"Air Pollution can be fixed"

- comments by Anders Wijkman, member of the European Parliament and vice chair of the Tällberg Foundation, in Hong Kong on jan 9th, 2009.

Reading on the plane here, that air pollution in Hong Kong last year reached its highest level since records began, I am reminded of Europe some fifty years ago. Air pollution was very serious all over Europe as a consequence of massive expansion of industrial as well as power and heat production. The damages caused to health, crops, forests, ecosystems and property were significant. One particular incident was the Great Smog in London of December 1952. More than ten thousand people are estimated to have died as a result.

Looking back I can state with confidence that quite a lot has been done to address the problem of air quality in Europe. Emissions of sulphur, nitrogen and ozone have come down significantly (table 1). The graphs are heading in the right direction, although progress is not as good as it could be. Rapidly growing economies all over Europe and – specifically - growth in road transport, are pulling in the opposite direction.

The air we breathe has become less polluted, but it is still unhealthy and sometimes even deadly. In spite of the efforts to tackle emissions at source, a report from the European Environment Agency (2005) tells us that an estimated 50% of the urban population in the EU are exposed to concentrations of air pollution, that exceed the daily limit values for more than 35 days per annum. So compliance with the agreed upon directives is a weak point in this as well as other areas of EU environment legislation.

So there is still a lot to be done. Nevertheless, I do not think it is an exaggeration to state that air quality legislation in the EU has been relatively successful. Policy action in this area truly demonstrates what can be achieved, not least through cross-border cooperation.

For a city like Hong Kong there ought to be a lot to be learnt from the EU experience.

From local problem to regional

The smog in London led to a gradual phase-out of small coal-fired furnaces. This, no doubt, had an immediate and positive effect on local air quality. But instead another problem followed. While local air pollution was reduced in

many places, the new tall-chimneyed power stations helped spread sulphur emissions across Europe and helped escalate the “acid rain crisis”.

Coming from Sweden, I do recall how sulphur and nitrogen emissions both from the UK and from the Continent badly damaged our lakes and our forests. We did cut down significantly on our own emissions but with limited results. It was only after becoming a member of the EU, in 1995, that we were successful in persuading other member states to agree on a “strategy to fight acid rain”. As a consequence several pieces of legislation have been introduced, such as lowering the sulphur content in fuels, stricter limits for NOx emissions from vehicles as well as gradually more stringent emission limits from large combustion plants.

Since 1980 sulphur emissions from land-based sources have come down by almost 80 % - from almost 40 million tons p a to 10 million tons. Emissions of NOx and ammonia have come down by an estimated 36% (table 2). This has meant that the area in Europe where acid deposition exceeds the critical load has been reduced by an estimated 3/4th.

Health concerns a major driver

The improvements in air quality have been the result of several parallel actions. First to be mentioned is the International Convention on Long-Range Transboundary Air Pollution – CLRTAP (1979) . This convention has been signed by all countries in Europe, Canada and the US and has led to several international agreements on emissions reductions, the latest being the Gothenburg Protocol from 1999 - establishing binding national emission ceilings for four air pollutants: sulphur dioxid (SO2), nitrogen oxides (NOx), volatile organic compounds and ammonia.

The EU work on air pollution was quite fragmented to start with. But step by step it has become more focussed. The acid rain strategy has already been mentioned.

A response to the Gothenburg Protocol, in the form of national emissions ceilings for SO2, NOx, VOCs and ammonia was agreed upon in 2001. Of critical importance here has been the gradual strengthening of emission targets from large combustion plants. Legislation to reduce emissions from agriculture, notably ammonia, has been crucial as have, of course, a succession of directives strengthening emission targets for motor-vehicles – both light and heavy vehicles. Just imagine if CO2 had been regulated the same way as NOx, particles etc!

While the protection of ecosystems was the center-piece of the acid rain strategy, health concerns has been the major focus of air quality legislation within the EU. A thematic strategy on air pollution was adopted in 2008, the main objective being to reduce the negative impacts on health. According to background study for the strategy, an estimated 350.000 people in Europe die

prematurely every year because of air pollution (table 3). The costs for society of air pollution are staggering (table 4).

The thematic strategy will improve things - as will the recent revision of the Clean Air Directive from 2001 - but not as much as many experts had called for. Even with the new measures proposed, the objective of the VIth Environmental Action Programme of the EU "to attain levels of air quality that do not give rise to significant negative impacts" will not be met. One positive thing is that limit values in the air for the smallest particles – so called PM 2,5 – are being introduced, albeit less strict than what is the case in both Canada and the US.

Action on ship emissions urgent

There is one area, however, where policy-making has been extremely ineffective. Emissions from shipping continue to increase and are estimated to exceed land-based sources for sulphur in the EU by 2020.

The main reason for the failure so far to reduce emissions from shipping is the slow progress within the IMO to agree on international standards. Just as is the case with aviation, this has made it difficult for individual countries to impose stricter standards. However, two recent developments are worth mentioning:

One is the decision in 2005 by the EU to regulate emissions from shipping, incl passenger ferries, in the Baltic and the North Sea. The sulphur content in fuels is maximised to 1,5%. While in ports and in sensitive waters the S content is significantly lower.

Second is the unexpected decision by the IMO in October last year to maximise the sulphur content in marine fuels to 0,5% from 2020. The average sulphur content today in shipping internationally is 2,7% so the decision will eventually bring positive results. However, agreements so far on limiting NOx emissions have been far from satisfactory.

In spite of the slow progress in international negotiations, there is quite a lot that countries can do to limit pollution from shipping. Such examples are:

- the introduction of environmentally differentiated charges when entering harbours.
- the promotion of shore-side electricity
- turn certain sea areas into ECA:s, where sulphur and NOx requirements can be stricter
- push for developments in IMO

Final comment.: Action to curb emissions from shipping is urgently needed for a number of reasons, like health concerns, environmental protection, the need to internalise external costs and establish fairness of competition with other transport modes and, finally, because of cost-effectiveness)as compared to additional reductions from land-based sources.

Cost effectiveness important

One important objective of air quality legislation has been cost effectiveness. The new thematic strategy rests on a careful analysis of costs. The ambition level finally chosen for the EU defines yearly costs in the range of 10 billion euros, compared to benefits that exceed 40 billion euros. Here two things should be noted:

One, that cost estimates are done with no regard for further action on climate change mitigation. If such measures are included, the costs for reducing air pollution will be significantly reduced. There is a clear synergy between climate change mitigation and air quality measures, not least in the field of energy.

Second, that only health benefits are being calculated. If we add the benefits for ecosystems, agricultural crops, buildings etc by reducing air pollution, the arguments for emissions reductions are even stronger.

One thing is abundantly clear, based on EU experience: Action to reduce air pollution has huge benefits for society and should be a priority in policy-making.

Challenges for the future

What are the lessons learnt from EU policy on air quality and what are the challenges ahead?

i) one hopeful lesson is that agreement on initial , fairly modest cuts in emissions is no impediment to tougher rules later on. Indeed, it seems to break the logjam and encourage tougher action later on.

ii) a systems approach is very much needed – to seek all possible synergies but as well to lower costs

iii) standards and targets through legislation are crucial. However, enforcement must not be overlooked. The EU experience is quite bleak on compliance.

iv) standards and targets drive technology change.

v) technology, however, is not enough. Lifestyles and consumption patterns matter as well. This si particularly true for transportation.

vi) a crash programme is needed to transform energy and transportation systems. Renewables and energy efficiency must be promoted vigorously. With projected growth in demand, not least in Asia, and based on conventional energy there is no way air pollution can be curbed and there is no way CO2 emissions can be controlled.

vii) nitrogen emissions are clearly not under control. Here we need more research but, as well, technology breakthroughs.

viii) fine particles – i e PM2,5 – are more dangerous for health than previously thought. Here we need more research as well as stricter standards.

ix) Urgent action on emissions from shipping, through vigorous action in the IMO but, through domestic action, as well.

x) finally: the synergy between climate change mitigation and reduction of air pollution is obvious. There is, however, one complicating factor: new science tells us that aerosols have masked a significant part of global warming so far.

The conclusion can not be any other than continued strong action to fight air pollution for all the benefits encountered, not least on public health. Parallel to that – and in order to counteract the cooling effect of aerosols - GHG emissions have to be reduced even more vigorously than previously thought. But more research is needed to improve our understanding on the role of aerosols in climate change mitigation and, in particular, the role of black carbon..

Table 1:
Emissions 1880-2005 in EU25, an
projected emissions up to 2030

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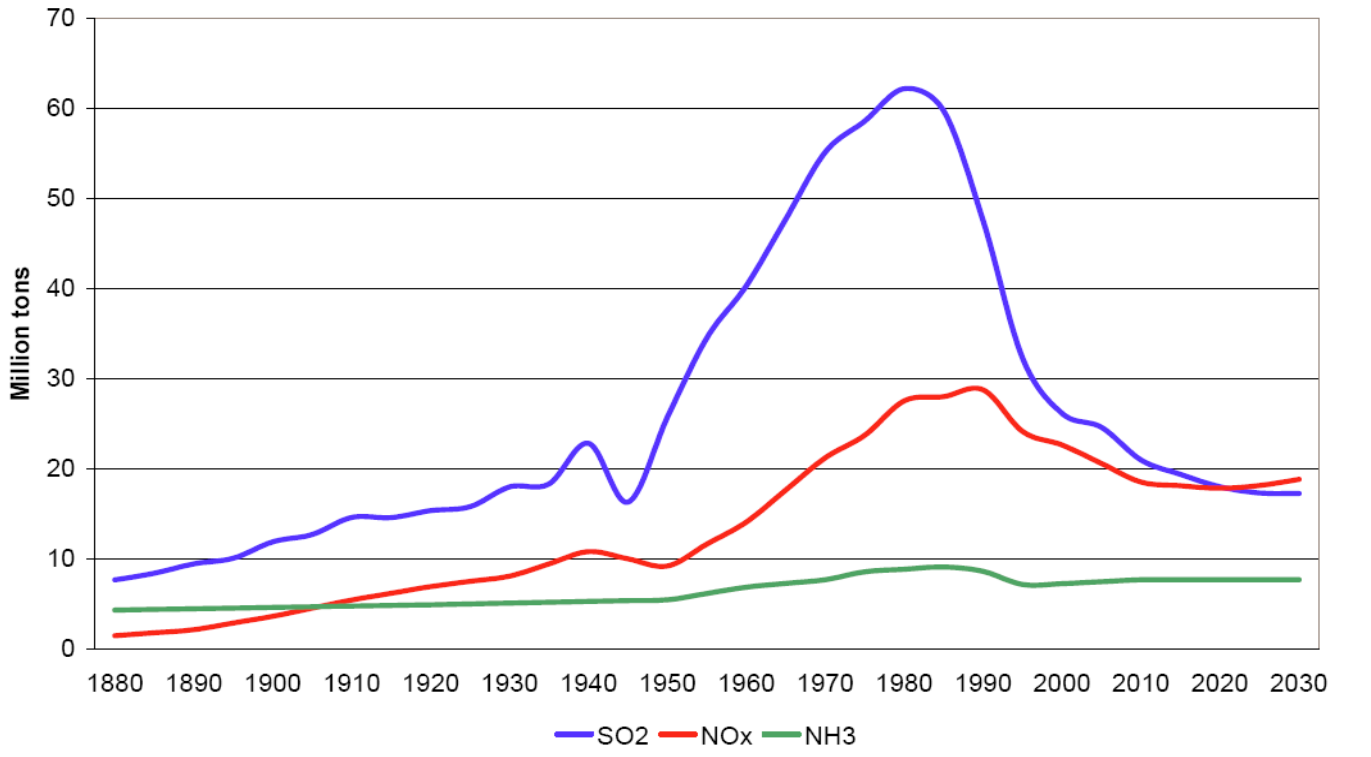

Table 2:
Land-based emissions decline

EU27: 1980-2005

SO_2: - 79%
NO_x: - 36%

Table 3:
Air Qualitv & Health

Fine particles (PM)

Estimates from the CAFE programme show that current levels of $PM_{2.5}$ in EU25 give rise to:

- **3.7 million life years lost in year 2000, or 348,000 premature deaths/year**
- **Several hundred million restricted activity days**

PM can be emitted directly (primary PM), or formed in the atmosphere from e.g. SO_2, NOx, and NH_3(secondary PM).

Table 4: Estimated costs of air pollution in EU 25 (billions € p a)

	2000	2020 CLE	Benefits from less
O_3 mortality	1.1 – 2.5	1.1 – 2.4	0 – 0.1
O_3	6.3	4.2	2.1
PM	190 - 703	130 - 548	60 - 155
PM	78.3	54.1	24.2
Crops (O_3)	2.8	1.5	1.3
Materials	1.1	0.7	0.4
Sum	**280 - 794**	**191 - 611**	**89 - 183**

Source: European Commission's Thematic Strategy on Air Pollution (September 2005)