Comparing Regional Environmental Governance in East Asia and Europe – Air Pollution

by Richard Ballaman,
former vice-chair of the Convention LRTAP

From Swiss Federal Office for the Environment,
Air Pollution Control and Chemicals Division,
CH-3003 Bern

1. The UNECE Convention on Long Range Transboundary Air Pollution (CLRTAP)

This contribution is presented on behalf of the UNECE Convention on Long Range Transboundary Air Pollution (CLRTAP), one of the most successful international instruments dealing with air pollution. The Convention was signed in 1979 as a result of scientific findings relating to the 'acid rain' problem, which was responsible for the decline in fish stocks, damage to forests and vegetation and other adverse environmental effects first observed and reported by Scandinavian scientists in the early 1970s. Careful scientific research also showed that to the surprise of many people, the pollutants which were causing this damage were being transported many hundreds of kilometres, indeed over the whole of the European continent. This led to the agreement on CLRTAP, but it also included North America – the USA and Canada – where acid rain problems were also being reported. The Convention now covers most of the Northern Hemisphere: it includes the Russian Federation and the countries of Eastern Europe, the Caucasus and Central Asia, and South-Eastern Europe as well as the European Union, the USA and Canada.

The Convention has given rise to a number of Protocols which have dealt with specific pollutants and problems. Protocols reducing emissions of sulphur, nitrogen oxides and volatile organic compounds were agreed in 1985, 1988 and 1991, and were followed by a second sulphur protocol in 1994.

This latter Protocol broke new ground both politically and scientifically in international air pollution agreements. Previous Protocols had contained obligations on all Parties to reduce emissions by the same fixed percentage from some base year. The second Sulphur Protocol however used an 'effects based' approach. This relied on a sophisticated atmospheric model to model the transport of pollutants from emitting countries to the receiving areas in sensitive ecosystems. Due to a combination of the prevailing weather conditions, and the extent of emissions of pollutants in different countries, the 'blame' for the adverse impacts is not uniform and could be allocated to the source regions most responsible, so that emission reduction targets would focus on these areas. The atmospheric modelling was complemented by a so-called integrated assessment model which contained a database of technologies and costs and which used a linear programming approach in conjunction with the atmospheric model to determine the least cost strategies for achieving a given

environmental target. At the time it was not only challenging scientifically but its acceptance at a political level was also not straightforward. However, the approach clearly embodies a high degree of 'environmental justice' and equity and it is now a well accepted approach to international air pollution problems.

Subsequent Protocols have extended the scientific coverage of the Convention and have dealt with Heavy Metals (Mercury, Cadmium and Lead) and Persistent Organic Pollutants – toxic compounds such as some pesticides which live for a long time in the environment and can hence be transported over large distances, in many cases around the globe. The most recent Protocol to be agreed was the 'Gothenburg' or Multi-Pollutant, Multi-effect' Protocol in 1999 which extended the second Sulphur Protocol to incorporate the four main pollutants responsible for acidification, eutrophication (an excess of nutrients in an ecosystem) and ground level ozone. The Regional Air Pollution Information and Simulation (RAINS) model was developed and used by the International Institute for Applied Systems Analysis (IIASA) to support the negotiation of the Protocol which was adopted in 1999.

Later further development were introduced to identify the most viable and cost-effective methods of jointly reducing emissions of air pollution and greenhouse gases. IIASA released the GAINS model: the Greenhouse Gas and Air Pollution Interactions and Synergies scientific model rely on information from RAINS databases, as well as updated national data delivered by countries taking part to the modelling exercise. A specific version of GAINS model was further developed within experts from India and China to release the GAINS-Asia tool (see more details at the end of this article).

In 2012, CLRTAP agreed amendments to the Gothenburg Protocol to include commitment to reduce emissions of particulate matter, considered to be the most important air pollutant affecting human health. The amendments also included further reductions in the four pollutants in the original Protocol (sulphur, nitrogen oxides, volatile organic compounds and ammonia), is a not inconsiderable achievement given the current economic situation.

The amendments to the Gothenburg protocol also recognised the role of some important air pollutants in climate change, notably Black Carbon and ozone, and also made recommendations for their reduction, becoming the first international legal instrument to attempt to bridge the gap between air pollution and climate change and to attempt to maximise the co-benefits to be obtained from policies which address both issues.

Politically the amendments to both the Gothenburg and the Heavy Metals Protocols were significant in that the negotiations included non-Parties to the Protocols. Strictly, only Parties to a Protocol to CLRTAP have to agree the amendments. However as will be discussed below, a strategic goal of CLRTAP is to maximise the ratifications within the UNECE region, consequently in order to facilitate this, non-Parties interests were very much part of the discussions on the amendments.

2. The Long Term Strategy of CLRTAP and Regional Co-operation

In 2010, the Executive Body of CLRTAP (equivalent to a 'Conference of Parties' or 'CoP') agreed a Long Term Strategy to guide the work of the Convention over the coming years. There are several elements to this Strategy which are relevant to the present Workshop.

First and most obvious is the issue of outreach to areas and regions beyond the UNECE/CLRTAP region.

Science is an integral part of CLRTAP - indeed the very first Protocol, agreed in 1984, dealt with the science base of CLRTAP (the Co-operative Programme for the Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe – EMEP). It was science that lead to the foundation of the Convention in the first place and science has remained at the heart of the Convention's work ever since. As discussed below, science can play an important role in Regional co-operation, beyond the countries formally involved in CLRTAP.

There is now a growing recognition of the importance of the transport of air pollutants over much longer distances than hitherto had been recognized. Hemispheric and intercontinental transport of air pollutants, especially ozone and PM, has been established as an important factor in air quality management. Addressing these issues will potentially involve further outreach activities and cooperation with other organizations around the world. CLRTAP already engages with many scientists in East Asia through the Task Force on Hemispheric Transport of Air Pollution. However, the scientific activities of CLRTAP extend far beyond this particular area and further scientific engagement with East Asia on other subjects could prove mutually beneficial. CLRTAP has a long history of using science to inform policy and the CLRTAP model could prove helpful to other regions in the management of air pollution problems.

But regional co-operation could extend beyond the purely scientific field. It has recently become apparent that wider cooperation on air pollution problems can extend beyond the UNECE region. The Convention has a worldwide reputation as one of the most successful environmental instruments and is seen as an exemplar across the world. Building on this reputation, the Convention has extended its outreach activities across the world, building on and cooperating in the work of UNEP and the Global Atmospheric Pollution Forum, among other activities. While such cooperation has been very effective in the scientific field, it should gain momentum in moving into the policy arena in the future. The Long Term Strategy of CLRTAP considers that these outreach activities are likely to assume even greater importance for the Convention in the coming years.

Some contacts were established by the CLRTAP secretariat with the Sub regional Office for East and North-East Asia of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and its North-East Asian Sub regional Programme for Environmental Cooperation (NEASPEC). Information were delivered about one-year project being carried out by the Russian Federation within the NEASPEC framework aimed to study existing sub regional and international mechanisms on transboundary air pollution and to identify gaps in knowledge, priority needs and to propose a set of options for a strengthened multilateral approach.

During a recent expert meeting (Saint Petersburg, Russian Federation, July 2012), the Russian Federation announced that a project proposal was forthcoming that, among others, would look into policy aspects of transboundary air pollution. It was expected that the developments in North East Asia might lead to the establishment of a policy-type umbrella framework that would cover the existing monitoring and modelling programmes like the

Joint Research Project on Long-range Transboundary Air Pollutants and the Acid Deposition Monitoring Network in East Asia (see http://www.eanet.cc/).

The Working Group on Strategies and Review under the UNECE LRTAP Convention took note of the information provided by the secretariat regarding cooperation with the UNESCAP and welcomed developments conducive to furthering cooperation with North-East Asia in addressing transboundary air pollution.

The Long-Term Strategy for the CLRTAP further notes that " The Convention will identify appropriate ways and means to best build on this work and to develop it, and to continue to build on the reputation of the Convention as a global leader in regional air pollution management" and the current Workshop in Kyoto represents an excellent forum to encourage that co-operation.

GAINS-Asia: a tool for environmental decision making

The Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model addresses local health impacts associated with fine particulate matter and ozone, vegetation damage to natural ecosystems and agricultural crops, and greenhouse gas emissions. GAINS has a medium-term planning horizon (up to 2030) and considers more than 1500 concrete options for reducing air pollution emissions of PM, SO_2, NO_x, NH_3 and VOC and 200 options for reducing CO_2, CH_4 and N2O. It takes full account of the interactions between these measures, and assesses their local application potential and costs. It covers all 30 provinces in China and all 15 states in India

IIASA's Asian partner institutions in the GAINS-Asia project are the Chinese Energy Research Institute (ERI) and The Energy and Resources Institute (TERI) of India. The project is funded by the European Commission.

Some key findings:
According to estimations made in the course of the GAINS-Asia assessment, application of advanced emission control technologies could reduce health impacts in China by 43% in 2030. GAINS in optimization mode was also able to identify the most cost-effective portfolio of measures to achieve these health improvements, but at 20% of the costs.

Link to IIASA with access to the online version of GAINS-Asia:
http://www.iiasa.ac.at/web/home/research/modelsData/GAINS/GAINS.en.html

References

An article in the last issue of Science magazine in 2012 by Dr Stefan Reis of the NERC Centre for Ecology & Hydrology (UK) and colleagues from six countries examines how science and policy address air pollution effects on human health and ecosystems, and climate change in Europe.

In their Policy Forum commentary entitled "From Acid Rain to Climate Change" the authors highlights several examples where successful collaboration between scientists and policy makers is required to develop cost-effective air pollution policies that address serious environmental issues. Their priority list includes the need to further reduce nitrogen emissions, for example in the form of ammonia from agriculture, which will help to bring down acidification of soils and eutrophication of terrestrial, freshwater and marine ecosystems.

They also discuss the requirement for integrated policies working on the interactions between air pollution and climate change which would help reduce short-term climate forcers such as black carbon and ozone. They suggest that the UNECE Convention LRTAP needs to work in partnership with the UNEP, the OECD and the Conventions covering biodiversity, the marine environment and water.

Read the article at: http://www.sciencemag.org/content/338/6111/1153

For more information on the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP), please visit: http://www.unece.org/env/lrtap/welcome.html

The Conventions' long-term strategy was adopted in 2010: http://www.unece.org/fileadmin/DAM/env/lrtap/conv/long-term_strategy.pdf