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 European Air Pollution and Development Co-ordinator

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An Introduction to the European Experience of Air Pollution and the Inter-governmental Policy Response

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- Impacts in Europe
- Impacts in Asia
- RAPIDC activities
- The European policy response
- Conclusions for S Asia regarding inter-governmental policy processes

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Knowledge Required by Policy Makers

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The Impacts of Air Pollution

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Impacts of Air Pollution at Different Scales

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Historical Impacts on Health in Europe

Date	Place	Excess deaths
December 1973	London, England	375-725
February 1980	London, England	1300
December 1980	London, England	1000
December 1980	Madrid, Spain	10
October 1946	Denver, USA	35
December 1962	London, England	8000
November 1960	New York City, USA	250
January 1988	London, England	880
December 1951	London, England	300-400
November-December 1962	New York City, USA	46
December 1982	London, England	340-770
December 1960	Osaka, Japan	60
January-February 1980	New York City, USA	200-400
November 1988	New York City, USA	100

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More than 8000 people were admitted to hospital in Malaysia due to Indonesian fires in September 1997

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Impacts of Health

- Globally more than 1200 million people are exposed to excessive outdoor SO₂ concentrations and more than 1400 million to excessive particulates
- women and children particularly at risk from indoor air pollution

Fuel regulations in Hong Kong decreased prevalence of respiratory disease

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RAPIDC Health Impact Activities to Improve the Understanding of Health Impacts in Asia

- Book on air pollution and health in developing countries
- Development of dose-response framework/manual for regional epidemiological studies
- As study of indoor air pollution and impacts
- Investigating use of airport visibility data as measure of particulate concentrations
- Workshop in South Asia to discuss links between air pollution and health

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Impacts on Materials

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Reduction of Corrosion Impacts and Associated Costs (million US\$) in Europe as a Result of the 2nd Sulphur Protocol

Region	Rural Areas	Urban Areas	Total
Western Europe	3 385	2 182	5 566
Western Europe	2 865	0 736	3 601
Total	6 250	2 918	9 168

Corrosion of steel in the Czech Republic

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RAPIDC Corrosion Impact Activities

No.	Country	Location	Type
1	India	Jamshedpur	Urban
2	India	Madurai	Rural
3	India	Bombay	Urban
4	India	Bombay	Rural
5	Thailand	Bangkok	Urban
6	Thailand	Phra Prang	Rural
7	Indonesia	Surabaya	Urban
8	Indonesia	Surabaya	Rural
9	Indonesia	Surabaya	Rural
10	China	Shanghai	Urban
11	China	Taiwan	Rural
12	China	Shanghai	Urban
13	Malaysia	Kuala Lumpur	Urban
14	Malaysia	Kuala Lumpur	Rural
15	South Africa	Johannesburg	Urban
16	Zambia	Kaobon	Urban
17	Zambia	Kaobon	Rural
18	Zambia	Kaobon	Rural

Exposures to develop the dose-response relationships for standard materials relevant to tropical and subtropical conditions as a basis for economic assessments of corrosion damage

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Impacts on Crops and Forests in Europe

Visible injury

Ozone induced visible injury to clover plants in the UK and to the needles of white pine in the eastern US

Invisible injury

Reduced yield and reduction in grain quality

The economic benefits of ozone reduction in the Netherlands:

310 million US\$
 (90 million to producers + 220 million to the consumers)

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Impacts on Crops in Asia

Yields in India are affected by mixtures of SO₂, NO₂, O₃ and particulate matter

Chinese dose-response relationships for SO₂ impacts on crops

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RAPIDC Crop and Forest Impact Activities

1. Developing a network of scientists in Asia interested in impacts of air pollution on crops and forests
2. Standard protocols, manuals and methods will be developed through this network to enable future socio-economic assessments

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Acidification in Europe

The pH of lake Gårdsjön, in Sweden, was constant at 6 for 12,000 years after which fish were totally lost from the lake due to acidification

Salmon decline in the acidified waters of southern Norway

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Regional Impacts of Pollution: Acidification and Eutrophication

Forest damage in Germany

Soil acidification in southern China

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Global Map of Terrestrial Ecosystem Sensitivity to Acidic Deposition

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RAPIDC Acidification Activities

1. Develop a network of scientists in Asia to promote the understanding of ecosystem acidification
2. Potential for acidification from transboundary air pollution in Malé Declaration countries to be discussed at workshop

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 European Inter-governmental Policy Process

1950s-1960s European cities deal with urban air pollution

1960s & 1970s Scandinavian scientists realised the importance of LRTAP for lake acidification
 International policy process initially developed

1970s & 1980s Scientific activities develop a deeper understanding of atmospheric and ecological processes

1980s Widespread forest decline in C Europe adds impetus to policy process

1983-2002 UN/ECE and EC policy initiatives develop agreements for emission reductions

1999 'Multi-pollutant-multi-effect' – Protocol to abate acidification, eutrophication and ground-level ozone

1980-2000 Sulphur emissions decrease; lesser decrease for other emissions;

2000 - new more stringent targets being set by UN/ECE & EC

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 The Progression of Sulphur Emissions in Different Regions

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 The Progression of Nitrogen Oxide Emissions in Different Regions

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 The Malé Declaration in South Asia

It is the only inter-governmental agreement in the region and good per se for dealing with the environmental problems

It provides a forum for sharing data and expertise within S Asia on assessment of pollution levels, impacts and mitigation measures

It promotes cooperation so that resources may be pooled more effectively and air pollution problems dealt with more rapidly

It can help to deal with air pollution at different scales – both shared local problems and regional problems (such as acidification)

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 Advantages of Considering All Impacts Across Scales

Impacts across the different scales often share the same emission source

e.g. avoid what happened in Europe where a tall stacks policy decreased local pollution problems but increased regional ones

Actions across scales reinforce each other and provide benefits for less certain impacts or unknown impacts

Studies of different impacts reinforce each other for action on the common emission source

A more cost-effective policy can be developed which highlights co-benefits

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 Benefits of International Co-operation

It is the only way for countries to deal with regional problems, especially small countries that import most of their pollution

Even weak demands mean that some action is taken by the worse performers who would otherwise have taken no action

Preparation for international negotiations involves international exchange of large amounts of information amongst the experts who are often used as national advisors by their governments

The process of elaborating international agreements requires the generation of much useful information on emissions, depositions, effects and mitigation options which can then be used to increase awareness of the problem both nationally and internationally

The agreements attract media attention that raises the profile of the problem and generates public awareness and knowledge

