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Project:	IMPLEMENTATION OF A CENTRAL LABORATORY AND AN AIR QUALITY MONITORING NETWORK IN DAKAR
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Air Quality Management Structure for Dakar

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List of Abbreviations

AQ	Air Quality
AQMS	Air Quality Management Strategy
AQRO	Air Quality Regional Observatory
CGQA	Centre for Air Quality Management
DEEC	Direction de l'Environnement et des Etablissements Classés
DPSIR	Drivers-Pressures-State-Impact-Response
ME	Ministry of Environment
NDF	Nordic Development Fund
NILU	Norwegian Institute for Air Research
QADAK	Qualite de l'Air de Dakar
SPIDS	Syndicat Professionnel des Industries et Mines de Sénégal



Air quality in urban environment of Dakar



1 Introduction

The organisational structure of air pollution management in Dakar has been assessed and compared to existing structures internationally. Information on the present environmental management structure in Senegal (Guerreiro et al, 2005) and propositions made in previous studies for a future air quality management structure for Dakar have been collected and evaluated (Nordic Consulting Group, 2001; Simon & Christiansen I. C., 2000).

As part of the contribution to the elaboration of the present report, a stakeholders workshop was held on 7 March 2006. The main objective of the workshops was to promote a reflection among the stakeholders on their role within an Air Quality Management Structure, namely their involvement within a future the Air Quality Regional Observatory (Guerreiro et al., 2006b).

In addition, discussions on the present and future air quality management structure for Dakar were held during several meetings with the Direction of Environment, allowing to specify the expectations towards the development of the CGQA and Observatoire Régional.

Based on the above background information assessment, as well as meetings held with key institutions and the stakeholders workshop, recommendations for the future air quality management structure for Dakar have been elaborated and are presented in the current report.

2 Description of existing structure

Environment is a priority sector in Senegal and this is reflected by the creation of a Ministry of Environment (ME) since 1981 and the adoption of an Environment act since 1983 the *Code de l'Environnement* (ME, 2001).

Information about the structure of the Air Quality management of the City of Dakar has been collected and assessed. In this chapter the institutional responsibilities and the enforcement of laws and regulations are presented.

A presentation of the Senegalese legislation related to air quality management has been prepared in "The legislatives and prescribed texts and the standards of the air quality control in Dakar; Essay of general presentation of the law applicable in Senegal" (Sy, 2005). The inter ministerial decree on the application of the standards on the air pollution is summarised in Appendix A.

2.1 The Ministry of Environment

Environment is a priority sector in Senegal and this is reflected by the creation of a Ministry of Environment and Nature Protection. This Ministry is in charge of environment in Senegal.

The “*Code de l’Environnement*” has been updated in 2000, to take into account the new dimensions of environmental issues (ref. Stockholm, Rio Conferences, OSPAR and related international agreements).

To ensure a good coordination between stakeholders for the sound management of chemicals, a national committee (‘Commission Nationale de Gestion des Produits Chimiques’) comprising all stakeholders (Government, private and NGOs) was established in 2001, as an outcome of the UNITAR/IOMC programme and in accordance with the Bahia Declaration of IFCS Forum III.

The Department of Environment and Classified Enterprises (DEEC) is responsible for the implementation of national policy for the protection of environment and prevention.

2.2 Direction of the Environment and Classified Enterprises (DEEC)

Under the authority of the Minister of Environment and the Protection of the Nature, the Direction of the Environment and Classified Establishments is responsible for the application of the policy of the Government in environment, notably the protection of the Nature and the people against the pollution and the environmental impacts.

It’s mission is to:

- Implement the appropriate means to insure the prevention and the control of the pollution and the nuisances;
- Follow all the actions of the different services and agencies involved in the field of Environment;
- Elaborate the legislative and statutory texts concerning the Environment;
- Favour the energy efficiency for a better environmental protection by a rational management of its resources.

The Direction of the Environment and Establishments includes:

- A Division of the Classified Establishments;
- A Division of the Impact Studies and Pollution and Nuisances Control;
- A Division of the Living conditions;
- A management Office;
- Regional divisions;

The duties of The Division of the Classified Establishments are to:

- Investigate the application package of license of every operator of a classified establishment,
- Assure the regular inspections and the control of the classified establishments,
- Proceed to the census and to the elaboration of the data base on Classified establishments as well as the collection of taxes,
- Assure the management of obsolete and hazardous products and to follow their destruction if needed.



The inter ministerial decree on the application of the standards on the air pollution is taken jointly by the Ministers in charge of industry and the craft industry, and responsible for the environment and the nature conservancy. It fixes the conditions for application of the standard NS 05-062 on the air pollution.

Article 4 specifies that owners of the classified installations for which, the respect of this technical standard can imply important capital expenditures, can require a memorandum of understanding with the Ministry in charge of the Environment for a differed and progressive setting of the standards. The memorandum of understanding fix the characteristics required for the rejection of the atmospheric pollutants and the obligations which fall to the owner of the classified installation.

The Management of the Environment and Classified Establishments is in charge of the follow-up and the evaluation of these memorandum of understanding.

In **Article 6** it is stated that the organizations charged to carry out the taking away and analyses on the atmospheric emissions of pollutants must be approved by the Ministry in charge of the Environment. An application including technical descriptions and material provisions needed for the activities must be submitted to the appreciation of the Minister in charge of the Environment.

The regulation part of the environment Code devotes a title V to the air pollution with three chapters of which the provisions relate respectively to the fixed installations (Articles R71 to R74), on the fixed installations of incineration of combustion or heating (Articles R75 to R79), on the zones of special protection (Articles R80 to R82). In the various cases, decrees are designed to fix the conditions for application of the rules and standards on the air pollution.

The articles L76 to L80 deal with air pollution and unpleasant odours (chapter II of title III on the protection and the development of environment receiving). These provisions fix the fundamental principles and reinforce if needed the application of the International Conventions related to the control of air pollution. Decrees of application are designed to determine the cases and conditions as well as the completion time for the legal regulations authorized in the environment code.

3 Institutional responsibilities in AQ Management

The main responsibility of the an Air Quality Management Strategy (AQMS) for Senegal has not been finally formulated and presented in writing. In other countries these statements are often presented as “Parliamentary Decisions” .

One agreed solution has been indicated through discussions held with DEEC during the establishment of the Centre for Air Quality Management (CGQA). A well-defined air quality management policy for Dakar and for Senegal will represent the starting point for defining the structure of air quality management as well as the organisation of this work in Dakar.

3.1 A framework for Air Quality Management

NILU supports the suggestion of a framework for the development of an air quality management strategy for Dakar and Senegal to be embedded as a centre of air quality expertise (CGQA) within the DEEC structure in a first stage.

NILU will suggest that an air quality management strategy should be understood as a structure of organisation, policy formulations based upon analytical elements, and enforcement instruments and awareness raising tools that enables the responsible institutions to perform the following tasks:

1. Assess the present air pollution situation, relative to standards and guidelines.
2. Develop control options / potential control strategies based upon firm knowledge of the sources and its impact.
3. Analyse the effect of control options and their cost-effectiveness or cost-benefit ratios.
4. Select control strategies for short/medium/long term, and enforce them.
5. Disseminate air quality information to the public and policy makers, including on-line showing of data using the internet.

This approach is in accordance with the integrated DPSIR (Drivers-Pressures-State-Impact-Response) framework, which is used internationally to follow pollutions from “cradle to grave” (see Figure 1).

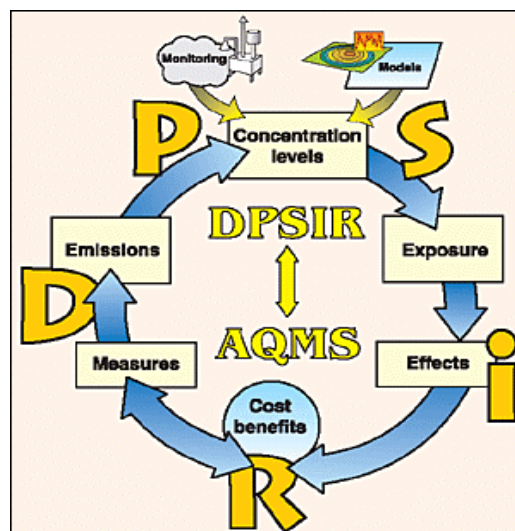


Figure 1: The DPSIR framework will represent an integrated way of handling the air pollution problems in Dakar.

The elements of the air quality management development will mirror the DPSIR way of thinking. This means that in any planning process, when air quality information is actively being used to improve the environment, it will be necessary to involve different levels of the environmental organisation.

The strategy / policy formulation represents a necessary foundation for the development of the Air Quality Management Plan. The strategy formulation should include a set of main goals and objectives that the Air Quality Management Plan is set up to respond to.

An objective for air pollution control activities in Dakar would be to collect sufficient and adequate information to enable the formulation of an Action Plan formulated in order to improve the air quality and reduce the air pollution impact in the area. During the formulation of such an Action Plan it will also be important to involve various stakeholders as well as different Ministries and political decision makers.

The structure of activities necessary in order to develop the input, analyses, priorities and decisions to be made in order to develop and enforce an Action Plan for air quality improvement is presented in the following Figure 2.

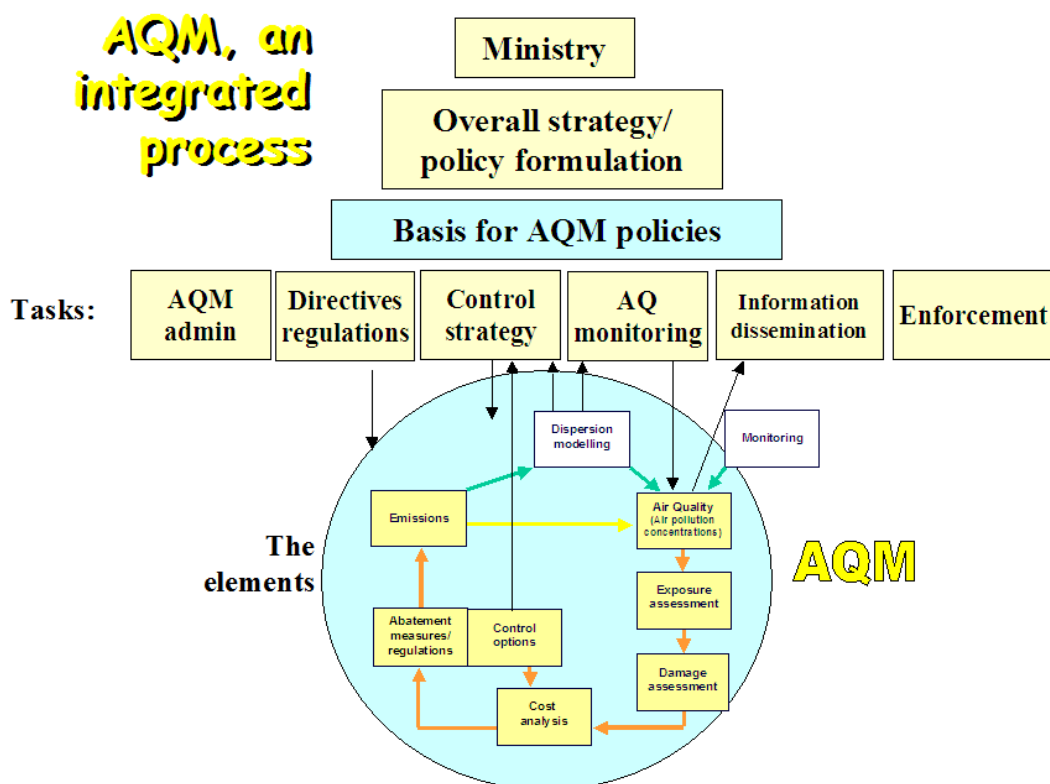


Figure 2: Suggested structure of activities of the CGQA with the responsibility of developing strategies and policies for air quality control.

The overall strategy and policy formulation is undertaken at a Ministry level. Decisions concerning actions to reduce air pollution loads are taken by the Conseil des Ministres

as presented by Government Bills. The basis for policy, regulations and directives are developed at a Directorate level. The scientific basis and the documentation of the impact of regulations are most often generated by experts and scientist at research centres and institutes, such as the CGQA establish as a first approach under DEEC in Dakar.

3.2 AQ management in other parts of the world, examples

Examples of some organisational structures used in other parts of the world has been summarised in Appendix C.

The development of strong and competent environmental institutions and integration of environmental concerns in sector policies is crucial to meet present and future environmental challenges.

From the analyses we have seen that the organisation of air pollution issues in most countries is undertaken at three levels:

1. The ministry (overall strategies and policy formulation),
2. Directorates (implementation of national policy)
3. Institutes and scientific centres (collect basic scientific data and information as input for decisions).

Environmental matters in many countries are regulated through a system of National or Federal Laws and Executive Regulations. These Laws are issued by the Ministry of Environment, where this exists.

The implementation of the Laws and regulations are normally the responsibility taken at one level below the Ministry level; the Directorates or National and Local Authorities. In most countries there are national as well as local or urban level authorities that handle the National Laws and regulations. In some countries there are parallel organisations, which have been given similar responsibilities. We will propose that the structure of parallel organisational structures will be avoided in Senegal.

The background data and the assessment of present and future air quality is normally collected by specialised institutions or laboratories with well trained experts in the necessary fields of science. The development of a centre such as the proposed CGQA in Senegal will also meet the international recognised structure of environmental and air quality matters, as presented in Figure 2.

4 Proposed AQ management organisation for Senegal

The organisation of the air quality management and operations in Senegal will have to reflect the needs and actions relative to the actual situation in the country and in Dakar especially.

A sequence of processes and different levels of actions has been proposed in the following. As in most countries the air pollution management, which is part of the environmental management responsibilities, should be handled at three levels:

- The Ministry
- The Directorates
- The specialised institutions

For Senegal this will imply that the Ministry of Environment will formulate the overall policy. The Directorates will enforce the pollution laws and regulations including the Product Control Acts. In addition, the Directorate will establish the framework and national goals on issues such as waste management and local air quality. The Centre for Air Quality Management (CGQA) will be responsible for air pollution monitoring and management conducting studies and preparing the scientific background for decisions.

Proposed organisation of air quality in Senegal

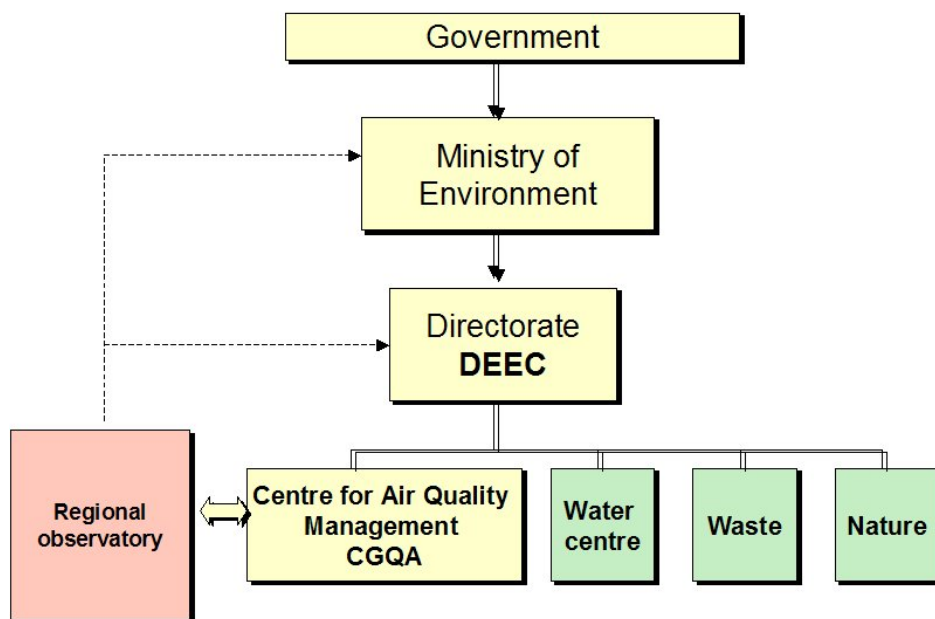


Figure 4: A proposed organisation of the air quality management and operations for the first phase of development in Senegal.

The main responsibility for planning and identifying actions to improve the air quality of Senegal is at the Minister of Environment. The Ministry will present proposals for actions to the Conseil des Ministers. The scientific and technical background for these proposals has been developed and evaluated by CGQA supported by the expert members of the Air Quality Regional Observatory. Experts from CGQA may be requested to present details of the proposals. The final approval is formulated by the Conseil des Ministers who makes the decisions and impose measures in co-operation with other concerned ministries.

4.1 Ministry of environment

The Ministry of Environment and Protection of Nature in Senegal has been working since 1981, and the adoption of an Environment act was established in 1983. (Code de l'Environnement). This Ministry is in-charge of all issues concerning the environment in Senegal. It has during the last few years established a number of working groups to handle the different issues.

The Ministry should be responsible for protecting the health and welfare of people and communities. As part of its commitment it should develop regulations that require industry, mobile sources and the communities to reduce their emissions of harmful air pollutants. The regulations have to specify commitments made in the government's based on specific prepared Action Plans.

The Ministry of the Environment should develop the policy based platform for setting the air quality standards in order to protect human and ecosystem health, prevent damage to the physical environment and minimize offensive odours.

Standards should be applied to determine compliance with Senegal's environmental regulations; define the legal limits for discharges to air and water for certificates of approval, control orders and program approvals issued under the *Environmental Protection Act*.

The Ministry of Environment will report directly to the Government (Conseil des Ministries) on Air Quality issues.

4.2 Directorate for the Environment (DEEC)

The Department of Environment and Classified Enterprises is responsible for the implementation of national policy for the protection of environment and for the prevention of adverse impact on man and the environment.

Based on the policy set by the Ministry DEEC should work on:

- Setting new air quality standards, in some cases for the first time, for many harmful pollutants, including carcinogens and toxins that could pose a threat to human health.
- Report on the state of the environment including air quality information based on data collected by CGQA
- Achieving a better picture of industrial emissions in order to set emission standards that can be achieved through the use of updated technology.
- Introducing a risk-based approach to implementing new air standards.

Implementing the policy defined by the Ministry of Environment DEEC will have to keep in mind that setting the values and procedures for meeting standards are based on the best scientific information available. They are further set to:



- protect the most sensitive receptors (e.g. sensitive sub-populations which includes children); and
- incorporate socio-economic considerations where appropriate.

The process for setting standards also recognizes that some contaminants can move through the natural environment, persist for long periods of time, and/or accumulate in the food chain. Certain receptors can also be exposed simultaneously through more than one environmental pathway -- for example, through contaminants in the air they breathe, the food they eat and the water they drink -- which requires a multi-media approach to setting standards. Where there is uncertainty regarding the risk posed by a contaminant, the standards-setting process incorporates the precautionary principle and exercises caution in favour of the environment.

Setting standards follows a generic multi-step process, which incorporates the key elements of priority setting, risk assessment, risk management and consultation. Depending on the standard being developed, additional steps may be employed. For example, in setting air standards, DEEC will have to consult with the ministry and with stakeholders prior to developing a limit based on risk to ensure that the full range of scientific information is considered. Additional factors, such as technical feasibility and cost, may also be considered in setting the air quality standards.

The law contains a total of 21 objectives for the Agency, of which the most important related to air quality is given below:

- Conduct studies, scientific research and comprehensive surveys of air quality and the environment in order to prepare strategies and priorities.
- Assess the impact of industrial gases and household air pollutants on the environment and wildlife, recommend solutions for air pollution problems and recommend projects to clear and control gas emissions, in coordination with the authorities concerned.
- Evaluate the effect of existing and future industrial and economic projects and investments in Senegal in coordination with the Ministry of Environment and other concerned bodies.
- Assess the impact of population growth and infrastructure projects of town planning on the environment.
- Coordinate research at specialized centres to carry out studies and scientific research related to the air pollution.
- Provide the public and private sector with information related to air pollution and the environment.
- Enhance public awareness on air pollution issues.

The Direction of Environment and Classified Establishments includes:

- A Division of the Classified Establishments;
- A Division of the Impact Studies and Pollution and Nuisances Control;
- A Division of the Living conditions;
- A Management Office;
- Regional divisions;

The Division of the Classified Establishments is in charge of industries and activities with hazardous emissions, including air pollutants.

The Division of the Living conditions is in charge of information, and legislation.

The Division of the Impact Studies and Pollution and Nuisances Control consists of:

- An office for pollution and nuisances control, in charge of air and water pollution as well as noise, where new CGQA will be established.
- An office for the follow-up and control of the Impact Studies on the Environment

There are four Regional Divisions of the Environment and the Classified Establishments:

- The regional division of Thiès;
- The regional division of Kaolack;
- The regional division of Saint-Louis;
- The regional division of Ziguinchor.

The Regional Division in Dakar is operated as a service of DEEC.

The organization of the regional divisions is defined by a memorandum from the Director of the Environment and Classified Establishments.

4.3 Centre for Air Quality Management (CGQA)

The CGQA is established as a component of the Division 'pollutions and nuisances Control and Impact Studies' of the DEEC (Appendix D-Arreté ministerial).

CGQA will be funded under DEEC budget. In 2007, it has been allocated 65 million FCFA in addition to a support from NDF for the remuneration of personal until 2009. (Appendix E – budget CGQA)

DEEC is currently establishing 3 laboratories for air, water and waste. CGQA will be the air laboratory. These laboratories are all established in a same new building.

Some of the tasks to be undertaken by the air quality management centre are to:

- Operate local monitoring programmes, sampling and analyses,
- Undertake QA/QC and SOP follow-ups,
- Prepare emission inventories
- Perform modelling and collect relevant input data,
- Assess the present air pollution situation,
- Compare to standards and guidelines / trend analyses.
- Develop control options / potential control strategies
- Analyse the effect of control options and their cost-effectiveness or cost-benefit ratios.
- Select control strategies for short/medium/long term, and enforce them.



- Disseminate AQ information to the public and policy makers including on-line presentations.

The air quality management centre will have the expertise to both perform environmental impact studies (EIA) on air quality and to assist the authorities in the definition of the EIA's contents concerning air quality impacts, as well as being a technical advisor on EIA evaluation and follow up of the effects of mitigation measures.

The CGQA should secure high level of expertise in 4 fields :

- Quality assurance and quality control of air quality measurements
- Data management
- Modelling of air pollution
- Mitigation measures; conception and promotion

4.4 Observatoire Régional sur la Qualité de l'Air

The Arrêté ministerial establishes a as support to CGQA (Appendix D). This 'Comité de Conseil et de Suivi' will in the following be referred to as 'Observatoire Régional sur la Qualité de l'Air' or only the Obseratoire.

This will also be consistent with former studies related to Air Quality Management in Dakar as well as information given to stakeholders participating at the March 2006 workshop,

The terms of reference of QADAK project indicate key strategic orientations for the Observatoire such as indicated in the following fact box:

Description de l'Observatoire Régional de la Qualité de l'Air dans les Termes de référence du projet QADAK (CETUD, 2004)

“(L’Observatoire régional de la qualité de l’air) servira de plate forme d’échanges et de coordination, et sera un acteur clé dans le lancement de mesures politiques et de propositions législatives pour améliorer la qualité de l’air.”

“Cet observatoire sera un organe consultatif et de régulation qui donnera ses avis sur les problèmes d’ordre juridique, qui mettra en œuvre une veille informationnelle et une stratégie de communication pour aider à la prise de décision et aux changements de comportements.”

“Ce sera un lieu de concertation, point focal des sources d’informations; il réunirait 3 groupes d’intérêts: l’administration, les associations, les centres de compétence”.

CGQA collects and analyses information about the state of the air quality, which must be transcribed by the government into air quality management measures.

The role of an Observatoire Régional is to:

- Define CGQA yearly scope of work

- Enhance the information produced by CGQA, based on the Observatories partners own information;
- Assist CGQA in the elaboration of propositions for measures to improve AQ
- Disseminate AQ information to the general public so that it is aware of the proposed measures and new regulations and accepts the constraints associated to these;
- Facilitate decisions at political level so that proposed measures are translated into the national regulatory framework

The Air Quality Regional Observatory should be a network constituted by all the stakeholders, i.e. persons, groups and organisations playing important roles in urban development and air quality management, comprising:

- Those who are adversely affected by air pollution;
- Those who create air pollution and represent a threat to the environment such as industries and traffic authorities;
- Those who have information on the field of air quality management; and
- Those who control the instruments to address air pollution such as policy makers, the media, and the polluting activity sectors that have the resources to reduce their emissions by adopting pollution prevention measures.

For the CGQA this network will represent an information exchange and synergies development framework for instance through joint research and development projects. It constitutes the framework in which concerned institutions (industry, tourism, transport) are invited to propose areas of research and to participate in the elaboration of propositions of measures aiming at the improvement of the air quality.

This Air Quality Regional Observatory (AQRO) is composed by three main bodies:

1. The animator, which should be CGQA (representing DEEC, identified in the Arrete Ministeriel as chairing the AQRO);
2. An 'executive committee' which is responsible for: 1) evaluating the feasibility of the propositions of measures for pollution reduction coming from the network; 2) validating the propositions; 3) present them to the Ministry of Environment.
3. A network of resource persons from different concerned stakeholders, which may support information and discuss propositions of actions or measures, based on its own information and knowledge on technical feasibilities.

The executive committee should be constituted by representatives from different key institutions in charge of Environment, Energy, Industry and Transport, in order to assure that action propositions are politically and technically feasible.

The stakeholders include people from civil society, scientific community, health professionals and anyone who feels concerned by AQ. Participation is widely open and encouraged.



CGQA will periodically capitalise the contributions from the network into concrete propositions, which are then presented to the “executive committee” of the Observatoire, whose mission will be to:

1. Discuss these propositions with the various institutional structures, which could be concerned by their application (Ministry of Transport, local government, etc.) so that their formulation takes into consideration the operational constraints of these structures.
2. Present these propositions to the Minister of Environment, after validation by DEEC, as the result of a consensus between stakeholders.

The Minister of the Environment presents these propositions in Cabinet (Conseil des Ministres), where it is decided on the distribution of the responsibilities of their implementation between the various concerned institutions. CGQA can be called to participate in the Conseil des Ministres meeting to support the measures proposed.

The Observatoire will be an important tool for the sustainability of CGQA. The CGQA director, as facilitator of the AQRO, will have the following responsibilities:

1. To elaborate and operate the activity plan of the AQRO
2. To look for the financing necessary for the activities of the AQRO (notably for general assembly and annual publication)
3. To organize an annual general assembly of the AQRO

The operation of the AQRO should be, in its main lines, as following:

1. It holds an annual General assembly, which gathers all the stakeholders. Its agenda includes:

- Evaluation and possible improvements based on the activities of the past year
- Identify and propose areas of studies and research to be pursued for the coming year
- Present possible improvement measures on air quality which must be studied and followed up.

2. It publishes every year, on the occasion of its general assembly, a report presented to the decision-makers and partners, which presents a synthesis of its works, including:

- Analysis of the situation by CGQA;
- Publication of relevant works realized by members of observers' network;
- Publication of the measures notified to the government.

The schedule for the annual activities should be prepared by the General Assembly in order to main objectives of the AQRO:

- Month 1 to 6 : Preparations and development of actions and proposals by the technical/scientific centre in the “Network”
- Month 7 to 9 : Elaboration of proposed measures and actions in dialogue with the institutional stakeholders
- Month 10 to 12 : Validation of the proposals by the Ministry of Environment and presentation to the Government

Each of the parties member of the AQRO is free to use any information prepared and presented by this Network. It is even one of the main tasks for the CGQA and the AQRO to disseminate all available information about the state of the air quality and the impact of the measures taken to improve it. The position of the AQRO in the organization of environmental management is shown in Figure 5.

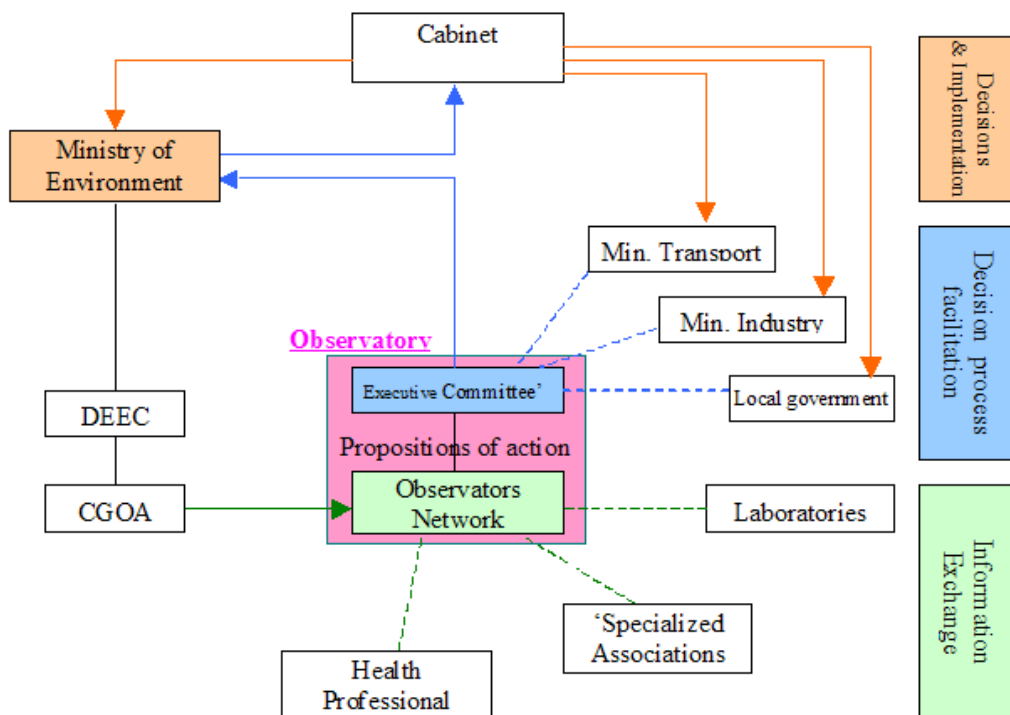


Figure 5: The position of the AQRO in the organisational structure of air quality and environmental issues in Senegal.

The role of the Observatory is thus to support the Ministry in disseminating relevant information on actions needed to meet the goals and targets set by the Ministry and to support and ensure that the “correct” decisions are taken by the Government.

The AQRO will further:

- Review the work accomplished by CGQA
- Assess the effectiveness and efficiency of the work performed
- Approve Project Documents
- Evaluate expected outputs relative to budget
- Approve the annual plans
- Give guidance for project implementation
- Ensure the policy dialogue with other Ministries and Agencies

5 Sustainability

To ensure sustainability in the development of the new organisation for air quality management in Senegal, as well as long-term institutional capacity, the following conditions must be fulfilled:

1. The Centre must consist of a competent and internationally recognised staff of experts;
2. Financial capacity must ensure the well functioning of the different components of the air quality management structure;
3. The proposed air pollution reduction measures must be feasible;
4. Public awareness is enhanced and facilitates decisions at political level so that proposed measures are implemented.

5.1 Expertise

A high level of expertise must be maintained and updated in CGQA and this expertise must be recognized both at national level and by similar international institutions.

Experts in CGQA will therefore need to :

- Participate in international work and contribute to organisations such as UNEP, Clean Air Africa, WHO and GEF;
- Publish results and air quality information in international journals;
- Participate in international conferences ;
- Develop partnerships with air quality management institutions in other countries and the scientific community in Senegal ;
- Report and present their work to authorities, decision makers and the public.

5.1.1 Opportunities

The existence in Senegal of several active scientific groups working with different topics related to air quality represents a dynamic environment for CGQA. The CGQA may cooperate with atmospheric scientists, chemists, climate change experts, as well as professionals in the health sector. Preliminary contacts have already shown that CGQA is considered by the University of Dakar as an opportunity for students at PhD level.

5.1.2 Threats

Managing the CGQA as a 'project' and not as a perennial institution, may represent a main risk for the sustainability of the centre. The tasks and responsibilities defined to be handled by the CGQA and its experts must be considered more important than the infrastructure and facilities.

5.1.3 Propositions

The proposals for the maintaining a good quality Air Quality Management structure in Dakar have identified 3 technical fields where high level of expertise must be maintained and developed: 1) Quality assurance and quality control of air quality measurements, 2) Data management and assessment, 3) Modelling of air pollution (see Ch 4.3).

5.2 Finance

Adequate financial resources must be secured in order to enable remuneration levels compatible with the level of expertise requested. Financial support must also be secured in order to maintain and develop the facilities and equipment necessary for a highly performing air quality management network.

Estimated future yearly budget for CGQA will be above 300 MFCFA, compared to 2007 budget of 65 MFCFA. It can be roughly distributed in 3 major components: 100 MFCFA for remunerations (including charges), 100 MFCFA for maintenance and renewal of air quality management facilities (20% of an investment of 500 MFCFA), 100 MFCFA for functioning and capacity building.

Furthermore, direct access to the financial resources allocated to the CGQA is essential to guarantee permanent operationally of each component in the air quality management network as data collection must be a continuous process.

5.2.1 Opportunities

The high initial budget allocated to CGQA for year 2007 gives a positive signal of government commitment for the establishment of an air quality management facility in Dakar. A correct management of this resource will allow to have it positively re-evaluated every year.

The mission of the Director of CGQA should be to work towards the autonomy of the CGQA, as agreed with DEEC (see minutes of meeting with DEEC in Appendix F). Autonomy is necessary to secure sufficient and reliable financial support, and to easily access future resources.

5.2.2 Threats

The present remuneration levels in administration in Senegal do not allow for the maintenance of highly qualified experts at CGQA. Investigations made during the process of selection of CGQA experts have raised the important issue of the cost of such an expertise. High level of expertise is definitely available in Senegal, but the dynamic development of the private sector in this country creates very attractive opportunities in terms both of challenges and remuneration CGQA will have to compete with in order to attract and maintain requested expertise.

5.2.3 Propositions

The establishment of AQ Management structure in Dakar has identified the environment of CGQA as highly competitive. The type of expertise needed for the CGQA, characterized by an intense activity in software development and communication technologies and new strategies for the development of PME/PMI based on quality certification, is also highly demanded in the labour market in Senegal.

The CGQA must therefore offer very attractive opportunities for high level experts in order to keep a highly competent and operative staff.

5.3 Political will

Air quality management relies on operating a sophisticated measurement network as well as experts to understand and operate air pollution dispersion modelling tools. The development of actions aimed at improving the air quality in Dakar will largely depend on contributions from a number of stakeholders. The dynamics of the AQRO will be closely linked to positive and significant feedback and contributions from stakeholders and representatives from decision makers and politicians. It is therefore essential that proposed measures are being validated at political level and implemented.

5.3.1 Opportunities

Dissemination of information is identified as an important mission of CGQA. Raising public awareness is essential to promote political will and to develop understanding and interest for the air pollution issues in Senegal.

5.3.2 Threats

Management of the AQRO as a 'technical committee' which role would be limited to associate various administrations in the monitoring of CGQA's work should be considered as a risk, because it would undermine one of the main functions of the AQRO which is raising public awareness and acceptance of measures necessary to alleviate air pollution.

5.3.3 Propositions

Dissemination of information should include any information issued and validated by the AQRO, such as:

- Proposals for measures to improve air quality;
- Information on potential health or environmental impacts of air pollution;
- Simplified daily information of the status of air quality;
- Stakeholders should be able to disseminate through its own networks, any information made available to the AQRO.

A close interaction between DEEC and key institutions directly concerned by the implementation of mitigation measures (e.g. Direction des Transports Terrestres, Direction de l'Industrie, Direction de l'Energie) is necessary to raise a consensus on such measures and enforce their submission to the government.

The proposition for AQ Management structure in Dakar organises the 'Observatoire Régional de la Qualité de l'Air' into two major components (see Figure 5):

- A dynamic and opened network established between concerned stakeholders where an intensive dissemination of information is encouraged as it has an important role in enhancement of public awareness.
- An operational 'Comité Exécutif', consisting of a restricted number of key institutions, which is the interface between stakeholders and political level ; it as

an important role of validation of the feasibility of propositions of measured elaborated by CGQA and stakeholders

For the Observatoire Régional to play an active role in air quality management, meetings must easily be organised with whoever is expected to carry pertinent inputs or actively analyse and support abatement actions and proposals. In order to operate efficiently such working groups should never target more than 6 to 7 persons and should be able to meet at any time and as frequently as requested.

5.4 Management

Overall institutional capacity on air quality management depends on interlinking the above issues into a coherent and proactive strategy. Responsibility of raising expertise level, mobilising adequate finance, negotiating active civil society and political supports, which are the main components of this strategy, must be clearly identified.

5.4.1 Opportunities

The development of CGQA into an autonomous status would result in concentration of responsibility for the achievement of the major issues developed above : expertise development and acknowledgement, raising of adequate finance and promotion of requested alleviation measures at political level.

The location of three different environmental laboratories in the same building may be an incentive to develop a structure that supports sustainability for the total environmental field in Senegal. The co-location of the laboratories may optimise costs for experts and laboratories and give high visibility as the different laboratories may in the future use the same instruments and exchange analyses as well as experts.

5.4.2 Threats

As one component of an office under a division of DEEC, CGQA may have a too low institutional visibility and capacity to directly interact with other institutions and stakeholders.

Dependant on the budget affected to DEEC by the Government, the development of CGQA is constrained by the framework it imposes especially regarding remuneration standards within Administration which are not attractive enough to maintain expertise at an adequate level. In addition the procedures to access the budget within the Administration are very complicated and time consuming and the delayed access to the necessary financial resources can often cause delays and discontinuities in the CGQA work.



5.4.3 Propositions

In order to execute all its tasks in time and achieve its goals, the CGQA needs not only a good technical capacity, but also an operative financial capacity which allows direct access to its budget without delays.

The proposition for AQ Management structure in Dakar identifies the need for high technical expertise also at the level of the Director of the Laboratory, in order to manage the process of conception and promotion of an Air Quality Action Plan, containing measures to improve air quality in Dakar (see Ch. 4.3-4.4).

It is furthermore required that the 'Observatoire Régional de la Qualité de l'Air' should be considered as a 'tool' for the CGQA. The AQRO is necessary for the full achievement of CGQA's missions and objectives, as well as the establishment of a performing monitoring network. It is therefore important for the Director of CGQA to animate this Observatoire in order to receive relevant contributions and support from its stakeholders. It is also crucial that the Senegalese authorities, including the political decision makers, actively will use the CGQA as a technical adviser for its environmental planning and energy policies.

Implementation of these recommendations is critical for CGQA to acquire the credibility and efficiency it needs to develop as an autonomous institution.

6 Conclusions

The proposed plan for organisation of environmental issues in Senegal gives a general frame for the management of the air quality in Dakar by describing the respective positioning and the role of different entities.

The recommendations for air quality management in Senegal will contain institutions at three levels; The Ministry, Directorates and Specialised Centres. We have also recommended the establishment of an AQRO including a network of stakeholders and an executive committee. The executive committee represents an interface between CGQA, the stakeholders and the Ministry of Environment. The main objective of the AQRO will be to discuss and present proposals to the Ministry and to disseminate relevant information on the present and forecasted air quality as well as actions to improve the air quality in Senegal and in Dakar especially.

This report also clarifies the role of DEEC as the Directorate under the Ministry with a main role of executing and setting into operation the Laws and Regulations set fourth by the Ministry.

It has been necessary to clarify the modalities of functioning of the third level, in which the new centre of Air Quality Management (CGQA) will be established. The relation CGQA / AQRO must be bi-directional. The AQRO has an important role of guidance, follow-up and support to the work undertaken at the CGQA. This AQRO will also be part of the structure of the Ministry of the Environment and the DEEC.

The proposed organisation presented in this report indicate the AQRO as a network of observers and important stakeholders, who may ensure sustainability and support plans and actions aimed at improving the air quality in Senegal.

Once the structure of the Air Quality Management in Dakar has been evaluated, NILU will present suggestions on improvements of the present structure as well as different alternative structures. These suggestions will be based on NILUs experience in dealing with air quality and environmental authorities worldwide.

The organisational structures proposed in this report will also enable the Senegalese authorities through CGQA and the AQRO to coordinate all the different support programmes on air quality that is being given to Senegal by International Organisations, International Banks and institutions.

7 References

- CETUD (2004) Demande de propositions DP N. PAMU/FND/C/08/04. L'assistance technique a la mise en place du laboratoire central et des stations de mesures pour l'amélioration de la qualité de l'air en milieu urbain de Dakar. Version 08-04-04.
- Commission Nationale sur le Développement Durable (CNDD) (2002) Sommet Mondial sur le Développement Durable, Rapport National du Senegal, Johannesburg, 26 Août – 04 Septembre 2002.
- Guerreiro, C., Sivertsen, B. and Laupsa, H. (2005) QADAK Mission 1, May-June 2005. Kjeller (NILU OR 45/2005).
- Guerreiro, C., Sivertsen, B. and Laupsa, H. (2006a) QADAK Mission 2, 3-12 October 2005. Kjeller (NILU OR 8/2006).
- Guerreiro, C., Sivertsen, B. and Laupsa, H. (2006b) QADAK Mission 3, 27 February-10 March 2006. Kjeller (NILU OR 74/2006).
- Ly Ibrahim (2005) Rapport juridique sur la qualite de l'air a Dakar. Les textes legislatifs et reglementaires et les normes de controle de la qualite de l'air a Dakar. Dakar Decembre 2006. (Rapport projet QADAK).
- Ministere de la Jeunesse de l'Environnement et de l'Hygiene Publique (2001) Code de l'Environnement.
- Norme Sénégalaise NS 05-062 (2003) Pollution atmosphérique - Norme de rejets, Direction de l'Environnement et des Etablissements classés. Octobre 2003.
- Nordic Consulting Group (2001) Projet d'Amélioration de la Mobilité Urbaine (PAMU) Qualité de l'air – Rapport Définitif, Décembre 2001.



Simon & Cristiansen Ingénieurs Conseils S.A. (2000) Étude sur la connaissance des sources de pollution et le niveau de contribution de chaque source identifiée à Dakar, Définition d'un programme d'actions – Rapport Définitif. Volume I. Janvier 2000.

The Ministry of Environment Norway. URL:
<http://www.regjeringen.no/en/ministries/md.html?id=668>





Appendix A

Summary from the report “The legislatives and prescribed texts and the standards of the air quality control in Dakar; Essay of general presentation of the law applicable in Senegal”





IV. interministerial decree on the application of the standards on the air pollution.

Summary :

This interministerial decree is taken jointly by the Ministers in charge of industry and the craft industry, and responsible for the environment and the nature conservancy. It fixes the conditions for application of the standard NS 05-062 on the air pollution. The originality of this Article is in its Article 10 which sanctions the right to information for any person on the air quality on the whole territory.

Interministerial decree fixing the conditions for application of the standard NS 05-062 on the air pollution

ARTICLE 1: This present decree has the aim of applying the standard NS 05-062 regulating the conditions of atmospheric rejections of pollutants in the ambient air.

ARTICLE 2: The provisions of the Article L 78 of the Environment code the must be respected by any classified installation rejecting atmospheric pollutants.

ARTICLE 3: The Management of the Environment and the classified establishments controls that the existing stationary installations which do not correspond to the requirements of this decree are put at the standards. It enacts the provisions necessary and fixes the time of setting at the standards

ARTICLE 4: Owners of the classified installations for which, the respect of this technical standard can imply important capital expenditures, can require a memorandum of understanding with the Ministry in charge of the Environment for a differed and progressive setting of the standards

ARTICLE 5: The memorandum of understanding fix the characteristics required for the rejection of the atmospheric pollutants and the obligations which fall to the owner of the classified installation.

The Management of the Environment and Cassified Establishments is in charge of the follow-up and the evaluation of these memorandum of understanding.

ARTICLE 6: The organizations charged to carry out the taking away and analyses on the atmospheric rejections of pollutants must be approved by the Ministry in charge of the Environment

A brief of approval making state of their technical and material provisions to conclude these activities must be submitted to the appreciation of the Minister in charge of the Environment

In addition to the approved organizations, the sworn agents according to the law n° 2001-01 of January 15, 2001, bearing Code of the Environment could be committed for this purpose in case of necessity.

ARTICLE 7: The methods of analysis consigned in the appendix V of the standard NS 05-062 constitute the official methods of reference

ARTICLE 8: Any infringement with the provisions contained in the standard NS 05 - 062 can liable to sanctions defined in the L99 ARTICLE of the law n° 2001-01 of January 15, 2001, bearing Code of Environment

ARTICLE 9:

In all the agglomerations where limiting values mentioned in appendix I of the standard NS 05 - 062 are exceeded or risk to be exceeded, the local proper authority works out a plan of protection of the atmosphere and subjects it for opinion and approval of the Technical Committee of Standardization in the field of the Environment and the Natural resources of Senegalese Association of Standardization

The local plans of protection of the atmosphere are the subject of an evaluation at the end of a five years period and, if necessary, are revised.

ARTICLE 10: The right to information on the air quality is recognized to each citizen on the whole territory. The State is standing security for the exercise of this right, reliability of information and its diffusion. This right is exercised according to the methods' defined in the present article.

The Ministry in charge of the Environment in connection with the qualified engineering departments regularly publishes a report on the quality of the air and its possible evolution in time and space.

When the qualitative aims of the air are not achieved or are likely not to be achieved , the public is immediately informed by the Ministry in charge of the Environment.

This information also relates the measured values, the advices to the concerned populations, and the temporary or permanent regulations decided.

ARTICLE 11: The Ministry in charge of the Environment must support and support research on the effects of the ambient air pollution on pubic health and the environment

ARTICLE 12: The tax on the air pollution is eligible for any stationary or mobile installation and any vehicle rejecting atmospheric pollutants exceeding the standard.



ARTICLE 13: The payment of the various taxes is carried out in accordance with the provisions of the L73 article of the law n° 2001-01 of January 15, 2001, bearing Code of the Environment and the bearing decree n° 2001-282 application of the Code of the Environment.

ARTICLE 14: The Minister in charge of the Environment will take a decree to determine the mode of calculation of this tax according to the polluting load retained as base. This tax on the air pollution will be defined according to the nature and of the importance of the Classified Installation.

ARTICLE 15: The analyses as well as the other expenses of sampling are the responsibility of the owners of the Classified Installations concerned

Each of , The Director of the Environment and Classified Establishments, the Director of The Senegalese Association of Standardization, the Director of Health, the National Meteorology Director and the Director of the Local Communities, is in charge of the application of this decree which will be recorded and published everywhere where need will be.

Dakar _____

The STATE MINISTER, MINISTER IN CHARGE OF INDUSTRY AND CRAFT
INDUSTRY

The MINISTER IN CHARGE OF ENVIRONMENT AND CLEANING UP



Air quality in urban environment of Dakar



Appendix B

Dakar AQ management Stakeholders





Dakar AQ management Stakeholders

A workshop was arranged in Dakar on 6 and 7 March 2006 in order to discuss various stakeholders role within the Air Quality Regional Observatory in Dakar.

Three separate topics were brought up:

- Air Quality and Health
- Air Quality and Transportation and
- Air Quality and Communication

The participants gave already during this first meeting recommendations of actions to be implemented. It was, however, noticed that it is necessary for to obtain more sound and deepened information about the situation and the underlying dynamics before priorities are presented.

It proved, however, important that the most important stakeholders in Dakar willø have to be identified in an early stage:

- Who are they?
- What are their activities?
- How can they contribute to the AQRO?

The project team in close collaboration with the DEEC and the CETUD established a first list of 51 persons or institutions. It does not include the resource person directly involved or being close partners in the project.

Participants to the workshop 6-7- March, 2006

Special-interest group	Guests	Participants		Main interest		
		Day 1	Day 2	Health	Transport	Communication
Public services	15	10	8	2	3	3
Proficiency center	9	5	4	3	1	0
Communication	4	3	0	0	0	0
resource person *	23	10	7	3	2	2
Total	51	28	19	8	6	5

* We understand here by resource person, the people targeted within professional associations or within the civil society or within professional structures (industry, health); these people are a component of 'associations' or 'civil society' for the Air Quality Regional Observatory.





Appendix C

Examples of air quality organisation and administration in other countries





Norway

The Ministry of environment

Norway was one of the first countries to establish a Ministry for the Environment (1972). The Ministry is responsible for developing policies and instruments to protect the environment and cultural heritage. It is advised by five executive agencies, each responsible for implementation of the acts, regulations and policy instruments within its area of expertise.

We believe that the development of strong and competent environmental institutions and integration of environmental concerns in sector policies is crucial in meeting present and future environmental challenges. Norway and NILU may contribute with our expertise in the development of environmental policy and management systems.

The core competence in the Ministry is:

- Organization of an efficient environmental administration at national, regional and local levels
- Mechanisms for sector integration, delegation of authority and cooperative relations between local and central authorities
- Introduction of economic instruments such as taxes and support schemes
- Development of legal instruments, such as laws, regulations and control systems
- International negotiations and implementation of environmental treaties and conventions
- Promoting transparency and broad involvement of civil society in environmental policymaking
- Development of the knowledge-base on the state of the environment

The Norwegian Pollution Control Authority (SFT)

SFT works to ensure that pollution, hazardous substances and waste do not affect people's well-being or harm nature's powers of regeneration. SFT enforces the Pollution and Product Control Acts and related regulations. Equally important is environmental monitoring and information. SFT also instructs and guides the County Governors on pollution issues. In addition, the Authority lays down the framework and national goals on issues such as waste and local air quality.

The Ministry of the Environment has assigned the responsibility for production of State of the Environment Norway to the environmental authorities. The Norwegian Pollution Control Authority has the overall editorial responsibility.

The content has been produced and quality checked by the respective environmental agencies. The [Directorate for Nature Management](#) is responsible for the topics on "biological diversity" and "outdoor recreation", while the [Directorate for Cultural Heritage](#) is responsible for the topic on "cultural heritage". The [Norwegian Polar Institute](#) has prepared the topic about "polar regions", and the [Norwegian Pollution Control Authority](#) is responsible for "water pollution", "hazardous chemicals", "climate and ozone", "noise", "air pollution", "waste" and "international co-operation".

The pollution control act of 13 March 1981 No.6 concerning protection against pollution and concerning waste (the Pollution Control Act), has been amended by Act of 20 June 2003 No.45.

The purpose of this Act is to protect the outdoor environment against pollution and to reduce existing pollution, to reduce the quantity of waste and to promote better waste management. The Act shall ensure that the quality of the environment is satisfactory, so that pollution and waste do not result in damage to human health or adversely affect welfare, or damage the productivity of the natural environment and its capacity for self-renewal.

Research institutes

Research institutes and scientific laboratories are given the responsibility for supporting relevant data and information to SFT. The Norwegian Institute for Air Research (NILU) is responsible for air pollution, and support the databases, is acting as a national reference laboratory for air pollution and is conducting studies and preparing the scientific background for further decisions.

The United Arab Emirates (UAE), Abu Dhabi

Environmental matters in the UAE are regulated through a system of Federal Laws and Executive Regulations which apply to all industrial operations in the country. In addition, each Emirate issues its own Regulations which implement the various Federal requirements.

The UAE Federal Environment Agency was established in 1993 to manage the environment of the Emirates and to implement national environmental laws. Subsequent to that the Environmental Research and Wildlife Development Agency (ERWDA) was created in 1996 (Law No.4) to protect the natural wealth of the Emirate of Abu Dhabi and to promote sustainable Development. ERWDA was restructured in 2005 under Law No.16 and was given additional responsibilities. Its name was also formally changed to the Environment Agency-Abu Dhabi.

The most significant Federal Law covering environmental protection is Federal Law No. (24) of 1999 for the Protection and Development of the Environment [4]. This law established the framework for environmental protection in the UAE and has the following key objectives:

1. Protection and conservation of the quality and natural balance of the environment.
2. Control all forms of pollution and avoidance of any immediate or long-term harmful effects.
3. Development of natural resources and conservation of biological diversity.



4. Protection of society, human health and health of other living creatures.
5. Protection of the State environment from the harmful effects of activities undertaken outside the region or State.
6. Compliance with international and regional conventions ratified or approved by the state regarding environmental protection, control of pollution and conservation of natural resources.

Federal Law No. (24) is comprehensive and covers the following environmental issues:

1. Development and the Environment.
2. Protection of the Water Environment.
3. Soil Protection.
4. Protection of Air from Pollution.
5. Handling of Hazardous Substances and Hazardous Wastes and Medical Wastes.
6. Natural Reserves.
7. Liability and Compensation for Environmental Damage.
8. Penalties.

The designated Competent Authority in Abu Dhabi for administration of Federal Law N0 (24) is the Environment Agency- Abu Dhabi (EAD).

Law No. 16 of 2005

Law No. 16 of 2005 restructured the competent authority for the environment in Abu Dhabi. With regards to the Restructuring of EAD from ERWDA, the law states that EAD remains an independent entity with full capacity and financial and administrative independence and remains the responsible authority for environmental and wildlife issues in the Emirate of Abu Dhabi. The law stipulates that all Government departments and agencies are required to coordinate and cooperate with the Agency on issues related to researches, studies and programs that concern the environment and wildlife.

The law further states that the Minister of Justice can, in collaboration with the Chairman or Deputy Chairman of the Agency's Board of Directors, appoint some Agency staff members to assume the capacity of a judicial enforcement officer. The officer is authorised to inspect sites and projects to ensure they comply with federal and local laws and regulations.

The law further states that the Agency's approval is required at all times prior to the issuing of regulations, policies and decrees that are related to environmental and wildlife affairs.

The new law also stipulates that the Agency's mission will include working towards achieving sustainable development through its environmental work and promotion of environmental awareness.

The law contains a total of 21 objectives for the Agency, of which the most important related to air quality is given below:

1. Conduct studies, scientific research and comprehensive surveys of the environment and wildlife in order to prepare strategies and priorities.
2. Assess the impact of industrial gases and household air pollutants on the environment and wildlife, recommend solutions for air pollution problems and recommend projects to clear and control gas emissions, in coordination with the authorities concerned.
3. Evaluate the effect of existing and future industrial and economic projects and investments in the Emirate of Abu Dhabi, in coordination with the Federal Environment Agency (FEA) and other concerned bodies.
4. Assess the impact of population growth and infrastructure projects of town planning on the environment and wildlife.
5. Prepare plans required to introduce and develop a balanced environmental strategy, and implement it on the industrial, agricultural and economic projects within the Emirate of Abu Dhabi.
6. Establish specialized centres to carry out studies and scientific research related to the environment and wildlife, and to develop techniques to collect information about the natural constituents of the environment and wildlife.
7. Provide the public and private sector with information related to the environment and wildlife.

Enhance public awareness on the importance of protecting and restoring the environment and wildlife, and to familiarise the general public with the Agency and its objectives throughout the educational and cultural programs.

Executive Regulations

In addition to the requirements of Federal Law 24, a number of Regulations have been published dealing with specific environmental areas. To date these regulations include:

- Regulation for Handling Hazardous Materials, Hazardous Wastes and Medical Wastes
- Regulation for the Assessment of Environmental Effects of Installations
- Regulations for the Protection of the Maritime Environment
- Regulations for Insecticides and Agricultural Additives and Fertilizers
- Regulations for the Protection of Air from Pollution



A brief review of the main provisions of these regulations in so far as they are relevant to air quality is given below.

Regulation for the Assessment of Environmental Effects of Installations

This Regulation requires that an environmental impact assessment be carried out for certain projects before a licence/permit to construct/operate the project is issued by the Competent Authority. The procedures for applying for an Environmental License and the information requirements are specified in the Regulation. Procedures for permitting of new projects are detailed in EAD publication SOP-PNPS-Rev3 'Standard Operating Procedures for Permitting of New Projects in Abu Dhabi' [5]. As part of these procedures, any relevant air quality matters must be addressed as part of an Environmental Impact Assessment, which the project proponent must prepare for all significant projects. EAD reviews the EIA and may impose project specific conditions pertaining to air quality (or other matters) as part of the construction/operating permit.

Regulations for the Protection of Air From Pollution

This Regulation established a number of air emission and air quality standards. These standards cover emissions from stationary sources and incinerators, ambient air quality and noise. These Regulations are currently in draft form. The standards for ambient air given in the regulations are recommended rather than statutory limits. The draft standards are detailed in Appendix A.

Inspection and Enforcement

In addition to its role in permitting of new projects, EAD is the designated authority for inspection and enforcement of environmental laws and regulations in the Emirate of Abu Dhabi. The present enforcement procedures comprise inspections of industrial premises to check on compliance with permit conditions, taking of samples for analysis and, where necessary prosecution for non-compliance.

Emissions from vehicles are currently controlled via an emission test conducted once a year as part of the annual licensing requirements. Vehicles are tested for emissions of carbon monoxide and hydrocarbons and cannot be re licensed unless the emissions of these pollutants are within certain limits.

Hanoi, Vietnam

There seem to be a major lack in the cooperation among the organisations, the exchange of data and the disclosure of information towards other stakeholders including decision- and policy makers and the general public.

The fact that there are many different operators of the air quality monitoring stations may theoretically also be possible in the future, as long as the instruments used in the different sites are different. However, it would be of great advantage to the quality of data that ONE institution had the responsibility for all air quality monitoring!

One responsible institution

At least, all data should be automatically transferred on a daily basis to ONE common database placed at DONREH. In this way it will be possible to undertake daily Quality Control of the data, and errors and missing data could be reported back to the operators immediately. This will improve the data quality and assure that the assessment of the air pollution situation will be “correct”.

In order to implement the total Air Quality Management Component in Hanoi NILU has suggested that Hanoi should base the development on the decisions already made by the People Committee (Decision No.101/2003/QDU from August 2003). DONREH is the key stakeholder and the other agencies should cooperate with DONREH including:

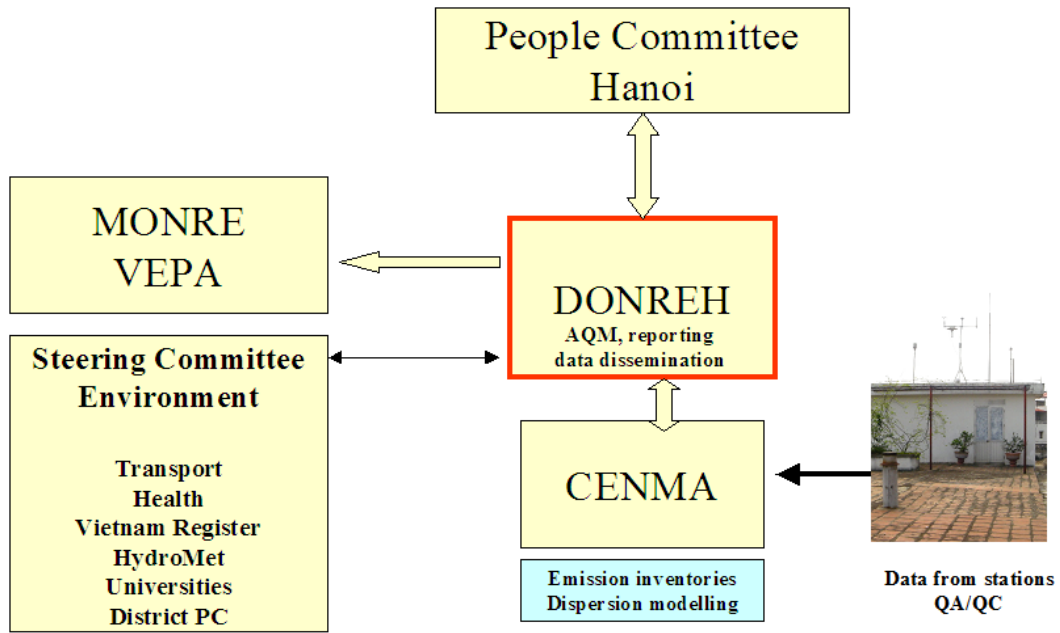
- Centre of Environmental Monitoring and Data (Vietnam Environmental Protection Agency)
- Vietnam Register (including source information on industries and traffic in Hanoi)
- Project Management Unit of Hanoi Urban Transport Development Project (Hanoi Public Work Department)
- Hanoi Transport Police Department
- Hanoi Health Department
- Districts People Committee (through Natural Resources and Environment Department of District)
- Other monitoring institutions already involved in air quality measurements

The Hanoi DONREH will be mainly responsible for coordination, management and supervision of AQMC and will mobilize human resources for this purpose. DONREH will also be the main responsible body for air quality monitoring and management including operating as the central database for air quality data as well as the emission inventory for Hanoi. CEMDI/VEPA should also support data to the DONREH database, and in return get on-line access to all air quality data in Hanoi.

The Vietnam Register and other key agencies and the private sector related to various aspects of vehicular air pollution management will be involved through appropriate mechanism in the different phases of the air quality management of Hanoi. Vietnam Register will together with transport authorities be a key partner in the development of a complete emission inventory for Hanoi.

Efforts should be made to strengthen the project management capability of DONREH. There might be a need for a strong steering committee composed of the main stakeholders in the processes of improving the air pollution situation in Hanoi.

The Project Management Unit of Hanoi Urban Transport Development Project (Hanoi Public Work Department) must have a trained staff to ensure proper financial management of key components of all operations linked to this project. PIU will play a key role in the air quality improvement process.







Appendix D

Arrêté portant création et fonctionnement du Centre de Gestion de la Qualité de l’Air





7. **MINISTRE DE L'ENVIRONNEMENT
ET DE LA PROTECTION DE LA NATURE**



N°

**ARRETE PORTANT CREATION ET FONCTIONNEMENT DU
CENTRE DE GESTION DE LA QUALITE DE L'AIR**

**LE MINISTRE DE L'ENVIRONNEMENT ET DE LA PROTECTION DE LA
NATURE**

- Vu la Constitution, notamment en son article 8 ;
- Vu la loi n° 2001 – 01 du 15 Janvier 2001 portant code de l'environnement ;
- Vu la loi n°2002-30 du 24 Décembre 2002 portant Code de la Route ;
- Vu le décret 94-81 du 02 février 1994 portant organisation du Ministère de l'Environnement ;
- Vu le décret n° 2001-282 portant application du code de l'environnement ;
- Vu le Décret n°2004-13 du 19 janvier 2004 fixant les règles d'application de la loi n°2002-30 du 24 Décembre 2002 portant Code de la Route
- Vu le décret n° 2004-561 du 21 avril 2004 portant nomination du Premier Ministre ;
- Vu le décret n° 2006-1345 du 23 novembre 2006 portant réaménagement du gouvernement ;
- Vu le décret n° 2006 – 1333 du 27 novembre 2006 portant répartition des services de l'Etat et du contrôle des établissements publics, des sociétés nationales et des sociétés à participation publique entre la Présidence de la République, la Primature et les Ministères ;
- Vu l'arrêté interministériel n° 007358 du 23 novembre 2003 fixant les conditions d'application de la norme NS 05-062 sur la pollution atmosphérique ;
- Vu la norme NS 05 – 062 sur la pollution atmosphérique ;
- Vu la norme NS 05 –060 sur la pollution automobile ;
- Vu la lettre de politique sectorielle du Ministère de l'Environnement et de la Protection de la Nature ;

Sur proposition du Directeur de l'Environnement et des Etablissements Classés

ARRETE

Article premier :

Dans le cadre de l'application de la politique d'amélioration de la qualité de l'air du Ministère de l'Environnement et de la Protection de la Nature, Il est créé au sein de la Direction de l'Environnement et des Etablissements Classés, un Centre de Gestion de la Qualité de l'Air, ci-après, dénommé CGQA.

Article 2 :

Le CGQA est une structure d'expertise – conseil rattachée à la Direction de l'Environnement et des Etablissements Classés.

Article 3 :

Le CGQA a pour principal rôle de mettre en œuvre, le programme de suivi de la qualité de l'air validé par le Ministère de l'Environnement et de la Protection de la Nature/Direction de l'Environnement et des Etablissements Classés.

Il réalise dans le cadre de la mise en œuvre de ce programme, les missions suivantes :

- ✓ l'exploitation d'un réseau de surveillance de la qualité de l'air et son maintien à un haut niveau de performances ;
- ✓ le contrôle de qualité, l'analyse et le stockage en base de données des données collectées au niveau du réseau de surveillance ;
- ✓ la réalisation d'inventaire d'émissions et la modélisation de la dispersion atmosphérique ;
- ✓ l'évaluation de la qualité de l'air et de l'exposition des populations à la pollution atmosphérique ;
- ✓ l'identification de mesures efficaces et efficientes de réduction de la pollution de l'air;
- ✓ la diffusion de l'information auprès des décideurs et du grand public pour une meilleure prise de conscience ;
- ✓ l'échange d'information et de données avec d'autres structures au niveau national et international ;

- ✓ la recherche de partenariats et le développement d'une stratégie de mobilisation de ressources financières pour faciliter la mise en œuvre des projets ;
- ✓ l'appui technique à la mise en œuvre de rencontres de coordination intersectorielle sur la gestion de la qualité de l'air ;
- ✓ l'élaboration et la publication de rapports scientifiques mensuels et annuels sur la qualité de l'air et de rapports destinés au public ;
- ✓ etc.

Article 4 :

Le CGQA est assisté dans sa mission par un Comité de Conseil et de Suivi composé par :

- ✓ la Direction de l'Environnement et des Etablissements Classés ;
- ✓ la Direction des Transports Terrestres ;
- ✓ le Conseil Exécutif des Transports Urbains de Dakar ;
- ✓ la Direction de la Santé ;
- ✓ la Direction de l'Industrie ;
- ✓ la Direction de l'Urbanisme ;
- ✓ la Direction de la Météorologie Nationale ;
- ✓ le Laboratoire de Physique de l'Atmosphère ;
- ✓ le Réseau des Experts Africains pour l'Amélioration de la Qualité de l'Air en Afrique Subsaharienne (Africaclean) ;
- ✓ l'Association des Transporteurs ;
- ✓ le Club de pneumologie ;
- ✓ le SPIDS ;
- ✓ la Faculté des Sciences et Techniques de l'Université Cheikh Anta Diop de Dakar.

Le Comité de Conseil et de Suivi est présidé par la Direction de l'Environnement et des Etablissements Classés.

Son principal rôle est d'assurer le suivi de l'exécution des activités du CGQA, de l'appuyer et de l'orienter dans l'identification et le développement de mesures de réduction de la pollution.

Il peut faire appel à toute personne physique ou structure compétente en cas de besoin.

Le Comité de Conseil et de Suivi élabore son règlement intérieur.

Article 5 :

Le CGQA est dirigé par un Responsable nommé par arrêté du Ministre de l'Environnement et de la Protection de la Nature et sur proposition du Directeur de l'Environnement et des Etablissements Classés.

Il est assisté par un groupe d'experts recrutés par la Direction de l'Environnement et des Etablissements Classés.

La Direction de l'Environnement et des Etablissements Classés met à la disposition du Responsable du Centre un personnel d'appui.

Article 6 :

Le fonctionnement du Centre est régi par les règles générales de fonctionnement de l'Administration. Il peut s'investir et s'orienter vers toute démarche de qualité nécessaire à la garantie de la fiabilité des résultats d'une structure d'expertise dans son domaine d'activités.

Son budget de fonctionnement est inclus dans celui de la Direction de l'Environnement et des Etablissements Classés. Toutefois, il peut bénéficier de ressources additionnelles provenant des partenaires bilatéraux et multilatéraux.

Les financements mobilisés pour la mise en œuvre de projets spécifiques sont soumis au mode de gestion propre à l'administration après avis et autorisation du Directeur de l'Environnement et des Etablissements Classés, qui en assure le contrôle et l'exécution du budget.



Article 7 : Le Directeur de l'Environnement et des Etablissements Classés est chargé de l'exécution du présent arrêté qui sera publié au Journal Officiel.

l'Environnement

Le Ministre de

et de la Protection de la Nature

Thierno LO

Ampliations :

- **PR/CAB**
- **PM/CAB**
- **INTERESSES**
- **ARCHIVES**





Appendix E
Budget 2007 CGQA



Budget 2007 CGQA

Projets/Programmes	Activités	Budget voté à l'Assemblée Nationale	Nouvelles prévisions
PROJET GESTION QUALITE DE L'AIR EN MILIEU URBAIN	Achat matériel de transport et fonct°	0	23 000 000
	Autres matériels et outillages techniques	30 425 000	7 425 000
	Soldes et accessoires	11 787 448	11 787 448
	Cotisations sociales non ventilées	2 787 552	2 787 552
	Consommables informatiques	4 000 000	4 000 000
	Carburant	4 000 000	4 000 000
	Abonnements	5 000 000	5 000 000
	Frais de mission à l'extérieur du pays	7 000 000	7 000 000
	Total Activités	65 000 000	65 000 000

Activités	Détails	Coût	Ecart	Source de financement alternativepotentielle
Achat matériel de transport et fonct°	Achat d'un véhicule de services	6 000 000		
	Achat d'un véhicule utilitaire (entretien réseau)	15 000 000		Reliquat éventuel de l'achat des équipements
	Entretien et réparation	2 000 000		DEEC
	Sous - Total	23 000 000		0
Autres matériels et outillages techniques	Pièces de rechange stations de mesure	4 000 000		
	Gaz de calibrage	1 600 000		
	2 GPS	1 000 000		A voir ?
	1 Lasermeter	600 000		
	Sous - Total	7 200 000		225 000
Soldes et Cotisations sociales	Rémunération Ingénieur Electronicien	5 893 724	5 893 724	A voir ?
	Cotisations sociales non ventilées	2 508 797	278 755	
Carburant	Achat de 6 600 litres d'essence Super	4 000 000		DEEC et CETUD (voir à la baisse)
Matériel et Consommables Informatiques	1 Imprimante	600 000		
	1 Photocopieuse	800 000		
	1 Scanner	150 000		
	1 Ordinateur Portable	1 300 000		
	Accessoires informatiques (CD, Clés USB, Disques durs externes.....)	850 000		
	1 Fax	300 000		
	Sous - Total	4 000 000		0
Abonnement et Factures	Abonnement Electricité (SENELEC)	100 000		
	Factures Electricité	1 637 500		
	Frais d'accès ADSL + Routeur	878 000		
	Redevance mensuelle ADSL SONATEL	6 366 600		
	Ligne standard			
Sous - Total	8 982 100		-3 982 100	
Mobilier de Bureau	A préciser	0		Budget DMTA





Appendix F

Minutes of meeting with DEEC on the status of the CGQA and the air quality management structure in Dakar



Air quality in urban environment of Dakar

SUJET: Statut du CGQA et structure de gestion de la qualité de l'air à Dakar	
ENDROIT: DEEC	Heure: 9h00
AUTEUR : Bruno Legendre PARTICIPANTS: Bruno Legendre, Cristina Guerreiro, Cheikh Sylla, Aïta Seck, Ousmane Sow, Gatta Ba, Boubacar Mbodj (CGQA), Abdoulaye Ndiaye (CGQA)	DISTRIBUTION: NILU
REF.: m-deec-061006	DATE: 06/10/06

Statut du laboratoire

Le statut du laboratoire doit être clairement défini afin notamment de lui permettre de disposer des ressources nécessaires à son développement.

Dans un premier temps le CGQA sera un élément du bureau 'Contrôle pollutions et nuisances' de la DEEC. Il est appelé à évoluer vers une structure dotée d'une autonomie financière.

- Une telle structure pourrait d'ailleurs intégrer les divers projets en cours de la DEEC : CGQA, Laboratoire de contrôle des eaux de rejet, centre convention de Bâle (gestion des déchets).
- Elle serait sise dans l'actuel bâtiment en construction dont les 4 étages abriteraient l'ensemble de ces centres d'expertise.
- Des synergies pourraient être développées, accroissant le niveau d'expertise de chaque centre et optimisant leurs coûts de fonctionnement (ex : les capacités en modélisation du CGQA pourraient être utilisées par le laboratoire de contrôle des eaux ; et celui-ci en retour pourrait réaliser des analyses de la composition chimique des particules pour le compte du CGQA).

Il a été convenu de la stratégie suivante :

- Elaboration d'un projet d'arrêté ministériel portant création du CGQA : positionnement au sein de la DEEC et identification des différents postes d'expertise. Une note introductive définit sa mission
- Lettre de mission du directeur du CGQA (signée par le Ministre de l'Environnement), fixant l'objectif d'établir à terme le CGQA comme une structure autonome (ou au sein d'une telle structure). Elle définit les responsabilités du directeur du Centre, qui est chargé de réaliser cet objectif selon un échéancier précis :
 - Phase 1 (1 an) : établissement du CGQA et des organes de la structure de gestion de la qualité de l'air (Observatoire...)

- Phase 2 (2 ans) : développement de partenariats, élaboration de projets générateurs de ressources
- Phase 3 : élaboration d'un statut spécifique permettant au CGQA de mobiliser directement auprès de tiers les ressources nécessaires à ses activités

Structure de gestion de la qualité de l'air

Ayant ainsi défini le statut du CGQA, actuel et futur, il faut décrire l'environnement dans lequel il va évoluer : le CGQA collecte et analyse une information sur l'état de la qualité de l'air, qui devront être transcrite par le gouvernement en mesures de gestion de la qualité de l'air.

Le statut du CGQA le place sous l'autorité directe et unique du Ministre de l'Environnement.

La notion de 'comité de pilotage' n'est pas appropriée dans ce contexte précis : un tel comité est mis en place pour orienter les actions d'un projet (dans le cas présent c'est le CETUD qui met en œuvre ce projet, et il a mis pour cela un comité de pilotage ad hoc).

L'observatoire doit être en priorité un réseau ayant pour vocation d'échanger des informations et de développer des synergies entre le CGQA et des structures professionnelles compétentes ou concernées directement par les questions liées à la qualité de l'air : laboratoires (LPA...), cercle de pneumologie, ordre des médecins, africa clean....

Cet observatoire est animé par le CGQA et un groupe restreint d'acteurs ('comité exécutif' ou 'secrétariat' ou 'comité de réflexion'). Ce comité restreint, qui n'est pas forcément présidé par la DEEC/CGQA, aura pour mission

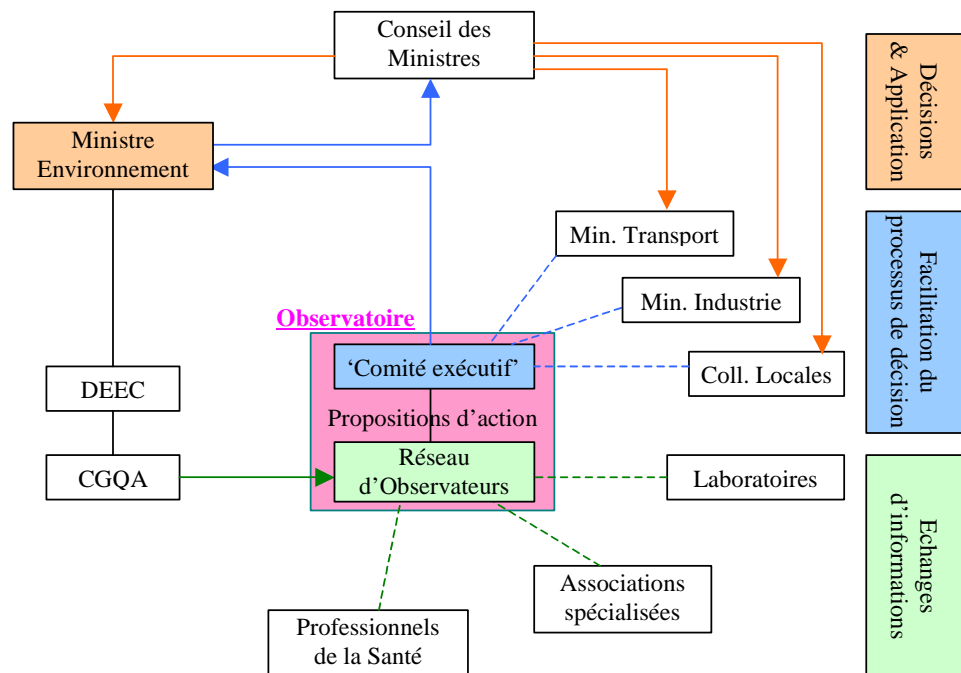
- De formuler les propositions d'actions ou de mesures issues de la réflexion entre les membres de l'observatoire et des résultats des travaux du CGQA
- De discuter de ces propositions avec les différentes structures institutionnelles qui pourraient être concernées par leur mise en application (ministère des transports, collectivité locale, etc...) afin que leur formulation prenne en compte les contraintes opérationnelles de ces structures
- De présenter au ministre de l'environnement ces propositions

Le Ministre de l'Environnement présente ces propositions en Conseil des Ministres, où il est décidé de la répartition des responsabilités de leur mise en œuvre entre les différentes institutions concernées.

Le statut de l'Observatoire ne doit pas être figé à sa création. Il doit fonctionner comme un réseau souple pendant au moins 2 ans. A ce terme, le statut le plus approprié pourra être identifié, compte-tenu du résultat de ses activités et de la motivation montrée par les différentes parties qui le constituent : ce statut ne peut être imposé ; il doit relever de la décision des membres de l'Observatoire.

Chacune des parties membre de l'Observatoire est libre d'utiliser l'information élaborer par ce réseau. C'est même une des missions du CGQA et de l'Observatoire que de diffuser très largement une information sur l'état de la qualité de l'air et l'impact des mesures prises pour l'améliorer.

La mission du laboratoire n'est pas de monter des actions de lobbying pour orienter l'action du gouvernement : c'est le rôle d'associations professionnelles ou de consommateurs qui recevront cette information. La mission du laboratoire est plutôt de faciliter la prise de décisions appropriées par le gouvernement.



Il a été convenu enfin que dans la semaine du 16 octobre :

- les projets d'arrêté ministériel et de lettre de mission seront finalisés
- la présente synthèse de la réflexion conduite par le groupe sur l'organisation de la structure de gestion de la qualité de l'air serait validée afin d'être intégrée dans le rapport que NILU doit produire sur cette structure de gestion.





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* Classification A *Unclassified (can be ordered from NILU)*
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