the National Physical Laboratory) is responsible for overall quality assurance.

- The directive specifies a standard methodology for monitoring ozone levels, but allows alternatives to be used if these can be shown to produce equivalent results. If an alternative method is being considered, it is the responsibility of the laboratory designated by the government to determine the suitability of this method, although the laboratory could ask the equipment manufacturer to produce the required evidence.

- Ozone monitoring should be carried out continuously, in accordance with the provisions specified in Annex V of the directive, using the reference method ultraviolet absorption. The directive specifies the calibration frequency, the position of the sampling head, the required characteristics and length of the sampling line and other general provisions for monitoring. The directive does not mention any other specific methods but does make allowance in general for alternative monitoring methods to be used. These must produce results equivalent to those that are produced using the reference method.

- There are currently no alternative, less expensive, monitoring methods for ozone.

- The continuous measurements are used to produce hourly mean values, which in turn are averaged to give running 8-hour, 24-hour and annual mean values. (Running eight-hour means are calculated every hour from the last eight hourly means). The data processing and storage system used for ozone monitoring should be expandable to deal with all likely future requirements for running and fixed means.

- The method to select the monitoring sites is set out in Annex II of the directive; the sites must be geographically and climatologically representative, and must be in areas of greatest risk of exceedance of the relevant threshold (i.e. the vegetation protection threshold, and the health protection threshold in inhabited areas). Therefore, given that ozone is destroyed by emitted precursor substances, monitoring stations should not be placed in the immediate vicinity of emission sources (e.g. busy streets, industrial facilities). Where Member States do not have information about such representative high-risk sites they must, according to the directive, carry out an Indicative Measurement Programme in order to select them. It should be noted that maximum concentrations of ozone generally occur downwind of the source areas (typically urban and industrial areas) where the precursors are emitted.

- Additional sites must be chosen to contribute towards knowledge of the formation and transportation of ozone and its precursors, and to monitor changes in ozone concentrations in areas affected by background pollution. This implies monitoring not only of ozone but also of its main precursors, oxides of nitrogen and VOCs, at these additional sites.

- Ideally, although this is not specifically required by the directive, the locations of fixed monitoring stations should be determined by modelling, which can be done relatively quickly, in a matter of weeks, once input data are available. This is likely to provide a more economical approach than comprehensive monitoring, since models can calculate air quality at hundreds of sites at a lower cost than that for a single set of measurements. However, calibration of results from modelling techniques will require some monitoring to be undertaken. This monitoring would constitute the Indicative Measurement Programme mentioned above. Again, any modelling work should be done in close co-ordination with, or as part of, the implementation of the Air Quality Framework Directive. The limitations of modelling ozone noted earlier should, however, be borne in mind.

Reporting, Consultation and Public Information

- The reporting and consultation requirements given in the directive are highly specific.

- Member States must participate in consultations on photochemical air pollution organised by the Commission. These must involve the competent authority and can involve other bodies.

- Members States must inform the public when the population information or warning threshold levels are reached. The information must be circulated to the population concerned on a "sufficiently large scale" and "as soon as possible". The aim is to allow people in the affected area to take appropriate action, such as staying indoors or avoiding exercise. The information supplied must include at least the time and location where the threshold was exceeded, whether the information or warning threshold was exceeded, and forecasts of the area affected, likely duration of the incident and whether ozone levels are likely to improve, remain the same or increase. It must also make clear who in the population are most likely to be affected and what precautions they should take. Different people in the same area may need to take different precautions, due to differing sensitivities to ozone.

- The competent authority must consider which media are appropriate to communicate information and warnings; television and radio will reach large numbers of people quickly, but other media such as the Internet and the telephone (to call large organisations or public services) may also play a role. Newspapers may also be used to give daily ozone forecasts.

Examples of Practice from Member States concerning Information to the Public

Member States (UK, F, S, DK) use various media to inform the public; use of local radio, the Internet and TV weather forecasts are common. Information on the Internet is typically provided constantly, whether or not the thresholds have been exceeded. One Member State (F) has a network of electronic screens in town centres, normally used for information for residents and tourists, which carry information when ozone levels exceed the thresholds. Another Member State (DK) has established a unified smog warning system, which provides information about NO_2 and SO_2 as well as ozone. Another Member State (UK) uses the teletext service of the main state TV channel to give information and forecasts on pollution levels. Forecasts are also given to newspapers and appear on the Internet. When levels are forecast to be high, this information is included in radio and television weather forecasts.

5 Costs

The following checklist describes the types of cost which are likely to be incurred to implement the directive. Further explanation is given below the checklist.

Checklist of the Types of Cost Incurred to Implement the Directive

Initial set-up costs:
- consultation with key actors and stakeholders (incurred by national government and others);
- establishment of the competent authority, CA (incurred by national government);
- devising quality assurance systems and procedures (incurred by CA);
- provision of training (incurred by CA);
- preparing initial technical guidance documents (incurred by CA).

Capital expenditure:
- setting up a network of ozone monitoring stations and associated quality; assurance equipment, (incurred by CA and possibly by some local authorities, LAs)
- setting up a public information and warning system (incurred by CA and/or by LAs.

On-going running costs:
- updating and improving technical guidance documents and/or telephone helpline (incurred by CA);

- maintenance of ozone monitoring network (repairs, spares, consumables, site rental, power) (incurred by CA and possibly by some LAs);
- maintenance of quality assurance facilities (incurred by CA and possibly by some LAs);
- compiling and checking of results from monitoring and any modelling (incurred by CA and possibly by some LAs);
- production of reports for the Commission (incurred by CA);
- involvement in consultations with the Commission (incurred by CA);
- maintaining and checking the public information and warning system (incurred by CA and/or by LAs).

- The initial set-up costs will be incurred in chiefly by the national government, mainly through the competent authority once it has been appointed. Some time costs are likely to be incurred by other key actors and stakeholders in attending meetings and reviewing documents. The total initial set-up costs are likely be relatively low.

- The costs of carrying out monitoring will be both capital and on-going. They will be incurred by the competent authority or by the government agency charged with undertaking the monitoring and possibly also by local authorities, depending on the exact arrangements for monitoring. This is true whether or not a consultant is employed to carry out the practical work. Costs will probably be greater than the initial set-up costs. Costs for any modelling carried out using commercially available models are likely to be in the very approximate region of the capital costs of one multi-pollutant monitoring station, but modelling may be carried out for several pollutants simultaneously (for example, in connection with the Air Quality Framework Directive) without incurring significant additional costs.

- The main costs of monitoring will be in setting up and maintaining a network of ozone monitoring stations and associated quality assurance equipment and tasks. The main capital cost will be the purchase and siting of continuous monitoring stations, together with staff training in operation, maintenance, data handling and quality control.

- As well as the capital costs involved in setting up the network, there will be costs involved in identifying the sites, which will require an Indicative Monitoring Programme and may require a modelling study in itself.

- There will be some small capital and running costs incurred in setting up and maintaining a public information and warning system, for example in obtaining or renting a control room, providing and renting dedicated telephones and lines and setting up, maintaining and testing the procedures for the rapid and secure dissemination of information and warnings.

- The main on-going (running) costs will be for the maintenance of the stations, for the supply of consumables, and for mains electrical power and for the collation and checking (for quality) of results.

- The overall costs for implementation will be low compared with the costs of other Directives that require air quality to comply with limit values, because there is no requirement to plan and implement abatement programmes.

- The costs of reporting, providing information and consulting are likely to be comparatively low. Local authorities, depending on exact arrangements for monitoring will incur them by the competent authority and possibly also. There is room for cost savings by using efficient (computer-based and automated) data handling and reporting methods.

- Although the directive does not impose measures actively to reduce ozone pollution, it provides for the Commission to determine such measures in future, which may lead to further legislation.

The costs of complying with such future regulations are unpredictable, but may be substantial. They will be borne by those responsible for emitting ozone precursors, such as fuel distribution companies operating vehicle filling stations, vehicle manufacturers and users, and solvent-using industries such as printing, surface coating and chemicals.

The Directive on VOC Emissions resulting from Storage and Distribution of Petrol

Official Title: European Parliament and Council Directive 94/63/EC on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations (OJ L 365, 31.12.1994)

TAIEX Ref. No.: 16

1 Summary of Main Aims and Provisions

The directive aims at combating air pollution by reducing VOC emissions from operations, installations, vehicles and vessels used for storage, loading and transport of petrol from one terminal to another, or from a terminal to a service station. The directive does not cover the refuelling of vehicles at service stations.

2 Principal Obligations of Member States

2.1 Regulation

- Require that storage installations at terminals be designed and operated in accordance with the technical provisions set out in the directive (Art. 3 and Annex I).
- Require that loading and unloading equipment of mobile containers at terminals be designed and operated in accordance with the technical provisions set out in the directive (Art. 4 and Annex II).
- Require that all terminals with loading facilities for road tankers be equipped with at least one gantry, which meets the specifications for bottom-loading equipment laid down in the directive (Art. 4 and Annex IV).
- With effect from 1 January 2005 require that all road tanker loading gantries at all terminals, unless exempted as specified in the directive, meet the specifications for bottom-loading equipment set out in the directive (Art. 4 and Annex IV).
- Require that mobile containers be designed and operated in accordance with the requirements set out in the directive (Art. 5).
- For unloading of petrol at service stations, vapour recovery must be implemented at all stations (with a throughput of more than 10 m^3 per annum) by 31.12.2004.
- Require that loading and storage equipment at service stations and terminals where the intermediate storage of vapours is carried out, be designed and operated in accordance with the technical provisions set out in the directive (Art. 6 and Annex III).

2.2 Monitoring and Enforcement

- Ensure that road tankers are regularly tested for vapour tightness and that vacuum/pressure valves on all mobile containers are periodically inspected for correct functioning (Art. 5).

- Ensure the establishment of measurement and analysis methods and their frequency for determining the mean concentration of vapours in the exhaust from the vapour recovery unit at loading and unloading installations at terminals. The methods and their frequency shall satisfy the conditions set out in the directive (Annex II, paragraph 2).

- Ensure that connection lines and pipe installations at loading and unloading installations at terminals are checked regularly for leaks (Annex II, paragraph 3).

- Ensure that loading operations at terminals are shut down at the gantry in case of leak of vapour; and that equipment for such shutdown operations are installed at the gantry (Annex II, paragraph 4).

2.3 Reporting

- Inform the Commission and other Member States of:

    - Existing and contemplated measures that are more stringent than those set out in the Directive which satisfy the conditions set out in the directive, and the grounds for taking them Arts. 3, 4 and 6);

    - Existing and contemplated alternative technical measures demonstrated to have at least the same efficiency as the measures set out in the directive, and the grounds for taking them (Art. 3,4 and 6).

- Inform the Commission of:

    - Terminals subject to derogations from the specifications for loading, unloading and storage equipment (Arts. 4 and 9);

    - Details of areas within which intends to grant a derogation for specified service stations from the requirements for loading and storage equipment, and subsequently of any changes to such areas (Art. 6).

- Report to the Commission on:

    - Implementation of the directive (Art. 9 and Art. 5 Council Directive 91/692/EEC);

    - Transposition measures and the text of the provisions of national law adopted in the field governed by the directive (Art. 10).

2.4 Additional Legal Instruments

A number of other legislative instruments have relevance to controlling emissions from mobile sources and must be borne in mind during the implementation of this directive. These include:

- Air Quality Framework Directive 96/62/EC;
- Air Quality Standards:
    - Tropospheric ozone 92/72/EEC;
    - Sulphur dioxide and suspended particulates 80/779/EEC as amended by Directive 1999/30/EC;
    - Lead 82/884/EEC as amended by Directive 1999/30/EC;
    - Nitrogen dioxide 85/203/EEC as amended.
- Sulphur content of certain liquid fuels 93/12/EEC as amended;
- Quality of petrol and diesel fuels 98/70/EC;
- Type-approval of motor vehicles and their trailers 70/156/EEC as amended;
- Light duty motor vehicles' exhaust emissions 70/220/EEC as amended;
- Emissions from diesel engines – Soot 72/306/EEC as amended;
- Smoke emissions from diesel engines for use in agricultural or forestry tractors 77/537/EEC as amended;
- Emissions from heavy goods vehicles 88/77/EEC as amended;
- Emissions from mobile machinery 97/68/EC;

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the checklist below. The key tasks are arranged under sub-headings and organised in chronological order of implementation (where possible).

DIRECTIVE ON VOC EMISSIONS RESULTING FROM STORAGE AND DISTRIBUTION OF PETROL – KEY IMPLEMENTATION TASKS	
1	**Regulation**
1.1	Designate the competent authorities with responsibility for implementing the Directive. Responsibilities would include: • authorising terminals and services stations; and • monitoring compliance with emission limits.
1.2	Establish systems and procedures for authorising terminals and services stations in order to ensure that they comply with the directive's requirements
2	**Monitoring**
2.1	Establish the competent authorities to monitor compliance with emissions limits for petrol vapour from storage tanks and mobile containers, including the appointment of competent laboratories.
2.2	Establish the measurement and analysis methods & their frequency for determining the mean concentration of vapours from terminals.
2.3	Establish the systems and procedures to regularly test the vapour tightness of road tankers.
2.4	Establish the systems and procedures to periodically inspect the vacuum/pressure valves on all mobile containers for correct functioning.
2.5	Establish the systems and procedures to regularly check for leaks the connection lines and pipe installations at loading and unloading installations at terminals.
2.6	Establish the systems and procedures to ensure that loading operations at terminals are shut down at the gantry in case of vapour leaks.
3	**Reporting**
3.1	Inform the Commission of: • More stringent national measures; • Alternative technical measures; • Terminals subject to derogations; • Areas within which intends to grant a derogation for service stations; and • Implementation and transposition measures.
3.2	Inform other Member States of: • More stringent national measures; and • Alternative technical measures.
4	**Technical Advice and Guidance**
4.1	Prepare and issue technical guidance to ensure full understanding of the technical specifications and requirements set out in the directive and to ensure the implementation of the technical and management requirements to minimise vapour losses from the handling of petrol at terminals and service stations or during transport.
4.2	Prepare and issue technical guidance to the monitoring authorities to help their application of nationally harmonised testing procedures monitoring terminals and service station, as well as vehicles and vessels for the transport of petrol.

3.2 Phasing Considerations

Experience within Member States suggests that the most demanding and time-consuming tasks associated with implementing this directive are:

- Establishing laws for meeting the emission limits for petrol vapour from storage tanks and mobile containers: trucks, trains and inland waterway vessels. The transposing structure needs to be carefully considered especially in countries where the issues covered by the directive are the responsibilities of various ministries (e.g. Ministry of Environment for fixed installations and Ministry of Transport for mobile containers).

- Establishing and developing the institutional structure, as well as systems and procedures for:

    - authorising relevant terminals and service stations covered to ensure that they comply with the directive's requirements as regards the design and operation of their storage, loading and unloading installations;

    - monitoring and enforcing the emissions limits for petrol vapour from storage tanks and mobile containers, as set out in the directive, in particular the acquisition and training of sufficient personnel.

Depending on the existing institutional structure, the transposition of legislation may be required before a new structure can be introduced, since it may be necessary to establish the new institutions through legislation.

Member States are allowed to uphold or impose more stringent measures relating to the evaporative losses than those set out in the directive. These may apply to storage installations at terminals, the loading of mobile containers, unloading and loading installation at terminals, and loading and storage equipment at service stations. Such measures are permitted throughout the Member State territory or in geographical areas where it is established that they are necessary for the protection of human health or the environment because of special conditions; and are subject to additional conditions set out in the directive. Member States may also maintain or develop technical measures that are alternatives to those set out in the directive. The Member State must be able to show that the alternative measures are at least as efficient as those set out in the directive. The more stringent and alternative measures may relate to storage installations at terminals, the loading of mobile containers, unloading and loading installation at terminals, and loading and storage equipment at service stations.

Certain Member States have been given longer periods in which to adapt to the requirements of the directive. Such derogations have taken account of any major environmental measures of that they may already have adopted which cover issues relating to the directive, or of the particular burden imposed by the measures in the directive owing to the structure of their networks. The implementation timetable to be applied in each Candidate Country should be brought up and discussed in the accession negotiations. In the directive, the implementation is staged according to the age and throughput of the installations, vehicles and vessels.

In the implementation of the directive, local actors in the Member State play a major role. The implementation of the Directive requires all operators of petrol terminals, service stations and petrol transports to implement a range of technical and management requirements to minimise vapour losses from the handling of petrol.

4 Implementation Guidance

Regulation

- A number of national ministries may have some responsibility for implementing various aspects of this directive – for example, the Ministries of Environment, Energy and Transport. It is therefore essential that there is co-operation between different ministries, and also prior consultation with other interested groups (e.g. oil industry).

Examples of Practice from a Member State

In one Member State (DK) the Ministry of Environment and Energy is the Ministry responsible for administering transposition of the directive. The Regulation transposing the Directive[1)] has been adopted under the Environmental Protection Act ('Lov om Miljøbeskyttelse').

- In order to ensure that the fixed terminals and service stations covered by the directive are designed and operated in accordance with the directive's requirements, Candidate Countries would be advised to establish an authorisation regime.

[1] Bekendtgørelse nr. 852 af 11. november 1995 om begrænsning af udslip af dampe ved oplagring og distribution af benzin.

Examples of Practice from a Member State

In one Member State (FIN) terminals and service stations need environmental permit. The permitting procedure requires compliance with the requirements set out in the VOC Directive. The competent authority that grants environmental permits for oil refineries and large petrol storage installations is the Regional Environmental Centre (REC). The authority that grants the authorisations for service stations is the local environmental authority.

Monitoring and Enforcement

- The Member States' competent authorities must ensure that the measurement and analysis methods and their frequency are established. Competent authorities monitoring terminals and service stations, as well as vehicles and vessels for the transport of petrol must apply nationally harmonised testing procedures.

- Regional or local environmental authorities normally carry out the practical monitoring of fixed terminals and service stations to ensure compliance with the directive's requirements. The authority with responsibility for monitoring mobile containers is often different from that with responsibility for monitoring fixed installations.

Examples of Practice from a Member State

In one Member State (FIN) the Safety Technology Authority (TUKES) is the competent authority monitoring the conformity of road tankers with the directive's requirements. TUKES is a technical authority placed under the Ministry of Trade and Industry. In practice the control of conformity with VOC emission limits is performed by means of a type-approval system of road tankers, as well as their periodic inspections. TUKES is the competent authority for the administration of ADR (European agreement concerning the international carriage of dangerous goods by road). The transposition and implementation of the directive as regards the VOC emissions from road tankers is included in the general system of requirements set for the carriage of dangerous goods by road.

Examples of Sanctioning Practice from a Member State

The transposed directive in one Member State (DK) prescribes sanctions for non-compliance with the directive. In very gross cases the maximum sanction for infringing the requirements laid down for storage installations at terminals, loading and unloading installations at terminals, mobile containers, and loading and storage installations at service stations, may be up to two years of prison.

5 Costs

The main types of costs arising from the implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred to Implement the Directive

Initial set-up costs:
- Establishment of competent authorities;
- Devising systems and procedures;
- Provisions for training;
- Preparation of technical guidance.

Capital expenditure:
- Vapour recovery systems for filling stations (approx. EUR 2,000 per station).

On-going running costs:
- Maintenance costs for vapour recovery systems.

The Directive on Sulphur Content of Liquid Fuels

Official Title: Council Directive 93/12/EEC relating to the sulphur content of certain liquid fuels (OJ L 74, 27.3.93), as amended by Directive 98/70/EC (OJ L 350, 28.12.1998) and Directive 99/32/EC (OJ L 121, 11.05.1999) and Directive 1999/32/EC

TAIEX Ref. No.: 18

1 Summary of Main Aims and Provisions

The main aim of Directive 93/12/EEC is to improve air quality especially as regards SO_2 pollution. The Directive sets the maximum sulphur content limit for gas oil, also known as light fuel oil, used for heating, marine and industrial purposes among others. The Directive has been amended by Directive 98/70/EC which, with effect from 1 January 2000, will replace the provisions of Directive 93/12/EEC controlling diesel fuel for use in road traffic. The Directive does not apply to gas oil intended for further processing, gas oil contained in the fuel tanks for vehicles crossing the borders of a Member State and a non-EU country, or to aviation fuel. As from 1 July 2000, the Directive will be significantly amended by Directive 99/32/EC which sets lower limits for the sulphur content in gas oil and lays down limits for heavy fuel oils. The provisions for gas oils will not cover marine diesel used in ships. The Directive allows derogations from the requirements relating to the sulphur content of fuels, if air quality standards for sulphur dioxide laid down in other EU legislation are respected, and the emissions do not contribute to critical loads being exceeded in any Member State. Since the provisions of Directive 99/32/EC will be effective from as early as July 2000, this fiche deals with Directive 93/12/EC as amended by the later Directive.

2 Principal Obligations of Member States

2.1 Regulation

- From 1 January 2003, prohibit the use of heavy fuel oils if their sulphur content exceeds 1.00% by mass (Art. 3 of Directive 99/32/EC).

- Ensure that combustion plants using heavy fuel oil with sulphur concentration greater than 1.00% by mass operate with permits which specify emission limits (Art. 3 of Directive 99/32/EC).

- From July 2000, prohibit the use of gas oils, including marine as oils, if their sulphur content exceeds 0.2 % by mass (Art.4 of Directive 99/32/EC).

- From 1 January 2008, prohibit the use of gas oils, including marine as oils, if their sulphur content exceeds 0.10 % by mass (Art.4 of Directive 99/32/EC).

- Put in place penalties applicable to breaches of national provisions transposing the requirements of the Directive. The penalties must be effective, proportionate and dissuasive. (Art 11 of Directive 99/32/EC).

2.2 Monitoring

- Check, by sampling, that the sulphur content of gas oil used in the territory complies with the requirements of the Directive. The sampling must start within six months of the date on which the relevant limit for maximum sulphur content comes into force, and carried out with enough frequency to ensure that samples are representative of fuel examined (Art. 6 of Directive 99/32/EC).

- Use the following reference methods for determining the sulphur content:
  - ISO method 8754 (1992) and PrEN ISO 14596 for heavy fuel oil and marine gas oil;
  - EN method 24260 (1987), ISO 8754 (1992) and PrEN ISO 14596 for gas oil. (Art. 6 of Directive 99/32/EC);
  - Use arbitration method PrEN ISO 14596 (Art. 6 of Directive 99/32/EC);
  - Ensure that the statistical interpretation of the verification of the sulphur content of gas oils is carried out in accordance with ISO standard 4259 (1992) (Art. 6 of Directive 99/32/EC).

2.3 Reporting

- Inform the Commission and the public of any derogations from the requirements relating to the sulphur content of fuels (Arts. 3 and 4 of Directive 99/32/EC).

- Report the Commission on:
  - difficulties in applying the sulphur limit set by the Directive in case of supply difficulties (Art. 5 of Directive 99/32//EC);
  - the sulphur content of liquid fuels falling within the scope of the Directive and used within the territory during the preceding calendar year. Report should be based on the results of sampling and analysis and include a summary of derogations (Art. 7 of Directive 99/32/EC); and
  - laws, regulations and administrative provisions brought into force to comply with the Directive (transposition measures) (Art. 10 of Directive 99/32/EC).

2.4 Additional Legal Instruments

A number of other legislative instruments have relevance to controlling atmospheric emissions from mobile sources, and must be borne in mind during the implementation of this directive. These include:

- Air Quality Framework Directive 96/62/EC;
- Air Quality Standards:
  - Sulphur dioxide and suspended particulates 80/779/EEC as amended;
  - Lead 82/884/EEC as amended;
  - Nitrogen dioxide 85/203/EEC as amended;
  - Tropospheric ozone 92/72/EEC.
- Light duty motor vehicles' exhaust emissions 70/220/EEC as amended;
- Emissions from diesel engines – Soot 72/306/EEC as amended;
- Smoke emissions from diesel engines for use in agricultural or forestry tractors 77/537/EEC as amended;
- Emissions from heavy goods vehicles 88/77/EEC as amended;
- Emissions from mobile machinery 97/68/EC;
- CO_2 emissions and fuel consumption of motor vehicles 80/1268/EEC as amended;
- Emissions from motor vehicles – roadworthiness test for emissions 96/96/EC;
- VOC emissions from storage and distribution of petrol 94/63/EC;
- Reduction of CO_2 emissions from passenger cars Commission Recommendation 99/125/EC; and

- Directive on the limitation of emissions of certain pollutants into the air from large combustion plants 88/609/EEC.

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the table below. The tasks are arranged under sub-headings and organised in chronological order of implementation where possible.

DIRECTIVE ON SULPHUR CONTENT OF CERTAIN LIQUID FUELS – KEY IMPLEMENTATION TASKS	
1	**Planning and Assessments**
1.1	Designate authorities and other organisations with responsibility for regulating the quality of heavy fuel oil used in plants and gas oils placed on the market. Responsibilities would include: · sampling and analysing the quality of heavy fuel oil used in plants and gas oils; and · enforcing breaches of national provisions transposing the requirements of the directive.
1.2	Carry out assessment of sulphur content of heavy fuel oil in plants and of gas oils used in country
2	**Regulation**
2.1	Take steps and establish regulatory system to: · ensure that heavy fuel oil with a sulphur content greater than 1% will not be used as from 1 January 2003; · ensure that gas oil with a sulphur content greater than 0.20% will not be used as from 1 January 2000, and that gas oil with a sulphur content greater than 0.10% will not be used as from 1 January 2008; and · to cover exceptional circumstances when it may be difficult to apply the relevant limits on the maximum sulphur content in liquid fuels. This should set higher limits on sulphur content permissible, time limits for derogations, and a system for notifying derogations.
3	**Monitoring**
3.1	Set up system and procedure for monitoring the sulphur content of heavy fuel oil used in plants and gas oils placed on the market. This includes the designation and control of private and/or public sector laboratories for carrying out analysis of samples taken.
3.2	Provide relevant training on monitoring procedures, in particular in ISO method 8754 for determining the sulphur content of gas oils; and on ISO standards 4259 for interpreting results of checks on sulphur content of gas oil.
4	**Reporting**
4.1	Set up system (for example a database) to collect results of sampling and analysis of heavy fuel oil used in plants and gas oils. This system should include summaries of derogations, and a method of producing annual reports.
4.2	Report to the Commission on transposition measures.
4.3	Where necessary, co-operate with the industry and local authorities to obtain information about the difficulties in applying the fuel specifications in case of supply difficulties.
4.4	Inform the Commission of difficulties in applying the fuel specifications in case of supply difficulties.
5	**Technical Advice and Guidance**
5.1	Prepare and issue guidance on monitoring procedures which incorporate ISO method 8754 and ISO standards 4259

3.2 Phasing Considerations

Experience within Member States suggests that the most demanding and time consuming task associated with implementing this directive is the setting up of an efficient system to monitor the sulphur content of gas oils placed on the market. The planning and setting up of monitoring systems and procedures need to be commenced during the initial phase of implementation. Depending on the existing institutional structure, the transposition of legislation may be required before a new structure can be introduced, since it may be necessary to establish the new institutions through legislation. The institutional structures and systems for monitoring and enforcing the requirements of the directive would be the same as those for implementing the requirements of Directive 98/70 relating to the quality of petrol and diesel fuels.

In the accession negotiations possible derogations from the directive's requirements may be discussed. For example one Member State (EL) has been authorised for a limited period to market gas oil intended for marine use in seagoing ships with sulphur content higher than 0.2 %, since the application of the regular limits would raise specific technical and economic problems for this country. A condition for

the derogation is that it does not have negative effects on the market in gas oil intended for marine use (this country's refinery installations do not cover more than domestic demand for gas oils and medium oils). Also exports of gas oils for marine use from this Member State to other Member States shall satisfy the requirements in force in the importing Member State. Another derogation example granted from the directive's requirements is the exception granted for a Member State (A) that joined the EU on January 1, 1995. In this Member State's Act of Accession it was authorised to maintain a maximum content of 0.1% for sulphur in gas oil, compared with the Community limit of 0.2%.

4 Implementation Guidance

The practical implementation of the provisions of the directive will depend on the particular needs, the institutional and administrative structures, and resources of each country. However, this section briefly gives some suggestions for implementing the directive, drawn from the experiences of various Member Sates.

Regulation

- National regulations to transpose this directive in most of the Member States are part of regulations on specifications for motor fuels.

- The ministry with primary responsibility for administering national legislation which transposes the requirements for sulphur content of heavy fuel oil and gas oil could either be the ministry responsible for energy matters or the ministry responsible for environmental matters. However, because the aim of the directive is air quality control, whichever ministry has primary responsible must co-operate closely with the ministry responsible for environmental issues, and with other ministries such as the Ministry of Transport, in developing legislation to transpose the requirements of the directive, and in establishing measures to implement the requirements of the directive.

- Countries should conduct discussions on implementation options with representatives of the oil sector as well as other interested parties in order to avoid compliance problems.

Examples of Practice in Member States

The fuel quality directives of one Member State (FIN) have been transposed into national law through Decrees of Cabinet Ministers adopted under the Air Pollution Prevention Act, and administered by the Ministry of Environment. The Decree of the Cabinet of Ministers on Sulphur Content of Light Fuel Oil and Diesel Fuel 1997 gives effect to Directive 93/12/EEC. This Member State has been allowed to adopt stricter requirements on the sulphur content of certain liquid fuels until the end of 1999.

In another Member State (D), the Federal Government has adopted a Regulation on the Sulphur Content of Light Fuel Oil and Diesel Fuel 1975, under the Federal Emission Control Act (Bundesimmissionsschutzgesetz - BImSchG). The Regulation partly implements Directive 93/12/EEC. Other relevant national regulations are the Regulation on the Characteristics and Marking of the Quality of Fuel 1993 and the Fuel Regulation 1993. Although the Federal Ministry of Environment is responsible for drafting the legislation, the Federal States implement and enforce the regulations. Samples are collected twice a year from 10 to 20 service stations in every State and analysed by the Federal Environment Agency.

The Air Pollution Act 1987 (Sulphur Content of Gas Oil) Regulations 1994 in another Member State (IRL) transpose the requirements of Directive 93/12/EEC

Monitoring

- The directive requires that sulphur content of gas oils placed on the market is checked by sampling. The detailed organisation of the sampling regime is left to the discretion of the Member State, but the system must be efficient and ensure that the quality of gas oils placed on the market complies with the requirements set out in the directive. The sampling shall be carried out with sufficient frequency and in such a way that the samples are representative of the gas oil examined.

- The authorities/organisations set up to carry out monitoring functions must have the administrative apparatus (sufficient human, technical and financial resources), including sampling and statistical interpretation methodologies, for testing sulphur content levels and enforcing the requirements.

- Local authorities can be made responsible for monitoring within their jurisdictions.

- Private sector actors could also be required to monitor their gas oil supplies, and to report the results to the relevant authorities.

- Imported fuels are in most Member States monitored by the Customs and Excise department, using their laboratories to carry out sampling, where these are available.

- Fuels produced within the Member State are checked during one or more of the production, or wholesale or retail stages. The most appropriate and adequately equipped organisations to carry out monitoring are found within the oil sector.

- The fuel quality, and availability of non-leaded fuel should be checked at the gas station stage. This could be done by local authority officials such as environmental or health inspectors.

- Economic incentives can be used to encourage the marketing of low-sulphur gas oils. For example, the customer price of low-sulphur fuel could be lower than that of high-sulphur grade.

Enforcement

- The enforcement of the sulphur content requirements by administrative measures and possibly sanctions needs to be considered.

- Customs officials should report to the competent authorities shipments of imported gas oils that do not comply with the requirements of the directive.

5 Costs

The main types of costs arising from the implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred to Implement the Directive

Initial set-up costs:
- Establishment of competent authorities;
- Devising systems and procedures;
- Provisions for training;
- Preparation of technical guidance.

Capital expenditure:

- Fuel sulphur analyser (approximately EUR 30,000 to 50,000).

On-going running costs:

- Fuel sampling equipment (kits) (approximately EUR 150 each);
- Labour cost from sampling activity;
- Labour cost from fuel analysis;
- Operating costs for analyser;
- Labour costs for processing data and reporting to the Commission.

As an indicative cost of fuel analysis, one fuel sulphur analysis for one sample in an established laboratory could be some EUR 150.

The Directive on Emissions from Engines to be Installed in Non-Road Mobile Machinery

Official Title: European Parliament and Council Directive 97/68/EC on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery (OJ L 59, 27.2.1998)

TAIEX Ref. No.: 19

1 Summary of Main Aims and Provisions

The main aim of Directive 97/68/EC approximate the laws of EU Member States relating to emission standards and type approval procedures for engines to be installed in non-road mobile machinery, such as mobile cranes, industrial drilling rigs and compressors, snowplough equipment, fork lift trucks etc. The Directive contributes to the smooth functioning of the internal market, while protecting human health and the environment.

The Directive sets emission limit values for CO, HC, NO_x, and particulate matter. The main method of controlling emissions under the Directive is through the system of engine type-approval, a system that has stood the test of time for approvals for road vehicles and their components. A new element introduced to the engine type-approval regime by this Directive is the approval of a parent engine on behalf of a group of engines (engine family) built using similar components according to similar construction principles.

2 Principal Obligations of Member States

2.1 Regulation

- Ensure that applications for type-approval for engines and engine families are submitted and dealt with according the requirements of the directive (Art. 3).

- Grant type approval to all engine types and engine families that conform to particulars in information folder submitted with application (Art. 4).

- Complete and number the type-approval certificate, compile or verify the contents of the index to the information package, and deliver the certificate to the applicant (Arts. 4 and Annexes VI and VII).

- With effect from 30 June 1998 may not refuse to grant type-approval or to issue the type-approval certificate, and may not impose any other type-approval requirements with regard to the scope covered by the Directive, if the engine meets the requirements of the Directive with regard to gaseous and particulate matters (Art. 9).

- With effect from specified dates shall refuse to grant type-approval and to issue the type-approval certificate, and shall refuse to grant any other type-approval for non-road machinery in which an engine is installed, if the engine and its emissions fail to comply with the requirements of the Directive (Art. 9(2)-(3)).

- After granting type-approval, take the necessary measures to ensure that is being informed of any change in the particulars appearing in the information package.

- Ensure that applications for amendments of or extensions to a type-approval are submitted to approval authorities which granted original type approval and dealt with in accordance with the provisions of the Directive with regard to revising information packages and type approval certificates (Art. 5).

- Ensure that manufacturers affix to each unit manufactured prescribed markings; and, where type approval certificate includes restrictions, deliver with each unit manufactured specified information (Art. 6 and Annex I).

- Ensure that exemptions are granted for specified end-of-series engines only where there is compliance with all conditions set out in the directive (Art. 10).

- May not refuse the registration, where applicable, or placing on the market of new engines, whether or not already installed in machinery, meeting the requirements of the Directive. With certain exceptions, only permit the registration or placing on the market of new engines meeting the requirements of the Directive and approved in compliance with one of the engine categories. (Art. 8 and Art. 9).

- Before granting a type-approval, verify, according to the provisions of the Directive, that adequate arrangements have been made to ensure an effective Code of Practice (CoP) (Art. 11).

2.2 Monitoring and Enforcement

- After granting the approval, verify that the CoP arrangements continue to be adequate and that each production engine bearing a type-approval number pursuant to the Directive continues to conform to the description given in approval certificate and requirements of the directive (Art. 11).

- Ensure that manufacturers submit to approval authorities that granted type approvals declarations specifying future production plans and, where requested, detailed information on engines produced in compliance with the requirements of the directive (Art. 6).

- After granting type-approval, take the necessary measures to register and control the identification numbers of those engines produced in conformity with the requirements of the directive (Art. 8).

- In cases of non-conformity with the approved type or family that it has granted, take measures to ensure that the engines in production again conform to the approved type or family (Art. 12(1) and (2)).

- Co-operate with other Member States over disputes relating to non-conformity (Art. 12)

2.3 Reporting

- Inform the other Member States:
    - on a monthly basis of type-approvals granted, refused and withdrawn (Art. 4);
    - of any withdrawal of type-approval and its reasons (Art. 12);
    - particulars of, and reasons for, the exemptions granted for the manufacturer (Art. 10);
    - measures taken, and their reasons, in case of non-conformity with the approved type or family (Art. 12(2) and (4)); and
    - the approval authorities and technical services (Art. 16).

- Supply to other Member States on request:
    - a copy of the type-approval certificate with/without information package, for each engine type or engine family approved, refused or withdrawn;
    - a list of engines produced according to type-approvals granted; and
    - a copy of a manufacturer's declaration specifying his production plans (Art. 4).

- Inform the Commission of:
    - the engines approved (Art. 4(5));
    - the exemptions granted for the manufacturers, and their reasons (Art. 10(2));
    - disputes between Member States relating to the non-conformity of production (Art. 12(5));
    - details of the approval authorities and technical services responsible for implementing the directive (Art. 16); and
    - transposition measures and the text of the provisions of national law adopted in the field governed by the Directive (Art. 17).

2.4 Additional Legal Instruments

A number of other legislative instruments have relevance to controlling emissions from mobile sources and must be borne in mind during the implementation of this directive. These include:

- Type-approval of motor vehicles and their trailers 70/156/EEC as amended;
- Air Quality Framework Directive 96/62/EC;
- Air Quality Standards:
    - Sulphur dioxide and suspended particulates 80/779/EEC as amended;
    - Lead 82/884/EEC as amended;
    - Nitrogen dioxide 85/203/EEC as amended;
    - Tropospheric ozone 92/72/EEC.

- Emissions from light duty motor vehicles 70/220/EEC as amended;
- Emissions from diesel engines – Soot 72/306/EEC as amended;
- Smoke emissions from diesel engines for use in agricultural or forestry tractors 77/537/EEC as amended;
- Emissions from heavy goods vehicles 88/77/EEC as amended;
- CO_2 emissions and fuel consumption of motor vehicles 80/1268/EEC as amended;
- Emissions from motor vehicles – roadworthiness test for emissions 96/96/EC;
- Sulphur content of certain liquid fuels 93/12/EEC as amended;
- Quality of petrol and diesel fuels 98/70/EC;
- VOC emissions from storage and distribution of petrol 94/63/EC;
- Reduction of CO_2 emissions from passenger cars Commission Recommendation 99/125/EC.

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the checklist below. The key tasks are arranged under sub-headings and organised in chronological order of implementation (where possible).

DIRECTIVE ON EMISSIONS FROM ENGINES TO BE INSTALLED IN NON-ROAD MOBILE MACHINERY – KEY IMPLEMENTATION TASKS	
1	**Planning**
1.1	Designate the competent authority (ies) responsible for regulating emissions form internal combustion engines in non-road mobile machinery. Responsibilities would include: • issuing and/or withdrawing type approval certificates; • registering and permitting the placing on the market of new engines; • regulating exemptions from the requirements of the directive; • testing and inspecting engines; • verifying the manufacturers CoP arrangements; and • serving as contact point with the approval authorities of other Member States; verifying the manufacturer's CoP arrangements.
1.2	Where it is considered necessary, appoint the organisation or body to carry out technical services as required under the directive.
2	**Regulation**
2.1	Adopt the systems and procedures for type-approval of engines as required by the directive. This includes: • a system for initial type approval; • procedures for amending type approval certificates (including requirements relating to notification, revision of information packages, fresh tests or checks, and issuing revised type approval certificates) • national database of certificates; and • system for co-operation between the competent authorities of different Member States as well as the Commission as required under the directive.
2.2	Put in place system for the registration and placing on the market of new engines. The systems should: • control identification numbers; • compile information of purchasers and the identification number of the engine sold.
2.3	Adopt system to regulate exemptions from requirements of the directive.
3	**Monitoring**
2.1	Adopt a testing/inspection system to control quality of engine types or families. System should: • control quality of production of engines; • ensure conformity of production; and • ensure and enforce compliance with the type approval.
2.2	If a private sector organisation is appointed as a technical service, establish a system for monitoring its activities.
2.3	Establish systems and procedures for requesting, receiving and handling information from the engine manufacturers.

3	**Reporting**
3.1	Inform the other Member States of: • type-approvals granted, refused and withdrawn; • any withdrawal of type-approval and its reasons; • particulars of, and reasons for, the exemptions granted for the manufacturer; • measures taken, and their reasons, in case of non-conformity with the approved type or family; and • the approval authorities and technical services.
3.2	Supply to other Member States on request: • a copy of the type-approval certificate with/without information package, for each engine type or engine family approved, refused or withdrawn; • a list of engines produced according to type-approvals granted; and • a copy of a manufacturer's declaration specifying his production plans.
3.3	Inform the Commission of: • the engines approved; • the exemptions granted for the manufacturers, and their reasons; • disputes between Member States relating to the non-conformity of production; • the approval authorities and technical services; and • transposition measures and the text of the provisions of national law adopted in the field governed by the directive.
4	**Technical Advice and Guidance**
4.1	Prepare and issue technical guidance to ensure full understanding of the technical requirements for testing set out in the directive.

3.2 Phasing Considerations

The most demanding and time-consuming tasks associated with implementing this directive are deemed to be:

- Establishing and developing the institutional structure responsible the type-approval and monitoring regime, in particular the acquisition and training of sufficient personnel, and the development of systems and procedures for all aspects of type-approval and monitoring.

The implementation of the directive is staggered according to the level of power output of engines. The implementation timetable in each Candidate Country could be brought up and discussed in the accession negotiations.

The Commission has submitted a proposal (COM(98)472) for emissions control legislation on agricultural and forestry tractor engines. The aim of the proposed directive is to ensure a level of environmental protection equivalent to the level established pursuant to Directive 97/68/EC with standards and requirements fully consistent with it. The provisions of this draft directive need to be taken into account when implementing the non-road mobile machinery directive.

4 Implementation Guidance

Regulation

- In the national legal systems the technical requirements set out for diesel engines to be installed in non-road mobile machinery structurally differ from the corresponding requirements set for those in road vehicles. This is primarily because non-road mobile machinery do not normally undergo the same kind of registration procedures as road vehicles. Consequently, type-approval provisions for non-road vehicles are not normally transposed through the same legislation as those for road vehicles that have separate type-approval directives. The type-approval regime laid down by Directive 97/68/EC is independent from the regime set out in framework Directive 70/156/EEC. Directive 97/68/EC does not contain any referrals to the framework type-approval

directive. However, the basic principles of the type-approval system set out in the framework directive are adopted in Directive 97/68/EC.

- Exhaust emission standards set by this directive are technically not as demanding as set in Directive 88/77/EEC for on-road diesel engines. Engines that comply with the directive are being developed and currently produced widely in many Member States.

- It is recommended that the competent authority responsible for road vehicle type-approval is also designated the competent authority responsible for all aspects of type-approval as regards engines to be installed in non-road mobile machinery.

Example of Institutional Practice in a Member State

When implementing the directive in one Member State (FIN) the Ministry of Environment and the Ministry of Transport agreed for pragmatic reasons that the Vehicle Administration Centre that is under the Ministry of Transport would be the competent authority responsible for type-approval issues regarding engines to be installed in non-road mobile machinery. However, the Ministry of Environment is the ministry with primary responsibility for administering the transposition of the directive.

- Technical service means a private sector organisation or a public body that has been appointed as a testing laboratory to carry out tests or inspections on behalf of the competent authority. The competent may itself carry out the tests and inspections. Every Member State does not need to have its own technical service, but can use services situated in another Member State. Designation of technical service is, thus, optional. If technical services are appointed, they must be accredited to ensure their competence.

- The accredited organisations that act as technical services in type-approval matters, can be research institutes established specifically to carry out certification and type-approvals, or organisations responsible for vehicle roadworthiness testing.

- For advice on how to establish effective administrative structures, type-approval authorities and technical services, authorities in Candidate Countries should consult Member States that have large national automotive industries.

Monitoring and Enforcement

- There is usually no obligation to register non-road mobile machinery, so an alternative form of monitoring such machinery to ensure compliance with the requirements of the directive is necessary. Information supplied to the authorities by the manufacturers will play an important role. The engine manufacturers have to notify the authorities about the engines produced in accordance with the directive, and they have to make available relevant production planning information at regular intervals. It is recommended that the authority granting type-approval for engines regularly demands the manufacturer to provide the list containing information on the engines produced in accordance with the requirements of the directive. With help provided by the manufacturers the authority must register and control the identification numbers of those engines produced in conformity with the granted approval. The competent authorities should be given powers to carry out spot checks.

- The manufacturers' delivery of information to the competent authorities shall be enforced by effective administrative provisions, which could include sanctions.

- Some degree of self-regulation within the non-road mobile machinery and engine markets can be expected, when competing manufacturers and dealers of engines and machinery act as watch dogs

for the products of other manufacturers and give provide the authorities with information on non-compliance.

- In case of non-conformity, the authority shall ensure (by means of guidance, administrative orders, and withdrawal of approval) that the engines in production again conform to the approved type. Appropriate penalties for non-compliance should be established.

- The enforcement requires increased staffing and training of the bodies handling the vehicle approvals and registrations, or governing technical safety of machinery. The workload expected depends heavily on the number of separate machine types being offered on the market. Thus, it is very difficult to approximate costs.

- If a Candidate Country chooses not to use accredited technical organisations in other EU member countries to carry out testing for certificate and type approvals, the competent national organisations responsible for testing and approvals need to also check engine emissions conform to standards set in the directive. These new tasks are closely related to those required by Directives 72/306/EEC and 88/77/EEC.

5 Costs

The main types of costs arising from the implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred to Implement the Directive

Initial set-up costs:
- Establishment of competent authorities;
- Devising systems and procedures;
- Provisions for training;
- Preparation of technical guidance.

Capital expenditure:
- Test laboratory/installation for exhaust emissions measurements.

On-going running costs:
- Labour cost from certification testing (if not outsourced: see below);
- Operating costs for test laboratory (if not outsourced: see below);
- Acquisition costs from testing services (if testing is outsourced);
- Labour costs for processing of data and reporting to the Commission.

Cost sharing:
- This cost can partly be shared with those pending from Directives 72/306/EEC and 88/77/EC.

If a Candidate Country chooses to use technical services in another Member State, capital expenditure will be minimal, but on-going costs would be higher, because the acquisition of testing services shall then include the cost of depreciation for the equipment at the agency providing the testing services.

Enforcement requires increased staffing and training in the bodies handling the vehicle approvals and registrations, or governing technical safety of machinery. The workload expected depends heavily on the number of separate machine types being offered to the market. Thus, it is very difficult even to approximate the costs.

The Decision on Monitoring Carbon Dioxide and other Greenhouse Gas Emissions

Official Title: Council Decision 99/296/EC for a monitoring mechanism of Community CO_2 and other greenhouse gas emissions (OJ L 117, 5.5.99)

TAIEX Ref. No.: 162

1 Summary of Main Aims and Provisions

The decision establishes a mechanism for monitoring anthropogenic emissions, within the Community, of carbon dioxide and other greenhouse gases (GHG) not controlled by the Montreal Protocol (on substances that deplete the ozone layer). The main aim of the decision is to assess regularly the extent of progress being made towards the Community's commitments relating to the limitation and/or reduction of GHG under the UNFCC Convention and its Kyoto Protocol. Member States are required to establish and implement national programmes to limit emissions of all greenhouse gases not controlled by the Montreal Protocol, and to report to the Commission on progress. The Commission has to report annually to the European Parliament and the Council.

2 Principal Obligations of Member States

2.1 Monitoring

Determine, on an annual basis and in accordance with the methodologies adopted by the Conference of Parties, the anthropogenic emissions by sources and removal by sinks of all greenhouse gases not controlled by the Montreal Protocol.

2.2 Planning

Establish and implement a national programme for limiting and/or reducing anthropogenic emissions by sources and enhancing removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. The programme should include information on data emissions, policies and measures taken or envisaged, estimates for emissions projections (Art. 2.2). The level of details required is greater for the six GHG listed in Annex A to the Kyoto Protocol.

2.3 Information and Reporting

- Forward to the Commission national programmes or updates (Art. 5).

- Report to the Commission (Art. 3.2):
    - anthropogenic emissions of carbon dioxide and the removal of carbon dioxide by sinks, every year for the previous calendar year; and
    - national inventory data on emissions by sources and removals by sinks of the other greenhouse gases (final data for the previous year but one, and provisional data for the previous year);

- the most recent projected emissions by sources and removals by sinks of the GHG listed in the Annex A to the Kyoto Protocol for the period 2008-2012 and, as far as possible, for 2005.

2.4 Additional Legal Instruments

The following list, which is not exhaustive, serves to illustrate the considerable attention paid by the European Union to energy efficiency and to carbon dioxide emissions:

- Council Resolution of 21 June 1989 on the greenhouse effect and the Community (89/C 183/03);
- Council Recommendation of 4 May 1976 on the rational use of energy by promoting the thermal insulation of buildings (76/492/EEC);
- Council Recommendation of 4 May 1976 on the rational use of energy in urban passenger transport (76/495/EEC);
- Council Recommendation of 25 October 1977 on the rational use of energy in industrial undertakings (77/713/EEC);
- Council Resolution of 9 June 1980 concerning new lines of action by the Community in the field of energy saving;
- Council Recommendation of 5 February 1979 on the reduction of energy requirements for buildings in the Community (79/167/ECSC, EEC, Euratom);
- Council Resolution of 15 January 1985 on the improvement of energy-saving programmes in the Member States (85/C 20/01);
- Resolution of the Consultative Committee of the European Coal and Steel Community concerning the Commission communication to the Council on a Community strategy to limit carbon dioxide emissions and to improve energy efficiency (CO2/energy tax) (92/C 127/02);
- Council Resolution of 7 December 1998 on energy efficiency in the European Community (98/C 394/01).

In addition, the following legal instruments are related to implement the present directive in so far as achieving compliance with these directives may lead to reduced emissions of CO_2.

- Emissions standards for stationary sources:
    - Municipal waste incineration (existing installations) (89/429/EEC);
    - Municipal waste incineration (new installations) (89/369/EEC);
    - Hazardous waste incineration (94/67/EC);
    - Integrated Pollution Prevention and Control (96/61/EC), which will replace the directive on air pollution from industrial plants (84/360/EEC as amended by 91/692/EEC);
    - Air pollution from industrial plants (84/360/EEC);
    - Large combustion plants (88/609/EEC, amended by 94/66/EC).

- Emissions standards for mobile sources:
    - Light duty motor vehicle emissions (70/220/EEC, amended by 74/270/EEC, 77/102/EEC, 78/665/EEC, 83/351/EEC, 88/76/EEC, 88/436/EEC, 89/458/EEC, 89/491/EEC, 91/441/EEC, 93/59/EEC, 94/12/EEC, 96/44/EEC and 96/69/EEC);
    - "Auto-Oil" Proposal COM/96/0163 (COD) for an amending directive on emissions covered by Directive 70/220/EEC;
    - Roadworthiness test for emissions (96/96/EC, which replaced 92/55/EC, which had amended Directive 77/143/EEC);
    - Diesel engine emissions (88/77/EEC, amended by 91/542/EEC and 96/1/EEC);

- Emissions from non-road mobile machinery (97/68/EC).

- Ambient air quality standards:
  - Limit values and guide values for sulphur dioxide and suspended particulates in ambient air (80/779/EEC amended by 89/427/EEC and 91/692/EEC);
  - Limit and guide values for nitrogen dioxide in ambient air (85/203/EEC amended by 91/692/EEC).

- Other instruments:
  - Decision 86/277/EEC on long-term financing of the programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP);
  - Decision 96/511/EC on a questionnaire on air pollution;
  - Decision 97/101/EC on the exchange of information on air quality.

3 Implementation

According to the Treaty establishing the European Community (Article 189), a decision is binding in its entirety upon those to whom it is addressed. As this decision is addressed to all Member States, it is of direct application in the legal order of any new Member State by the date of its accession, according to the Treaty. Consequently no transposition is required.

3.1 Key Tasks

The key tasks involved in implementing this decision are summarised in the checklist overleaf. They are organised in chronological order of implementation wherever possible.

DECISION ON MONITORING CO_2 AND OTHER GREENHOUSE GAS EMISSIONS – KEY IMPLEMENTATION TASKS	
1	**Planning the Implementation**
1.1	Designate a competent authority to implement the requirements of the decision. In general, these requirements are: · monitoring of greenhouse gas emissions and sinks to produce inventories; · production of a National Programme for GHG; and · arrangements for reporting on CO_2 and other greenhouse gases.
1.2	Implement any necessary legislation to allow information to be obtained.
1.3	Provide financial resources for undertaking the monitoring and checking and for collating and disseminating the results.
1.4	Appoint an appropriate institution (or institutions) to compile inventories for GHG emission sources and sinks.
1.5	Prepare and implement a National Programme to limit anthropogenic emissions of GHG and enhance their removals by sinks.
2	**Monitoring**
2.1	Set up suitable quality assurance and technical advice and guidance for the inventories, to include third party accreditation that the methodology used complies with the requirements of the Convention.
2.2	Carry out monitoring to compile inventories and sinks, and check results.
3	**Reporting and Consultation**
3.1	Inform the Commission of: · the existing National Programme and updates; · annual inventory data on anthropogenic emissions and removals by sinks of GHG; and · projected emissions by sources and removals by sinks of the six GHG listed in the Kyoto Protocol, annually.
3.2	Appoint a national representative to sit on the Committee that reviews the Commission's proposals.
3.3	Publish the National Programme.

3.2 Phasing Considerations

The work to be done in implementing this decision will not, in general, form part of the work to implement the Air Quality Framework Directive but could be co-ordinated with it, especially where inventories are to be drawn up. For example, information for compiling inventories for CO_2 emissions

could be requested from operators of stationary sources at the same time as information on other emissions.

The required financial resources need to be estimated and allocated before any monitoring activities can start (see Section 4.3 for an explanation of the term "monitoring" as it is used in the decision and in this fiche).

A quality assurance system must be set up before devoting resources to monitoring to ensure that it produces results of known reliability and that it will operate in accordance with the requirements of the decision. The quality assurance system may need to be accompanied by technical training, support and guidance.

A National Programme should be drawn up once quality assured inventories of GHG emissions and removals by sinks have been produced. Implementation of these plans will be the most expensive part of achieving compliance with the decision.

4 Implementation Guidance

Each Member State and the European Community have respectively ratified the UN Framework Convention on Climate Change (hereafter "the Convention"). The Convention aims to stabilise greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Convention has numerous implications for its signatories; those covered by this decision are those that the European Union has decided to implement jointly as part of its approach to action on global warming. The Kyoto Protocol (hereafter "the Protocol") contains individual emissions limitations and reductions commitments for Parties included in Annex I to the Convention, covering six mains GHG. It will enter into force as and when 55 Parties (accounting in total for at least 55% of the total CO_2 emissions for 1990 for the Annex I Parties) have ratified the Protocol. the EU negotiated a single target for the reduction of greenhouse gases, subsequently negotiating internally to set targets for individual Member States.

Member States retain their obligations under the Convention, including reporting their greenhouse gas emissions to the Convention Secretariat, in addition to the reporting requirements of this decision.

Many of the actions required by this decision are the responsibility of the Commission and not of the Member States. These include reporting on total emissions from the EU, based on the data supplied annually by the Member States, evaluating National Programmes submitted by Member States and assessing whether sufficient progress is being made across the EU towards meeting the obligations of the Convention. The Commission reports annually to the European Parliament and the Council of Ministers.

Planning Implementation

- At the earliest stage of implementation it is necessary to identify key actors and stakeholders who will be involved in implementation of the decision and arrange discussions between them and/or set up working groups, especially on the choice of a competent authority. The competent authority would probably be the ministry with responsibility for environmental protection or the national environmental protection agency. The authority needs to be able to take a nation-wide view of the issues, co-ordinate nation-wide actions, and report on a nation-wide basis. It would be

advantageous to choose the ministry that is also the competent authority for the Air Quality Framework Directive.

- Stakeholders need to be involved according to the situation in each individual Candidate Country. Identification of, and initial discussion with all potential stakeholders will help to achieve the most efficient path to implement the decision, to avoid costly errors and to encourage the co-operation of stakeholders in complying with the requirements of the implementation of the decision.

- It is necessary to designate a competent authority to be responsible for producing the National Programme, which will include a national inventory of emissions by sources and removals by sinks of CO_2 and other greenhouse gases. The ministry with responsibilities for the environment will generally have overall responsibility for the National Programme, although individual tasks such as calculating emissions may be delegated to other public or to private bodies.

- One of the main tasks of the competent authority is to co-ordinate various national organisations in order to produce a GHG inventory by using data gathered from the best available sources, consistent with the guidelines and any good practices agreed upon by COP.

- It is also necessary for each Member State to appoint a national representative to sit on the committee established to assist the Commission in carrying out its obligations. The committee is composed of representatives from the Member States and chaired by a representative of the Commission. This representative should have a good knowledge of issues related to GHG inventories and projections and, if possible, on climate change issues in general..

Monitoring

- In the context of this decision, and in contrast to the fiches on other directives, the term "monitoring" means formulation and maintenance of inventories, not air sampling and analysis.

- Member States must calculate their greenhouse gas emissions using the standard methodologies laid down by the Intergovernmental Panel on Climate Change (IPCC), agreed upon by the Conference of the Parties to the Convention and accepted by the Committee established by this decision. The Convention allows the Parties to propose an alternative methodologies, provided that they are compatible with the IPCC methods and fully documented.

- The competent authority will need to ensure that there is appropriate quality assurance for all monitoring (emissions from sources and removals by sink) work. To support this, it may be necessary to obtain or to prepare and issue some additional detailed technical advice and guidance in addition to that available from the Convention Secretariat.

- The monitoring work may be conducted by the competent authority, or by one or more other organisations appointed for the purpose, either from the public or the private sector. In either event, a third party should be appointed to verify that the monitoring methodology used complied with the requirements of the decision and to provide independent accreditation of the techniques used. This task should normally be given to an organisation that is not itself involved in monitoring; the competent authority will usually be the most logical choice, provided that it has the expertise. Failing that, the competent authority could appoint an independent accreditation body to carry out this task.

Examples of Practice from a Member State

In one Member State (UK), the Department of the Environment, Transport and the Regions takes responsibility for the National Programme. The calculation of national emissions of greenhouse gases is contracted to the National Atmospheric Emissions Inventory (NAEI), a body which also has contracts to estimate national emissions of other key pollutants, either as part of a treaty obligation or to inform government policy-making.

The NAEI estimates emissions of CO_2, CH_4 and N_2O using a format allowing comparison with historic data compiled since the NAEI was set up in 1970, as well as calculating emissions using the IPCC method. The emissions data required for the National Programme, which are compiled by the NAEI, are included in this Programme but are also published separately by the NAEI.

National Programmes

- Each Member State must devise a National Programme for limiting anthropogenic GHG emissions. The measures implemented to meet the targets to which Member States are committed are determined by the individual Member States in their National Programmes. The decision requires the following areas to be addressed:
    - Inventories – as a minimum for the 6 GHG of the Kyoto Protocol – of anthropogenic emissions by sources and removals by sinks, for the base year and each year up to the previous year.;
    - details on national policies & measures implemented or committed;
    - measures being taken or envisaged to implement for the implementation of relevant Community legislation & policies;
    - estimates of the effects of policies & measures on emissions and removals and incorporation of these estimates in projections between the base year and the period 2008-2012, and, to the extent possible, between the base year and 2005;
    - assessment of the economic impact of the above measures, to the extent possible;
    - information on CO, NOx, NMVOCs, SO_2 (data on emissions, policies & measures for reduction of emissions, estimates for emissions projections).

Examples of Practice from Member States concerning CO_2 Emissions

In one Member State (UK), little active government intervention has been required, as significant reductions in CO_2 emissions have resulted from the conversion of electricity generation from coal to combined-cycle gas technology. This has been undertaken by the power generating companies for commercial reasons. None the less, the government now has a policy of increasing the tax on petrol by more than the rate of inflation every year. The government also provides free information on energy efficiency schemes in industry and buildings. In addition, a non-fossil fuel obligation acts as a subsidy to the generation of electricity by methods that do not involve a net emission of CO_2, thus stimulating the development of new technologies.

In another Member State (F), the national programme has been based on four strands of policy: regulations setting minimum energy efficiency standards (e.g. insulation for houses); financial incentives such as higher duty on fuels; a programme of public awareness raising; increased reliance for electricity generation on technology which releases less CO_2 per unit of energy.

- Once the effect of measures undertaken in the Programme are assessed, new measures may be added, or existing ones strengthened, if it appears that emission targets will not be met.

- The Commission, with the approval of the Committee, may specify a minimum frequency of updates (the decision itself does not specify a frequency). Member states are free to update their

Programmes more frequently. Updates should be based on the data gathered on emissions of greenhouse gases, and should be aimed at adjusting the Programme so that targets are met.

- As examples for CO_2, measures that can be implemented by Member States include energy efficiency programmes, changing electricity and district heating power stations to more efficient generating technologies and encouraging public transport. Encouraging forestry so as to increase the amount of CO_2 absorbed by growing trees also serves to reduce net CO_2 emissions. Some of the measures to reduce emissions from combustion processes in order to comply with emissions standards and ambient air quality targets (mainly for nitrogen dioxide, sulphur dioxide and particulates) are likely to consist of energy efficiency programmes. These will have the additional effect of reducing CO_2 emissions.

- Energy taxation is also to be considered amongst the key measures that can be taken at the Community level. Although the European Commission is examining the possibility of a tax on energy (or carbon emissions), this has not as yet been adopted on a Community basis, but several Member States have such taxes, including Austria, Denmark, the Netherlands, Sweden and Finland. The aim of this tax is to encourage energy efficiency measures by increasing the cost to industries and individuals of excessive energy consumption.

Reporting

- Each Member State must publish its National Programme. The media to be used are not specified in the decision. It seems reasonable that media such as the Internet may be used, in addition to publication in booklet form.

- Each Member State must report annually on anthropogenic emissions and sinks of GHG. Reports for each year should be with the Commission by 31 December the following year.

- Member States retain their reporting responsibilities under the Convention, and must also report on their emissions of greenhouse gases to the Secretariat of the Convention.

Examples of Reporting Practice from a Member State

In one Member State (UK), much of the task of preparing reports required by this Council decision, and by the Convention, is contracted to the NAEI. These reports are then submitted to the Commission by the Department of the Environment, Transport and the Regions, which is the competent authority.

5 Costs

The following checklist describes the types of cost which are likely to be incurred to implement the decision. Further explanation is given below the checklist.

Checklist of the Types of Cost Incurred To Implement the Decision

Initial set-up costs:
- consultation with key actors and stakeholders (incurred by national government and others);
- establishment of the competent authority, CA (incurred by national government);
- devising quality assurance systems and procedures (incurred by CA);
- provision of training (incurred by CA);
- preparing initial technical guidance documents (incurred by CA).

Capital expenditure:
- implementation of improvements to sources (changing materials and/or processes) (costs incurred by the owners of the sources);
- implementation of energy conservation measures (changing materials and/or processes) (costs incurred by distributors and consumers of energy).

On-going running costs:
- updating and improving the National Programme (including the inventories) (incurred by the CA and possibly by others such as major energy producers and users);
- fiscal incentives to implement improvements to sources and/or energy conservation measures (incurred by national government and possibly by some LAs);
- production of reports to the Commission (incurred by the CA).

- The main costs to government of compliance with the decision *per se* will relate to staff time calculating the emissions and sinks inventories and to the cost of publication.

- The costs of implementation of the National Programme for limiting emission of greenhouse gases are hard to predict, being highly dependent both on the strategy adopted and on the development of the national economy. Some measures, such as improving the heating efficiency of publicly-owned housing, will involve an investment cost but will subsequently pay for themselves, at least in part, through reduced heating costs. There may also be opportunities for sales of any new technologies that are developed. Other measures, such as changing the fuels used to provide energy, may result in costs or savings, depending on the fuels involved. The National Programme must include an assessment of the economic impact of the measures taken and proposed. The overall costs for practical implementation of the National Programme are likely to be high in comparison with the work on inventories.

- In many cases, reductions in emissions of greenhouse gases arise without government intervention. In many European countries, there is also a long-term trend away from energy-intensive industries such as steel production, and this leads to reductions in emissions. In other cases, active intervention may be needed to limit increases in emissions due to increased economic activity; costs of such mandatory measures might in some cases be high, and would be borne by the industries concerned.

- The initial set-up costs will be incurred in chiefly by the national government, mainly through the competent authority once it has been appointed. Some time costs are likely to be incurred by other key actors and stakeholders in the initial consultation phase. The total initial set-up costs are likely be relatively low.

- The preparation of National Programmes will incur costs for the competent authority and possibly also for local authorities and major industries. Evaluations will also probably need to be made of the technical and economic feasibility of achieving emission reductions from particular emission

classes, to ensure cost-effectiveness. Some costs in planning may be incurred by major sources of air pollution. Overall costs for the preparation of National Programmes will probably lie in the low to medium range.

- The costs of achieving compliance with National Programmes will be borne by emitters, by consumers of energy and services and, or by taxpayers through the cost of investment (although some or all of this may be recoverable) through increased prices, and through national taxation to fund fiscal incentives (e.g. subsidies). National Programmes should be designed to maximise the mass of GHG emission abated per Euro invested.

- In contrast to the pollutants such as sulphur dioxide or nitrogen dioxide which are conventionally addressed by air quality or air emissions programmes, local emissions are of little or no importance. Because CO_2 is not a conventional pollutant, the "Polluter Pays" principle does not apply here.

- The costs of reporting, providing information and taking part in Committee meetings are likely to be comparatively low. They will probably be incurred only by the competent authority. There is room for cost savings by using efficient (i.e. computer-based and automated) reporting methods

The Protocol on Long-Term Financing of EMEP

Official Title: Council Decision 86/277/EEC on the conclusion of the Protocol to the 1979 Convention on long-range transboundary air pollution on long-term financing of the co-operative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP) (OJ 181, 4.7.86)

TAIEX Ref. No.: 167

1 Summary of Main Aims and Provisions

The decision approves, on behalf of the Community, the EMEP Protocol, adopted under the 1979 Convention on Long-Range Transboundary Air Pollution. The Protocol lays down the long-term financing arrangements for the co-operative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP). The Decision commits the Community to paying its share of the costs of EMEP, which are allocated to the Member States in accordance with an agreed formula.

2 Principal Obligations

The decision commits the Community to paying its share of the costs of EMEP, which are allocated to the Member States in accordance with an agreed formula.

3 Implementation

The Protocol entered into force on 28 January 1988. For countries that have already ratified the protocol, all key tasks are complete other than to maintain annual payments.

4 Implementation Guidance

Implementation of this decision (i.e. paying the EU's share of the budget) is the responsibility of the Council. Implementation of the Protocol by Member States is independent of the EU.

There are no implementation costs, other than those already committed to.

An indicative timetable is not applicable.

The Decision on the Montreal Protocol (Depletion of the Ozone Layer)

Official Title: Council Decision 88/540/EEC concerning the conclusion of the Vienna Convention for the protection of the ozone layer and the Montreal Protocol on substances that deplete the ozone layer (OJ L 297, 31.10.88)

TAIEX Ref. No.: 168

1 Summary of Main Aims and Provisions

The decision approves the Vienna Convention and the Montreal Protocol on behalf of the Community. It requires Member States to conclude their procedures for accession to and ratification of the Convention and the Protocol as soon as possible, in order to enable the whole Community to also become a contracting party to both the Convention and the Protocol.

2 Principal Obligations of Member States

2.1 General

Member States are required to ratify the Montreal Protocol and to notify the European Commission that they have done so.

2.2 Additional Legal Instruments

A number of other legal instruments are relevant to this decision. They include:

- Commission Recommendation of 27 June 1990 on the reduction of chlorofluorocarbons used by the Community's refrigeration industry (90/438/EEC);

- Council Regulation (EC) No 3093/94 of 15 December 1994 on substances that deplete the ozone layer (see chemicals sector);

- Commission Decision of 11 January 1999 allocating import quotas for the fully halogenated chlorofluorocarbons 11, 12, 113, 114 and 115, other fully halogenated chlorofluorocarbons, halons, carbon tetrachloride, 1,1,1-trichloroethane, hydrobromofluorocarbons and methyl bromide for the period 1 January to 31 December 1999, and in addition, allocating placing on the market quotas for hydrochlorofluorocarbons for the period 1 January to 31 December 1999 (notified under document number C(1998) 4563) (Only the Dutch, English, French, German, Greek, Italian, Portuguese, Spanish and Swedish texts are authentic) (Text with EEA relevance) (1999/58/EC);

- Commission Decision of 11 January 1999 on the allocation of quantities of controlled substances allowed for essential uses in the Community in 1999 under Council Regulation (EC) No 3093/94 on substances that deplete the ozone layer (notified under document number C(1998) 4564) (Only the Spanish, German, English, French, Italian, Dutch and Finnish texts are authentic) (Text with EEA relevance) (1999/59/EC).

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the checklist below. They are organised in chronological order of implementation wherever possible. Note that most of these tasks are required by signature of the Montreal Protocol. States which have ratified the Protocol prior to accession will therefore already be carrying them out.

DECISION ON THE MONTREAL PROTOCOL (DEPLETION OF THE OZONE LAYER) KEY IMPLEMENTATION TASKS	
1	**Planning the Implementation**
1.1	Ratify the Vienna Convention and Montreal Protocol (as amended) if not already done.
1.2	Appoint a competent authority to implement the other requirements of the decision. In general, these requirements are: · to set penalties for non-compliance; · to specify the level of qualifications needed by those disposing of the substances; · to carry out carry out investigations required by the Commission into the activities of single individuals or companies; and · to carry out carry out investigations required by the Commission into compliance with overall quotas.
1.3	Provide financial resources for undertaking the investigations.
1.4	Appoint an appropriate institution (or institutions) to control the substances
1.5	Appoint a representative to the committee of representatives of the Member States (national expert) which reviews proposals by the Commission for new or revised measures to be taken to reduce ozone depletion. (Tasks 1.1 to 1.4 should already have been carried out if the protocol has been ratified and implemented)
2	**Control**
2.1	Maintain the capability to carry out investigations on behalf of the Commission when required.
3	**Reporting and Review**
3.1	Notify the Commission that the Vienna Convention and Montreal Protocol have been ratified.
3.2	Reporting to the Commission/UNEP on production, import, export, etc of ozone depleting substances as specified in the Montreal Protocol
3.3	Inform the Commission of the results of: · investigations required by the Commission into the activities of single individuals or companies; and · investigations required by the Commission into compliance with overall quotas.
3.4	Send a representative to attend meetings of the committee of representatives of the Member States.

3.2 Phasing Considerations

Before any other activities can start, the required financial resources need to be estimated and allocated. A competent authority must be appointed at an early stage.

4 Implementation Guidance

Implementation of the specific requirements of this decision will be influenced by, and must be tailored to, the present status, needs and conditions concerning the management of ozone-depleting substances in each Candidate Country.
The Vienna Convention and the associated Montreal Protocol are international agreements to limit and phase out production and use of various compounds that destroy stratospheric ozone. The parties to these agreements hold regular meetings to review the list of substances which are banned or restricted, three of which, in London, Montreal and Copenhagen, have resulted in amendments to the Montreal Protocol.

The Convention and Protocol impose many requirements on their signatories. This Council Decision does not directly add to these; it requires Member States to ratify the Convention and Protocol, and also ratifies it on behalf of the European Community. Since both the EU and the Member States have ratified together, it is practical for commitments regarding the production, import and trade of ozone-

depleting substances to be enforced at a Community level. Accordingly, the Council has issued Regulations (EC/3093/94) requiring the European Commission to regulate eight classes of substances. These are chlorofluorocarbons (CFCs); other fully halogenated chlorofluorocarbons; halons; carbon tetrachloride CCl_4; 1,1,1-trichloroethane; methyl bromide CH_3Br (sometimes abbreviated to MeBr or MBR); hydrobromofluorocarbons (HBFCs); and hydrochlorofluorocarbons (HCFCs). Detailed definitions of the substances referred to are contained in Annex I of Regulation 3093/94.

This Council Decision provides for joint implementation of the Protocol, with many of the tasks that would otherwise fall on the competent authority of the Member State instead being the responsibility of the Commission.

The Council Decision does not forbid Member States from withdrawing from the Montreal Protocol, or the Vienna Convention as a whole, but the Regulations would remain in force, so withdrawal would be ineffective. In practice, therefore, Member States are committed to the Protocol indefinitely.

Planning Implementation

- The competent authority must ensure that the requirements of the Montreal Protocol are met and in particular that ozone depleting substances are properly controlled, with penalties for non-compliance that are enforced. It may be necessary to provide additional powers for the competent authority or others to bring about compliance with the Protocol, where these do not already exist under other legislation.

- The competent authority must also specify the level of qualifications needed by those disposing of the substances.

- The appropriate institution (or institutions) to control ozone depleting substances may be the police, customs authorities and/or national regional or local authorities (including trading standards offices).

Controlling Ozone-Depleting Substances

- For the most part, Regulation 3093/94 imposes duties directly on the producers, importers, users and other handlers of the controlled ozone-depleting substances.

- The competent authority will need to ensure that there is appropriate control of ozone-depleting substances. To support this, it may be necessary to prepare and issue detailed technical advice and guidance, to ensure a full understanding of the methods of detection, identification and control.

- The competent authority must carry out investigations required by the Commission, whether into the activities of single individuals or companies, or into compliance with overall quotas.

Reporting and Review

- Under regulation 3093/94, the Commission can propose new or revised measures to be taken to reduce ozone depletion, these proposals are reviewed by a committee of representatives of the Member States. This is the forum through which Member States influence the implementation of the Protocol.

5 Costs

The following checklist describes the types of cost which are likely to be incurred to implement the decision. None of these are additional to the costs resulting from ratifying the Montreal Protocol. Further explanation is given below the checklist.

Checklist of the Types of Cost Incurred to Implement the Montreal Protocol

Initial set-up costs:
- establishment of the competent authority, CA (cost incurred by the national government);
- provision of any necessary training (cost incurred by the CA);
- preparing any necessary technical guidance documents (cost incurred by the CA).

Capital expenditure:
- strengthening enforcement authorities (e.g. Customs) with equipment (cost incurred by the CA and possibly by others);
- implementation of changes to total equipment and products such as air-conditioning, refrigeration equipment (cost incurred by the owners of equipment);
- purchase of alternative substances for production processes such as manufacture of insulating equipment (cost incurred by manufacturers).

On-going running costs:
- activities of enforcement authorities (e.g. Customs): salaries, transport, offices, equipment (cost incurred by the CA and possibly by others);
- analysis of samples (cost incurred by the CA and/or possibly by others);
- carrying out of investigations (cost incurred by the CA and/or possibly by others);
- preparation of companies' reports for the Commission (cost incurred by the CA and companies);
- support of the representative to the Committee of representatives of the Member States (cost incurred by the CA and possibly by others).

- Ratification of the Montreal Protocol may entail substantial costs, both to government for investigation and enforcement and to industry in finding alternative substances to use in various processes.

- In practice, for states that would have ratified the Protocol with or without this Council Decision, costs may well be reduced, due to many of the tasks being taken on by the European Commission.

- Industry may face additional costs because Council Regulation 3093/94 imposes more demanding measures than those set out in the Protocol. However there may also be some compensatory economic benefits, if European industries develop alternatives to ozone-depleting substances which can be marketed elsewhere in the world.

The Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter and Lead in Ambient Air Directive

Official Title: Council Directive 1999/30/EEC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (OJ L 163, 26.9.99)

TAIEX Ref. No.: -

1 Summary of Main Aims and Provisions

The objective of the directive is to:

- establish limit values and alert thresholds for concentrations ofsulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead ("the relevant pollutants") in the atmosphere in order to avoid, prevent or reduce harmful effects on human health and the environment;
- assess concentrations of the relevant substances in the atmosphere on the basis of common methods and criteria;
- obtain adequate information on concentrations of the relevant substances and ensure that such information is made available to the public; and
- maintain ambient air quality where it is good and improve it where other cases.

This Directive will progressively replace the following Directives by January 2010:

- The Sulphur Dioxide Air Pollution Directive (80/779/EEC);
- The Nitrogen Dioxide Air Pollution Directive (85/203/EEC);
- The Lead in Air Directive (82/884/EEC).

Candidate Countries would therefore be advised to take steps to implement the provisions of this Directive rather than those of the earlier three directives.

This Directive is following legislation of the Air Quality Framework Directive (96/62/EC). All obligations and implementation requirements listed there are to be taken into account.

2 Principal Obligations of Member States

2.1 Planning

- Ensure that measuring stations to supply data on concentrations of specified particular matter, PM2,5 are installed and operated (Art. 5).

2.2 Monitoring

- Take measures to ensure that concentrations of relevant substances in ambient air are assessed in accordance with the methods and criteria set out in the Directive (Arts. 3 to 7, and Annexes V to IX).

- Record data on concentration of sulphur dioxide in manner specified in the Directive (Art. 3).

- Update information on concentrations of relevant substances on basis set out in the Directive (Art. 8).

- Annually review classification of each zone or agglomeration for the purpose of assessing ambient air quality in accordance with Article 6 of Directive 96/62/EC; or carry out an earlier review in the event of significant changes in activities relevant to the concentration of relevant substances in the atmosphere (Art. 7 and Annex V).

2.3 Regulation and Enforcement

- Take measures necessary to ensure that concentrations of relevant substances in the atmosphere do not exceed the prescribed limit values (Art. 3, 4, 5, 6, and Annexes I, II, III and IV).

- Ensure that action plans for PM10 and general strategies for reducing concentrations of PM10 also aim to reduce concentrations of PM2,5 (Art. 5).

- Implement action plans to improve air quality in areas where prescribed limit values for relevant substances has been exceeded where the exceedance is due from sources other than natural sources or to causes other than natural events (Arts. 3 and 5).

- Put in place effective, proportionate and dissausive penalties for breaches of national law transposing the requirements of the Directive (Art. 11).

2.4 Consultation and Reporting

- Consult with other Member States where limit values are fixed, or are exceeded, in border regions (Art. 8 of Directive 96/62/EC).

- Ensure that the following information, in a clear, comprehensible and accessible form, is made available to the public:
    - up-to-date information on concentrations on relevant substances in the atmosphere;
    - of action plans are made available to the public and appropriate organisations; and
    - circumstances where prescribed alert thresholds are exceeded

  (Art. 8).

- Report to the Commission on:
    - information relating to concentrations of relevant substances which have exceeded limits set out in Directive (Art 3 to 6 and Art.11 Directive 96/62/EC);

- lists of designated zones and agglomerations where prescribed limit values for relevant substances are exceeded due to natural sources (Art. 3, 5 and Art. 11 of Directive 96/62/EC);
- information on concentrations of specified particulate matter (Art. 5);
- methods used to sample and measure PM10 and PM2,5 (Annex IX); and
- transposition, with texts of the main provisions of national law adopted in the field covered by the directive (Art. 12).

3 Implementation

3.1 Key Tasks

This directive will be implemented as an integral part of the Air Quality Framework Directive, Directive 96/62/EC. Reference should therefore be made to the key tasks set out in the fiche on the framework directive. This section sets out tasks that are specific to the implementation of this directive.

THE SULPHUR DIOXIDE, NITROGEN DIOXIDE AND LEAD IN AMBIENT AIR DIRECTIVE – KEY IMPLEMENTATION TASKS	
1	**Planning**
1.1	Establish a system to divide the territory into zones and agglomerations, and prepare list of zones and agglomerations. This should include zones for ecosystem protection (against SO_2 pollution) and for the protection of vegetation (against NO_x pollution).
1.2	Establish a system to designate zones or agglomerations within which assessment thresholds (for the purpose of assessing ambient air quality in accordance with Article 6 of Directive 96/62/EC) for one or more of the relevant pollutants are exceeded, and prepare a list of such zones and agglomerations. System should include mechanism for reviewing the classification.
2	**Monitoring**
2.1	Establish a system to and designate zones or agglomerations within which limit values for one or more relevant pollutant are likely to be approached or exceeded, and at representative sites where pollution is thought to be greatest. System should include a mechanism for identifying sources of pollution (for SO_2 and PM_{10}) so as to distinguish between natural and man-made sources of pollution and a mechanism for reviewing the classifications.
2.2	Carry out monitoring and compile and check results.
3	**Plans**
3.1	Prepare and implement action plans in areas where limit values are exceeded. The plans should include time limits for attaining the relevant limit values; integrated plans where limit values for more than one relevant pollutant are exceeded, and justification for not taking action where limit values are exceeded due to natural events in the case of SO_2 and PM_{10}.

3.2 Phasing Considerations

The work to be done in implementing must be co-ordinated with the implementation of the Air Quality Framework Directive, Directive 96/62/EC.

4 Implementation Guidance

This section will be written up after advice from the relevant Technical Unit in DG ENV.

5 Costs

See fiche on The Air Quality Framework Directive.

The Directive on the Quality of Petrol and Diesel Fuels

Official Title: Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (OJ L 350, 28.12.1998)

TAIEX Ref. No.: -

1 Summary of Main Aims and Provisions

Directive 98/70/EC, which forms part of the "Auto-Oil I package", aims at reducing air pollution caused by road traffic. The Directive sets technical specifications for petrol and diesel fuels that influence the level of atmospheric emissions. Particularly important from the health and environment point of view are the concentrations of lead, sulphur, aromatics and benzene. The Directive lays down environmental specifications for fuels taking effect as from years 2000 and 2005.

With effect from 1 January 2000 Directive 98/70/EC amends Directive 93/12/EEC (OJ L 74, 27.3.93) as regards quality of diesel fuel for use in road traffic, and repeals and replaces Directive 85/210/EEC which regulates with the lead and benzene content of petrol[1)].

2 Principal Obligations of Member States

2.1 Regulation

- Prohibit the marketing of leaded petrol no later than 1.1.2000 (Art. 3).

- Ensure that unleaded petrol can be marketed:
  - no later than 1.1.2000 only if it complies with Annex I environmental specifications; and
  - no later than 1.1.2005 only if it complies with Annex III environmental specifications (Art. 3).

- Ensure that diesel fuel can be marketed:
  - no later than 1.1.2000 only if it complies with Annex II environmental specifications; and
  - no later than 1.1.2005 only if it complies with Annex IV environmental specifications (Art. 4).

- With effect from 1.1.2000 permit the marketing of:
  - unleaded petrol complying with Annex III (year 2005) environmental specifications; and

[1] In addition Directive 98/70/EC repeals Directive 85/536/EEC (OJ L 334, 12.12.85) relating to crude-oil savings through the use of substitute fuel components in petrol, as amended by Directive 87/441/EEC (OJ L 238, 21.8.87).

    - diesel fuel complying with Annex IV (year 2005) environmental specifications (Arts. 3 and 4).

- May not prohibit, restrict or prevent the placing on the market of fuels, which comply with the requirements of the Directive (Art. 5).

2.2 Monitoring

- Monitor compliance with the fuel specifications on the basis of the analytical methods set out in the Directive (Art. 8, Annex I and II).

2.3 Reporting

- Submit to the Commission a summary of national fuel quality data satisfying the conditions set out in the Directive (Art. 8).

- Report to the Commission on laws, regulations and administrative provisions adopted to comply with the Directive (transposition measures) and the text of the main provisions of national legislation adopted in the scope of the Directive (Art. 13).

- Inform the Commission in case of supply difficulties that make it difficult for refineries to meet the specification requirements set out in the Directive (Art. 7).

- Submit to the Commission a request, satisfying the conditions set out in the Directive:
    - for derogations from requirements concerning lead content of petrol, and/or sulphur content of petrol or diesel fuel (Arts. 3 and 4);
    - to impose more stringent environmental specifications for fuel. The submission should include the justification for imposing more stringent standards and data on ambient air quality for the area in question as well as the predicted effects on air quality of the measures proposed (Art. 6).

2.4 Additional Legal Instruments

A number of other legislative instruments have relevance to controlling atmospheric emissions from road traffic, and must be borne in mind during the implementation of this directive. These include:

- Sulphur content of certain liquid fuels 93/12/EEC as amended by (1999/32/EC);
- Air Quality Framework Directive 96/62/EC;
- Air Quality Standards:
    - Sulphur dioxide and suspended particulates 80/779/EEC as amended by new Directive 1999/30/EC ;
    - Lead 82/884/EEC as amended;
    - Nitrogen dioxide 85/203/EEC as amended;
    - Tropospheric ozone 92/72/EEC.
- Light duty motor vehicles' exhaust emissions 70/220/EEC as amended;
- Emissions from diesel engines – Soot 72/306/EEC as amended;
- Smoke emissions from diesel engines for use in agricultural or forestry tractors 77/537/EEC as amended;

- Emissions from heavy goods vehicles 88/77/EEC as amended;
- Emissions from mobile machinery 97/68/EC;
- CO_2 emissions and fuel consumption of motor vehicles 80/1268/EEC as amended;
- Emissions from motor vehicles – roadworthiness test for emissions 96/96/EC;
- VOC emissions from storage and distribution of petrol 94/63/EC;
- Reduction of CO_2 emissions from passenger cars Commission Recommendation 99/125/EC.

3 Implementation

3.1 Key Tasks

The key tasks involved in implementing this directive are summarised in the table below. The tasks are arranged under sub-headings and organised in chronological order of implementation where possible.

DIRECTIVE ON QUALITY OF PETROL AND DIESEL FUELS – KEY IMPLEMENATION TASKS	
1	**Planning and Assessments**
1.1	Designate authorities and other organisations with responsibility for regulating the quality of fuel quality. Responsibilities would include monitoring fuel quality and collecting and summarising national fuel quality data.
1.2	Put in place system for assessing the need for more stringent fuel standards.
2	**Regulations and Enforcement**
2.1	Identify necessary steps and put in place regulatory system to ensure that: • marketing of leaded petrol is prohibited as from 1 January 2000, taking into account situations where delay of such a prohibition until 1 January 2005 may be necessary, and for allowing the marketing of small quantities of such petrol for certain old vehicles; and • unleaded petrol and diesel fuel can only be marketed if it meets standards set in directive. The system should take into account situations where it may be necessary to allow the marketing of unleaded fuel and diesel fuel with sulphur content which does not comply with the directives requirements within the transitional periods set in the directive.
2.2	Put in place regulatory system to cover exceptional circumstances when it may be difficult for refineries to meet relevant fuel specifications. System should specify higher limits on fuel components, time limits and a notification system
2.3	Set up enforcement system to deal with non-compliance of national provisions transposing the requirements of the directive. This should include penalties to deal with breaches of the provisions.
3	**Monitoring**
3.1	Set up system and procedure for monitoring compliance with fuel quality requirements. This would include designating and supervising public and/or private sector laboratories to carry out analysis of fuel samples.
4	**Reporting**
4.1	Establish a system to collect national fuel quality data (database or other system). This should include system to summarise derogations, and a method to produce annual reports.
4.2	Submit to the Commission a summary of national fuel quality data following the reporting format to be established by the Commission.
4.3	Report to the Commission on transposition.
4.4	Where relevant, co-operate with the industry and the local authorities to obtain information about the difficulties in applying the fuel specifications in case of supply difficulties, and about the desire to request for derogations.
4.5	Inform the Commission of difficulties in applying the fuel specifications in case of supply difficulties.
4.6	Where relevant, submit to the Commission requests for derogations from the requirements of the directive or to apply more stringent specifications than required under the directive

3.2 Phasing Considerations

Experience within Member States suggests that the most demanding and time consuming task associated with implementing this directive is the setting up of an efficient system to monitor the quality of fuels on the market. The planning and setting up of monitoring systems and procedures need to be commenced during the initial phase of implementation. Depending on the existing institutional structure, the transposition of legislation may be required before a new structure can be introduced, since it may be necessary to establish the new institutions through legislation. The institutional structures and systems for monitoring and enforcing the requirements of the directive would be the same as those for implementing the requirements of Directive 93/12 relating to the sulphur content of certain liquid fuels.

Legal transposition of the technical specifications for fuels set out in the directive should not be time consuming nor difficult, since in most Candidate Countries there already exists legislation dealing with the quality of fuel, especially the lead content of petrol.

The directive lays down fuel specifications taking effect in two stages: 1 January 2000, and 1 January 2005. According to the directive leaded petrol must be phased out by year 2000, but allows for derogations from this requirement up to the year 2005. Low sulphur fuels are mandatory from 2000 with lower sulphur content fuels from 2005. However, the directive takes into consideration problems that some of the Member States may have with regard to their high-sulphur crude. It therefore allows limited derogations from Annex I specifications until year 2003, and for Annex IV specifications until year 2007. All Member States that wish to take advantage of any of these derogations must submit requests to and receive authorisation from the Commission. Requests for derogations from Annex I specifications must have been submitted by 31 August 1999, and derogation requests from Annex IV requirements by 31 August 2003. All EU legal requirements, including the submission of requests, are only applicable to the Candidate Countries from the beginning of their membership. However, Candidate Countries should begin considering their need for possible derogations at this stage of the approximation process so that these matters can be requested and discussed during the accession negotiations. This is even more important since the deadlines set in the directive may have passed by the time that accession takes place.

4 Implementation Guidance

The means for implementing the requirements of the directive will depend upon the particular needs, institutional and administrative structures, and resources of each country. This section briefly gives some suggestions for implementation, drawn from the experiences of selected Member States.

Regulation

- National regulations to transpose this directive would usually be part of regulations on specifications for motor fuels.

- The ministry with primary responsibility for administering national legislation relevant to this directive could either be the ministry responsible for energy matters or the

ministry responsible for environmental matters. However, because the aim of the directive is air quality control whichever ministry has primary responsibility must co-operate closely with the Ministry for Environment and other ministries such as the Ministry of Transport, and Customs and Excise officials who may be under the Ministry of Trade and Industry. Such co-operation will be necessary both in developing the relevant national legislation as well as in establishing other measures to implement the requirements of the directive.

- Countries should conduct discussions on implementation options with representatives of the oil and gas sector as well as other interested parties in order to avoid compliance problems.

Examples of Practice from Member States

In one Member State (FIN), a Decree of the Cabinet of Ministers on the Lead and Benzene Content of Petrol 1988, adopted under the Air Pollution Prevention Act (administered by the Ministry of Environment) implements Directive 85/210/EEC (to be repealed by Directive 98/70/EC).

In another Member State (D) Directive 85/210/EEC is partially implemented by the Road Traffic Licensing order (Strassenverkehrs-Zulassungs-Ordnung-StVZO). The Federal Motor Transport Authority (Kraftfahrt-Bundesamt) has primary responsible for administering this regulation. The Lead in Petrol Act also regulates lead content of petrol. The Regulation concerning the Information on the Quality of Petrol is also relevant for the implementation of the directive. The use of additives in petrol as substitutes for lead is prohibited, and additives are added manually when required for certain vehicles.

Monitoring and Enforcement

- The directive does not set out any detailed requirements for the fuel quality monitoring system. The Member State are free to choose the method of implementing the monitoring requirement as long as the surveillance system effectively ensures that the quality of petrol and diesel fuels placed on the market complies with the specifications set out in the directive.

- The authorities/organisations set up to carry out monitoring functions must have the necessary administrative powers, and technical, human and financial resources for sampling and testing. Testing laboratories are crucial tools for the implementation of the monitoring task.

- In order to achieve compliance, both local production and appropriate retail sector monitoring should be targeted. This can be supplemented with random spot testing of imports through border checks and at the retail pump site. The choice of authorities responsible for monitoring depends greatly on each country's national conditions (size, characteristics of fuel market etc.).

- Economic incentives can be used to encourage the marketing of petrol and diesel fuels that comply with the requirements of the directive. For example, the price of low-sulphur fuel could be lower than that of high- sulphur grade fuel.

- In the near future the EU will set more detailed requirements for monitoring the market fuel quality. In accordance with the directive the Commission has launched a study for

the development of a uniform fuel quality monitoring system in the Community. The Commission has committed the development to CEN, which should have the study finished by the end of 1999, and the uniform guidelines are expected to be adopted in early 2000. The aim of the Commission is to develop a set of monitoring guidelines for Member States. These would answer questions such as: How many samples need to be taken? What kind of testing methods should be used? What kind of conditions shall the testing laboratories satisfy?

Examples of Practice from Member States

In one Member State (B) the regime of fuel quality surveillance includes a public fund. The importers and producers of fuel must pay a levy of 10 BEFs (0.4 EUR) into the fund for every 1,000 litres of fuel imported / produced. The fund wholly finances the system of monitoring fuel quality on the Member States' market. The Ministry of Economic Affairs administers the fund, and it was set up as a means of encouraging co-operation between the state authorities and the oil industry. The board of the fund, which gives advice on fuel monitoring issues, consists of eight members: four representing the Ministry and four coming from the industry.

Ministry officials do practical surveillance work. The officials perform random sampling so that each week 200 samples are taken from 100 different service stations[1]. At each station targeted the authorities take samples of diesel fuel and of one type of petrol. The computer picks out the stations to be spot checked each week. The authorities perform sampling all year around, 5 days a week.

After taking the samples the officials take them to private appointed laboratories[2], which have 24 hours to analyse the sample. If the analyses of the laboratory indicate problems with regard to the quality of fuel, the sample is taken to another laboratory in order to be double-checked. This laboratory has again 24 hours to finalise the analyses. If the sample is conformed to be non-compliant with the fuel quality requirements, the government officials contact the service station in question as well as the oil company which provided the fuel to the station. At this stage the companies involved have 24 hours to carry out the measures required by the monitoring officials to ensure conformity with the fuel requirements. If the required measures have not been undertaken within the period of 24 hours, the government officials go and seal the pump.

In another Member State (FIN) tax relief is granted to unleaded petrol under the Excise Duty on Liquid Fuels Act 1994.

The price of leaded petrol in a third Member State (D) was raised under the Petrol Tax law 1985.

[1] Altogether there are 5,400 service stations in this Member State.
[2] There are 3 private sector laboratories in this Member State taking care of the fuel quality analysing. The laboratories are appointed and controlled by the Ministry of Economic Affairs.

5 Costs

The main types of costs arising from the implementation of this directive are given in the checklist below.

Checklist of the Types of Cost Incurred to Implement the Directive

Initial set-up costs:
- Establishment of competent authorities;
- Devising systems and procedures;
- Provisions for training;
- Preparation of technical guidance.

Capital expenditure:
- Fuel sulphur analyser (approximately EUR 30,000 to 50,000);
- Fuel lead analyser (approximately EUR 30,000 to 50,000).

On-going running costs:
- Fuel sampling equipment (kits) (approximately EUR 150 each);
- Labour cost from sampling activity;
- Labour cost from fuel analysis;
- Operating costs for analyser;
- Labour costs for processing data and reporting to the Commission.

As an indicative cost for fuel analysis, one fuel sulphur analysis of one sample in an established laboratory could cost some EUR 150.

The Directive on Volatile Organic Compounds

Official Title: Council Directive 99/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations (OJ L 85, 29.3.99)

TAIEX Ref. No.: -

1 Summary of Main Aims and Provisions

The aim of the Directive is to prevent or reduce the effects of emissions of volatile organic compounds (VOCs) into the environment, and the potential risks to human health. It places a number of obligations on Member States to control emissions of VOCs from 'installations', i.e. stationary technical units where certain listed activities are carried out, in excess of specified solvent consumption thresholds, and certain associated activities. The measures required to meet the objectives of the Directive include the application of emission limit values, or emission reduction schemes, and monitoring and reporting.

2 Principal Obligations of Member States

2.1 Planning

- If this is chosen as an alternative to applying emission limit values to certain existing installations, define and implement a national plan for achieving equivalent reductions in emissions of VOCs (Arts. 5 and 6).

- Designate a national authority to be responsible for the collection and evaluation of information and the implementation of any national plan (Art. 6).

- Ensure that any guidance published by the Commission is taken into account in issuing authorisations and in formulating binding rules (Art. 7).

2.2 Regulation

- Ensure (through conditions in authorisations or through general binding rules) that installations take the measures required by the Directive to limit emissions of VOCs, including compliance with emission limit values, the implementation of reduction schemes, and/or the use of alternative substances (Arts. 3, 4, 5 and Annex IIB).

- Ensure that existing installations, and new installations that are not covered by Council Directive 96/61/EC (on IPPC) are registered or authorised prior to being put into operation, and that installations implementing a reduction scheme to meet the Directive's requirements notify the competent authorities (Arts. 3, 4).

- Ensure that existing installations that undergo a substantial change comply with the requirements of the Directive (Art. 4).

- Ensure that competent authorities only allow derogations from the standards laid down in the Directive in accordance with specified conditions, including the use of best available techniques (Art. 5).

- Ensure that effective, proportionate and dissuasive sanctions are determined and applied to breaches of national provisions adopted pursuant to the Directive (Art. 14).

- Take appropriate enforcement action in cases of non-compliance with the requirements of the Directive, including suspension of operations where non-compliance causes immediate danger to human health (Art. 10).

2.3 Monitoring

- Require operators of installations to supply the competent authorities with data to enable the authorities to verify compliance with the Directive (Art. 8).

- Ensure that continuous monitoring is carried out, or periodic measurements are taken, as required, to ensure compliance with the Directive (Art. 8).

- Ensure that compliance with emission limit values is demonstrated to the satisfaction of the competent authorities, and that compliance is verified in accordance with the standards laid down in the Directive (Art. 9).

2.4 Reporting

- Report to the Commission on:
  - implementation of the Directive (Art. 11 and Council Directive 91/692/EEC);
  - national plans for reducing emissions of VOCs, and supporting documentation, as well as any corrective measures taken to ensure that the objectives are achieved (Art. 6);
  - sanctions applicable to breaches of national provisions, and subsequent modifications (Art. 14);
  - implementation (Art. 15); and
  - transposition, with texts of the main provisions of national law adopted in the field covered by the Directive (Art.15).

- Make certain information available to the public, including applications for authorisation, decisions of competent authorities on authorisations, lists of registered and authorised activities, the results of emission monitoring, and the implementation reports sent to the Commission (this obligation is subject to the restrictions laid down in Council Directive 90/313/EEC on Access to Environmental Information) (Arts. 11 and 12).

3 Implementation

As this is a new directive, this section will be completed after advice on implementation is obtained from the relevant Technical Unit of DG ENV.

4 Implementation Guidance

As this is a new directive, this section will be completed after advice on implementation is obtained from the relevant Technical Unit of DG ENV.

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