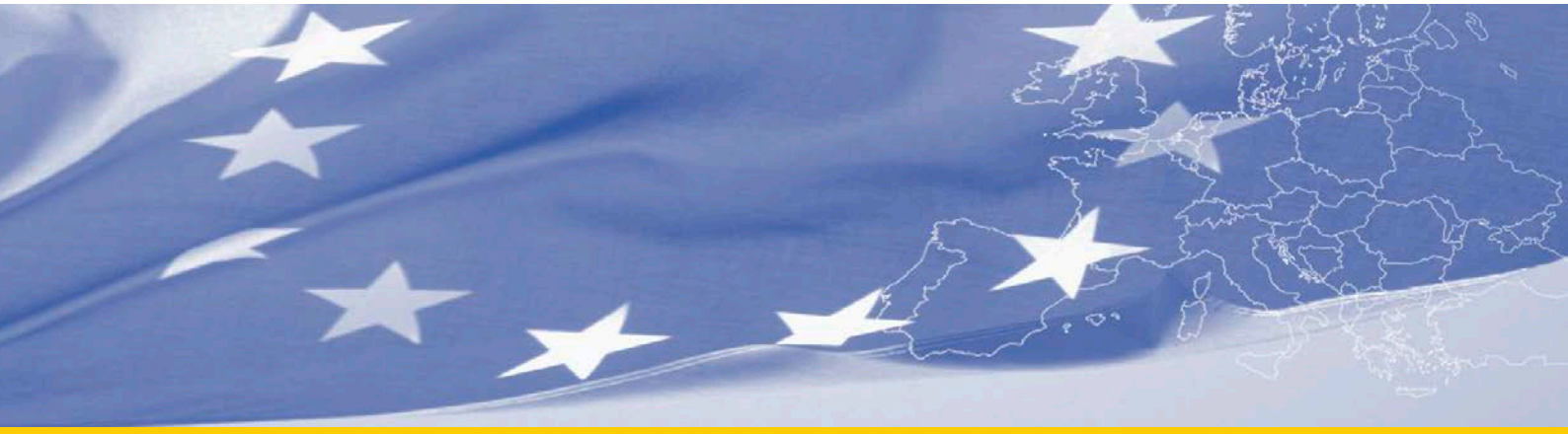

The European Union's IPA 2010 programme for Albania

Technical Assistance for Strengthening the Capacity of the Ministry of Environment, Forests and Water Administration in Albania for Law Drafting and Enforcement of National Environmental Legislation

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Strategy on Ambient Air Quality in Albania

Draft Final

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Contents

Glossary and Abbreviations

AAQ	Ambient Air Quality
AQO	Air quality objectives
AQS	Air quality standards
CEMSA	Consolidation of the Environmental Monitoring System in Albania
DQOs	Data Quality Objectives
EC	European Commission
ECAT	Environmental Centre for Administration and Technology
EEA	European Environmental Agency
EEC	European Economic Community
EU	European Union
EUROAIRNET	EuroAirnet, the European Air Quality monitoring network (EEA)
GoA	Government of Albania
H_2S	Hydrogen Sulphite
IPA	European Union pre-accession instrument
IPH	Institute of Public Health
IPPC	Integrated Pollution Prevention and Control
LIFE	European Union's funding instrument for the environment
LGU	Local Government Unit
MoEFWA	Ministry of Environment, Forestry and Water Administrations
MS	Member States
NEA	National Environment Agency
NEI	National Environment Inspectorate
NOx	Nitrogen oxides (NOx) The gases nitric oxide (NO) and nitrogen dioxide (NO_2). NO is predominantly formed in high temperature combustion processes and can subsequently be converted to NO_2in the atmosphere.
O_3	Ground-level ozone (O_3) Ozone formed in the lowermost part of the atmosphere from the reaction of nitrogen oxides and volatile organic compounds in the presence of sunlight. Ozone is a strongly oxidising gas.
Pb	Lead (Latin name: Plumbum)
PM	Particulate matter
PM10, PM2.5	Particulate matter in ambient air with a diameter less than 10 or 2.5 millionths of a metre respectively.
QA	Quality Assurance
QC	Quality Control
SO_2	Sulphur dioxide. Gas formed from the combustion of fuels which contain sulphur.
StEMA	Strengthening of the Environmental Monitoring System in Albania
WHO	World Health Organisation

Introduction

This Air Quality Strategy sets out air quality objectives and policy options to further improve air quality in Albania from today into the long term. As well as direct benefits to public health, these options are intended to provide important benefits to quality of life and help to protect our environment.
This strategy provides as well steps for the alignment of the current legal framework with European regulators and its implementation.

This Strategy has been prepared by within the framework of the EU IPA 2010 project: "*Technical Assistance for Strengthening the Capacity of the Ministry of Environment, Forests and Water Administration in Albania for Law Drafting and Enforcement of National Environmental Legislation*" (SELEA).

This document provides an overview of the current situation and outlines the Albanian Government air quality policy. It sets out a way forward for improving the air quality in the Country, details objectives to be achieved, and proposes measures to be considered further to help reach them. The strategy is based on a thorough and detailed analysis of estimating air pollution data, and quantification and valuation of benefits and estimated costs for improving of air quality.
It should however be noted that current monitoring practices do not foresee even the most basic quality control for AAQ monitoring data and therefore available data cannot be considered reliable. As a direct consequence, there may be a need to propose new measures to tackle particular pollutants or sources hitherto not or only partially addressed.

This document is a draft. The document will be finalised after formal consultation with stakeholders will take place. The current version of the document includes the preliminary comments from the Ministry of Environment, Forests and Water Administration (MoEFWA).

1 Aims of the ambient air quality strategy

The aim of an Ambient Air Quality (AAQ) strategy is to support the achievement of air quality objectives and to raise air quality as an issue for consideration within a wide range of local government units throughout Albania. This is important because working towards achieving air quality objectives will help reduce the risk of the most serious health effects related to pollution.
By establishing a strategy framework for the inclusion of air quality considerations within local government policies and procedures, local government units are well placed to maintain good air quality and secure improvements in air quality.

The key advantages of developing and implementing an AAQ strategy at national level can be summarised as follows:

- It provides greater consistency across a range of policy areas for the achievement of improved local air quality, including local planning, transport planning, health, industry, housing and environmental protection, and ensures air quality is addressed in a multi-disciplinary way within the different local government units (LGUs) across Albania;
- It provides the framework for a consistent approach to addressing local air quality issues; ;
- It is a tool for developing a coherent air quality policy across Albania for local planning processes;
- It provides a link to wider initiatives across different sectors (for example Transport Plans, Climate Change programmes, and energy efficiency programmes), and
- It provides the platform for local air quality considerations for future Local Development Plans.

Other advantages of an AAQ strategy are that it:

- Bring the air quality issues within local authorities, and ensures it remains on political agendas;
- Highlights the link between air quality and the risks to human health as well as to the local environment and biodiversity;
- Raises the profile of air quality amongst the local communities across Albania;
- Encourages greater co-operation and collaboration between local and national authorities and among different Ministries at national level;
- Complements other national and local strategies and policies produced in Albania;

1.1 What problem does the AAQ strategy set out to tackle?

Air pollution is a significant public health concern.
Recent research has shown that some pollutants, in particular, pollution by atmospheric particulate matter (PM) is responsible for increased mortality and morbidity, primarily via cardiovascular and respiratory diseases.
In a recent report the amount of premature deaths in Europe has been assessed by the use of modelling. (J. Brandt et al., 2011: Assessment of Health-Cost Externalities of Air Pollution at the

National Level using the EVA Model System, CEEH Scientific Report No 3, Centre for Energy, Environment and Health Report series, March 2011, pp. 98).
http://www.ceeh.dk/CEEH_Reports/Report_3/CEEH_Scientific_Report3.pdf.

The results by the model show that the total number of premature deaths in the whole model domain is estimated 680,000 per year. The graphical presentation is shown in Fig. 1.

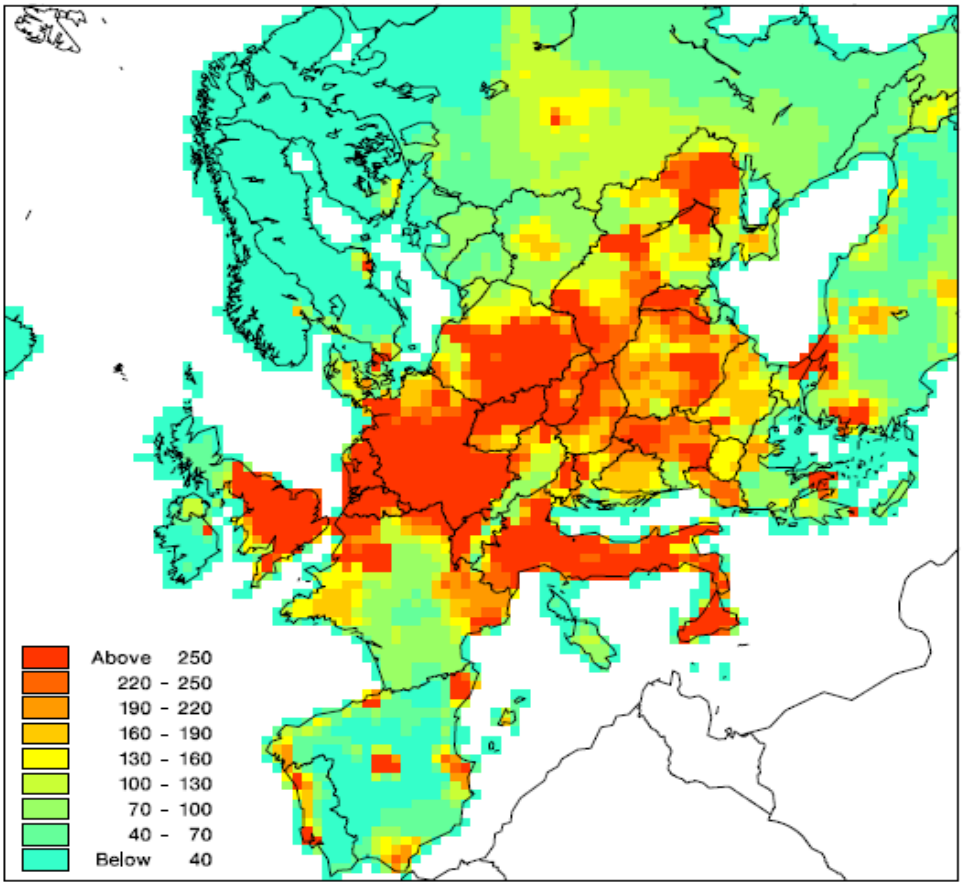


Fig.1. Number of premature deaths per grid cell in Europe (DEHM model domain 2) calculated with the integrated EVA model system for the year 2000 for the total air pollution levels (scenario All/all). The area of the grid cells are 50 km x 50 km = 2500 km² so the colours refer to the number of premature deaths per 2500 km². High numbers of premature deaths as shown in the map, require both high levels of annual particle concentrations and high population density

There are many sources of air pollution in Albania; the main contributing sectors are transport, industry, agriculture, domestic use of products, and heating. All these sectors emit a variety of air pollutants, such as sulphur dioxide, nitrogen oxides, ammonia, volatile organic substances and particulate matter. The relationship between the economic sectors, emissions, and the negative effects on air quality is outlined in the Table below.

Table 1: Economic sectors and air quality impacts

Human Activity	AAQ impact
Urban development	Construction activities are considerably contributors to the high concentrations of particulates in the air. Construction activities contribute for sure but in the construction areas it might as well be the traffic, unpaved streets and areas and re-suspension of particulates that contributes at most. Since the concentration of particulates is high all over Albania, it should be taken into account how much the "natural contribution" is.
Industry	Industrial areas contribute considerably to the air pollution. AAQ measurements have indicated serious problems in Elbasan caused by the metallurgic industry, the cement factory and open deposits for particulates. In the Fieri area indicative measurements have registered severe problems caused by the present and previous petrol industry. In the vicinity of larger industries there might be problems with AAQ but monitoring around a single source is not an efficient tool for abatement strategies. Proper emission monitoring should be introduced to control emissions from single sources. Industrial dump sites and deposits from previous industrial activities might also contribute to emission and re-suspension of particulates. Deposits in Elbasan are considered to contribute to particulate pollution. Many "oil pools" in the Fieri area contribute to considerable emission of hydrocarbons.
Transportation	Road transport is a key source of many air pollutants, particularly in urban areas. The density of the traffic, the average age of the car park and the lack of exhaust emission control all cause elevated emissions that reduce AAQ in general. The problems have been identified in several monitoring programmes during many years. High concentrations of particulates and NO_2 are registered in the monitoring stations close to streets with dense traffic in Tirana. Until 2013 there has not been any automatic monitoring in "street canyons" in dense populated areas with heavy traffic. But we estimate that that the air pollution caused by traffic is significant in the part of the Albanian with dense traffic. Congestions in city centres because of inefficient traffic management increase the emission of pollutants. Traffic management can make a significant contribution to help reduce emissions of pollutants from road vehicles, for example, schemes which restrict or exclude less clean vehicles from certain roads or areas, or reduce road congestion by solving parking problems as the capacity of the streets and roads can be increased considerably if illegal parked cars and double parallel parking was reduced by enforcing the laws on traffic and by increasing the number of available parking lots.
Agriculture	Agricultural pollution negatively affects the quality of air. Chemicals and by-products from the agricultural industry are quite harmful to the natural environment and can pose a problem for humans as well. Pesticides used to kill insects that feed on crops can cause much damage to the environment if used inappropriately. The methane released from cow flatulence is also a type of greenhouse gas making it partly responsible for global warming. Emissions from the use of fossil fuels by tractors and other farm equipment used in agriculture also contribute to air pollution. Fires, which are not uncommon on farms, can be very detrimental to the environment if fertilizer or waste products are being burnt.
Waste Management	There are few sanitary landfills of household waste in Albania. Waste is widely stored in dumpsites and the amount is reduced by uncontrolled fires that cause some problems in the vicinity of the deposits. The waste types that can be disposed of by burning without an environmental permit are restricted to vegetation, untreated wood and untreated timber.

Table below summarises the main sources of each pollutant. It is worth noting that the largest emission sources are not necessarily the greatest contributors to poor air quality – exposure depends on several other factors as well, such as proximity of source to receptor and the efficiency of dispersion in the atmosphere.

Table 2: Pollution sources in Albania

Pollutant	Main Source in Albania
Particulate Matter (PM-PM10 and PM2.5)	Particulate Matter is categorised on the basis of the size of the particles (for example PM2.5 is particles with a diameter of less than 2.5μm). PM is made up of a wide range of materials and arises from a variety of sources. Concentrations of PM comprise primary particles emitted directly into the atmosphere from combustion sources and secondary particles formed by chemical reactions in the air. PM derives from both human-made and natural sources (such as sea spray and Saharan dust). In Albania the biggest human-made sources is transport. Road transport gives rise to primary particles from engine emissions, tyre and brake wear and other non-exhaust emissions. Other primary sources include quarrying, and construction and non-road sources.
Oxides of Nitrogen (NO_x)	All combustion processes in air produce oxides of nitrogen (NO_x). Nitrogen dioxide (NO_2) and nitric oxide (NO) are both oxides of nitrogen and together are referred to as NO_x. Road transport is the main source, followed by industry sector.
Ozone (O_3)	Ozone is not emitted directly from any human-made source. It arises from chemical reactions between various air pollutants, primarily NO_x and Volatile Organic Compounds (VOCs), initiated by strong sunlight.
Sulphur dioxide (SO_2)	Originated by combustion of fuels containing sulphur, such as coal and heavy oils by refineries.
Benzene	Has a variety of sources, but primarily arises from domestic and industrial combustion and road transport.
Carbon monoxide (CO)	Formed from incomplete combustion of carbon-containing fuels. The largest source is road transport, with residential and industrial combustion making significant contributions
Lead (Pb)	Emitted from the combustion of coal and also the iron and steel combustion and nonferrous metals.

1.2 Air quality standards and objectives

The Albanian Government's primary objective is to ensure that all citizens should have access to ambient air without significant risk to their health.
This strategy is based on standards representing levels at which no significant health effects would be expected in the population as a whole and on the standards and principles of better regulation. The objectives in this strategy aim to move air quality as close to these standards as possible.

There are a wide range of terms featuring this strategy:

- **Air quality standards (AQS)** are the concentrations of pollutants in the atmosphere which can be taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health including the effects on sensitive populations (such as children, the elderly, and individuals suffering from respiratory diseases) or on ecosystems.

- **Air quality objectives (AQO)** are limits on the acceptable presence of contaminants in the atmosphere expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specific period of time. AQS, as the benchmarks for setting objectives, are the maximum amount of pollutants that can be present in atmosphere without harm to the public's health, or, in the appropriate context, on the environment. In the area of the effects on human health this is the approach adopted by the World Health Organisation (WHO) in the formulation of their air quality

guidelines published in 1987 and their subsequent revision in 1994/95 (published in 2000 and 2005). A similar approach is utilised for the development of policies and measures to reduce ecosystem damage.

The long term goal of the Albanian Government, in line with the European policy[1] on air pollution, is to remove all critical levels and loads exceedances.

1.3 Implementation of air quality objectives

The Albanian Government set AAQ strategy objectives to reflect the importance of public health and the environment. However, these objectives do not have direct legal value, but their existence and attainment needs to be borne in mind when designing and executing all foreseen measures. Local authorities are also required to work towards the achievement of strategy's objectives.

The air quality objectives in the AAQ strategy are a statement of policy intentions or policy targets. As such, there is no legal requirement to meet these objectives except in as far as these reflect any equivalent legally binding limit values[2] in the legislation.

The aim of the Government is a continuous decreased concentration of pollutants in ambient air towards the objectives over the period of implementation of this strategy, and to maintain thereafter the level of air quality to safeguard the health and well being of population
As AQO apply to the whole territory of Albania, some areas of the country will find it easier than others to achieve these objectives. In these cases LGUs should try, if it is practicable and efficient, either to reach objectives before the target date, or to achieve air quality levels exceeding the objectives.

The tables below sets out for each pollutant, **National Air Quality Objectives** and European Directive limit or target values in accordance with the two EU Directives 2008/50/EC, on Ambient Air Quality and Directive 2004/107/EC, relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons.

[1] Thematic Strategy on Air Pollution under the Sixth Environmental Action Programme was adopted on 21 September 2005 (see http://ec.europa.eu/environment/air/cafe/index.htm). The objectives of the Thematic Strategy are achieving "levels of air quality that do not give rise to significant negative impacts on, and risks to human health and the environment". For the natural environment, this means no exceedance of critical loads and levels.

[2] Limit values are legally binding parameters that must not be exceeded. Limit values are set for individual pollutants and are made up of a concentration value, an averaging time over which it is to be measured, the number of exceedances allowed per year, if any, and a date by which it must be achieved. Some pollutants have more than one limit value covering different endpoints or averaging times.

Limit values[3] based on human health

Pollutant	Concentration	Averaging period	Permitted exceedances each year	Date to be achieved
Fine articles (PM2.5)	25 µg/m^3 from 2015 20 µg/m^3 from 2020	1 year 1 year	n/a	10 years from the adoption of the strategy
PM10	50 µg/m^3	24 hours	35	10 years from the adoption of the strategy
	40 µg/m^3	1 year	n/a	10 years from the adoption of the strategy
Sulphur dioxide (SO2)	350 µg/m^3	1 hour	24	5 years from the adoption of the strategy
	125 µg/m^3	24 hours	3	5 years from the adoption of the strategy
Nitrogen dioxide (NO2)	200 µg/m^3	1 hour	18	10 years from the adoption of the strategy
	40 µg/m^3	1 year	n/a	10 years from the adoption of the strategy
Lead (Pb)	0.5 µg/m^3	1 year	n/a	5 years from the adoption of the strategy
Carbon monoxide (CO)	10 mg/m^3	Maximum daily 8 hour mean	n/a	5 years from the adoption of the strategy
Benzene	5 µg/m^3	1 year	n/a	10 years from the adoption of the strategy

[3] A **limit value** is legally binding from the date it enters into force.

Target values[4]

Pollutant	Concentration	Averaging period	Permitted exceedances each year	Date to be achieved
Ozone	120 µg/m^3	Maximum daily 8 hour mean	25 days per year averaged over 3 years	10 years from the adoption of the strategy
Arsenic (As)	6 ng/m^3	1 year	n/a	10 years from the adoption of the strategy
Cadmium (Cd)	5 ng/m^3	1 year	n/a	10 years from the adoption of the strategy
Nickel (Ni)	20 ng/m^3	1 year	n/a	10 years from the adoption of the strategy
Polycyclic Aromatic Hydrocarbons	1 ng/m^3 (expressed as concentration of Benzo(a)pyrene)	1 year	n/a	10 years from the adoption of the strategy

Critical level for protection of vegetation

Pollutant	Concentration	Averaging period	Permitted exceedances each year	Date to be achieved
Sulphur dioxide (SO_2)	20 µg/m^3	Calendar year and winter (1 October to 31 March)	n/a	10 years from the adoption of the strategy
Nitrogen oxides (NOx)	30 µg/m^3	1 year	n/a	10 years from the adoption of the strategy
Ozone. Target value	AOT40[5] (calculated from 1 h values) 18000 µg/m3 · h averaged over five years	May to July	n/a	10 years from the adoption of the strategy

[4] **A target value** is to be attained as far as possible by the achievement date and so is less strict than a limit value.

[5] **AOT40** (expressed in (µg/m3) · hours) means the sum of the difference between hourly concentrations greater than 80 µg/m^3 (= 40 parts per billion) and 80 µg/m^3 over a given period using only the one-hour values measured between 8.00 and 20.00 Central European Time (CET) each day.

Information and Alert Thresholds

Information threshold means a level beyond which there is a risk to human health from brief exposure for particularly sensitive sections of the population and for which immediate and appropriate information is necessary;

Alert threshold means a level beyond which there is a risk to human health from brief exposure for the population as a whole and at which immediate steps are to be taken by the Member States;
Action plans should be drawn up indicating the measures to be taken in the short term where there is a risk of an exceedance of one or more alert thresholds in order to reduce that risk and to limit its duration.
To be measured over three consecutive hours at locations representative of air quality over at least 100 km^2 or an entire zone or agglomeration, whichever is the smallest.

Pollutant	Concentration	Averaging period	Date to be achieved
Sulphur dioxide (SO2)	500 µg/m^3	1 hour	3 years from the adoption of the strategy
Nitrogen dioxide (NO2)	400 µg/m^3	1 hour	3 years from the adoption of the strategy
Ozone. Information	180 µg/m^3	1 hour	3 years from the adoption of the strategy
Ozone. Alert	240 µg/m^3	1 hour	3 years from the adoption of the strategy

2 Current conditions in the sector and new measures

The need for improvement in the air sector has been called for in different reports of the European Commission including the regular EC Progress Monitoring Reports which are also reporting on environment sector.
Air pollution is one of the main environmental concerns for Albania. In the National Environmental Strategy (MoEFWA, November 2006) air quality problems have been addressed but the problems mentioned have not been reduced to appropriate levels during the period of six years.
It is possible to list the current implementation shortcomings as follows:

1. A certain degree of overlap and fragmentation of responsibilities between the National Environment Agency (NEA) and Institute of Public Health (IPH) in particular for what attain AAQ monitoring exist. Streamlining and consolidation of the existing institutional arrangements is required including setting up and make effectively operational the newly established NEA and inspection units. It is also essential to establish a clear division of responsibilities between different administrative bodies. The inter-institutional coordination has to be strengthened.

2. The current monitoring practice is not in line with the EU requirements[6]. The automatic monitoring stations produce air quality concentration figures but QA/QC of data has never been implemented. Quality Assurance is needed if the data shall be considered plausible and be used to create the information needed for managing air quality. Urgent efforts are needed to develop a consolidated, properly equipped monitoring and information system.

3. Control and reduction of discharges of gases to the atmosphere by motor vehicles is a very difficult task which require that several measures are implemented simultaneously (e.g. exhaust control, reduction of the number cars using streets where the AAQ problems are highest, improved public transport to substitute private cars, etc.). Car's exhaust gases control is not carried out in the appropriate standards, since the capacities at responsible institutions are still low. Emission monitoring and information is a precondition for control.

4. Control and reduction of discharges of polluting substances from industrial plants is not possible when industrial emission monitoring has not been enforced as appropriate. It will be necessary to implement emission monitoring by the National Environment Inspectorate to perform emission measurements in a reliable way.

5. Control and reduction of dust caused by construction is probably not the biggest AAQ challenge in Albania. It is possible to use some abatement strategies without air quality data since it is too expensive and comprehensive to monitor emission from single sources.

[6] An overview of EU legal requirements is provided in Annex I to this document.

6. When the above activities have been implemented it will be possible to prepare plans for air quality management. To be cost-effective the measures have to be selected and designed based on facts and reliable information on emissions and the ambient air quality.

7. The environmental inspection system is only partly aligned with the *acquis*. There is a lack of professional capacity, in particular enough well trained staff and appropriate equipment for proper implementation of the whole environmental inspection cycle. Particular efforts are needed on inspection planning, on effective cooperation between environmental inspectors and other supervisory authorities and on improving the system for reporting and evaluating the inspectorate's work.

8. A more effective system for prosecuting breaches of environmental law is required, including new legislation targeting specific offences, proportionate and dissuasive sanctions, an effective enforcement system and proper prosecution. Overall, implementation and enforcement levels are low due to lack of human and financial resources, and lack of awareness in government, business and society in general, fragmented responsibilities and a weak judicial system[7] .

9. There are no local plans concerning ambient air quality and no activities have been initiated to improve known exceedances of the limit values.

2.1 Air quality standards

The monitoring results indicate non compliance in relation to EU and international quality standards (EQS) in a number of environmental components including air. The available results of monitoring of ambient air quality 2006 – 2010 show that air quality standards for PM10 (Particulate Matter with a diameter less than 10 micron) are not met in most of the urban areas of the country.

In the central part of Tirana NO_2 concentrations are above the EU limit values. According to several reports the concentrations of particulates are 2-5 times higher than allowed levels in major cities like Tirana and Elbasan.

Based on monitoring results it may be concluded that traffic, the oil industry and the metallurgical industry are the main sources for air pollution. The areas influenced by the most severe pollution are Tirana Centre, Elbasan and the Fier area.

An overview of the air quality across the country is provided in Annex II to this document.

[7] Albania – European Commission's Progress and Monitoring Reports http://ec.europa.eu/enlargement/pdf/key_documents/2011/package/al_rapport_2011_en.pdf http://www.rai-see.org/anti-corruption-monitoring/938-european-commissions-progress-and-monitoring-reports-2010.html

3 Vision, strategic priorities and goals

3.1 Vision

The Government and responsible institutions are committed to improve air quality in Albania by working with citizens and business, and achieve health-based air quality standards for a range of pollutants. There is the need to tackle air pollutants in order to meet our obligations and targets for both climate change and air quality. The Government is committed to achieve cleaner air through the full transposition and implementation of legal standards of the European Community in the same and the related sectors, and through strengthening the permitting/compliance procedures by regulating emissions from industrial processes, and progressively tightening emissions and fuel standards for road vehicles and controlling smoke from domestic sources and burning of waste.

3.2 Priorities of government

The Albanian Government's primary objective is to ensure that all citizens have access to ambient air without significant risk to their health.

The priority is to meet the EU legislative requirements, including the EU air quality limit values everywhere in Albania and, at the end, monitoring of the air pollution stemming from different sources, like stationary sources (industrial plants), motor vehicles, etc. and taking action to remove the causes of exceedances of limits allowed for different pollutants , protecting human health and environment.

The following are set as priorities to achieve European ambient air quality standards:

- Continue to provide clear policy framework to include, where appropriate, legislation and/or non regulatory measures such as financial incentives;
- Ensure better planning, better management and smarter ways of using technological progress from the transport and industry sectors;
- Continuing investing in education and awareness of public to influence individual behaviour;

3.2.1 Climate change

The Albanian Government acknowledge the importance of climate change - caused by an increase in greenhouse gases - and the need to take effective measures to mitigate its consequences[8].

Climate change and air pollution are closely linked. Just as air pollution can have adverse effects on human health and ecosystems; in the upper layer of the atmosphere, it can influence the global climate by affecting the ozone layer, which protects us from some of the harmful effects of the sun's rays.

[8] Albania became part of the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and ratified the Kyoto Protocol in 2004.

The close connection between climate and air quality is also reflected in the impacts of climate change on air pollution levels. Indeed, based on projected future climate scenarios, and in the absence of additional emissions reductions, the Intergovernmental Panel on Climate Change (IPCC) projected "declining air quality in cities" into the future as a result of climate change.

The importance of climate change as an environmental issue of global significance has increased enormously in the past few years, and the Government of Albania has recognised the need to cut greenhouse gas emissions[9] at a level that would prevent dangerous anthropogenic interference with the climate system.

The Government's main focus for climate change is to improve energy efficiency in all sectors in order to reduce the demand for power and the level of emissions. Environmental policies will be developed with a consideration of their impact on climate change and greenhouse gas emissions. Greenhouse gas emissions reduction targets shall be integrated where practicable and sensible to pursue synergistic policies beneficial to both air quality and climate change. In particular:

- Policies or specific developments, for industry, transport, energy etc, should take into account of the impact of emissions on air quality and climate change from the standpoint of energy consumption and technology improvement
- Measures at the national level should be designed and implemented to improve local air quality and/or to abate greenhouse gases emissions by encouraging energy efficiency.

3.3 Purpose, Measures and Targets

The general public and the natural environment are affected by air pollution. Road transport, industry, agriculture, and households are the main sectors contributing to the overall burden of air pollutant emissions.

The Albanian Government is intended to set air quality standards for ground-level concentrations of ambient air pollutants compliant with those of the EU and is committed to attain them where possible by taking all necessary enforcement arrangements.

3.3.1 Road Transport

Most of the high NO_2 and PM_{10} concentration levels observed in the majority of urban areas are caused by transport and especially road transport. It is important to quantify this sector's contribution since much of the Albanian population lives and works in such areas.
Thanks to technological development, and in response to European emission standards legislation, new vehicles continue to get cleaner, quieter and less harmful to the environment. However, the number of vehicles is continuously increasing.
The Government has acknowledged that it will need to take action to control the rate of traffic growth, improve the environmental performance of vehicles and increase public awareness about the environmental impacts of pollutant emissions from transport.

The Government is committed to:

- Ensure that all new models of cars coming into Albania meet EU emissions standards.
- Implementation of vehicle emission control as part of the annual car testing procedures.

[9] The main greenhouse gases are: CO2, methane, and nitrous oxide. Other significant greenhouse gases include chlorofluorocarbons (CFCs). These are man-made refrigerants which are thought to be responsible for causing the holes in the ozone layer above the Earth's poles. Pollution is thought to be adding to the natural greenhouse effect - causing the temperature of the Earth's surface to rise. Some of the greenhouse gases can stay in the atmosphere for a long time, so it's important to take action to reduce such pollution as early as possible.

- Strengthen the check of vehicle emissions by the roadside and issue fixed penalties if vehicles do not meet the legal limits.
- Incentivise cleaner fuels and vehicles through duty differentials.

3.3.2 Emissions from larger industrial sources

Legislation for regulating air pollution emission from industrial sources is in place, but it remains very important that there is continuing regulatory effort in order to enforce such mechanisms.
Albania has recently transposed the EU IPPC Directive (96/61/EC), and a phased approach is underway to implement the law on permitting at large-scale installations, including emission limits associated with the use of Best Available Techniques (BAT).
The Government of Albania will strengthen the capacity at National Environment Inspectorate to perform emission measurement from stationary sources, and the strengthening of operating organisations in the field.

3.3.3 Agriculture

Agriculture contributes significantly to emissions of greenhouse gases and other pollutants, especially ammonia. It is also one of the sectors which any potential climate change will affect the most. Given the serious concerns raised regarding the amount and the impacts of agricultural air emissions, policies must be pursued and regulations must be enacted in order to make real progress in reducing these emissions and their associated environmental impacts.

3.3.4 Households

Many Albanians use wood-burning fireplaces and wood stoves to heat their homes. Although wood is a renewable fuel source, wood-burning devices emit substantial quantities of pollutants. Reducing emissions from the residential wood-burning sector presents an opportunity to improve air quality.

The uncontrolled urban waste burning in open air, spontaneous or intentional, is the most significant contributor to PCDDs[10] and PCDFs[11] emissions. The poor waste collection rate in the rural areas of the country led to substantial burning of waste in the backyards and in the streets, in order to reduce volumes and to get rid of the smell. Also some of the uncontrolled burning is done for retrieving valuable waste streams such as metals. Such activities are taking place also at uncontrolled dumpsites.

3.3.5 The adoption of the legal standards of the European Union

The Albanian Government is committed to achieve cleaner air through the full transposition and implementation of EU Directive 2008/50/EC and of other co-related directives (and regulations).
The MoEFWA is currently undertaking a series of actions to gradually accomplish full transposition of Directive 2008/50/EC, including:

1. Preparation and drafting of the new legislation,
2. Preparation and drafting of new administrative procedures, guidelines and standards,
3. Preparation of a National Plan to secure full implementation and enforcement of Directive 2008/50/EC in Albania.

[10] **Polychlorinated dibenzodioxins** (**PCDD**s), or simply dioxins, are a group of organic polyhalogenated compounds that are significant environmental pollutants, and suspected human carcinogens.

[11] **Polychlorinated dibenzofurans** (**PCDF**s) are a group of halogenated organic compounds which are toxic environmental pollutants. They are known teratogens, mutagens, and suspected human carcinogens.

3.3.6 Improve inspection and enforcement arrangements

The Government will continue to enforce air quality regulations by ensuring that the inspection and enforcement arrangements associated with air quality are as proportionate, efficient and equitable as possible.

A full range of educational and technical assistance programmes will be promoted to further strengthen the National Environment Inspectorate and to fairly improve its capacities to conduct inspections of air pollution sources, verify compliance, investigate breakdowns, document violations, and respond to citizen complaints about air pollution and accidental releases of air contaminants.

4 Policies

In order to ensure that air quality improvements are brought about, both in locations where exceedances are monitored or predicted, and more generally over Albania, the Government will:

1. Take the opportunity for improving air quality through including the issue when working at transport planning, land use planning, and in the frame of wider policy processes such as climate change, health and energy policy adoption.
2. Provide, through the MoEFWA, support to local government units to the delivery of this AAQ Strategy. This will be largely made through provision of assistance to the process of local air quality management planning in identifying areas exceeding air quality objectives and implementing action plans to improve air quality within these areas;
3. Ensure that areas currently achieving air quality objectives continue to do so;
4. Continue improve air quality monitoring;
5. Consistently support the adoption and implementation of local air quality management plans;
6. Ensure that Government's actions do not have a detrimental effect on air quality;
7. Promote public awareness;

4.1 Policy/objectives for monitoring

Ambient air monitoring systems shall become a pillar of the nation's air quality management programme. Ambient air monitoring shall be used for a wide variety of purposes in managing air quality. Air quality management involves a cycle of setting standards and objectives, designing and implementing control strategies, assessing the results of those control strategies, and measuring progress.

Ambient monitoring data have many uses throughout this process, such as determining compliance with the AAQ standards; characterizing air quality and trends; estimating health risks and ecosystem impacts; developing and evaluating emission control strategies; evaluating source-receptor relationships; providing data for input to run and evaluate models; and measuring overall progress of air pollution control programmes. Ambient air monitoring data provide accountability for emission strategy progress through tracking long-term trends of pollutants. The data also form the basis for air quality forecasting and other public air quality reports. They also can provide valuable information for broader ecosystem impacts.

A key element of this strategy is to ensure that the ambient air monitoring systems become a critical part of the nation's air quality management programme.

Given this background, the overarching goals of the Albanian Government for air monitoring are:

1) To ensure that the existing monitoring networks are reconfigured to be consistent with the basic environmental and programmatic needs for current environmental management;
2) To ensure that the type of monitoring required is appropriate to the nature and size of the source and the pollutants under consideration;
3) To seek ways to integrate various monitoring networks where opportunities for integration exist, and enhance National Environment Agency (NEA) supervision of these networks;
4) To improve the scientific and technical competency of the NEA to ensure high quality data; and

5) To enhance data storage, dissemination, and analyses so that local government units , researchers, and the general public have improved access to ambient monitoring data, both in terms of completeness and timeliness.

4.2 New policies to be considered

Additional policy measures could be implemented (after taking costs into account), by the example of many EU Member States to achieve significant improvement to the national ecosystems and habitats, and help the Albanian Government to move closer to the air quality objectives by eliminating a significant number of areas of possible exceedance.

4.2.1 Vehicle Emission Reduction

The Government encourage the use of cleaner fuels, technologies and vehicles, for example through graduated vehicle excise duty, and fuel duty differentials.
The Government will continue to explore opportunities to reduce air pollution in these areas based on future developments:

- A programme of incentives to phase out most polluting vehicles;
- A national road pricing scheme;
- A programme of incentives for the early uptake of new tighter European vehicle emissions standards (Euro-standards);
- A programme to increase the uptake of low emission vehicles;

4.2.2 Industrial Emission Reduction

This Government is of the opinion that the contribution of each industrial source to local and regional air quality improvement should be quantified and the required control equipment should be put in place. The Government will explore the opportunity of:

- Promoting new energy efficient technologies in industries.
- Introducing online monitoring of emissions from industrial stacks to ensure compliance with limit values.
- Promoting the use of renewable energy sources.
- Introducing grant or subsidy scheme for energy efficiency improvements.

4.2.3 Agriculture Emission Reduction

The Government acknowledge the need to develop strategies to manage and reduce agriculture emissions, especially greenhouse gases.
The Government will explore the opportunity to define the most appropriate integrated and consistent actions to reduce various impacts from agriculture on air quality. Specifically, the objective is to develop measures aiming at reducing the impact of agriculture on air pollution and climate change by stimulating farmers to:

- use of fossil fuels efficiently;
- reduce heat loss at glasshouses;
- use of alternative energy sources;
- use fertilisers efficiently;
- reduce ammonia loss from slurry stores;
- reduce burning of farm waste and stubble.

4.2.4 Household Emission Reduction

The Government will explore the opportunity of:

- Promoting thermal insulation and reducing unnecessary use of power for heating or cooling systems in residential buildings.
- Introduce product standards for domestic boilers.

- Promoting use of solar heating systems in residential buildings.
- Improve waste collection and safety waste disposal in rural areas.

4.3 Local measures

The quality of the local environment, which includes air quality, has been identified as one of the government's priorities. Local measures are herein after considered in principle, although cannot be specified exactly in this strategy which is concerned primarily with specific national measures.

Nevertheless, local measures are likely to play a significant role in the achievement of the strategy's objectives and the Government of Albania advocate for their adoption. These may include, but are not limited to:

- Improving public transport, increase parking places, and green zones.
- Create restricted traffic zones.
- Raising public's awareness about air quality.
- Using filter and catalytic converter systems for exhaust emission control on buses.
- Reducing pollution through the use of environmentally acceptable vehicles and fuels in public transportation, by gradually replacing diesel buses with hybrid buses
- Promoting alternative and more sustainable modes of transport to motor vehicles.
- Enforcing emission inspection and control program for motor vehicles.
- Raising awareness about the environmentally friendly driving habits.

5 Accountability, monitoring and evaluation

The effectiveness of any strategy should be monitored periodically to ensure the aims and objectives are being met. Indicators can be used to monitor the effectiveness of a strategy, and should be easy to use and transparent in their use.
There are a number of possible indicators to use in monitoring the effectiveness of this strategy.
Some indicators may provide direct evidence for improving air quality, with others providing an indication of changes in other policy areas which are likely to improve air quality.

5.1 Coordination and awareness

Air quality management and actions to improve air quality need to be implemented by a range of stakeholders. The implementation of any air quality strategy should therefore be dependent on meeting the needs of the community to which it relates. The people of Albania have to be made aware of air pollution problems in their cities and agreed that counter measures are needed. Command and control measures become effective, when people give support and cooperation.
Communication and collaboration is the key to ensuring that measures arising from this strategy are implemented.
The continued work of the Government is central to the implementation of this strategy, and the MoEFWA will require input from the wider stakeholders identified in this report to ensure that implementation of this Strategy becomes effective. The MoEFWA will also ensure that air quality is properly considered within planning policy processes, with the inclusion of a specific air quality policy where applicable.

5.2 Environmental units and environmental experts

The MoEFWA will supervise the work and the cooperation between institutions working with AAQ. The main institutions are NEA and IPH but other institutions might be involved in special activities and measurements. MoEFWA will take the lead in working groups where significant decisions are made and in case of disputes, it is the MoEFWA who makes the final decisions to ensure that the sparse resources are used best possible. Significant decisions of national importance could be decisions on zoning and agglomerations, particular areas with problems concerning AAQ, monitoring sites, substances to be monitored in selected areas, and prioritising emission reduction activities, coordination with local government units and regional environmental agencies and inspectorates. The staff capacity of the AAQ group at the MoEFWA, NEA and IPH will be increased and training programmes will be initiated to ensure that expertise in basic AAQ monitoring and assessment is transferred from international experts.

5.3 Monitoring of progress

The MoEFWA will use a set of performance indicators to monitor the progress, to ensure that the implementation of this strategy is resulting in the maximum benefit in terms of air quality. The progresses will be regularly reviewed internally by the MoEFWA through the NEA structure.

The monitoring network could be used to directly report on trends in air pollutant concentrations. Some indicators of air quality include:

- Reductions in nitrogen dioxide concentrations within major cities of the country
- Number of days when air pollution is moderate or higher than standards

Progress monitoring will include:

- Mapping of major pollution sources, and creation of a national emission data base.
- Assessment of AAQ monitoring results for creating zones and agglomerations including monitoring plans.
- Implement QA/QC for AAQ monitoring.
- Appoint a National Reference Laboratory for AAQ
- Perform a Preliminary Assessment
- Work out plans for improving or maintaining AAQ in agglomerations and zones
- Report the findings to the EEA and other institutions to which Albania is obliged to report data on AAQ.
- Introduce a dispersion model for issuing permits.
- Introduce an AAQ modelling system for local and regional AAQ assessment.

5.4 Performance reporting

The MoEFWA will report regularly to the Government on the progresses of the strategy's implementation.

6 Economic framework and financial implications

An estimate has been made of the costs for implementing the additional policy measures. The estimate of funds is mostly based on the so-called top-down approach where investment and operating costs are estimated on the basis of aggregate data at the level of sectors and subsectors observed.

This approach is acceptable for analyses used to identify the magnitude of costs without detailing individual actions. Some data are obtained directly from the private sector or local governments through cost estimates for programs that are being implemented and / or have been implemented. The most precise estimates are provided for a segment of costs to be financed from the government budget. For that reason we used the data received from the mid-term budget for the period 2013-2015.

Table 3: Total costs on ambient air quality strategy

	Type of cost	Funds (€ million)
1	Estimated costs of vehicle emission reduction	490
2	Estimated costs for industrial emission reduction	11
3	Cost of pilot projects to reduce the household emiss*ion*	90
4	Estimated cost for air quality management	1.3
5	Estimated costs of implementation Directive 2008/50/EC[12]	2.2
	Total	494.5

Of the total costs only a minor part of 1.3 million EUR will be financed from the budget. Other costs are paid by polluters, physical entities through various charges or direct investments. Public funds in the form of direct transfers to the Environmental authorities are needed to implement the strategy. MoEFWA need to plan in the medium-term budget sufficient funds for the implementation of the strategy. The following is an outline of individual groups of costs.

6.1 Estimated costs of vehicle emission reduction

Road pricing is a system of charging drivers to reflect car usage, with frequent drivers paying more than infrequent drivers. Normally, schemes are skewed to encourage drivers to use less congested routes or drive at less busy times.

Introducing a pricing scheme is costly mainly due to the operational and maintenance costs of the whole system. These costs range from:

- Service provision: provision of transport alternatives to cars, staff training, customer services and database management etc;
- Infrastructure expenses: camera, payment and enforcement system etc.

[12] For more details refer to Directive Specific Implementation Plan for the Directive 2008/50/EC

Of course these costs need to be balanced with the revenues collected and the costs related to congestion: travel time unpredictability, environmental damage, loss of productivity etc.

It is important to have good governance and effective co-operation between stakeholders. Key stakeholders might include:

- National government, as national legislation to enable road pricing may be required.
- Regional and local government (depending on the circumstances), prepare policy that permits pricing and plan the operation scheme..
- Transport authority, which takes care of planning the services to enable access to areas affected by the pricing scheme.
- Urban planning authority, which develops land-use planning approaches to reinforce pricing.
- Transport operators, to provide services enabling access to areas affected by the pricing scheme.
- Businesses also play a crucial role in the success of the scheme. The impacts of the scheme on the private sector are various and can either be beneficial or costly.

The acceptability of a road pricing scheme depends amongst other things on its cost, especially as a proportion of the revenue generated. A number of cost estimates have been published. According to literature the cost estimates based on the Swiss road pricing scheme are 415 million €[13].

The legal and institutional framework is a key issue for success as it ensures a broad base of support for any scheme. At this stage, the national government is required to set the legal basis for allowing road pricing schemes. Then, the local authority or authorities would be responsible for operating the scheme and ensure efficient and fair enforcement procedures for pursuing the resulting fines. Appointed authorities should have the mandate to do the work and the capacity to sustain their responsibilities.

The challenge is to set prices that reasonably match demand and supply. The concept underlying road pricing is the economic theory of 'Marginal Cost Pricing'. The charge should not be presented as 'just another tax', and therefore it is crucial to make the use of funds acceptable or attractive to people. Before implementing the road pricing scheme, setting up traffic control centers in the big cities is recommended.

Tirana Municipality has set up a center for traffic control, funded by a loan received from EBRD. The cost of the project is 8.2 million €. Pilot projects can be implemented in several large municipalities with a total cost of 50 million €.

Low emission vehicle program.
The government can pilot a program to encourage the purchase of low emission vehicles and/or another program to remove from use cars manufactured before 1995. The Government must allocate a fond of at least 15 million EUR to initiate the programs for a period of 3-5 years. The number of beneficiaries could reach up to 20 thousand or approximately 6% of people and/ or companies who possess a vehicle.

[13] See for more information "The Acceptability of Road Pricing", published by RAC Foundation, London 2011

Table 4: Cost of vehicle emission reduction

Activities	Cost (€ million)	Remarks
Setup of pilot centers for traffic control (4-5 centers)	50	The Government can support the big Municipalities with problems in air pollution to replicate the project implemented in Tirana
Subsidy program to phase out most polluting vehicles	15	The beneficiaries number could be up to 20 thousand people depending on the scheme
Subsidy programs to increase the uptake of low emission vehicles	10	The beneficiaries number could be up to 15 thousand people depending on the scheme
Cost estimates based on the Swiss road price scheme.	415	310 million-Investment costs 104 million -Annual operating costs (including enforcement and equipment amortization)
Total	490	

6.2 Estimated costs for industrial emission reduction

IFC, a member of the World Bank Group, with the support of the Government of Canada, is helping Credins Bank Albania to expand its financing of renewable energy and energy efficiency projects, promoting the efficient use of resources and reducing greenhouse gas emissions. IFC will provide €10 million in financing to the bank, including up to €1 million from the IFC-Canada Climate Change Program. That will help the bank provide loans to Albanian companies interested in investing in energy efficient technologies and renewable energy projects.

6.3 Estimated costs for household emission reduction

The existing stock of buildings in Albania is not insulated and in most cases electricity is used for space heating. The main heat losses in buildings are those of heat transmissions from walls, roofs and terraces especially in the buildings constructed before 90's.

Residential housing accounts for about 60% of all electricity consumed in Albania and has therefore a great potential in terms of energy savings. Investments in energy efficiency offer many benefits for individual households, including reduced monthly energy costs and improved living standards. These benefits can be achieved by introducing more efficient technologies and processes. For example, an efficient heating system in a well-insulated house reduces the amount of energy used and also improves indoor air quality.

Approximately 15,872 kWh per year are needed to heat and cool a 150 m2 house. After insulation, the amount falls to 10,317 kWh or 35%. Insulation thus results in energy savings of about 5,555 kWh per year, approximately ALL 89,991 per year or 35% of the energy bill for heating and cooling.

Water heating can account for 14 %-25 % of the energy consumed at home. In Albania electricity is usually used for water heating. Electricity bills can be reduced through the use of solar panels for water heating. The usage of solar panels with an area of 2-4 m^2 installed in the terrace/roof of the building for sanitary hot water, reduces energy used for this purpose by more than 60%.

The key sectors on which efforts should be focused are residential buildings and public buildings (such as kindergartens, schools, university buildings, administrative buildings, etc). According to Albanian specialists construction costs may increase with only 3% if the insulation techniques are applied.

The government may initiate pilot programs on thermal insulation mainly in urban areas to reduce greenhouse gas emissions and at the same time to reduce consumption of energy resources for heating.

Table 5: Cost of pilot projects to reduce the household emission

Activities	Cost (€ million)	Remarks
Support for thermal insulation in residential buildings	50	The average support per household is € 500. Municipalities with high air-dust pollution from heating sources, economically disadvantaged regions and regions with high unemployment rates should benefit from support in form of subsidies.
Introduce product standards for domestic boilers.	40	Support to construction companies to introduce such standards. A public- private partnership method should be applied.
Total	**90**	

6.4 Estimated cost for air quality management

Key responsibilities involved in air quality management are:

- planning, organization, control and coordination of monitoring at the national and local levels,
- preparation of technical guidelines,
- data monitoring and processing,
- quality assurance,
- data filing,
- implementation of regulations, and
- reporting.

In connection to these important roles are played by a number of competent authorities: Ministry of Environment, Forestry and Water Administrations, Institute of Public Health, National Environment Agency, National Environment Inspectorate, National Environment Laboratory entrusted with the maintenance of the air quality information system and reporting. All these institutions receive funds from the state budget to implement functions that were imposed by law. In this context it is necessary to plan additional funds for the period 2014-216 based on expected changes in legislation.

Table 6: Air quality management - a plan for funds to be secured from the government budget

ACTIVITIES (LEGISLATIVE AND IMPLEMENTING) COMPETENT AUTHORITY	SOURCE OF FUNDS	FUNDS PLANNED / ALL (thousand)		
		2013	2014	2015
Laws and bylaws drafted and approved for air quality, (2 acts) MoEFWA	Government budget	20,880.92	8,150.66	8,440.22
Inspection reports on the implementation of environmental permit conditions to industrial activities that cause air emissions - NEI	Government budget	10,000.00	9,870.00	10,220.00
Monitoring reports on environmental indicators (urban air) IPH&NEA	Government budget	14,725.25	5,127.75	2,699.13
Report on the State of the Environment (chapter on air)-NEA	Government budget	1,458.00	1,528.38	1,582.50
National reports on the implementation of international conventions on air quality - MoEFWA	Government budget	1,418.70	1,467.15	1,519.20
Database related to the quality of petrol and diesel generated - NEA	Government budget	2,364.00	2,446.00	2,532.00
Inventory of emissions of contaminants in the air and air quality planning designed[14]- NEA	Government budget	0.00	0.00	0.00
Development of the institutional, legal and regulatory framework to promote a sustainable SWH market - MoEFWA	Government budget	17,559.00	13,682.00	0.00
Awareness campaigns for professional users and developers to integrate SWH systems in buildings- MoEFWA	Government budget	11,711.00	9,122.00	0.00
National plan for the management of air quality - MoEFWA	Government budget	24,854.14	2,996.71	1,808.57
TOTAL AMOUNT (ALL)		**104,971.01**	**54,390.65**	**28,801.62**
TOTAL AMOUNT (Euro)		**749,793**	**388,505**	**205,726**

Source: the data were taken from *mid-term budget 2013-2015, pg.285-291*

6.5 Estimated costs of implementation Directive 2008/50/EC[15]

Implementing the Directive will mainly be the responsibility of the Competent Authorities designated to implement the Directive at the national level (NEA).

The estimated overall costs of implementing the Directive are shown in the table below. Costs are divided into:

- capital or one-off costs, which include capital expenditure and non-recurrent costs such as new equipment and rehabilitation of existing equipment, specific projects, initial training, awareness campaigns, etc., and
- operating or recurrent costs, which includes salaries, rent, maintenance, light and heating, fuel, annual fees, etc.

[14] It was planned for 2012. No funds are planned for the period 2013-2015

[15] For more detail refer to DSIP_AAQ

Table 7: Overall costs of implementing the Directive

Stakeholder	Capital / one-off costs (€ million)	Operating / recurrent costs (€'000s p.a.)
Competent Authority (monitoring, data management, reporting (incl. quality assurance and quality control), reporting and the national programme for ambient air management and improvement) – 4 full time persons	-	32
Additional equipment	0,1	-
Rehabilitation of 6 existing monitoring stations	0,1	-
Running costs for monitoring (6 stations)	-	150
Technical assistance project and train to the staff involved in air quality monitoring, assessment and planning in MoEFWA, NEA, MoH and IPH.	2	-
Total	**2,2**	**182**

6.6 Financing Strategy

The purpose of this section is to look at how the costs identified in the previous section can be financed.

Central Government Budget
The main funds to monitor the air quality would come from governmental sources. The budget covers the salaries, the social security for the permanent staff and the dedicated budget to cover operational cost and investment.

- *Charges paid by polluters (*Fees paid by polluters, cars, trucks, industries etc.)

Charges paid by polluters include:

- Import tax for used vehicles. This tax has brought more revenues that all the other environmental mechanisms. The annual tax for used cars has been halved. In June 2013, the decision to halve the tax on used cars entered into force.
- Carbon tax. This tax is set at the level 0.5 ALL (0.5 cents) per liter of gasoline and benzene and 1 ALL (1 cent) per liter of diesel. This tax is levied on both imported and domestic fuels. This tax was introduced in 2002 and its level has not changed since.

- *Municipal budgets*
The salaries (including social security benefits) of the staff taken on to meet additional obligations, and indeed all ongoing recurrent costs, will have to be met by the MoEFWA or other government agency concerned.
ENSI - Energy Saving International AS from Norway has implemented the Energy Efficiency Programmes in Albania since 2007, in close partnership with Albania-EU Energy Efficiency Centre (EEC), Albanian Association of Municipalities (AAM) and the USAID funded Local Governance Programme in Albania. The new programme (2012-2015) can be considered as an important step in introducing to Albanian municipalities and communes the issues such as efficient management of energy resources, thermal insulation of existing buildings stock and consequently bring steady improvements in the long term.

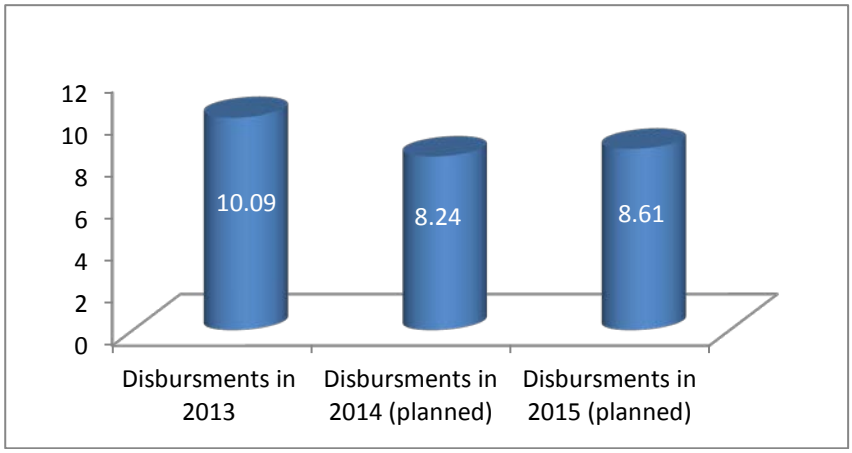
- *Instrument for Pre-Accession Assistance*
The instrument for Pre-Accession Assistance (IPA) is the European Union's principal mechanism for providing financial assistance for compliance-related investments in candidate and accession countries.

- European Regional Development Fund (ERDF) and Cohesion Fund

These are potential sources of funding post-accession. They provide in particular grant funding for a range of project types including infrastructure and the environment, of up to 50% of the value of the project. It is not known how much would be available under the ERDF for Albania, and it is possible that changes will have been made to this Fund by the time the Albania becomes a member. However these funds are relevant in terms of implementation of the environmental acquis.

- Other bilateral and multilateral donors

The most active multilateral donors in the field of environmental in Albania are European Union (EU), World Bank and UNDP and the bilateral donors are Swiss Development Cooperation, SIDA and Netherlands Embassy. The donor commitments for the financing of projects are too small for the period 2013-2015 and the Albanian government is in the process of negotiating for the period 2014-2018. The government should try to ensure that as much foreign aid as possible is directed towards assisting Albania to meet its accession obligations. Such funding is of course likely to dry up after Albania accedes to the EU.



Source: DEBASCOM database, May 2013

- Loans from international funding institutions (IFIs)

The international funding institutions are development banks such as the World Bank, the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB) which offers loans at a relatively low rate of interest for investments (amongst others) intended to establish or improve environmental facilities or infrastructure.

IFC, a member of the World Bank Group, with the support of the Government of Canada, is helping Credins Bank Albania expand its financing of renewable energy and energy efficiency projects, promoting the efficient use of resources and reducing greenhouse gas emissions. IFC will provide €10 million in financing to the bank, including up to €1 million from the IFC-Canada Climate Change Program. That will help the bank provide loans to Albanian companies interested in investing in energy efficient technologies and renewable energy projects.

- Loans from commercial banks

Pro Credit Bank is the first bank in Albania that has lunched the program that supports the energy efficiency. The Energy Efficiency loan promotes investments in private homes and apartments with the aim of reducing energy use and energy costs. The bank gives all households and businesses the opportunity to invest in new technologies, to save energy and also to decrease CO2 emissions.

Annex I Requirements of EU Legislation

The European Union (EU) requires Member States to achieve health-based air quality limits for a range of pollutants. These limit values are prescribed principally through the 2008 European Directive on Ambient Air Quality and Cleaner Air for Europe. The limits are legally binding and must be met by the MS and they include limits for Nitrogen Dioxide (NO_2) particulate matter less than 10 microns (PM10) and particulate matter less than 2.5 microns (PM2.5).
There are also limits for the protection of vegetation and ecosystems. The limits to protect vegetation are limited in their application rather than being intended to protect human health.

EU legislation related to the air sector broadly covers four areas:

- measures and standards to protect ambient air quality;
- measures and standards to limit emissions from point sources;
- measures to combat vehicle emissions, and;
- standards for fuel quality.

Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management, Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air, Directive 2002/3/EC of the European Parliament and of the Council of 12 February 2002 relating to ozone in ambient air and Council Decision 97/101/EC of 27 January 1997 establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the Member States, were substantially revised in order to incorporate the latest health and scientific developments and the experience of the Member States. Those five acts were repealed 11 June 2010 and are replaced by a single **Directive 2008/50/EC on ambient air quality and cleaner air for Europe.**

The AAQ Directive aims to define the basic principles and the common strategy for establishing objectives for ambient air quality designed to avoid, prevent and reduce harmful effects on human health and environment, assessing ambient air quality and concentrations of relevant pollutants using common methods and criteria, producing adequate information on ambient air quality (available to the public), maintaining and improving ambient air quality, and establishing limit values and alert thresholds for sulphur dioxide, nitrogen dioxide, oxides of nitrogen, particulate matter, lead, ozone and benzene concentrations in ambient air.

Direct Requirements of Legislation

The Directive provisions regulate the following specifics:

General provisions:

- Member States (MS) shall designate at the appropriate levels the competent authorities and bodies responsible for the assessment of ambient air quality and related activities (article 3);

- MS shall establish zones and agglomerations where air quality assessment and air quality management shall be carried out (article 4);

Assessment of ambient air quality:

- Assessment regime (Annex II) and assessment criteria (Annex III) for ambient air quality in relation to *sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, lead, benzene and carbon monoxide* (article 5 & 6);
- The location of sampling points for the measurement shall be determined using the criteria listed in Annex III;
- MS shall apply the reference measurement methods and criteria specified in Section A and Section C of Annex VI;
- Assessment criteria, sampling points for assessment of ambient air quality in relation to ozone (articles 9 & 10) as well as reference methods for measurement of *ozone* (article 11) according to Annex VIII & VI respectively;

Management of ambient air quality:

- Limit values and alert thresholds (article 13) according to Annex XI & XII;
- MS shall ensure compliance with the critical levels specified in Annex XIII as assessed in accordance with Section A of Annex III;
- Measures required in the event of information or alert thresholds being exceeded – information to public by means of different media (article 19);
- Postponement of attainment deadlines and exemption from the obligation to apply certain limit values (article 22);

Plans:

- MS shall established air quality plans for zones or agglomerations, when the levels of pollutants in ambient air exceed any limit value or target value, plus any relevant margin of tolerance (article 23) and submit them to the Commission;
- MS shall draw up (short-term) action plans indicating the measures to be taken in the short term in order to reduce the risk of the levels of pollutants exceeding one or more of the alert thresholds specified in Annex XII or duration of such an exceedance and make them available to the public and to appropriate organisations such as environmental organisations, organisations representing the interests of sensitive population groups, relevant health-care bodies, etc;
- MS shall cooperate in cases of transboundary air pollution (transboundary transport of air pollutants or their precursors) and, where appropriate, draw up joint activities, such as the preparation of joint or coordinated air quality plans pursuant to Article 23 in order to remove such exceedances.

Information and reporting:

- Article 26 - Public shall be informed, adequately and in good time, information shall be made available free of charge by means of any easily accessible media including the Internet or any other appropriate means of telecommunication of:
  (a) ambient air quality in accordance with Annex XVI;
  (b) any postponement decisions pursuant to Article 22(1);
  (c) any exemptions pursuant to Article 22(2);
  (d) air quality plans as provided for in Article 22(1) and Article 23 and programmes referred to in Article 17(2).
- MS shall make available to the public annual reports for all pollutants covered by this Directive and inform the public of the authority or the body designated in accordance with article 3.
- Informing and reporting to the Commission; Transmission of information and reporting information (Article 27) on ambient air quality is made available to the Commission within

the required timescale as determined by the implementing measures referred to in Article 28(2);

Penalties:

- Member States shall lay down the rules on effective, proportionate and dissuasive penalties applicable to infringements of the national provisions adopted pursuant to this Directive and shall take all measures necessary to ensure that they are implemented.

The indirect implications of the Directive

The Directive aims to:

- Avoid, prevent or reduce the harmful effects on human health and/or environment as a whole, through the establishment of limit values and guide values;
- Maintain ambient air quality at sites where the air is not polluted and improve it in other cases.

To comply with the Directive, significant improvement in pollution reduction at the sources shall be achieved. This has very much to do with implementation of requirements under linked legislation. There are two main trends regarding air pollution: (1) increased transport-related emissions, and (2) increasing pollution from industrial and energy sources.

Priority actions aimed at reducing air pollution from transport can include the improvement of fuel quality and a gradual shift towards the use of vehicles meeting EU standards. EU standards should also be met in order to control air pollution from the industrial and energy sectors; legislation is to be developed as soon as possible to regulate emissions, implement energy saving measures, promote the use of cleaner fuels and introduce advanced production and pollutant treatment technologies. Actions (which can be a part of urban planning) to reduce traffic in areas of cities where assessment of ambient air quality shows that the Directives limit values are exceed should probably also be included among the priority actions.

The results from ambient air monitoring in line with the requirements of the Directive will be the basis for the assessment of ambient air quality and air quality plans specifying the measures that are needed to improve the ambient air quality in zones or agglomerations, where the levels of pollutants in ambient air exceed any limit value or target value.

Annex II Air quality across the country

The Institute for Public Health (IPH) has, since 1976, performed ambient air quality monitoring. It has been the main source for air quality data collected using manual and semi-automatic sampling and laboratory analyses. Early 2011 the World Health Organisation (WHO) financed two automatic monitoring stations situated in the courtyard at the institute and in the courtyard of the Poliklinika Qendrore in Tirana.

The National Environmental Agency (NEA) has been in charge of the three monitoring stations supplied by the project: "Strengthening of the Environmental Monitoring System in Albania" (StEMA) since January 2008.
In 2011, as part of the EU CEMSA project (Consolidation of the Environmental Monitoring System in Albania) four automatic monitoring stations were delivered to NEA and installed in Durres, Shkoder, Korce and Vlore.

Neither IPH nor NEA has implemented quality assurance of data and neither has access to proper calibration of instruments. The lack of quality assurance has been pointed out in many reports during more than a decade and it is still the major problem for AAQ monitoring in Albania. *Due to this absence of calibration and quality assurance the monitoring data cannot be considered to provide a reliable picture of the ambient air quality.*

The last published data for 2011 (Raporti për Gjëndjen e Mjedisit 2011) is shown in the table below. Data are provided in µg/m³.

Annual average values of eight indicators monitored for 2011

Station	SO_2	NO_2	TSP	PM10	PM2.5	O_3	Pb	CO	Benzene
Tirana DSHP		34.91		77		23.01		0.437	2.88
Tirana NEA	7.61	29.15				39.63		0.562	0.666
Tirana Alba1 (Poliklinika Quendore)		50.89		121.36	37.28	41.94		0.250	1.208
Tirana Alba2 (IPH)		44.82		52.64	28.33	51.38		0.987	
Elbasan 2				79.24					
Shkodër	12.4	25.5	193.2	93.9		73.8	0.22		
Durrës	15.1	32.8	217	104		79	0.24		
Fier	19.6	31.5	185	89		76	0.23		
Korça	11.3	16.9	180	84.4		67.4	0.19		
Vlora	11.4	25.7	180.3	83.7		70.4	0.19		
Albanian Standard	**60**	**60**	**140**	**60**	**15**	**65**	**1**	**2**	**5**
EU Standard		**40**		**40**	**25**		**0.5**		**5**

Since the monitoring results from 2011, AAQ data have not been published. The manual monitoring site "21 Dhjetori" in Tirana, representing some of the highest concentration during many years, has been closed down in 2011.

The four new NEA monitoring stations in Shkoder, Durres, Vlore and Korce were in operation about half of the time from August 2011 to December 2012. Except for the particulates and ozone the preliminary results do not indicate any exceedances of relevant limit values.

StEMA and CEMSA campaigns with passive samplers

IPH has executed three campaigns with passive samplers positioned all over Albania. Campaigns in January 2008, January and June 2012 included indicative measurements of SO_2, NO_2, Benzene and Ozone – exposure about 10 days). Such sporadic short time average values are difficult to interpret but in general the results indicate that *there are three areas with potential threats on public health due to air pollution – Tirana Centre, Elbasani and Fier.*

In Fieri and Elbasani manual sampling by IPH from August to December 2012 results in average PM10 concentrations of 97 and 88 µg/m3. This is a clear indication that Fieri and Elbasani might have serious problems with AAQ. The figures just underline the common knowledge that there are serious air pollution problems in the two towns. Elbasan, surrounded by mountains, suffer from regular inversions reducing the dispersion of pollutants and increasing the concentration levels for periods of days.

Air Quality Dispersion Models for Year 2009

In 2012 an Italian consultant has done a national emission inventory and an air quality modelling (CALPUFF) for the whole Albania for 2009 - "Air pollutant emission inventories implementation and air quality planning", Techne Consulting (Executive Summary. MEA.TS.10 RS - Ed. 1 Rev.0 July 2012). The findings have indicated some results that should be included in the zoning procedures required by article 5 of the AAQ Directive. (AIR POLLUTANT EMISSION INVENTORIES IMPLEMENTATION AND AIR QUALITY PLANNING).

Results are presented graphically as the example in Fig. 2

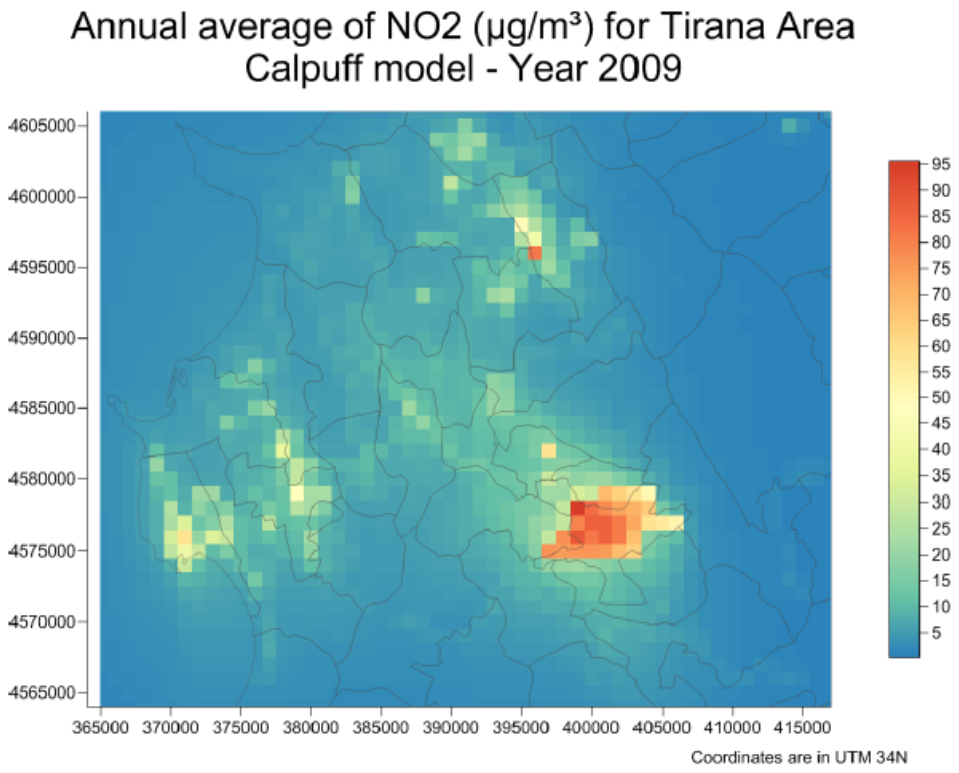


Fig. 2: Graphic presentation of model results for the annual average of NO_2 in the Tirana area.

The modelling results based on dispersion and transformation of primary pollutants, nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulate matter with diameter less than 10 micrometres (PM10) and lesser than 2.5 micrometres (PM2.5) concludes:

- "For Tirana Area, NO_2 is an issue in terms of annual average for the Commune of Tirana only, while hourly average shows issues even in Durres and other minor inhabited places."
- "We shortly remember that the main pollutant source for Tirana Commune is road traffic, this is an issue to be considered in future air quality improvement plans."
- "For Elbasan Area, NO_2 is an issue in terms of annual average for the Commune of Elbasan only, while hourly average shows issues even in Bradashesh".
- "The main pollutant sources for Elbasan Area are the industrial plants; this is an issue to be considered in future air quality improvement plans".
- "For Vlores Area, all considered pollutants are an issue only for the Commune of Fier, and a small part of Portëz for what concerns SO_2 only, leaving the rest of the area relatively free from air pollution".

The findings clearly identify potential problems concerning NO_2 and PM10 in Tirana, Elbasan and Fier areas.

Assessment of health effect in the Fier Area

A Dutch company has done some indicative measurements and an assessment of health effects in the Fier area. Results are reported in "Integrated Environmental and Health Action Plan Patos-Marinze Oil Field, Albania" (Ministry of Environment, Albania. (19 June 2008). HASKONING NEDERLAND B.V).
The indicative measurements using passive samplers and portable units (Gas Chromatograph, Photo Ionisation Detector, Flame Ionisation Detector and H_2S monitor) were performed in the winter season (January - February). It is expected that the evaporation of hydrocarbons from 150 oil pools will be much higher in the summer period.

The report findings are:

- "Furthermore, air quality in Fier is affected as well as in other locations close to oil installations, such as Visoke in the Gjanica valley. Air quality varies depending on the amount of emitted gases and their composition, but also depending on weather conditions; such as wind direction, wind speed, temperature and humidity. Ideally air monitoring should be undertaken continuously for a number of years at various locations of the project area".
- "The air quality data indicate that there are very high concentrations of pollutants present in the area. The air quality, in particular concentrations of benzene and hydrogen sulphide in the air, has severe impacts on the local population leading to significantly reduced health in local population and statistically leading to more cases of asthma, more cancer cases and ultimately leading to fatalities. *The impact of the oil industry on local air quality is accordingly considered to be* ***catastrophic***".
- "Air pollution with release of benzene and hydrogen sulphide – this impact is considered to be very serious as these gases are highly toxic, can cause severe effects on human health, including cancer, affect a large proportion of the local population and concentration measured in air are at several locations close to or even several times above of what is considered safe concentration".

Public health has been investigated and evaluated along a number of different lines. The main results from the health data analyses can be summarised as follows:

- "The data analyses related to the prevalence of lung diseases show significant differences between study and control group, which can only be explained by air pollution".
- "The statistical analysis of the total number of recorded cancer cases within the last ten year revealed that the population in the project area had 105 recorded cancer cases and in the similar sized population in the control area 6 cancer cases were recorded".

- "Considering the source-pathway-receptor strategy in defining the background to the above public health effects, it is obvious that pollution from the oil industry through the air has played a major role in the deterioration of public health in the Patos – Marinza area. In fact, this should likely be considered the only mechanism for this phenomenon".

Levels of air pollution in Tirana

Based on the available data and considering the quality problems related to these data (as outlined in the previous sections of this report) we have made some estimates on the two major pollutants concerning the threats to human health – NO_2 and PM. PM covers Total Suspended Particulates (TSP), which includes all particulates sampled in a special way; PM10, which includes all particulates with a diameter smaller than 10 µm; and PM2.5, including the smallest particulates with a diameter less than 2.5 µm.

The monitoring programmes performed during many years by Institute of Public Health, the National Environmental Agency, and the Institute for Hydrometeorology and the monitoring campaigns accomplished by various projects all show the same characteristics. The air pollution level in Tirana is high because of contributions from traffic. In most of Europe there are problems to keep the concentrations of particulate matter below the limit values of 40 microgram per cubic meter (µg/m^3) on a yearly basis. In Tirana the concentrations of particulate matter are remarkable high in the order of 40 – 100 µg/m^3. Sometimes measurements are even much higher.

The concentrations of Nitrogen Dioxide (NO_2) are also much higher than the European limit value of 40 µg/m^3 as the yearly average. Monitoring stations and monitoring campaigns result in concentrations of 40 - 80 µg/m^3. Based on experience the highest hourly average values should be 3 – 4 times the yearly average value of NO_2.

Tirana, most probably, has problems with the hourly limit value of 200 µg/m^3 for NO_2. This has not been demonstrated during the long period of monitoring because the automatic monitoring stations have not been situated in streets with dense traffic and houses on both sides of the streets (street canyons). Thousands of people live close to this type of "hot spots" in Tirana.

During 2012 IPH has performed continuous monitoring in the two automatic monitoring stations Tirana Centre (Alba1, Poliklinika Quendore) and Tirana IPH (Alba2). In Tirana Centre the yearly limit value for NO_2 was slightly exceeded (42 µg/m^3). "Tirana Centre" is an urban background[16] station situated near a small street about 100 m from Boulevard George Busch. This is a clear indication for much higher concentrations along the Tirana streets with dense traffic – representing thousands of Tirana inhabitants working and living in shops and apartments along the streets with dense traffic.

ECAT indicative monitoring programme 2008

ECAT organised a comprehensive indicative monitoring campaign in October 2008 covering the major part of Tirana (ECAT Tirana AQ Report. Dec 2008). All local stakeholders were involved in the project which received financial support from the EU/LIFE Program and the German Federal Ministry of Environment, Nature Protection and Nuclear Safety. The 35 passive samplers were analysed by ARPAV's laboratories in Venice. If "Blanks" were used for QC, the results have not been reported.

[16] Urban background represents locations in urban areas where the level of air pollutants is not mainly influenced by any single source, but rather by the integrated contribution from all sources upwind of this location. The air pollution level in these locations should typically be representative for several km²

Passive samplers are not accurate but the monitoring campaign gives a good idea about simultaneous concentrations measured during eight days. Fig. 3 shows the monitoring sites and the concentrations found.

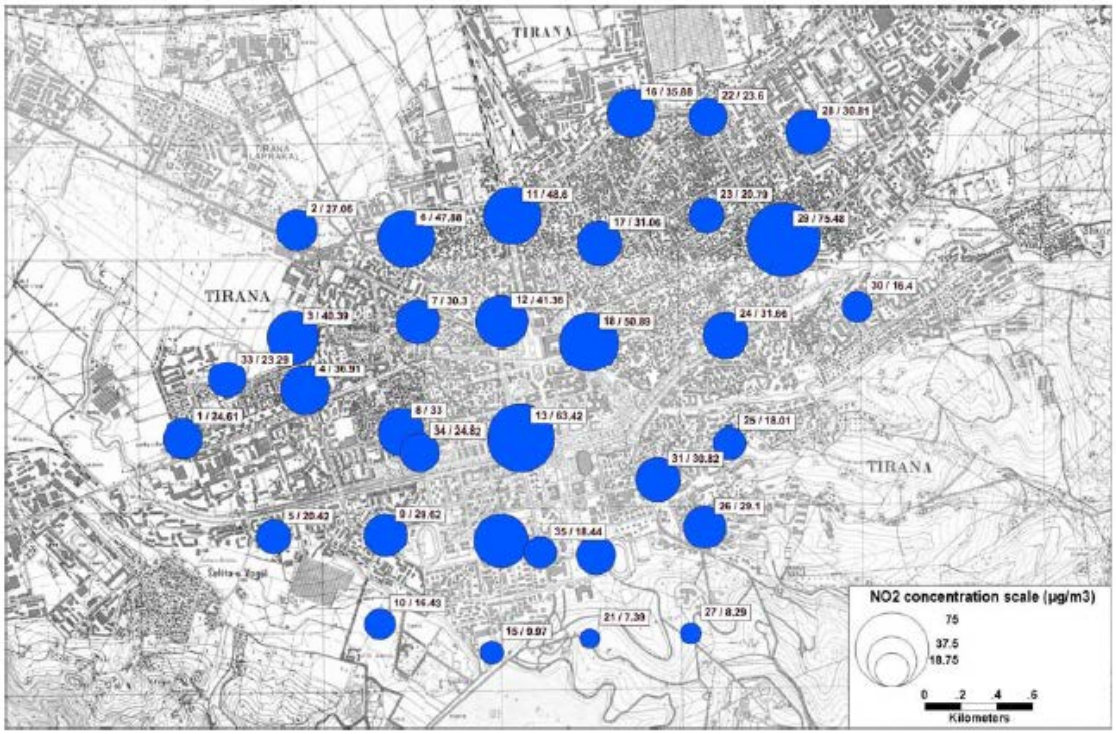


Fig. 3: NO_2 concentration at each of the 35 monitoring sites

In Fig. 4 the bar chart gives an overview of the NO_2 concentrations registered. The values are from 7 – 75 µg/m³. It is remarkable that eight out of the 35 samples are above the yearly average of 40 µg/m³, but no final conclusions can be made for short-term concentrations compared with the yearly limit value. It is obvious that the highest concentrations appear in the central part of Tirana close to the major streets with dense traffic.

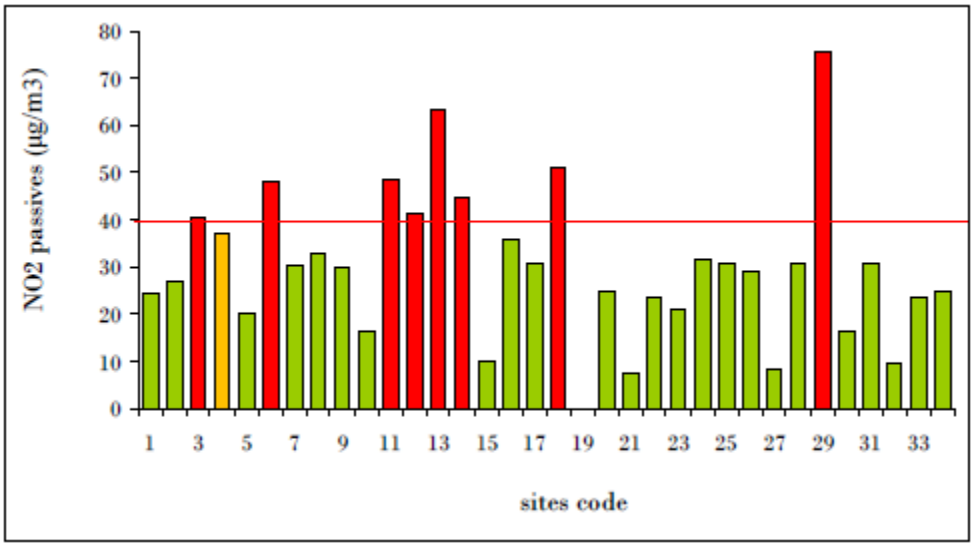


Fig. 4: Nitrogen dioxide concentration in Tirana city. 28.10 – 06.11.2008

The ECAT organised indicative monitoring programme is generally a good programme. Unfortunately, the monitoring did not include the most basic QC measures like using “blanks” and install the passive samplers at the monitoring sites where automatic sampling is done. Blanks can be used to check the zero-values

and the concentrations compared with automatic monitors (or other methods) are relevant for the accuracy of passive sampling.

The report summarise findings like:

- In Albania there are no strict quality assurance and quality control (QA/QC) procedures applied. So, the present monitoring does not meet the requirements of the EU legislation and EUROAIRNET in terms of DQOs and measurement techniques.
- Measurements of nitrogen dioxide and benzene in Tirana using passive sampling show very high concentration of these pollutants in street canyons and high values near the roads and in open space. The influence of the air pollution from the city ring is in very evidence especially at crossroad with narrow streets.
- The differences of pollutant concentrations between measuring sites can encourage a new approach of monitoring air pollution in Tirana city. Since the three automated station that are in action in Tirana city belongs to urban background or suburban typology there is the time to make a new configuration of this monitoring network.

These and previous as well as later findings and recommendations have never been considered or activities to improve AAQ monitoring in Albania.