



From Air Quality to Climate Change Jane Brown, BP

9th CONCAWE Symposium

14-15th March 2011

conservation of clean air and water in europe

Air quality policy





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Climate change policy



Air quality measures with CO₂ penalty

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These figures assume constant energy efficiency frozen at the 2005 level

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From CONCAWE 8/08

From Air Quality to Climate Change Jane Brown, BP

9th CONCAWE Symposium 14th & 15th March 2011 Need to understand how air quality pollutants can affect climate change and vice versa. For example:

- Radiative forcing of short-lived air pollutants
 - Warming: BC (black carbon), CO,
 - Cooling: SO₂, OC (organic carbon)
 - Only little net effect: NO_x, VOC
- Effect of aerosols on cloud formation
- Changes in precipitation distribution and intensity
- The effect of climate change on the impacts of air pollution e.g. the effect of increased temperature on ecological responses to air pollutants

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Policy integration



UNECE Task Force on Integrated Assessment Modelling - Feb 2011: IIASA presented an update to models used to develop European air quality policy in the framework of the Gothenburg Protocol:

- Model (GAINS) has been extended to include radiative forcing from aerosols and carbon deposition.
- Ozone still to be incorporated.
- Allows the radiative forcing effects of AQ policies to be estimated.

Report reference: Cost-effective Emission Reductions to Improve Air Quality in Europe in 2020, Feb 2011

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Radiative forcing over the EMEP domain from the emissions of the countries in the EMEP domain



The Economist

Pollution and global warming Climate change in black and white

Feb 17th 2011 | from PRINT EDITION

UNEP Summary for decision makers of the integrated assessment of black carbon and tropospheric ozone

(February 2011)

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- Identified black carbon and tropospheric ozone as having negative impacts on health and climate change.
- Investigated impact of implementing 16 'win-win' measures for reducing BC and ozone. Including:
 - Landfill biogas energy
 - Reduction in gas venting from oil exploration
 - Livestock manure management
 - Diesel particle filters
 - Improved brick kilns
- Argue that if we implement these measures in the short term, (in addition to CO₂ measures) this will increase the chance of staying within critical temperature thresholds.
 - Estimates associated health and crop yield benefit.

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UNEP assessment effect of measures on shortlived climate forcing agents



- The importance of reducing air pollution to protect the environment and health has long been recognised this has resulted in legislation that will continue to produce large reductions in emissions of key pollutants. By 2020 the reductions compared to 1990 under current legislation will be :
 - ► SO_x ~ 90%
 - ▶ VOC ~ 65%
 - ▶ NO_x ~ 68%
- Climate change action has focused on the vital need for CO₂ reduction. Measures to achieve this produce co-benefits via reduced emissions of traditional pollutants.
- As science develops there is growing awareness that some air pollutants, particularly SO₂, BC and O₃, have a role to play in climate change action. Particularly, removing SO₂ increases the pressure on CO₂ measures.
- Health impacts of PM demand further reductions in PM emissions and secondary PM precursors. There is increasing focus on black carbon as both a contributor to PM and as a warming agent.
- Studies suggest that there are opportunities to use reductions in emissions of short lived climate forcing agents (BC, CH₄, ozone) to contribute to meeting CC and health impact goals in the short term and these are being explored at international level.

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Thank you for your attention

