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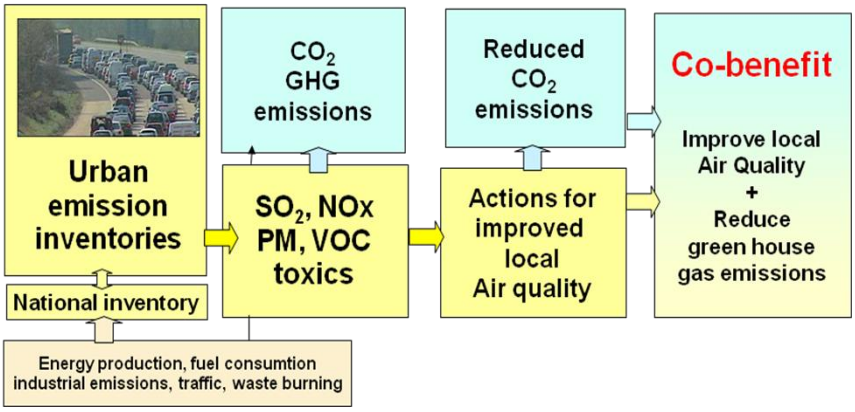
Air Quality Management and GHG reductions

Presented at the Norwegian Ministry of Environment African Delegation Seminar, 19 Sept. 2008

Bjarne Sivertsen



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1 Introduction

A mini seminar on Climate Change Policy was held at the Norwegian Ministry of Environment on Friday 19 September 2008. Bjarne Sivertsen at NILU was requested to present the Air Quality management planning system and relate this to Clean Development Mechanisms (CDM) and potential green house gas (GHG) reductions.

The seminar was arranged in connection with visit to Norway by a delegation from Department of Environment and Tourism in South Africa. This delegation consisted of:

Ms Nosipho Ngcaba	- Director-General
Dr Monde Mayekiso	- Deputy Director General (MCM)
Mr Zaheer Fakir	- Chief Director Int. Relations and Governance
Ms Merlyn Van Voore	- Director International Governance
Ms Nomxolisi Matyana	– Director Office of the Director General
Ms Mirriam Motjela	- PA to the DG Office of the Director General

2 The AQMP system for South Africa

NILU was part of the development of the Air Quality Management Planning (AQMP) system for DEAT, and prepared among other input the Draft AQMP implementation Manual (Sivertsen 2007).

The manual establishes best practice guidelines on definition of objectives, strategies, plans and procedures for each sphere of government, in order to meet the requirements of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) on good air quality management planning and reporting.

The AQMP document included a generic introduction to the development of an AQMP as well as roles and responsibilities of different levels of government in South Africa.

The AQMP Process is usually divided into 6 parts:

- Goal setting
- Baseline air assessment
- Air quality management system (AQMS)
- Intervention strategies
- Action plans implementation
- Evaluation and follow up
- Capacity building and training

3 Local and global challenges

During recent years focus has shifted from local air pollution and its threat to health and environment, toward global threats due to greenhouse gas (GHG) emissions and their impact on climate. As global warming has recently taken most of the focus in the political decision processes, local and regional challenges seem to have been set aside.

NILU has recommended decision makers take a balanced view, as it is possible to reduce both GHG emission and local pollution simultaneously. International experience shows that climate change mitigation can result in a simultaneous reduction in air pollution. IPCC states in its fourth assessment report that "integrating air pollution abatement and climate change mitigation policies offers potentially large cost reductions compared to treating those policies in isolation".

4 Possible co-benefits

The IPCC recommends a co-benefit thinking in the climate change mitigation. To support this argument, a number of technologies and measures in the energy supply, transport, building and industry sector have been identified to also help abate urban air pollution.

Focusing on co-benefit actions is now and will be in the future, an important part of NILU's research both in the local and regional air quality management planning. It is necessary also in the study of climate change, including the study of mitigation steps and their effects.

5 CDM an instrument for limiting GHG emissions

With the Kyoto Protocol becoming legally binding from 16 February 2005, the Clean Development Mechanism (CDM) is becoming a key instrument for limiting greenhouse gas emissions (GHG) and promoting sustainable development.

For both developing and developed countries to benefit from the CDM, it is important to establish increased awareness and understanding of its various aspects. Building capacities in the baseline methodology and assessment of GHG emission reductions/sequestration benefits of CDM projects are keys to the successful development and implementation of the CDM.

The following types of GHG mitigation or sequestration projects and activities can be eligible for CDM**:**

- Renewable energy technologies
- Energy efficiency improvements - supply side and/or demand side
- Fuel switching (e.g., coal to natural gas or coal to sustainable biomass)
- Combined heat and power (CHP)
- Capture and destruction of methane emissions (e.g. from landfill sites, oil, gas and coal mining)
- Emissions reduction from such industrial processes as manufacture of cement

- Capture and destruction of GHGs other than methane (N2O, HFC, PFCs, and SF6)
- Emission reductions in the transport sector
- Emission reductions in the agricultural sector
- Afforestation and reforestation
- Modernization of existing industrial units/equipment using less GHGintensive practices/technologies (retrofitting)
- Expansion of existing plants using less GHG intensive-practices/technologies (Brownfield projects)
- New construction using less GHG-intensive practices/technologies (Greenfield projects)

Seven basic stages have been identified in the development of a CDM project. In South Africa the Department of Minerals and Energy has been appointed Designated National CDM Authority, while DEAT is part of the Steering Committee.

6 References

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Sivertsen, B. and Dudek, A. (2007) Integrated air quality management in urban areas: simplified methods. Presented at the 18th IUAPPA World Clean Air and Environmental Protection Congress, Brisbane, Australia, 9-13 September 2007. Kjeller (NILU F 20/2007).

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Appendix A

Slides presented at the Seminar

Air Quality Management and GHG reductions

Co-benefit

Improve local Air Quality
+
Reduce green house gas emissions

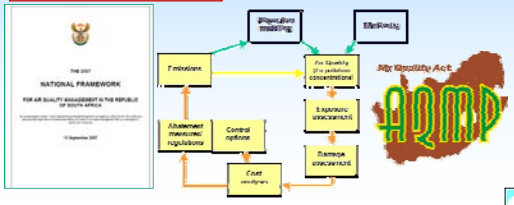
Bjarne Sivertsen

Norwegian Institute for Air Research

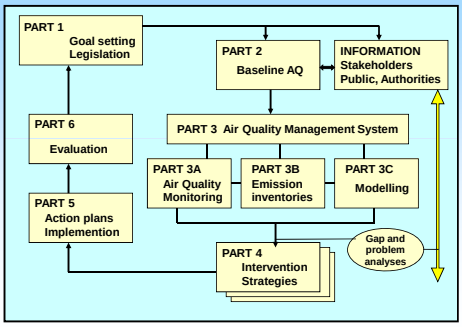
Participated in developing:

National Framework for Air Quality Management
published by the Minister of Environmental Affairs and Tourism on 11 September 2007

Air Quality Management Planning
Implementation Manual



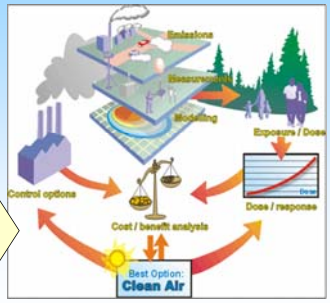
AQMP *A dynamic process*



AQMS – main objective:

Identify actions to improve air quality

Identify most cost-effective options



CDM: Cost effective GHG reductions

Urban Air Quality Planning + Green house gas reductions

IPCC

Climate Change

Urban emission inventories

National inventory

Energy production, fuel consumtion industrial emissions, traffic, waste burning

CO_2 GHG emissions

SO_2, NOx PM, VOC toxics

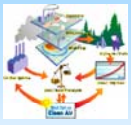
Reduced CO_2 emissions

Actions for improved local Air quality

Co-benefit

Improve local Air Quality
+
Reduce green house gas emissions

Intervention Strategies



- Identify possible sources
- Implement reduction measures
- Estimate costs
- Estimate impact reductions (model)
- Cost estimate improvements
- List of priority; cost - effective
- Select best possible actions
- Develop Action Plan

Kyoto protocol, 1997

The Clean Development Mechanism

CDM allows emission reduction projects that assist in creating sustainable development in developing countries to generate "certified emission reductions" for use by the investor.

CDM promote sustainable development in developing countries, while allowing developed countries to contribute to the goal of reducing atmospheric concentrations of GHG.

6 Six main greenhouse gases:
carbon dioxide, methane, nitrous oxide; hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulphur hexafluoride.

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GHG emission reductions

Part of the process:

- People's awareness
- Energy Efficiency in industry
- Electricity generation: renewable sources, cleaner coal
- Carbon capture and storage
- Transport sector; public transport
- Damage costs of climate change impacts
- Cost/benefit (costs of no action)

Part of CDM process: Assign Designated National Authority

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GHG mitigation or sequestration activities eligible for CDM:

- Renewable energy technologies
- Energy efficiency improvements - supply side and/or demand side
- Fuel switching (e.g., coal to natural gas or to sustainable biomass)
- Combined heat and power (CHP)
- Capture and destruction of methane emissions (e.g. from landfill sites)
- Emissions reduction from industrial processes (e.g. cement prod.)
- Capture/destruct of GHGs other than methane (N2O, HFC, PFCs, and SF6)
- Emission reductions in the transport sector
- Emission reductions in the agricultural sector
- Afforestation and reforestation
- Modernization of existing industries using less GHG technologies

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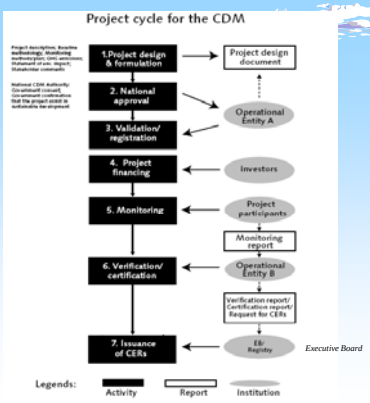
CDM seven basic stages

DNA RSA: Dept Minerals & Energy

DEAT part of the Steering Committee

CER: Certified emission reductions



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Implementation and review

Implement control strategies
Financing and time frame
Enforce policies and regulations
National Authority to approve CDM

Participation from:
- ✓Industries and private sector
- ✓Municipalities
- ✓Authorities
- ✓NGOs and
- ✓The public

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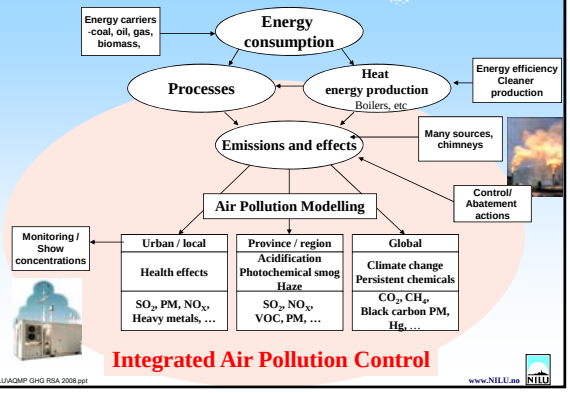
Energy and AQM plannning



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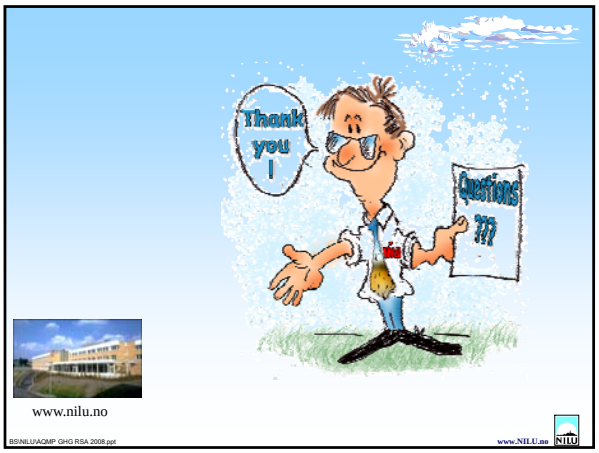
Thank you !
Questions ???
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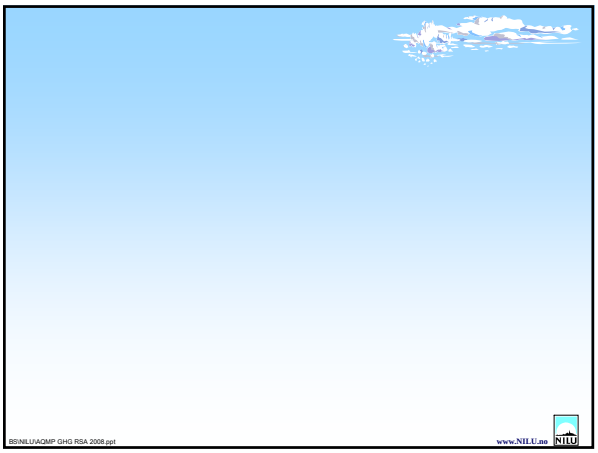
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