Towards an Integrated Approach to Managing Urban Pollution:
An Overview of EU Policy and Regulation

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Preamble

This report presents the results of a 12 week-research project on regulatory aspects of the management of urban pollution undertaken during my Simon Industrial and Professional Fellowship in the School of Chemical Engineering and Analytical Sciences (SCEAS) at the University of Manchester in 2008. The research was conducted in conjunction with an EPSRC-funded project on Pollutants in the Urban Environment (PUrE) led by Prof. Azapagic. The PUrE project has been concerned with the development of an integrated approach to the management of urban pollution. The SCEAS Sustainable Industrial Systems group was the host for this Fellowship.

I would like to thank the University of Manchester's Simon Industrial and Professional Fellowship Fund for their generous support for the project. I am particularly indebted to Prof. Adisa Azapagic and her research team at SCEAS for providing me with the opportunity to conduct this research in a friendly and stimulating academic environment where the issues of urban pollution are researched at an advanced level.

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1. Introduction

Current trends in urban development such as the growth of road transport, the drive for more housing and rising household consumption of natural resources, place severe pressure on the environment, human health and the quality of life. Poor air quality, generation of large volumes of waste and waste-water, high levels of greenhouse gas emissions, high levels of ambient noise and derelict land are some of the common environmental problems facing urban areas.

There is a wide range of different approaches to deal with these impacts. However, it is being increasingly recognised that the most appropriate way of tackling the problems of urban pollution would be to employ an integrated management approach which would recognise that the most powerful solutions may not be entirely technical, and may involve understanding and encouraging behavioural change.

Those working on developing such an integrated approach to urban pollution face a complex regulatory regime to navigate – and that regime is changing rapidly. European legislation plays one of the key parts in this complex regulatory framework. A number of EU Directives concerning water and air pollution, the Directives on Environmental Impact Assessment and Strategic Environmental Assessment, and the European Thematic Strategy on the Urban Environment, are some of the examples of the EU legislation with a significant impact on urban policy.

This report gives an overview of the current EU regulatory framework for the management of urban pollution. The first section lists the EU environmental legislation relevant to urban pollution, and outlines main features of the most important Directives. The second section looks at the EU Thematic Strategy on the Urban Environment and assesses its importance for development of a more integrated approach to urban environment. Main features of the integrated approach to the management of urban pollutions promoted by the EU, and barriers for its implementation are then discussed. The report concludes with a brief discussion of a possible way forward for dealing with the issues of urban pollution in the current regulatory context.

2. EU legislation on urban pollution

The quality of the urban environment is regulated by a significant number of EU environmental laws and policies. They address a range of different issues and concerns, including:

- **air, water and land pollution**, e.g. the Directive on Ambient Air Quality Assessment and Management, the Water Framework Directive, and the Waste Framework Directive;
- **public and private projects and industrial installations**, e.g. the Directives on Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), and Integrated Pollution Prevention and Control (IPPC);
- **waste management**, e.g. the Landfill Directive, and the Incineration Directive;
- **products**, e.g. the Waste Electrical and Electronic Equipment Directive; and
- **energy,** e.g. the Directive on the Energy Performance of Buildings.

Let us have a closer look at the directives most relevant to urban pollution.

1.1 The Environmental Impact Assessment (EIA) Directive[1]

The European Directive on the effects of certain public and private projects on the environment came into effect in 1988. The Directive, referred to as the EIA Directive, was amended in 1997, and subsequently in 2003.

The EIA Directive requires an assessment to be carried out by the competent national authority for certain projects which have a physical effect on the environment. The environmental impact assessment must identify the direct and indirect effects of a project on the following factors: man(!), the fauna, the flora, the soil, water, air, the climate, the landscape, the material assets and cultural heritage, and the interaction between these various elements.

Projects concerned

The projects may be proposed by a public or private person. An assessment is obligatory for certain projects. These include:

- dangerous industrial facilities such as oil refineries, nuclear fuel or nuclear waste treatment facilities, integrated chemical installations;
- power stations of more than 300 megawatts or nuclear power stations;
- transport infrastructure such as railways, airports, motorways, inland waterways and ports when the infrastructure exceeds certain specific thresholds;
- waste and water treatment facilities;
- large mining facilities (large quarries, large gas or oil rigs);
- water transport or storage facilities, and dams;
- installations for the intensive rearing of poultry or pigs which exceed certain specific thresholds.

Other projects are not automatically assessed: Member States can decide to subject them to assessment on a case-by-case basis or according to thresholds, certain criteria (for example size), location (sensitive ecological areas in particular) and potential impact (surface affected, duration). This particularly concerns projects in the following fields:

- agriculture, forestry and aquaculture (for example agricultural irrigation projects or intensive fish-farming);
- the mining industry (underground mining, deep drillings, etc.);
- industrial facilities for generating, transporting and storing electricity;
- the production and processing of metals (cast iron or steel, shipyards, etc.);
- the mineral industry (distillation of coal, cement production, etc.);
- the chemical industry (production of pesticides, pharmaceutical products, paints, etc.);
- the food industry;
- textile, leather, wood, paper and rubber industries;
- infrastructure projects (shopping centres, car parks, elevated and underground railways, etc.);
- tourism or leisure projects (ski-runs and ski lifts, holiday villages, theme parks, etc).

Information required and consultation of interested parties

[1] **COUNCIL DIRECTIVE of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment,** (85/337/EEC) (OJ L 175, 5.7.1985, p. 40) Amended by: Official Journal**, M1** Council Directive 97/11/EC of 3 March 1997 (L 73 5 14.3.1997); **M2** Directive2003/35/EC of the European Parliament and of the Council of 26 May 2003 **(**L 156 17 25.6.2003)

The developer (the person who applied for development consent or the public authority which initiated the project) must provide the authority responsible for approving the project with the following information as a minimum:

- a description of the project (location, design and size);
- data required to assess the main effects of the project on the environment;
- possible measures to reduce significant adverse effects;
- the main alternatives considered by the developer and the main reasons for this choice;
- a non-technical summary of this information.

With due regard for rules and practices regarding commercial and industrial secrecy, this information must be made available to interested parties sufficiently early in the decision-making process:

- the competent environmental authorities likely to be consulted on the authorisation of the project;
- the public, by the appropriate means (including electronically) at the same time as information (in particular) on the procedure for approving the project, details of the authority responsible for approving or rejecting the project and the possibility of public participation in the approval procedure;
- other Member States, if the project is likely to have transboundary effects. Each Member State must make this information available to interested parties on its territory to enable them to express an opinion.

Reasonable time-limits must be provided for, allowing sufficient time for all the interested parties to react. These opinions must be taken into account in the approval procedure.

Result of the assessment procedure and consultations

At the end of the procedure, the following information must be made available to the public and transmitted to the other Member States concerned:

- the approval or rejection of the project and any conditions associated with it;
- the principal arguments upon which the decision was based after examination of the results of the public consultation, including information on the process of public participation;
- any measures to reduce the adverse effects of the project.

In accordance with national legislation, Member States must ensure that the interested parties can challenge the decision in court.

The revision of the EIA Directive in 2003 made it possible to incorporate certain provisions of the Arhus Convention on access to information, public participation and access to justice in environmental matters. This Convention was signed by the European Community and its Member States in 1998. It aims to get European citizens more involved in decisions concerning their environment.

1.2 The Strategic Environmental Assessment (SEA) Directive[2]

The Strategic Environmental Assessment (SEA) Directive stipulates that plans and programmes which are liable to have significant effects on the environment must be subject to an environmental assessment prior to their adoption.

[2] **DIRECTIVE 2001/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment,** *Official Journal of the European Communities, L 197/30, 21.7.2001*

The SEA Directive supplements the environmental impact assessment system for projects introduced by The EIA Directive. The EIA Directive covers construction work and other installations or schemes, as well as other measures affecting the natural environment or landscape. The SEA Directive introduces a system of prior environmental assessment at the planning stage.

The SEA Directive applies to plans and programmes liable to have significant effects on the environment, as well as to their modifications, which are prepared and/or adopted by a competent authority or prepared by a competent authority for adoption by means of a legislative procedure; and which are required by legislative, regulatory or administrative provisions. Environmental assessment is automatically required for plans and programmes which are prepared for town and country planning, land use, transport, energy, waste management, water management, industry, telecommunications, agriculture, forestry, fisheries and tourism and which provide the framework for subsequent consent for specific projects listed in Annexes I and II to The EIA Directive. The same applies to the adoption of plans and programmes liable to affect sites protected by the Conservation Directive[3] and for which an assessment is required under that Directive. Other plans and programmes which set the framework for future development consent of projects are subject to environmental assessment if an examination taking account of the criteria laid down in Annex II to the SEA Directive shows that they are liable to have significant effects on the environment.

Prior to the adoption of a plan or programme or its submission to the legislative process, the competent authority of the Member State concerned is required to carry out an environmental assessment and, after consulting the competent environmental authorities, to prepare an environmental report setting out inter alia:

- the contents of the plan or programme and its main objectives;
- the environmental characteristics of any area likely to be significantly affected by the plan or programme;
- any existing environmental problems which are relevant to the plan or programme;
- the national, Community or international environmental protection objectives which are relevant to the plan or programme in question;
- the likely environmental effects of implementing the plan or programme;
- the measures envisaged to prevent, reduce and offset any significant adverse effects on the environment;
- the envisaged monitoring measures.

The report must also include a non-technical summary of this information.

The draft plan or programme and the environmental report must be made available to the authorities responsible for the environment and to the public. The authorities and the public will be able to express their views on the draft plan or programme prior to its adoption or submission to the legislative process.

1.3 Integrated Pollution Prevention and Control (IPPC) Directive[4]

The European Union defines the obligations with which highly polluting industrial and agricultural activities must comply. It establishes a procedure for authorising these activities and sets minimum requirements to be included in all permits, particularly in

[3] **Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora** , *Official Journal of the European Communities, L 206 , 22/07/1992 P. 0007 – 0050*

[4] **DIRECTIVE 2008/1/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 January 2008 concerning integrated pollution prevention and control (Codified version),** *Official Journal of the European Communities, L 24/8, 29.1.2008*

terms of pollutants released. The aim is to prevent or reduce pollution of the atmosphere, water and soil, as well as the quantities of waste arising from industrial and agricultural installations to ensure a high level of environmental protection.

This Directive ('the IPPC Directive') imposes a requirement for industrial and agricultural activities with a high pollution potential to have a permit which can only be issued if certain environmental conditions are met, so that the companies themselves bear responsibility for preventing and reducing any pollution they may cause.

Integrated pollution prevention and control concerns highly polluting new or existing industrial and agricultural activities, as defined in Annex I to the Directive (energy industries, production and processing of metals, mineral industry, chemical industry, waste management, livestock farming, etc.).

In order to receive a permit an industrial or agricultural installation must comply with certain basic obligations. In particular, it must:

- use all appropriate pollution-prevention measures, namely the best available techniques (which produce the least waste, use less hazardous substances, enable the recovery and recycling of substances generated, etc.);
- prevent all large-scale pollution;
- prevent, recycle or dispose of waste in the least polluting way possible;
- use energy efficiently;
- ensure accident prevention and damage limitation;
- return sites to their original state when the activity is over.

In addition, the decision to issue a permit must contain a number of specific requirements, in particular including:

- emission limit values for polluting substances (with the exception of greenhouse gases if the emissions trading scheme applies - see below);
- any soil, water and air protection measures required;
- waste management measures;
- measures to be taken in exceptional circumstances (leaks, malfunctions, temporary or permanent stoppages, etc.);
- minimisation of long-distance or transboundary pollution;
- release monitoring;
- all other appropriate measures.

To coordinate the permit process required under the Directive and the emissions trading scheme, a permit issued in compliance with the Directive is not obliged to contain the emission limit values for greenhouse gases if they are subject to an emissions trading scheme, provided there is no local pollution problem. The competent authorities can also impose energy efficiency measures targeted at combustion plants.

The IPPC Directive has recently been codified. The codified act includes all the previous amendments to the Directive 96/61/EC and introduces some linguistic changes and adaptations (e.g. updating the number of legislation referred to in the text). The substance of Directive 96/61/EC has not been changed and the adopted new legal act is without prejudice to the new Proposal for a Directive on Industrial Emissions.

1.4 The Water Framework Directive (WFD)[5]

The Water Framework Directive (WFD) is the most substantial piece of EC water legislation to date and is designed to improve and integrate the way water bodies are managed throughout Europe. It came into force on 22 December 2000, and was put into UK law (transposed) in 2003.

The WFD is designed to:

- enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands, which depend on the aquatic ecosystems
- promote the sustainable use of water
- reduce pollution of water, especially by 'priority' and 'priority hazardous' substances (see Daughter Directives)
- ensure progressive reduction of groundwater pollution

In summary, the Directive requires that all surface waters and groundwaters within defined river basin districts must reach at least 'good' status by 2015. It will do this for each river basin district by:

- Defining what is meant by 'good' status by setting environmental quality objectives for surface waters and groundwaters;
- Identifying in detail the characteristics of the river basin district, including the environmental impact of human activity;
- Assessing the present water quality in the river basin district;
- Undertaking an analysis of the significant water quality management issues.
- Identifying the pollution control measures required to achieve the environmental objectives;
- Consulting with interested parties about the pollution control measures, the costs involved and the benefits arising;
- Implementing the agreed control measures, monitoring the improvements in water quality and reviewing progress and revising water management plans to achieve the quality objectives.

Annex X to the Directive set out a list of priority substances selected from among the ones which present a significant risk to or via the aquatic environment has been drawn up using a combined monitoring-based and modelling-based procedure. Control measures for these priority substances and quality standards for concentrations of the substances have also been proposed.

A significant feature of the WFD is that it rationalises the EU water legislation by replacing seven of the earlier directives: those on surface water and two related directives on measurement methods and sampling frequencies and exchanges of information on fresh water quality; the fish water, shellfish water, and groundwater directives; and the directive on dangerous substances discharges. The operative provisions of these directives are taken over in the framework directive, allowing them to be repealed.

[5] **DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy,** *Official Journal of the European Communities, L 327/1, 22.12.2000*

1.5 The Urban Waste Water Treatment Directive[6]

Due to their volume, discharges of urban waste water are the second most serious cause of the pollution of waters by eutrophication. This Directive seeks to harmonise measures relating to the treatment of such waters at the EU level. The Directive was adopted by member states in May 1991 and transposed into legislation across the UK by the end of January 1995.

The Directive concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors. Its aim is to protect the environment from any adverse effects due to discharge of such waters.

Industrial waste water entering collecting systems, and the disposal of waste water and sludge from urban waste water treatment plants, are both subject to regulations and/or specific authorisations on the part of the competent authorities. The Directive establishes a time-table, which Member States must adhere to, for the provision of collecting and treatment systems for urban waste water in agglomerations which meet the criteria laid down in the Directive.

Annex II requires Member States to draw up lists of sensitive and less sensitive areas which receive the treated waters. These lists must be updated regularly. The treatment of urban water is to be varied according to the sensitivity of the receiving waters.

The Directive lays down specific requirements for discharges from certain industrial sectors of biodegradable industrial waste water not entering urban waste water treatment plants before discharge to receiving waters.

Member States are responsible for monitoring both discharges from treatment plants and the receiving waters. They must ensure that the competent national authorities publish a situation report every two years. This report must also be sent to the Commission.

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In 1998 the Commission issued Directive 98/15/EC amending the Urban Waster Water Directive 91/271/EEC to clarify the requirements of the Directive in relation to discharges from urban waste water treatment plants to sensitive areas which are subject to eutrophication.

Directive 98/15/EC specifies, *inter alia*, that:

- the option of using daily averages for the total nitrogen concentration applies both to agglomerations of 10 000-100 000 p.e. and to those of more than 100 000 p.e.;
- the condition concerning the temperature of the effluent in the biological reactor and the limitation on the time of operation to take account of regional climatic conditions only apply to the "alternative" method using daily averages;
- use of the "alternative" method must ensure the same level of environmental protection as the annual mean technique.

[6] COUNCIL DIRECTIVE of 21 May 1991 concerning urban waste water treatment, *Official Journal L 135 , 30/05/1991 P. 0040 - 0052*

1.6 The Waste Framework Directive[7]

The Waste Framework Directive provides the overarching legislative framework for the collection, transport, recovery and disposal of waste, and includes a common definition of waste. The Directive requires all Member States to take the necessary measures to ensure that waste is recovered or disposed of without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements. The Directive also requires Member States to take appropriate measures to encourage firstly, the prevention or reduction of waste production and its harmfulness and secondly the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy. The Directive's overarching requirements are supplemented by other Directives for specific waste streams such as:

- Electrical and electronic equipment (including WEEE and ROHS Directives);
- Certain hazardous substances
- Packaging and packaging waste
- End-of-life vehicles (ELVs)
- Waste Oil
- Batteries etc.

1.7 The Waste Incineration Directive[8]

When the proposal for this Directive was introduced, the Community's waste incineration system was covered by Directives 89/369/EEC and 89/429/EEC (new and existing municipal waste-incineration plants) and 94/67/EC (incineration of hazardous waste). This Directive is intended to fill the gaps existing in that legislation. Apart from the incineration of non-hazardous municipal waste, its scope extends to the incineration of non-hazardous non-municipal waste (such as sewage sludge, tyres and hospital waste) and hazardous wastes not covered by Directive 94/67/EC (such as waste oils and solvents). At the same time, it is intended to incorporate the technical progress made on monitoring incineration-process emissions into the existing legislation, and to ensure that the Community meets its international commitments to reduce pollution, particularly those concerning the introduction of limits on emissions of dioxins, mercury and dust arising from waste incineration. The Directive is based on an integrated approach: limits for discharges to water are added to the updated limits for emissions to air.

Unlike Directives 89/369/EEC and 89/429/EEC referred to above, this Directive applies not only to facilities intended for waste incineration ("dedicated incineration plants") but also to "co-incineration" plants (facilities whose main purpose is to produce energy or material products and which use waste as a regular or additional fuel, this waste being thermally treated for the purpose of disposal). The Directive does not cover experimental plants for improving the incineration process and which treat less than 50 tonnes of waste per year. Nor does it cover plants treating only:

- vegetable waste from agriculture and forestry, the food processing industry or the production of paper;
- wood waste;
- cork waste;

[7] DIRECTIVE 2006/12/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 April 2006 on waste, *Official Journal of the European Union, L 114/9, 27.4.2006.*

[8] **Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste***, Official Journal, L 332, 28.12.2000*

- radioactive waste;
- animal carcases;
- waste resulting from the exploitation of oil and gas and incinerated on board offshore installations.

All incineration or co-incineration plants must be authorised. Permits will be issued by the competent authority and will list the categories and quantities of hazardous and non-hazardous waste which may be treated, the plant's incineration or co-incineration capacity and the sampling and measurement procedures which are to be used. Before accepting hazardous waste, operators of incineration or co-incineration plants must have available the prescribed administrative information on the generating processes, information on the physical and chemical composition of hazardous waste, and information on the hazardous characteristics of the waste.

In order to guarantee complete waste combustion, the Directive requires all plants to keep the incineration or co-incineration gases at a temperature of at least 850°C for at least two seconds. If hazardous waste with a content of more than 1% of halogenated organic substances, expressed as chlorine, is incinerated, the temperature has to be raised to 1 100 °C for at least two seconds. The heat generated by the incineration process has to be put to good use as far as possible.

The limit values for incineration plant emissions to air are set out in Annex V to the Directive. They concern heavy metals, dioxins and furans, carbon monoxide (CO), dust, total organic carbon (TOC), hydrogen chloride (HCl), hydrogen fluoride (HF), sulphur dioxide (SO_2), nitrogen monoxide (NO) and nitrogen dioxide (NO_2).

The limit values for co-incineration plant emissions to air are set out in Annex II. In addition, special provisions are laid down relating to cement kilns, other industrial sectors, and combustion plants which co-incinerate waste.

All discharges of effluents caused by exhaust-gas clean-up must be authorised. This will ensure that the emission limit values set out in Annex IV to the Directive are not exceeded. Rain or firefighting water will be collected and analysed before being discharged.

Incineration residues must be reduced to a minimum and, as far as possible, recycled. When dry residues are transported, precautions must be taken to prevent their dispersal in the environment. Tests must be carried out to establish the physical and chemical characteristics, and polluting potential, of residues.

The Directive requires the installation of measurement systems to monitor the parameters and relevant emission limits. Emissions to air and to water must be measured periodically in accordance with Annex III and Article 11 of the Directive.

Applications for new permits must be made accessible to the public so that the latter may comment before the competent authority reaches a decision.

1.8 The Landfill Directive[9]

The Directive is intended to prevent or reduce the adverse effects of the landfill of waste on the environment, in particular on surface water, groundwater, soil, air and human

[9] **Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste**, *Official Journal, L 182/1, 16.7.1999.*

health. It defines the different categories of waste (municipal waste, hazardous waste, non-hazardous waste and inert waste) and applies to all landfills, defined as waste disposal sites for the deposit of waste onto or into land. Landfills are divided into three classes:

- landfills for hazardous waste;
- landfills for non-hazardous waste;
- landfills for inert waste.

On the other hand, the Directive does not apply to:

- the spreading on the soil of sludges (including sewage sludges and sludges resulting from dredging operations);
- the use in landfills of inert waste for redevelopment or restoration work;
- the deposit of unpolluted soil or of non-hazardous inert waste resulting from prospecting and extraction, treatment and storage of mineral resources as well as from the operation of quarries;
- the deposit of non-hazardous dredging sludges alongside small waterways from which they have been dredged and of non-hazardous sludges in surface water, including the bed and its subsoil.

A standard waste acceptance procedure is laid down so as to avoid any risks:

- waste must be treated before being landfilled;
- hazardous waste within the meaning of the Directive must be assigned to a hazardous waste landfill;
- landfills for non-hazardous waste must be used for municipal waste and for non-hazardous waste;
- landfill sites for inert waste must be used only for inert waste.

The following wastes may not be accepted in a landfill:

- liquid waste;
- flammable waste;
- explosive or oxidising waste;
- hospital and other clinical waste which is infectious;
- used tyres, with certain exceptions;
- any other type of waste which does not meet the acceptance criteria laid down in Annex II.

The Directive sets up a system of operating permits for landfill sites. Applications for permits must contain the following information:

- the identity of the applicant and, in some cases, of the operator;
- a description of the types and total quantity of waste to be deposited;
- the capacity of the disposal site;
- a description of the site;
- the proposed methods for pollution prevention and abatement;
- the proposed operation, monitoring and control plan;
- the plan for closure and aftercare procedures;
- the applicant's financial security;
- an impact assessment study, where required under The EIA Directive

The Directive sets demanding targets to reduce the amount of biodegradable municipal landfilled. These targets are:

• By 2010 to reduce biodegradable municipal waste landfilled to 75% of that produced in 1995;

• By 2013 to reduce biodegradable municipal waste landfilled to 50% of that produced in 1995;

• By 2020 to reduce biodegradable municipal waste landfilled to 35% of that produced in 1995.

1.9 The Directive on Ambient Air Quality Assessment and Management[10]

The Directive on **Ambient Air Quality Assessment and Management** requires plans to be established for urban zones when limit values are or might be exceeded. It defines the policy framework for 13 air pollutants known to have a harmful effect on human health and the environment:

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
13. Mercury.

The limit values for the specific pollutants are set through a series of Daughter Directives.

- *Directive 1999/30/EC* (the 1st Daughter Directive) sets limit values (values not to be exceeded) for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (dust) and lead in ambient air.
- *Directive 2000/69/EC* (the 2nd Daughter Directive) establishes limit values for concentrations of benzene and carbon monoxide in ambient air.
- *Directive 2002/3/EC* (the 3rd Daughter Directive) establishes long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.
- *Directive 2004/107/EC* (the 4th Daughter Directive) establishes a target value for the concentration of arsenic, cadmium, nickel and benzo(a)pyrene in ambient air so as to avoid, prevent or reduce harmful effects of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons on human health and the environment as a whole

A new air quality directive came into force in June 2008, and will be transposed into national legislation by June 2010[11]. The new directive consolidates existing air quality legislation apart from the 4th Daughter Directive, which will be brought within the new Directive at a later date; provides a new regulatory framework for PM2.5; and makes provision for extended compliance deadlines for NO_2 and PM10.

[10] **Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management** (*Official Journal L 296, 21/11/1996 P. 0055 – 0063*)
[11] **DIRECTIVE 2008/50/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2008 on ambient air quality and cleaner air for Europe,** Official Journal of the European Union, 11.6.2008

1.10 The Assessment and Management of Environmental Noise Directive[12]

This Directive is aimed at controlling noise perceived by people in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise-sensitive buildings and areas. It does not apply to noise that is caused by the exposed person him or herself, noise from domestic activities, noise created by neighbours, noise at work places or inside means of transport or noise due to military activities in military areas.

Noise indicators and their assessment methods

Lden is an indicator of the overall noise level during the day, evening and night which is used to describe the annoyance caused by exposure to noise. Lnight is an indicator for the sound level during the night used to describe sleep disturbance. The noise indicators Lden and Lnight are used in the making of strategic noise maps.

Other indicators may be used for acoustical planning and noise zoning and in the special cases as listed in Annex I to the Directive.

The values of Lden and Lnight are defined using the assessment methods set out in Annex II to the Directive. Common assessment methods for the determination of Lden and Lnight will be established by the Commission. In the meantime, Member States may use their own methods to determine the common indicators, provided that such methods conform to Annex II.

Dose-effect relations will be introduced in Annex III by future revisions in order to be able to assess the effect of noise on populations.

Strategic noise mapping

A strategic noise map enables a global assessment to be made of noise exposure in an area due to different noise sources and overall predictions to be made for such an area. The strategic noise maps must satisfy the minimum requirements laid down in *Annex IV to the Directive.*

The measures within the plans are at the discretion of the competent authorities, but should address priorities which may be identified by the exceeding of any relevant limit value or by other criteria chosen by the Member States and apply in particular to the most important areas as established by strategic mapping.

1.11 The Packaging and Packaging Waste Directive[13]

This Directive covers all packaging placed on the market in the EU and all packaging waste, whether it is used or released at industrial, commercial, office, shop, service, household or any other level, regardless of the material used. Directive 2004/12/EC (amending Directive 94/62/EC) establishes criteria clarifying the definition of the term 'packaging'. Clear examples are given in Annex I, such as tea bags, which are non-packaging, and the film overwrap around a CD case or labels hung directly on or

[12] **DIRECTIVE 2002/49/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 June 2002 relating to the assessment and management of environmental noise,** *Official Journal of the European Communities, L 189/1, 18.7.2002*

[13] **European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste,** *Official Journal L 365 , 31/12/1994 P. 0010 - 0023*

attached to a product, which are packaging. This Annex replaces Annex I to Directive 94/62/EC.

The Packaging and Packaging Waste Directive requires Member States to take measures, which may include national programmes, to prevent the formation of packaging waste, and encourages them to develop packaging reuse systems.

The Member States must introduce systems for the return and/or collection of used packaging to attain the following targets:

- by no later than 31 December 2008, at least 60% by weight of packaging waste to be recovered or incinerated at waste incineration plants with energy recovery;
- by no later than 31 December 2008, between 55 and 80% by weight of packaging waste to be recycled;
- no later than 31 December 2008 the following targets for materials contained in packaging waste must be attained: 60% by weight for glass, paper and board; 50% by weight for metals; 22.5% by weight for plastics and 15% by weight for wood.

The incineration of waste at plants with energy recovery is regarded as contributing to the realisation of these objectives.

1.12 The Waste Electrical and Electronic Equipment (WEEE) Directive[14]

The EU is taking measures to prevent the generation of electrical and electronic waste and to promote reuse, recycling and other forms of recovery in order to reduce the quantity of such waste to be eliminated, whilst also improving the environmental performance of economic operators involved in its management. In addition, in order to contribute to the recovery and elimination of equipment waste and the protection of human health, the EU is also taking measures to restrict the use of hazardous substances in this type of equipment.

The Directive on waste electrical and electronic equipment applies to the following categories of electrical and electronic equipment:

- large and small household appliances;
- IT and telecommunications equipment;
- consumer equipment;
- lighting equipment;
- electrical and electronic tools (with the exception of large-scale stationary industrial tools);
- toys, leisure and sports equipment;
- medical devices (with the exception of implanted and infected products);
- monitoring and control instruments;
- automatic dispensers.

Member States are to minimise the disposal of waste electrical and electronic equipment (WEEE) as unsorted municipal waste and are to set up separate collection systems for WEEE. In the case of electrical and electronic waste, Member States are to ensure that:

- final holders and distributors can return such waste free of charge;

[14] **Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) -** *Official Journal L 037 , 13/02/2003 P. 0024 – 0039;* **Directive 2003/108/EC of the European Parliament and of the Council of 8 December 2003 amending Directive 2002/96/EC on waste electrical and electronic equipment (WEEE),** *Official Journal L 345 , 31/12/2003 P. 0106 - 0107*

- distributors of new products ensure that waste of the same type of equipment can be returned to them free of charge on a one-to-one basis;
- producers are allowed to set up and operate individual or collective take-back systems;
- the return of contaminated waste presenting a risk to the health and safety of personnel may be refused.

Producers must make provision for the collection of waste that is not from private households. Member States must ensure that all waste electrical and electronic equipment is transported to authorised treatment facilities.

Producers of electrical and electronic equipment must apply the best available treatment, recovery and recycling techniques. Such treatment is to include the removal of fluids and selective treatment in accordance with Annex II to the Directive. Waste treatment and storage must be in conformity with Annex III to the Directive. Establishments responsible for treatment operations must obtain a permit from the competent authorities. They are encouraged to participate in the Community eco-management and audit scheme (EMAS).

Producers must set up systems for the recovery of waste electrical and electronic equipment collected separately. The rate of recovery by an average weight per appliance must be at least 80% in the case of large domestic appliances and automatic dispensers, 70% in the case of small domestic appliances, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment and monitoring and control instruments, and 75% in the case of IT and telecommunications equipment and consumer equipment.

The rate of component, material and substance reuse and recycling by an average weight per appliance must be at least 80% in the case of discharge lamps, 75% in the case of large domestic appliances and automatic dispensers, 50% in the case of small domestic appliances, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment and monitoring and control equipment, and 65% in the case of IT and telecommunications equipment and consumer equipment.

Producers must state the weight of the electrical and electronic waste entering and leaving treatment and recovery or recycling facilities. By 31 December 2008, the European Parliament and the Council are to set new targets for recovery, recycling and reuse.

Producers must provide for the financing of the collection, treatment, recovery and environmentally sound disposal of waste electrical and electronic equipment. Users of electrical and electronic equipment in private households must have access to the necessary information on the requirement not to mix this type of waste with unsorted municipal waste and to ensure separate collection, collection and take-back systems, their role in the recovery of waste, the effects of such waste on the environment and health, and the meaning of the symbol which must appear on the packaging of such equipment (a crossed-out wheeled bin). For each new type of electrical or electronic equipment, producers must provide, within one year after it is placed on the market, information on its reuse and treatment. Such information is to identify the components and materials present in the equipment and the location of dangerous substances and preparations. Such information must be communicated to reuse centres and treatment and recycling facilities.

1.13 The End-of-life Vehicles (ELVs) Directive[15]

The Directive defines an end-of-life vehicle as any type of vehicle which constitutes waste. Waste prevention is the priority objective of the Directive. To this end, it stipulates that vehicle manufacturers and material and equipment manufacturers must:

- endeavour to reduce the use of hazardous substances when designing vehicles;
- design and produce vehicles which facilitate the dismantling, re-use, recovery and recycling of end-of-life vehicles;
- increase the use of recycled materials in vehicle manufacture;
- ensure that components of vehicles placed on the market after 1 July 2003 do not contain mercury, hexavalent chromium, cadmium or lead, except in the applications listed in Annex II.

The Directive also introduces provisions on the collection of all end-of-life vehicles (Article 5). Member States must set up collection systems for end-of-life vehicles and for used parts. They must also ensure that all vehicles are transferred to authorised treatment facilities, and set up a system of deregistration upon presentation of a certificate of destruction. Such certificates are to be issued when the vehicle is transferred, free of charge, to a treatment facility.

The last holder of an end-of-life vehicle may dispose of it free of charge ("free take-back" principle). Producers must meet all, or a significant proportion of, the cost of this measure.

The storage and treatment of end-of-life vehicles is also subject to strict control, in accordance with the requirements of the Waste Framework Directive. Establishments or undertakings carrying out treatment operations must strip end-of-life vehicles before treatment and recover all environmentally hazardous components. Priority must be given to the re-use and recycling of vehicle components (batteries, tyres and oil).

At present, 75% of end-of-life vehicles are recycled (metal content). The aim of this Directive is to increase the rate of re-use and recovery to 95% by 2015, and to increase the rate of re-use and recycling over the same period to at least 80% and 85% respectively in terms of average weight per vehicle/year. Less stringent objectives may be set for vehicles produced before 1980.

1.14 The Directive on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment[16]

This Directive covers the same scope as the WEEE Directive (except for medical devices and monitoring and control instruments). It also applies to electric light bulbs and luminaires in households.

From 1 July 2006, lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) in electrical and electronic equipment must be replaced by other substances. However, as it is not always possible to completely abandon these substances, the Commission provides for a tolerance level of 0.1% for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs), and a tolerance level of

[15] **Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles**, *Official Journal, L 269, 21.10.2000.*

[16] **Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment,** *Official Journal, L 37, 13.2.2003, p. 19–23***.**

0.01% for cadmium. In addition, certain uses specified in the Annex to the Directive are tolerated.

1.15 The Directive on the Energy Performance of Buildings[17]

The Directive on the Energy Performance of Buildings requires new buildings and existing buildings of over 1,000m2 that are undergoing major renovation work to meet minimum energy efficiency requirements that will be set by each Member State following a common methodology.

The four key points of the Directive on the Energy Performance of Buildings are:

- a common methodology for calculating the integrated energy performance of buildings;
- minimum standards on the energy performance of new buildings and existing buildings that are subject to major renovation;
- systems for the energy certification of new and existing buildings and, for public buildings, prominent display of this certification and other relevant information. Certificates must be less than five years old;
- regular inspection of boilers and central air-conditioning systems in buildings and in addition an assessment of heating installations in which the boilers are more than 15 years old.

The common calculation methodology should include all the aspects which determine energy efficiency and not just the quality of the building's insulation. This integrated approach should take account of aspects such as heating and cooling installations, lighting installations, the position and orientation of the building, heat recovery, etc. The minimum standards for buildings are calculated on the basis of the above methodology. The Member States are responsible for setting the minimum standards.

The Directive concerns the residential sector and the tertiary sector (offices, public buildings, etc.). The scope of the provisions on certification does not, however, include some buildings, such as historic buildings, industrial sites, etc. It covers all aspects of energy efficiency in buildings in an attempt to establish a truly integrated approach.

The Directive does not lay down measures on moveable equipment such as household appliances. Measures on labelling and mandatory minimum efficiency requirements have already been implemented or are envisaged in the Action Plan for Energy Efficiency.

Energy performance certificates should be made available when buildings are constructed, sold or rented out. The Directive specifically mentions rented buildings with the aim of ensuring that the owner, who does not normally pay the charges for energy expenditure, should take the necessary action. Furthermore, the Directive states that occupants of buildings should be enabled to regulate their own consumption of heat and hot water, in so far as such measures are cost effective.

The Directive forms part of the Community initiatives on climate change (commitments under the Kyoto Protocol) and security of supply (the Green Paper on security of supply). Firstly, the Community is increasingly dependent on external energy sources and, secondly, greenhouse gas emissions are on the increase. The Community can have little influence on energy supply but can influence energy demand. One possible

[17] **DIRECTIVE 2002/91/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2002 on the energy performance of buildings,** *Official Journal, L 1/65, 4.1.2003.*

solution to both the above problems is to reduce energy consumption by improving energy efficiency.

This Directive is a follow-up to the measures on **boilers** (92/42/EEC), **construction products** (89/106/EEC) and SAVE programme provisions on buildings. Though there is already a directive on the energy certification of buildings (Directive 93/76/EEC repealed by Directive 2006/23/32/EC), it was adopted in a different political context before the Kyoto agreement and the uncertainties with the security of energy supply in the Union.

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All the above mentioned EU directives are legally binding, but they are also sufficiently flexible for Member States to implement them through their own legal and administrative systems. It should be noted that the EU directives summarised in this section by no means exhaust the list of relevant EU legislation regarding urban pollution. They do, however, represent some key regulatory acts which significantly influence the management of urban pollution. In this respect it is worth mentioning that European legislation has long been an important factor in environmental policies concerning urban pollution, but its influence on urban policy has, however, been weaker, because spatial planning and housing are generally handled at or below Member State level. Some exceptions to this include the EU Directives on Environmental Impact Assessment and Strategic Environmental Assessment. More recently, however, The EC developed **the European Thematic Strategy on the Urban Environment**, which contains voluntary measures to promote best practice on managing larger urban areas.

2. The EU Thematic Strategy on the Urban Environment

Adopted by the Commission on 11 January 2006, the goal of the Thematic Strategy on the Urban Environment is to facilitate better implementation of EU environmental policies and legislation by encouraging *an integrated approach* at the local level.

The Thematic Strategy on the Urban Environment[18] is based on extensive research and on the results of discussions with a wide range of stakeholders. The consultation process began in 2002 and involved Member States, regional and local authorities, NGOs, academic institutions, city networks and the general public. An interim communication, Towards a Thematic Strategy on the Urban Environment, was issued in February 2004. To further develop central ideas contained in this communication, expert working groups were established to consider technical issues for environmental management plans, sustainable urban transport plans, and the future priorities for research and training.

The lack of an integrated approach to managing the urban environment is the key issue addressed by the Thematic Strategy, and measures proposed, including technical guidance, seek to support local authorities in their efforts to adopt a more integrated approach to urban management. Integrated approaches include long-term strategic visions and link different policies at different administrative levels to ensure coherency.

[18] **Communication from the Commission of 11 January 2006 on a thematic strategy on the urban environment**,*[COM(2005) 718, final* - Not published in the Official Journal. Available on: http://ec.europa.eu/environment/urban/pdf/com_2005_0718_en.pdf

Given the diversity of urban areas, the existing national, regional and local obligations, and the difficulties involved in establishing common standards for urban environment issues as a whole, the Strategy does not dictate the solutions that cities should adopt, or propose the mandatory implementation of environmental management plans in urban areas. The Thematic Strategy does, however, strongly encourage national and regional authorities to support municipalities in achieving a more integrated management at the local level.

The main measures proposed in the strategy are:

- Publication of guidelines for the integration of environmental issues into urban policies. The guidelines are based on best practice and expert advice. Integrated environmental management will make it possible to improve planning and avoid conflicts between the different measures;
- Publication of guidelines for sustainable urban transport plans. The guidelines will be based on best practice and expert advice. Effective transport planning should embrace both passengers and goods and promote safe and efficient use of less polluting, high-quality modes;
- Support for the exchange of best practices, e.g. through the networking of information, the development of demonstration projects funded by LIFE+, and the establishment of a network of national focal points;
- Broadening the range of information for local authorities via the Internet and of training on urban management issues for people working in regional and local government;
- Drawing on the Community support programmes in the context of cohesion policy or research.

The cross-cutting nature of urban management issues means that any strategy for improving the urban environment needs to be coordinated with the other environmental policies concerned, including climate change policy (sustainable construction to improve energy efficiency, urban transport plans, etc.); protection of nature and biodiversity (reducing urban sprawl, converting industrial wastelands, etc.); quality of life and health (reducing air pollution and noise, etc.); sustainable use of natural resources and prevention and recycling of waste.

Following European Commission's commitment within the Thematic Strategy on the Urban Environment a **Guidance document on Integrated Environmental Management Plans (IEMP)**[19] has been elaborated by the Environment DG. This document is not legally-binding but represents a synthesis of the information and experience available to the Commission.

The Guidance is intended as a summary of the current state of the art with respect to best practice on integrated environmental management. The Guidance is not intended to be a rigid set of rules to be followed in all circumstances. The mere fact that there is so much diversity between cities across the EU means that no one solution is applicable nor appropriate for all situations. The Guidance explains the basic building blocks and procedural steps that are involved in establishing a system of integrated environmental management. As such, it should be seen more as a description of the process and a reminder of the key elements that could be considered when developing Integrated Environmental Management Plans and Programs at local levels.

[19] **Integrated Environmental Management: Guidance in relation to the Thematic Strategy on the Urban Environment,** Luxembourg: Office for Official Publications of the European Communities, 2007

3. Integrated Management of Urban Pollution

Managing the urban environment requires a holistic approach to tackle issues that are characterised by their complexity, their mutual reinforcement, the range of stakeholders they involve, and their close links with the economic and social aspects of sustainable urban development.

Most of the urban areas in Europe suffer from similar environmental problems such as air pollution and noise caused by traffic or industry, improper land use, areas with contaminated soil, polluted water resources, lack of open space, parks and recreation areas and so on. As these are specific urban problems people expect them to be tackled by the local urban authorities. To meet the expectations of their citizens (and to show quick and effective political action and effective implementation of legal obligations) many local authorities have tried in the past, to tackle these problems on their own.

But the problems are often multilayered and in many cases local authorities do not have the power to handle all aspects. Adequate solutions can only be worked out if all aspects are carefully taken in consideration, and if all legal and administrative authorities concerned and all relevant stakeholders (including the public and the NGO's) are playing together and are involved in the solution finding processes.

It is a common experience of all urban authorities that the setting up of integrated plans and solutions needs much time and often is a hard and rather frustrating work to do. However, integrated approaches to urban environment management are recognised as necessary to improve legislative compliance; indeed, such approaches are increasingly explicitly required by the legislation itself, for example in the fields of air quality, waste management and environmental noise. Furthermore, environmental legislation places obligations for certain actions to be taken in urban zones and agglomerations with large populations or where certain environmental conditions exist.

In this context, European policies and legislation play a significant part. More recent European policy initiatives define commitments and contain specific statements and points that could be directly related to the issue “local integrated policies”.

For instance, The EU Strategy for Sustainable Development[20] adopted suggests the measures for improving “*the transport and land use management*” which include encouraging “*local initiatives to tackle the problems faced by urban areas”* and producing *“recommendations for integrated development strategies for urban and environmentally-sensitive areas."*

The Common Position adopted by the European Council on the Sixth Community Environment Action Programme 2002-2011 (7 June 2001), states that *“the Programme shall ensure that the Community's environmental policy-making is undertaken in an integrated way and open to all available options and instruments, taking into account regional and local differences*”.

[20] **Commission Communication of 15 May 2001 'A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development' (***Commission proposal to the Gothenburg European Council) [COM(2001) 264 final - not published in the Official Journal***]; Commission Communication of 13 December 2005 on the review of the Sustainable Development Strategy - A platform for action** *(COM(2005) 658 final - not published in the Official Journal***).**

More integrated approaches are also growing in some other policy papers (e.g. the White Paper on Transport), and in some EU legislation (e.g. the Water Framework Directive, the IPPC Directive, the SEA Directive, the revision of the Public Procurement Directive, etc.). Finally, the Thematic Strategy on the Urban Environment explicitly endorses *an integrated approach* at the local level as the best way of implementing the environmental policies and legislation.

In this respect, the EU legislators have identified the need for integration *within* environmental legislation and policies, and *between* environmental legislation and other sectoral policies, relevant to implementation. As to the latter, positive signals and steps have been taken at European level with the aim to integrate environmental policy into other Community policies such as energy, transport, agricultural, internal market etc.

This call for integration of different policies is particularly significant. All urban elements (such as buildings, infrastructure, green space and water bodies) and urban functions (such as housing, employment, mobility, access to goods and services, cultural activities and social interaction) have considerable impacts on the environment. While different administrative levels and departments address these elements through different policies, they often act in isolation from one another. This can lead to fragmented policies and the uncoordinated implementation of actions. Similarly, environmental management tools and methods (such as environmental policy statements, participatory planning processes, performance indicators or environmental impact assessments) are often designed for specific tasks. These technical and political tools form a patchwork of instruments that often results in gaps, overlaps and a lack of harmonised information, decision-making and practices.

That is the reason why the Thematic Strategy on the Urban Environment calls for the better management of urban areas through integrated environmental management at the local level. This is characterised by a strategic management of the environmental impacts of all activities within the entire functional area of a political authority and/or a built-up city. The approach should ensure cross-departmental and sector cooperation, an engagement with all relevant stakeholders in the city, as well as vertical integration by addressing local, regional and national spheres of government.

This integrated approach should define the organisational structures, procedures, responsibilities and resources for developing policy, establishing long-term visions, setting targets, defining actions and measures, monitoring implementation, evaluating results and communicating outcomes. It should also include a system for ensuring delivery of results, such as the International Organisation for Standardisation's ISO 14001, and the EC's related Eco-Management and Audit Scheme (EMAS). Though initially designed for private organisations, both systems can also be applied to public administration, and over the past 10 years, numerous local government services and sites have achieved certification by one of these standards.

Systems such as EMAS define the organisational structures, procedures, responsibilities and resources for developing policy, establishing long-term visions, setting targets, defining activities, monitoring implementation, evaluating results, communicating outcomes and ensuring the system's own continuity.

Integrated management does not only involve overcoming the traditional barriers between different administrative units, and between a local authority's operational and political tiers. It also requires surpassing administrative boundaries to increase horizontal cooperation with neighbouring municipalities, as well as improving vertical linkages among the local, regional, national and European levels of public administration. This task can prove very difficult, for instance if coordination also

demands the amalgamation of budgets traditionally controlled at different levels of government or by different departments within individual authorities.

In this respect, the *26th report of the Royal Commission on Environmental Pollution on the urban environment*[21], proposes an environmental contract between central and local government, which would be a high level agreement to promote environmental action at the local level. On the ground, this would mean a local authority developing a strategy containing a small number of mandatory elements, but would also encourage the authority to design a programme to tackle a variety of environmental activities across sectors with the aim of stimulating improvement and innovation. This concept could help bridge gaps between national governments and municipal authorities and provide an opportunity for private and voluntary sectors and citizens to contribute to the design and implementation of the contract.

To sum up, the EU polices and legislation, in particular the most recent Thematic Strategy on the Urban Environment, promote an integrated approach to urban pollution. This integrated approach:

- aims at finding and implementing coherent and comprehensive solutions able to tackle different, interrelated (sometimes apparently separated) problems/sectors in the urban environment, connected to environmental quality and land use plans (e.g. housing, infrastructure, water management, economic activities);
- promotes measures which are "tailored" precisely (adapted) to different area-specific problems;
- promotes, wherever possible, "win-win solutions" addressing different points of view/interests and actively involving different interests;
- promotes vertical and horizontal cooperation among different administrative sectors and among various actors (civil servants, political elected representatives, the general public, NGOs etc.), as well as among different institutional levels and across different administrative boundaries.

4. Barriers to Integrated Management of Urban Pollution

As indicated in the previous section, creating high quality urban areas requires close coordination between different policies and initiatives, and better cooperation between different levels of administration. The challenge is to move forward from a sector-based approach to an integrated management system which would integrate various political processes into the larger scheme of urban governance.

For a local authority, introducing an integrated management system may seem like an overwhelming task. Unsurprisingly, there are many obstacles to be overcome when establishing an integrated management system. Perhaps the first and foremost issue is that of *political legitimacy or support for the integrated management process*. Successful schemes appear to have benefited from high level political support and resources to implement such integrated approach.

In addition to political legitimacy and/or support, some of the important obstacles to the implementation of integrated environmental management systems appear to be as follows.

[21] **Royal Commission on Environmental Pollution: *The Urban Environment*,** Royal Commission on Environmental Pollution, Twenty Six Report, London, 2007.

4.1 Sectoral organisation of administrative bodies and policies

Local environmental plans (energy management plans, waste management plans, air protection plans, water plans etc.), land use plans and socio-economic plans reflect a sectoral organisation of administrative bodies and policies and as such are often fragmented and uncoordinated. For instance, if the priority goal for a local authority is "*citizen health and climate protection*" there will be typically a lack of co-ordination between the Land use, Mobility and Air quality administrative sectors. Another example is lack of integration among the Environment, Public works, and Urban planning sectors in achieving the goal of "*nature, water and land use protection*"). Uncoordinated and fragmented approaches at the local level are in some cases the result of a lack of strategic plans and support from the regional/national levels in co-ordinating the goals.

4.2 Lack of awareness/information/knowledge of administrative bodies

Data and research enabling interpretation and representation of cities as integrated systems are not always available or are not accessible for end-users (elected representatives, civil servants, NGOs, citizens). Local ability to produce strategic, integrated, negotiated, action oriented plans and programmes is weak (the "*Not In My Term of Office*" approach is dominant). Very often, training of the public administration is carried out on a sector-basis, and public officers are not used to integrated, interdisciplinary approaches and new tools.

4.3 Lack of an integrated approach in the process of decision making

Integrated management of urban pollution requires that every actor in the urban scene plays its role, but sometimes some of the actors are weak (e.g. Local Authority, environmental NGOs) and so the possibility to implement policies is sharply reduced. Similarly, lack of consultation and transparency and inadequate involvement of stakeholders may induce the "*Not-In-My- Back-Yard*" reaction.

4.4 Sectoralised legislation and inappropriate use of funds

Not all EU legislation and funding policies are based on a fully integrated approach. In particular, some directives of the "older generation" (e.g. on urban waste water and on waste) have a sectoral approach that hardly allows an integrated implementation. In some cases they are the "sum" of different pieces of legislation; in some others rigid and stringent requirements leave little room for the tools of integrated approaches (incentives, multipurpose and "win-win" solutions, voluntary agreements, etc.). On the other hand, it is evident that weakly integrated implementation of the European legislation is sometimes the result of weaknesses at national level (delay in transposition, transfer in the national laws not coherent with the EU approach, lack of measures of support, etc.).

5. Conclusions

It appears that the EU regulatory framework on urban pollution is being shaped on the right premise, that is, on the belief that sustainable urban management requires moving forward from a sector-based approach, to an integrated *environmental* management

and, finally, to *sustainability* management that should address all aspects of sustainable development and integrate political processes into a comprehensive system of urban governance.

Due to the complexity of the issue, there is no unique and simple solution able to overcome obstacles and promote an integrated approach to urban management. Whilst the legislation plays an important role, solutions at the urban level should also comprise other positively combined policy tools. Environmental legislation is usually complemented by a range of other measures and integrated implementation needs to be promoted mainly through positively combining different typologies of policy tools, such as funding or incentives, infringement procedures, cooperative actions, exchange of information/networks, training actions, demonstrative projects, etc. In many cases these instruments aid legislative compliance. Nevertheless, it is clear that the legislation itself could play a positive role, evolving towards more integrated approaches and directly supporting this policy development effort.