



The Fridtjof Nansen Institute

Institute for
European
Environmental
Policy



Final version, in-depth case studies,

January 20, 2003

**THE EU AIR QUALITY FRAMEWORK
DIRECTIVE:
SHAPED AND SAVED BY INTERACTION?**

By

Jørgen Wettestad

The Fridtjof Nansen Institute

Andrew Farmer

Institute for European Environmental Policy

E-mail: jorgen.wettestad@fni.no

afarmer@ieeplondon.org.uk

1. Introduction

Although the development of EU air quality policy started in the 1980s, the 1996 Air Quality Framework Directive (FD) is an important legal milestone in the EU's fight against air pollution. The Directive itself did not create any precise air quality objectives, but rather it set out a framework and basic principles for ambient air quality monitoring and management. These were to go into effect once daughter directives for specific pollutants had been adopted. So the main reason to describe it as being a milestone is found in these subsequent daughter directives, which have both broadened the scope of EU policy in this area in terms of substances covered and introduced far more stringent air quality limit values than previously applied. The first daughter directive targets sulphur dioxide, nitrogen dioxide, particulate matter and lead, and was adopted in 1999. The second directive targets benzene and carbon monoxide, and was adopted in 2000. The third directive targets ground-level ozone and was adopted in late 2001. As it makes sense to see the 1996 Directive and the subsequent daughter directive as different facets of the same basic institutional entity, a reference in the rest of the paper to the Air Quality FD also includes the daughter directives. The Air Quality FD is the institution focused upon in this paper.

A previous inventory paper indicated that the FD has interacted and interacts with a number of institutions and processes both outside and within the EU (see section 2). A main thesis in this paper is that *in order to really understand both the shaping and future performance of the EU air quality FD it is absolutely crucial to understand the FD's interaction with external and internal institutions*. Hence, in terms of 'vertical' interaction with external institutions, the air quality guidelines produced by the World Health Organisation (WHO) seem especially to have been central shaping forces for the EU legislation. It is interesting to scrutinise this interaction further for several reasons. First, as there is considerable internal EU expertise in this field, this case of interaction touches upon the question how much EU environmental policy should be a 'home brew' and how much it should rely on external expertise. Moreover, the WHO guidelines are non-binding international 'soft law', and hence this case also touches upon the question of the extent to which non-binding instruments can have a profound influence on the development of binding legislation in international (environmental) politics. In addition, as

WHO is very much a scientific expert organisation and the EU is primarily about politics, the case touches upon the generally complex, but important, relationship between science and politics in international environmental politics (e.g. Andresen et al 2000). Hence, a first central puzzle in this paper becomes: *how can it be that the binding EU Air Quality FD has seemingly been heavily shaped by the non-binding and external WHO guidelines?*

With regard to ‘horizontal’ interaction within the EU, this is of course distinctly different from the relationship between EU legislation and the policies of other international institutions. Within the EU, the different strands of (environmental) policy should ideally interact and be compatible. But as pinpointed in this project’s concept paper, separate decision-making processes may in practice easily lead to uncoordinated and fragmented decision-making (Oberthur and Gehring 2001). With regard to the focused air quality context, given the central role of cleaner fuel and lower emissions from vehicles for the improvement of air quality, there is an obvious link to the revised fuel standards and vehicle emission limits emanating from the Auto-Oil I process. Starting in 1992, the Auto-Oil I Programme led to directive proposals in 1996 on stricter fuel standards and tighter emission limits, and these directives were adopted in 1998. Hence, the air quality directives and the Auto-Oil I Programme and directives were debated and adopted during roughly the same time period; partly targeting the same substances, such as NO_x, benzene and carbon monoxide. But the fact that the EU launched an air policy integration programme in 2001 – i.e. the Clean Air for Europe (CAFÉ) Programme – could be a sign of lacking integration and coordination so far of air quality and vehicle emissions reductions policies. So a second central question in this study becomes: *to what extent have the air quality and Auto-Oil policy-making processes interacted and how well have they been coordinated?*

However, this is not necessarily the only or most important process of interaction between these strands of legislation. Given the obvious role of cleaner fuel and lowered emissions for achieving better air quality, there is a distinct possibility that the *really* important interaction effects take place at the stage of outcomes, i.e. when the focused directives are implemented. Hence, a third central question addressed in this study becomes: *will the most important interaction between EU Auto-Oil standards and air quality standards take place*

when the former standards are implemented? In other words, will the Air Quality FD's fate and performance be 'saved' by the Auto-Oil Directives?

As indicated, the next section will briefly summarise how the Air Quality FD has interacted with various institutions and processes within and outside of the EU. Section three focuses upon the 'vertical' interaction with the WHO air quality guidelines, including the overall response to the interaction signalled in the 2001 Communication on the CAFÉ Programme. Section four scrutinises the 'horizontal' interaction between the Air Quality FD and the Auto-Oil Directives, including interaction at the level of both outputs and outcomes, and including an assessment of the CAFÉ response. Section five winds up the study with some more general observations and lessons.

2. The Air Quality FD and main 'horizontal' and 'vertical' interactions: an overview

We have provided an inventory elsewhere of interaction between the EU Air Quality FD, other relevant EU policy instruments and relevant international institutions (Wettestad and Farmer, 2001). With regard to other EU policy instruments, the inventory identified and discussed the interaction with five main processes and instruments: the Single Market; the Integrated Pollution Prevention and Control (IPPC) Directive; the Acidification Strategy and National Emission Ceilings (NEC) Directive; EU energy efficiency and renewables programmes and directives; and the Auto-Oil I Programme and Directives. Regarding 'vertical' interaction with other international institutions, two main cases were singled out: policy-making and protocols within the UNECE Convention of Long-Range Transboundary Air Pollution (CLRTAP), and the air quality guidelines produced by the World Health Organisation. Key features of these interactions are summed up in the box below and further information is found in the inventory paper by Wettestad and Farmer referred to above.

Box: Interactions between the EU Air Quality FD and other EU legislative instruments and international institutions

The Single Market - has amplified a trend of increasing transport emissions and hence disruptively affected the process of improving air quality

IPPC Directive – aims to reduce industrial emissions including those to air, and will help to achieve air quality targets

The NEC Directive – sets emission ceilings which will help to achieve air quality targets

Auto-Oil I Directives – set stricter fuel standards and vehicle emission limits which will help to achieve air quality targets

SAVE Programme and Renewables Directive – contribute to increased energy efficiency and use of renewables which help reduce emissions and improve air quality

CLRTAP – developed the critical loads concept which helped the EU process of setting air quality standards

WHO - produces air quality guidelines which have heavily influenced EU air quality standards

3. Vertical interaction with the World Health Organisation (WHO): external air quality guidelines as ambitious benchmarks for EU policy entrepreneurs?

3.1 Introduction

According to WHO, the organisation recognised already in 1958 that air pollution was a global threat to health.¹ In 1972, a first guidance regarding the levels of ambient air pollutants that constitute hazards to health was first formulated for the ‘classic’ compounds sulphur dioxide (SO₂), solid particulate matter, carbon monoxide (CO) and photochemical oxidants. The next major step in this process took place in 1987, with the publication of the *Air Quality Guidelines for Europe* for a much extended set of air pollutants. These guidelines were based on evidence from the epidemiological and toxicological

¹ See www.who.int/environmental_information/Air/Guidelines.

literature published in Europe and North America.² With regard to the health significance of air pollution, a new database of time-series studies was developed first in the United States and later in Europe and other areas.³

Let us then look into the evolving relationship between the EU and the work of the WHO in this field more closely. In section 3.2, the role of expertise in the period leading up to 1992, when the work on the Air Quality FD started, is briefly summarised. Section 3.3 discusses the negotiations on the framework directive during 1992-1996, and the role played by the WHO guidelines. In a similar manner, section 3.4 discusses the daughter directives with a specific focus on the ozone directive. Section 3.5 sums up the EU's response to the interaction communicated in the Clean Air for Europe (CAFÉ) Programme. Section 3.6 then winds up this part of the paper with a summary of main findings and interpretation of this vertical interaction.

3.2 The early years (pre-1992): air quality legislation mainly based on 'in-house' expertise

The first EU air quality directives were adopted in the first half of the 1980s. In 1980, a directive on air quality and limit values for sulphur dioxide and smoke was adopted (80/779). This was the first piece of Community-wide legislation to lay down mandatory air quality standards. The next air quality directive targeted lead and was adopted in 1982 (82/884). According to Haigh (2002:6.4-3), the limit values for these directives were largely derived from the epidemiological work of the British Professor Lawther. The lead directive was followed by a directive targeting nitrogen dioxide (85/203).⁴ The focus on nitrogen dioxide started already in the first environmental action programme from 1973, and this was endorsed in the second action programme and a 1983 Council resolution. Moreover, according to Haigh (Ibid.:6.5-2), 'the effects on air pollution on forests in Germany (and the 'acid rain' problem in general) in which nitrogen

² The work on making these guidelines globally applicable started in 1997. Ibid.

³ The time series approach takes a day as the unit of analysis and relates the daily occurrence of events such as deaths or admissions to hospital to daily average concentrations of pollutants, while taking careful account of confounding factors such as season, temperature and day of the week. Powerful statistical techniques have been applied and coefficients have been produced that relate the daily average concentrations of pollutants to their effects. Ibid.

⁴ This directive set a limit value of 200 µg/m³ for nitrogen dioxide (NO₂) in the atmosphere, and two lower guiding values to serve as reference points for the establishment of particular schemes within zones in the member states. Limits were to be met by 1987.

oxides play an important part gave added impetus to producing the proposal'. Hence, it can be assumed that Germany was among the driving forces for the limit values in this directive.

The Fourth Environmental Action Programme, launched in 1987, placed more emphasis on the problem of photochemical pollution and particularly ground-level ozone. The Commission described this problem as 'one of the major environmental problems of this century'.⁵ Moreover, in the early 1990s, increasing concentrations of ground-level ozone were worrying many European countries. Hence, monitoring networks were established in Germany and in the Benelux countries. These monitoring activities improved information to the public about pollution levels, generated increased public concern about the summer smog problem and resulted in a strengthened public demand for control measures.⁶ On this background, the first EU directive targeting ground-level ozone was then adopted in 1992 (92/72, Directive on air pollution by ozone). The Directive required member states to develop a network for the collection of information on ozone levels. Measurement points were to be located at geographically and climatologically representative sites, where the risk of exceedence of various thresholds was highest. Moreover, the Directive established four health and vegetation protection *thresholds*, and the health thresholds were directly based on WHO guidelines. When certain thresholds were exceeded, information was to be circulated 'on a sufficiently large scale and as soon as possible to enable the population to take appropriate protective action'.

Summing up, the legislation preceding the 1996 Air Quality Framework Directive was mainly based on EU in-house expertise. However, as soon as the WHO started its work in the air quality field, it was used as a central reference point also within the EU. This is witnessed in the 1992 monitoring directive.

3.3. Negotiating the framework directive 1992-1996: no specific limits, but still a certain role for the WHO

As further elaborated in section four, the background for the framework directive was multifarious. The Fifth Environment Action Programme (EAP), adopted in 1992, called for the effective protection of all people against

⁵ Haigh (2002:6.15-2).

⁶ See Amann and Lutz (2000:7).

recognized health risks from air pollution. As a central ‘action’, proposals for amendments of existing legislation were pinpointed.⁷ It is also interesting to note that a central target for 2000 was that ‘WHO values <should> become mandatory at EU level’.⁸ Moreover, according to Elsom (1999:106), a revision of EU air quality policy was spurred by WHO’s decision in 1993 to review and revise its 1987 air quality guideline values for Europe. This development was accompanied by the establishment of a funding agreement between the Commission and the European Regional Centre of WHO, resulting in the 1996 Air Quality Guidelines for Europe.⁹ Hence, the relationship between the EU and WHO is a true case of *interaction*.

With regard to the additional background for the process of establishing a new framework directive, there was also a more technical/administrative dimension to the matter. According to the *ENDS Report*; ‘the Commission <wanted> to put the legislation on a more consistent footing’.¹⁰ More specifically, the need to remove national differences in terms of monitoring strategies and measurement techniques as well as the degree of commitment towards improving air quality has been pointed out (Elsom *ibid.*). By the spring of 1993, early drafts of a framework directive on air quality were discussed in meetings between the Commission and national officials.¹¹ More than 20 substances were targeted¹² and a system consisting of different types of quality objectives was envisaged. ‘Alert thresholds’ were related to the top three pollutants; ‘guide values’ recommended by international expert groups such as WHO were to be established for all the pollutants; and ‘limit values’ (i.e. obligatory environmental quality standards to be met) were to be set for the pollutants in stages.¹³

The Commission then formally put forward a proposal for an air quality framework directive in the beginning of July of 1994.¹⁴ Important goals of the

⁷ The EU Commission (1993:81).

⁸ *Ibid.*

⁹ See the EU Commission’s CAFÉ Communication (2001:14).

¹⁰ See *ENDS Report* 219, April 1993, p. 38.

¹¹ *Ibid.*

¹² The top 14 were sulphur dioxide; nitrogen oxides; ozone; particulates; black smoke; lead; carbon monoxide; cadmium; acid deposition; toluene; benzene; benzo-a-pyrene; formaldehyde; and PAN. *Ibid.*

¹³ *Ibid.*

¹⁴ See *International Environment Reporter*, July 13, 1994, pp. 589–590, and *ENDS Report* 234, July 1994, pp. 41–42.

legislation were to put pressure on Member States to achieve continuous improvements in air quality and to move closer towards harmonisation of national air quality measurement programmes. Furthermore, it was declared as important to make information on air quality available to the public. Focus was explicitly on air quality in cities, and Brussels, Athens and London were mentioned as examples of ‘problem cities’.¹⁵ However, the more *specific* air quality limit values and alert thresholds were to be developed in several, subsequent daughter directives. A common position on the framework directive was obtained in June 1995 and the directive was formally adopted in September 1996.¹⁶

The Air Quality FD itself did not create any precise air quality objectives, but rather it set out a framework and basic principles for ambient air quality monitoring and management. These were to go into effect once daughter directives for specific pollutants had been adopted. At the same time as ambient standards were set, criteria were to be established for the assessment of air pollution. These were to include details of the location, number and type of sampling sites, as well as the use of other techniques such as modelling. Once daughter directives had been adopted, Member States would have to assess ambient air quality in accordance with the provisions specified.¹⁷ A key ingredient in the directive was a requirement for all EU countries to adopt monitoring systems in accordance with common standards (both in terms of the location of monitoring sites and measurement techniques), and to report the results regularly to the Commission.¹⁸

3.4. Negotiating the daughter directives: the heyday of the WHO guidelines

As the next step, several groups of experts, consisting of representatives from the Commission, the European Environment Agency, the World Health Organisation, Member States, industry, and environmental NGOs, developed proposals for daughter directives; the first one for standards for sulphur dioxide, nitrogen dioxide, particulate matter and lead. In June 1998, a joint position was obtained on this daughter directive, signalling a distinct, overall tightening of

¹⁵ International Environment Reporter, July 13, op. cit., p. 589.

¹⁶ Directive on ambient air quality assessment and management, 96/62/EU.

¹⁷ Measurement is mandatory in so-called ‘agglomerations’ – zones where the population concentration exceeds 250,000 inhabitants – and in zones where pollution exceeds some proportion of the limit values.

¹⁸ Acid News 2, June 1997, p. 7.

standards, but also with standards for particulates and NO_x ‘significantly diluted’ from those originally proposed by the Commission.¹⁹ The first daughter directive was then formally adopted in April 1999.²⁰

With regard to the use of expertise, the processes of producing the daughter directives have generally been characterised as ‘the heyday of the WHO guidelines’.²¹ The process of preparing this first daughter directive offers clear support for this thesis. In the explanatory memorandum to the proposal²² the Commission justified each of the proposed limit values by reference to the most recent WHO Guidelines. However, differing institutional contexts and the different nature of the instruments (i.e. advisory guidelines vs binding law) may shed light upon the fact that the Commission did not propose a sulphur dioxide limit value for peak concentrations in line with WHO guidelines. The WHO 1996 Guidelines for sulphur dioxide included a concentration of 500 µg/m³ averaged over ten minutes. The Commission stated that while ‘in principle’ it was undesirable to allow any exceedance of these guidelines, ‘it has been found that in practice it is not possible to base compliance regimes and management plans for limit values with short averaging times on maximum measured values’. In other words, what was fine as a Guideline may not be fine as a legal obligation. Thus although there was significant interaction between WHO and the development of the daughter Directive, the outcome of the interaction was strongly influenced by the different nature of the institutions.

A second daughter directive was proposed by the Commission in December 1998, targeting benzene and carbon monoxide. This particular daughter directive was adopted in November 2000 and also leaned heavily on the WHO’s guidelines in the development of limit values.²³

A third daughter directive has targeted the issue of ground-level ozone. As indicated in the section on the 1992 ozone directive, this issue was given specific emphasis in EU air pollution policy-making from the early 1990s on.

¹⁹ See Acid News 3, October 1998, p. 7 and ENDS Report 281, June 1998, p. 47. As pinpointed by ENDS Report, exceedance of the particulate matter value would be permitted on 35 occasions in 2005 – compared to the 25 occasions suggested by the Commission. NO_x limits could be breached up to 18 times – compared to the eight breaches suggested by the Commission .

²⁰ Directive 1999/30/EC.

²¹ Interview with Commission official, January 13, 2002.

²² COM(97)500, 08.10.1997.

²³ Directive 2000/69/EC.

The formal proposal for a directive on ozone in ambient air was presented in June 1999. The daughter directive proposed aspirational, non-binding target values for ozone by 2010; targets ‘widely seen as ambitious’, according to *Environment Watch*.²⁴ To protect human health, the proposal took its lead from the relevant WHO{ XE "World Health Organization (WHO)" } guideline, which calls for a limit on ambient ozone concentrations of 120 micrograms per cubic metre ($\mu\text{g}/\text{m}^3$). It was suggested that this limit could be breached up to 20 days per calendar year.²⁵ In addition, requirements were included to monitor ozone concentrations in ambient air, and to subsequently report to the public on the findings of that monitoring.

Cutting a longer story short, after a final round in conciliation, agreement was reached in November 2001, with Member States being obliged to meet the 2010 120 micrograms target ‘save where not achievable through proportionate measures’. The ‘25 breaches per year’ position favoured by the Council was adopted. Moreover, the year 2020 was set as a ‘reference year’ for studies to be carried out and for a possible revision of the Directive.²⁶ The Directive was then finally adopted in February 2002 (as 2002/3).

Meanwhile, in December 2001, it was reported that the Commission had delayed proposing a fourth daughter directive which was supposed to target polyaromatic hydrocarbons (PAHs), cadmium, arsenic, and nickel. This was due to considerable industry protests.²⁷ In October 2002, it was announced that the Commission was planning to launch a directive with non-binding instead of mandatory limits.²⁸

3.5. CAFÉ and the EU response to the interaction: continued reliance on WHO expertise, but also critical voices

As mentioned in the introduction, the Commission’s Environment Directorate has recently launched new initiative to incorporate the various aspects of EU air quality policy into a unified framework; under the banner of *Clean Air for Europe* or CAFÉ (cf. COM(2001) 245). CAFÉ can hence be seen as providing

²⁴ Environment Watch, June 18, 1999, p. 7.

²⁵ Ibid., p. 9.

²⁶ See Europe Environment, December 4, 2001.

²⁷ ENDS Daily, December 20, 2001.

²⁸ ENDS Daily, October 30, 2002.

the EU system's main response to the interaction and (lack of) coordination between sub-issues which has taken place in the issue area of air pollution control. So how does the EU assess the interaction with WHO according to CAFÉ Communication?

Overall, the response is positive. There are good reasons to believe that WHO and its air quality guidelines will continue to play a significant role in EU policy-making in the years ahead. According to the Communication, during the consultation process leading to the launch of CAFÉ, it became clear that a large majority of national representatives and stakeholders supported the use of WHO guidelines as the fundamental advice on risk.²⁹ This seems also to some extent to be the position of the Commission, but the picture is somewhat ambiguous.³⁰ First, the Commission has signed a contract with WHO on a revision of the 'Guidelines for Europe'.³¹ As there have been some delays in getting the contract going, uncertainty has been created as to whether or not these guidelines could be ready for the next main round of revision of EU air quality policy in 2004. Moreover, the process of producing the WHO guidelines has been criticised for lack of transparency. Hence, there seems to be a need to re-think the way the EU organises its scientific advisory process in this issue area. In such a re-appraisal process, several options should be evaluated, including a possible lower-cost option of producing the relevant knowledge 'in-house' in the EU.

3.6 A summary and interpretation of the interaction

This in-depth 'vertical' scrutiny has clearly confirmed that the WHO guidelines have been *the* most important scientific reference point in EU policy-making on air quality. As soon as WHO's work in this area started in 1987, this work became an important benchmark in the EU context. In the 1992 ozone directive, the threshold values were directly derived from the WHO guidelines. Moreover, the 1992 Fifth EAP_[MARI] established as a target that WHO values should become mandatory within the EU by 2000. As the 1996 Air Quality Framework Directive established just the framework, the main implementation of the Fifth EAP target took place in the daughter directive processes. WHO experts participated in expert groups preparing these directives, and the daughter

²⁹ CAFÉ Communication, p.14.

³⁰ Interviews with EU officials, January 2002.

³¹ According to M. Krzyzanowski, WHO, the EU financial contribution to this revision process is much more significant than the contribution in the mid-1990s. Communication with Krzyzanowski, Dec.11, 2002.

directive processes have been characterised as ‘the heyday of the WHO guidelines’. Hence, the main causal pathway has been at the level of *outputs*. However, the WHO values have not been uncritically taken into the EU context. Their appropriateness has been carefully examined, and in some cases, other (and more lenient) target values have been chosen.

In terms of the concepts used in this project, the central differences driving this interaction have to do with both *objectives* and *means*. First, the objectives and nature of the two institutions are clearly different. As noted in the introduction, WHO is very much of a science and expert organisation with the aim of producing ‘healthy guidelines and advice’ - while the EU is primarily about regulatory politics. Moreover, the broad-based international character and participation of high-quality experts have clearly given the WHO’s processes in terms of producing guidelines a high quality stamp within the EU. But what *really* has been driving this interaction is the higher and more ambitious level of norms within WHO (in the form of limit values). These norms, clearly more ambitious than EU standards, have been used as a benchmark and something to strive for by actors within the EU seeking a strengthening of EU policy. In terms of effects, the interaction has been strongly *synergistic*. The EU has adopted more ambitious policies than would have come about without the WHO benchmarks, and the EU’s financial contributions have led to better WHO guidelines than would otherwise have come about. This is also a clear case of *intentional* interaction. The WHO guidelines have been produced in order to influence other actors such as the EU. Not surprisingly, given this character of the interaction, the overall response to the interaction within the EU system has been positive, and the CAFÉ Programme signals a continuation of interaction practices. But in a policy-making climate where cost-effectiveness is increasingly emphasised as a steering principle for the work of the Commission and the EU as a whole, there is an understandable increasing interest in more low-cost, in-house expertise. This probably touches upon a more general dilemma for the EU, with far wider relevance than only the air pollution context.

4. Horizontal interaction with the EU Auto-Oil legislation: limited policy coordination, but crucially important implementation effects?

4.1. Introduction

In this section, we turn to the EU internal context. As noted in the introduction, such internal interaction is distinctively different from the relationship between EU legislation and the policies of other international institutions. Within the EU, the different strands of (environmental) policy should ideally interact and be compatible. With regard to the focused air quality context, measures to curb vehicle emissions are of central interest. In this field, the Auto-Oil I process has clearly been the most important EU process in the 1990s.³² The air quality directives and the Auto-Oil I Programme and related directives were debated and adopted over roughly the same time period; partly targeting the same substances, such as NO_x, benzene and carbon monoxide. So an interesting first question becomes: how closely have these ‘functionally’ related processes and directives interacted at the level of outputs? This is discussed in section 4.2. Given the obvious role of cleaner fuel and stricter emission limits in achieving better air quality, there is a distinct possibility that the most important interaction effects will emanate from the implementation of the Auto-Oil Directives, and hence take place at the level of outcomes. This is discussed in section 4.3. The EU system’s main response to the interaction is discussed in section 4.4, followed by a concluding summary and interpretation of this horizontal interaction in section 4.5.

4.2. Interaction at the level of outputs: formally moderate, but air quality increasingly important for EU Auto-Oil policy

As indicated, it makes sense to distinguish between two main phases in the Auto-Oil I process: first, a preparatory phase, lasting from 1992 to 1996; and, second, a policy-making phase, lasting from 1996 to 1998.

4.2.1. The Auto-Oil preparatory phase (1992-1996): increasing focus on air quality, but little EU policy to build upon

The Auto-Oil process was initiated by the Commission{ XE "Commission, the (EU)" } in 1992. The general backdrop for the initiation of this process was

³² As indicated, Auto-Oil I ended up setting the 2005 standards envisaged to be a central outcome of Auto-Oil II. Hence, Auto-Oil II was re-designed as a modelling and knowledge improvement effort.

multifarious. The adoption of the strengthened 1990 US{ XE "United States of America" } Clean Air Act, WHO's air quality guidelines for Europe{ XE "World Health Organization (WHO)" } (see section three), and growing frustration in industry circles over a policy-making approach paying too little attention to costs in relation to benefits, have all been indicated.³³ There was thus an interest in finding more cost-effective solutions.³⁴ As a response to these various concerns, a symposium on vehicle emission standards for the year 2000 was organised and attended by a wide range of actors including Commission and government officials, industry and NGO representatives, and Members of the European Parliament{ XE "European Parliament" }.³⁵ A central theme of this Symposium was the development of cost-effective measures based on ambient air quality standards. In particular DG Environment officials were considering the adoption of a programme similar to the US Auto-Oil Air Quality Improvement Research Programme initiated in April 1990³⁶.

The Commissioners for Environment, Industry and Energy then invited the European Automotive Manufacturers Association{ XE "European Automotive Manufacturers Association (ACEA)" } (ACEA) and the European Petroleum Industry Association{ XE "European Petroleum Industry Association (EUROPIA)" } (EUROPIA) to collaborate in the realisation of a technical research programme. It was decided to launch three independent but interrelated, projects:

- Urban ambient air quality studies. The aim here was to predict the air quality of seven European cities and ground level ozone across the EU for the year 2010, and on this basis derive emission reduction targets. These seven cities were Athens, Köln, The Hague, London, Lyon, Madrid and Milan.
- A 'European Programme on Emissions, Fuels and Engine Technologies', jointly carried out by ACEA{ XE "European Automotive Manufacturers Association (ACEA)" } and EUROPIA{ XE "European Petroleum Industry Association (EUROPIA)" } and focusing on the effect on emissions of vehicle technology and fuel characteristics, and

³³ See Weale et al. (ibid.); Young and Wallace (2000); and Haigh (2002:6.8-8).

³⁴ Interview with Matthew Ferguson, IEEP, November 1999.

³⁵ Friedrich et al. (1998:105).

³⁶ Friedrich et al (2000).

- A cost-effectiveness study, calculating the costs and emissions impact for different emission reduction measures.

At the outset, it was envisaged to have legislation proposals ready by the end of 1994, but this was delayed.³⁷ Hence, it was not until June 1996 that the Commission{ XE "Commission, the (EU)" } formally put forward the first two proposals for directives to take effect in the year 2000, and the main policy-making phase of this process started.

So what role did EU air quality legislation in this field play? As indicated above, when the Auto-Oil process was initiated by the Commission in 1992, one influencing factor was the then quite recently formulated and adopted WHO air quality guidelines. So a central pathway in this instance ran directly from WHO to the Auto-Oil context, and not via the EU air quality legislation. However, in a somewhat longer historical perspective, there is more to it than this. As summed up by Friedrich et al (1998:8), EU vehicle emission regulation in the 1970s and 1980s was characterised by an exclusive focus on the improvement of car technology, and the emission limit values were set in relation to best available technology (BAT).³⁸ The Auto-Oil I Programme, with its weight given to urban air quality studies, can hence be seen as a sign of a more fundamental shift in the Commission; away from technology-based policy-making towards policy-making giving more weight to environmental quality standards. A greater weight to such quality standards opened up for more flexible and hence cost-effective policy-making. This is hence part of the background for why urban air quality studies became one of the three pillars of the Auto-Oil Programme. On balance, given the fact that EU air quality legislation was in an early phase, the influence of EU policy in this field on the developing fuel standard and vehicles emissions legislation was almost inevitably weak. It is clearly symptomatic that it was the WHO guidelines and not EU policy that contributed to setting the Auto-Oil I process in motion.

But what about the other way around; did the Auto-Oil process influence the design of the Air Quality FD? Given the general character of the FD and its main focus on monitoring, it is not surprising to find no formal reference to the developing Auto-Oil legislation in the Directive. Article 7 makes only a general

³⁷ According to ENDS Report 257, June 1996, p. 41.

³⁸ However, as noted by Friedrich et al (1998:8), 'the values set usually remained well below the BAT'.

reference to the possible need for measures targeting motor-vehicle traffic in the air quality action plans to be drawn up by Member States.

4.2.2. The Auto-Oil policy-making phase (1996-1998): air quality considerations important, but moderate links to EU legislation

The Auto-Oil I study was ready in the spring of 1996. As indicated above, a key part of the Programme was the modelling of air quality in ‘representative’ European cities. As the existing EU air quality legislation was being revised, the Commission had set and used air quality ‘criteria’ based on WHO guidelines as yardsticks for assessing the acceptability of future levels of pollution.³⁹ Still, it was noted that ‘Article 4 of Directive 94/12/EC requires that measures to reduce emissions from road traffic shall be designed to meet the requirements of the Community’s air quality criteria and related objectives’.⁴⁰ So some sort of an explicit link to EU air quality legislation was made.

In June 1996 the Commission then{ XE "Commission, the (EU)" } formally put forward the first two proposals for directives arising from the Auto-Oil I Programme. Central components in this initial package of proposals consisted of tighter emission standards for passenger cars and fuel specifications for fuel and diesel.⁴¹ According to then Environment Commissioner Ritt Bjerregaard{ XE "Bjerregaard, Ritt, former EU Environment Commissioner" }, the proposals were ‘extremely ambitious’, and she emphasised again that the proposed new standards should help the EU to achieve WHO air quality standards.⁴² The proposed measures were to be followed by an Auto-Oil{ XE "Auto-Oil I process/programme" } II phase, specifying requirements for the year 2005. Together with proposals already adopted, emissions of NO_x from road traffic were envisaged to decline by 65% by 2010 from 1995 levels, and those of VOCs, carbon monoxide and urban particulate matter by 70%. Between a third

³⁹ ENDS Report 256, May 1996, p.23.

⁴⁰ The Commission’s Auto-Oil Communication (COM (96)248), section three.

⁴¹ More specifically, the following proposals were put forward: first, a proposal on the reformulation of petrol and diesel fuels. A key 2000 target here was petrol with 200 parts per million (ppm) of sulphur (down from the estimated market average of 300 ppm); and diesel with 350 ppm of sulphur (down from the estimated market average of 450 ppm). Second, a proposal to strengthen the existing emission limits for passenger cars (these being based on Directive 70/220 on Motor Vehicle Air Pollution Control, last amended by Directive 94/12). Targeted substances included were carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x) and, only for diesel cars, particulates. Emission limits for 2000 were proposed, but ‘indicative’ lower limits for 2005 were also included.

⁴² See Europe Environment, no. 480, June 27, 1996, p.1.

and a half of these reductions would be attributable to the Auto-Oil programme.⁴³

In the first reading in the European Parliament in March and April 1997, it became clear that the Parliament was quite critical of the Commission{ XE "Commission, the (EU)" } proposals. The Parliament called for both stricter fuel standards and lower emission limits than those proposed by the Commission, and also a mandatory 2005 requirement instead of the indicative limits proposed by the Commission.⁴⁴ So in the view of the Parliament, the Commission was giving more weight to the cost-effectiveness side of things than to air quality and health improvements per se. When the Environment Council of Ministers{ XE "Council of Ministers (EU)" } met in June 1997, the critical Auto-Oil{ XE "Auto-Oil I process/programme" } inputs from the Parliament served as the main backdrop. Described as ‘a rare decision where the European Union’s Council of Ministers strengthened an environmental legislative proposal from the European Commission’, the Ministers unanimously adopted stricter fuel standards than those proposed by the Commission{ XE "Commission, the (EU)" } – but not as strict as those proposed by the Parliament. The Council ended up supporting the Commission’s proposals on emission limits.

When the Parliament in its second reading in February 1998 gave only a qualified backing for the Council’s common position on the Auto-Oil{ XE "Auto-Oil I process/programme" } directives, the stage was set for the final rounds in a Conciliation Committee{ XE "Conciliation Committee (EU)" }, during the Spring of 1998. The Conciliation Committee negotiations were successfully concluded by the end of June. With regard to the hotly-debated 2005 requirements, the Parliament’s call for mandatory standards generally won through. Regarding the issue of fuel quality, standards for the years 2000 and 2005 were identical to those agreed upon by the Council of Ministers{ XE "Council of Ministers (EU)" }.⁴⁵

Since the conciliation agreement settled many of the 2005 standards intended to be settled in an Auto-Oil II Programme, this latter Programme was

⁴³ Acid News, October 1996, p. 1.

⁴⁴ With regard to *emission limit values*, in relation to the Commission{ XE "Commission, the (EU)" }’s proposals, lower limit values were suggested with regard to NOx emissions and particles from diesel-driven vehicles. Moreover, *binding* limit values for the year 2005 instead of indicative limits were proposed for NOx, carbon monoxides, ozone and sulphur emissions. With regard to *fuel quality*, a lower allowable sulphur content of diesel was suggested.

⁴⁵ These directives are 98/69 (Council Directive relating to passenger cars and light commercial vehicles) and 98/70 (Council Directive relating to the quality of petrol and diesel fuels).

redesigned as a more analytical Programme. Three main objectives were formulated: 1) to complete the work being done to assess future air quality and establish a consistent framework within which different policy options to reduce emissions can be assessed using the principles of cost effectiveness, sound science and transparency; 2) to provide the analytical foundation and input for a remaining set of Community measures to take effect from around 2005; 3) to provide the foundation, in terms of data and modelling tools, for the transition towards longer-term air quality studies covering all emission sources. A central ingredient is the REMOVE model, which was developed by the Commission and industry experts and, as indicated by its name, incorporates various components of earlier models (TRENEN, EUCARS, FOREMOVE). REMOVE is an integrated transport sector model that analyses the costs and effects of non-technical measures relating to road transport.⁴⁶

So what role did EU air quality legislation in this field play in this phase of the Auto-Oil I process? A clear impression is that air quality *considerations* functioned as a central contextual factor. Although the main controversies were fought over technological possibilities and the costs of different options, the implications of these possibilities and options for air quality and health were continuously referred to by all sides in the debate. The links to air quality were not least emphasised by several actors when commenting upon the final outcome. The agreement was hailed by Members of the European Parliament and Member States as well as the Commission as a major break-through in the effort to fight urban air pollution. For instance, according to Environment Commissioner Ritt Bjerregaard, ‘we shall see cleaner air in our cities, and we shall have fewer ozone episodes in the summer’.⁴⁷ Such comments bolster the impression that the Auto-Oil I conflicts took place within a broader policy context where the implications for air quality and health in the EU area were important parameters. Moreover, the comments point to the links between Auto-Oil and air quality legislation at the level of *outcomes*, as will be further elaborated in section 4.3.

However, the specific links between EU air quality legislation and the Auto-Oil I legislation at the level of outputs must again be characterised as weak. EU air quality legislation, including the 1996 Framework Directive, was

⁴⁶ See COM(2000)626, section 4.2.

⁴⁷ International Environment Reporter, July 8, 1998, p. 671.

referred to as a general parameter for Auto-Oil legislation, but a more specific influence is not detectable by a scrutiny of the main documents involved. An important explanation for this is of course that Auto-Oil I decision-makers had few recent, specific *EU* air quality standards to use as benchmarks in the policy-making process. By June 1998, none of the daughter directives had yet been adopted. So it is not surprising that the decision-makers instead frequently referred to WHO's air quality guidelines as central benchmarks in the development of policy.

With regard to possible influence the other way around, i.e. Auto-Oil influence on the air quality daughter directives, a closer scrutiny of the process of negotiating the ground-level ozone directive reveals that this process was closely related to the processes of producing an EU ozone strategy and a directive on national emission ceilings (NECs), as further discussed in Wettestad (2002). Hence, inter-policy coordination was surely taking place; however primarily involving other processes than Auto-Oil I. Still, as described by Amann and Lutz (2000), a central analytical tool in the EU's work on revising its ozone legislation was IIASA's RAINS model. Among the key inputs to this model was a summary of NO_x and VOC emission control policies within the transport sector. This exercise obviously included recent policies adopted within the Auto-Oil I context. Hence, this modelling work represented one way that the influence of Auto-Oil legislation on air quality legislation and the achievement of air quality targets was somehow taken into consideration. However, given the multitude of relevant policies to be included, the specificity of this assessment of influence was probably low.

All in all, it is hard to find clues which indicate that the influence of Auto-Oil I legislation on the preparation and negotiation of air quality legislation was very strong. It was generally included in some of the modelling work which underpinned the legislation, and it is reasonable to assume that it was included as a topic in the inter-policy co-ordination efforts which took place in the period from 1997 to 1999. So it may very well be that in order to capture the most significant and interesting interaction effects, we need to focus on the behavioural, outcome level and processes of implementing the directives involved.

4.3 Interaction at the level of outcomes: Auto-Oil implementation will undoubtedly help the achievement of air quality targets

We must first recall here that the adoption of the Auto-Oil I directives are events of a relatively recent character. As noted above, revised fuel standards and vehicle emission requirements were adopted in June 1998. Moreover, for instance the UK did not put the necessary fuel standard implementing legislation into place until December 2001 (Haigh 6.20-4). This makes it in practice impossible to already find any clear effects of Auto-Oil implementation on the achievement of the EU's revised air quality targets under the FD.

This is further confirmed by various information provided by the EU itself. There are certainly worrisome trends and projections. For instance, in the Commission's review of Auto-Oil II (COM(2000)626, p.11), only modest reductions in exposure to particulate matter were expected by 2010. Moreover, in September 2001, on the basis of a preliminary assessment of the follow-up of the first air quality daughter directive, the Commission's Environment Directorate launched clear warning signals. Urban areas all over Europe would likely fail to meet the limits on NO_x and particulates set in the 1999 Directive. A central reason pinpointed was the volume of road transport growing out of control.⁴⁸ This worrisome picture is given further support in the European Environment Agency's 2002 'Environmental signals' report (EEA 2002). In this report, the assessments of both urban air quality exceedances for ground-level ozone and exceedances for particulates are on the negative side; in the form of unhappy faces and 'unfavourable trends'.

However, although it is not possible to find clear evidence so far of synergistic interaction effects taking place, it is just as clear that such synergistic effects will take place in the years ahead. For instance, in the 'Environmental signals' report referred to above, transport measures from Auto-Oil I and II are one of the factors expected to lead to reduced emission of particulate matter.⁴⁹ This will then be a good example of intentional, synergistic interaction. However, although the picture is complex, the various worrisome trends and signals make it highly questionable whether or not the synergy has been 'strong

⁴⁸ See ENDS Daily, 'EU likely to miss air quality goals', Monday 24 September, 2001.

⁴⁹ EEA (2002:77).

enough' and the relationship between transport and air quality has been handled optimally so far. So the time has come to have a closer look at the response of the EU system in the form of the CAFÉ Program. How will the relationship between these activities and strands of legislation be handled in the future?

4.4 The response: CAFÉ co-ordination groups and improved analytical approaches

Two of the central, stated objectives of CAFÉ are to ensure that measures in different sectors needed to achieve air quality objectives are taken in a cost-effective manner at the relevant policy level through the development of effective structural links with the relevant policy areas; and to develop an overall integrated strategy to achieve air quality objectives in a cost-effective way.⁵⁰ Particulate matter and ozone are specifically targeted issues.

On the one hand, the CAFÉ Communication points out that considerable achievements have been made in terms of putting into place various legislation to improve fuel standards and bring down emissions from transport. Hence, the integration of vehicle and transport policies and air quality policies has not been a total failure. On the other hand, the two targeted issues of particulate matter and ozone are closely linked to emissions from transport. Recall here also section 4.3.3 and the various signals of worrisome trends and remaining air quality problems which have come out of the EU system in the recent years. Not least the Auto-Oil II Programme clearly singled out particulate matter and ozone as remaining air quality problems. Hence, it makes sense to see CAFÉ as confirming inadequate EU integration of transport and air quality policies so far. So despite significant progress, there is still room for improvement.

In terms of addressing these integration challenges, CAFÉ has announced several organisational devices.⁵¹ First, the Programme is developed under the leadership of a permanent secretariat housed within the Commission Environment DG, assisted by an inter-service group composed of all relevant

⁵⁰ The other main objectives are: to develop, collect and validate scientific information concerning air pollution, including projections, inventories, integrated assessment modelling and cost-effectiveness analysis studies, leading to the development of air quality and deposition objectives and indicators and identification of measures required to reduce emissions; to support the implementation of legislation and develop new legislation, especially the Air Quality Framework Directive daughter directives, and contribute to the review of international protocols; and to disseminate widely (including to the public) information and results from the programme.

⁵¹ This section leans heavily on information provided by the CAFÉ web site. See [http://europa.eu.int/comm/environment/air/cafe.htm#Organisational structure](http://europa.eu.int/comm/environment/air/cafe.htm#Organisational%20structure).

Commission departments. The mandate of this group, chaired by Environment DG, is to foster strategic discussion and consensus between the services and ensure that Commission policy in this area is fully co-ordinated. Second, a steering group composed of representatives of the Member States, the European Parliament, stakeholders and relevant international organisations meets two or three times a year to advise the Commission on the strategic direction of the programme. Hence, this signals the active involvement of a broader range of actors than those involved in the Auto-Oil context, especially Auto-Oil I.⁵² Third, in terms of more specific co-ordination between sectors, a sectoral co-ordination group will be set up with the objective of ensuring full communication between CAFÉ and sectoral policies including the development of source-based measures.

In addition to these organisational devices, the response also includes improved analytical approaches. A central way to get a better analytical grip of interaction of activities and policies is the further development of the aforementioned REMOVE model, which was developed within the context of Auto-Oil II.⁵³ REMOVE is an integrated transport sector model that analyses the costs and effects of non-technical measures relating to road transport. The upgraded model will incorporate all emissions from all transport modes in all current Member States and the candidate countries. This will then enable assessments to be made on policy options to meet the requirements of the current Air Quality Framework daughter directives, assist in their review and assist in the development of new daughter directives.

Are the measures announced in CAFÉ then an adequate response? It is of course too early to assess this conclusively. CAFÉ has been criticised for unclear financing of the programme,⁵⁴ and for lacking specification of the work programme which must be rapidly established in order to meet the 2004 deadline.⁵⁵ With regard to the co-ordination efforts, it has been pinpointed by *Environment Watch* that 'most if not all the key sectoral areas of policy making required to build the strategy remain the responsibility of those same parts of the Commission{ XE "Commission, the (EU)" } that ran them previously. They

⁵² Hence, this can be seen as a response to and balancing of Auto-Oil's heavy industry involvement. Interviews with Commission officials, February 13, 2002.

⁵³ See COM(2000)626, section 4.2.

⁵⁴ See Acid News 2, June 2001, p.2.

⁵⁵ See Environment Watch, May 11, 2001, p. 5-6..

have not been brought into the grasp of policy makers running the CAFÉ programme, so it remains to be seen if the requisite linkages can be made to work in practice as well as they may look in theory'.⁵⁶ According to Commission officials, all these points are valid ones, but there is a plea for patience.⁵⁷ There is clearly an awareness of central weaknesses and challenges, which is at least a necessary condition for making improvements in practice.

4.5 A summary and interpretation of the interaction

Although this study has in no way been able to reveal the complex coordination processes within the Commission in detail, the distinct impression is one of a quite limited interaction at the level of outputs. The Auto-Oil process and outputs mainly used WHO guidelines as benchmarks. The air quality process included Auto-Oil effects in the modelling input, but more effort was seemingly made in coordinating with other policies, such as the NEC Directive. The explanation may be simple: as the Auto-Oil and air quality directives inevitably interact when they are implemented, the challenge for policy-makers was much more to achieve as strong outputs as possible than to spend time and resources on coordination. Hence, the strongest interaction between these two strands of legislation will take place at the level of *outcomes*. However, given the fairly recent adoption of the Auto-Oil I directives, it is not possible to record any synergistic implementation effects so far in terms of improving air quality.⁵⁸

In terms of differences driving this interaction, a crucial difference is the fact that *the Auto-Oil Directives target central emission sources influencing air quality*, and the air quality directives do not. This can be categorised as differing *objectives*. But to some extent it is also a case of differing means, as the fuel and vehicle emission standards hence regulate polluting activities in a much more direct manner than the air quality standards. In terms of effects, we are clearly talking about *synergies*. EU air quality in the years ahead will most likely develop more beneficially due to the Auto-Oil directives than what would have been the case without them. This interaction at the level of outcomes has been *intentional*, i.e. a central aim for the Auto-Oil directives was to improve air quality and hence the performance of EU air quality directives. The overall

⁵⁶ Environment Watch, May 11, 2001, op.cit., p.6.

⁵⁷ Interview with Commission official, February 13, 2002.

⁵⁸ Such effects are highly probable, but given the multitude of factors and policies influencing air quality, it will be hard to distinguish the specific Auto-Oil effects.

response to the interaction so far must be characterised as a moderately positive one. On the one hand, the Auto-Oil and air quality Directives mean that the gap within the EU in terms of reconciling transport activities and air quality ambitions has been narrowed. Hence, a worry is now that sectors other than transport are lagging behind in terms of emission reductions. On the other hand, the ‘transport-air quality’ gap has in no way been closed, and the CAFÉ Programme launches both improved inter-institutional co-ordination and modelling as means to come up with stricter policies and hence a narrowed gap in the years ahead.

5. Some concluding notes on the role of ‘non’-EU expertise, soft law instruments - and timing

With regard to the ‘vertical’, strongly synergistic interaction with the WHO guidelines, it was noted that the overall response to the interaction within the EU system has been positive, and the CAFÉ Programme signals a continuation of interaction practices. But in a policy-making climate where cost-effectiveness is increasingly emphasised as a steering principle for the work of the Commission and the EU as a whole, an understandable increasing interest in more low-cost, in-house expertise was also noted. This forms the basis for a more general dilemma for the EU, with far wider relevance than only the air pollution context, and a possible lesson to be learned. *How much, then, should EU environmental policy be a ‘home brew’ and how much should it rely on external expertise?* On the one hand, the ability to point to highly authoritative external expertise may provide EU actors with a sort of undisputable, ‘distant’ authority. The role of the OECD in budgetary matters springs to mind. On the other hand, in line with the considerable development of EU environmental policy, the EU has built up considerable in-house national and EU-wide expertise. Relying upon this expertise will often be cheaper than the use of external expertise. However, the use of national expertise may also potentially be more controversial if suspicions of ‘politicisation’ of science arise. This case holds no clear answer to this dilemma, but given the constructive role played by the WHO guidelines in a number of EU processes, a shift towards more use of in-house expertise should be carefully considered before a decision is made.

Another general lesson emanating from this ‘vertical’ case has to do with the discussion of the role of non-binding instruments in international

environmental politics. Are they toothless paper tigers or are they flexible ‘tote-boards’? *This case offers further evidence that non-binding instruments can have a profound influence on the development of binding legislation in international (environmental) politics.* The crucial contingent factor in this case seems to be the high legitimacy surrounding the guideline-producing processes within WHO.

With regard to the ‘horizontal’, EU-internal interaction between the air quality directives and the stricter fuel standards and vehicle emission limits being developed under the banner of Auto-Oil I, there is clearly an interesting *timing* dimension involved.⁵⁹ When the Commission put forward the fuel standard and emission limits proposals in June 1996, none of the air quality daughter directives (which laid out the more specific air quality requirements) had been either presented or adopted. It is reasonable to assume that if they had been adopted prior to the fuel standard and vehicle emissions proposals, they could have functioned more as explicit reference points in the debate on the need for stricter policies. However, in this specific context, the lack of EU legislation was to a large extent made up for by a direct reference to the WHO guidelines. But it may be more of an exception than a rule that such external, authoritative reference points are available, and then internal EU timing of policy-making processes becomes more critical.

References

- Acid News (1996), Full Package Revealed, no. 4, October, p. 1, 3.
-(1997), New standards for air quality, no. 2, June, pp.7-9.
- (1998), Air Quality – Some Standards Ready, no. 3, October, p. 7.
- (2001), Editorial: Should have Learnt, no. 2, June, p. 2.
Ammann, M. and Lutz, M. (2000), The Revision of the Air Quality Legislation in the European Union Related to Ground-level Ozone, working paper, IIASA/DG ENV.
Andresen, S.; Underdal, A.; Skodvin, T.; Wettestad, J. (2000), *Science and Politics in International Environmental Regimes: Between Integrity and Involvement*, Manchester, Manchester University Press.
Elsom, D.M. (1999), Development and Implementation of Strategic Frameworks for Air Quality Management in the UK and the European Community, *Journal of Environmental Planning and Management*, 42 (1), pp.103-121.

⁵⁹ See Wettestad (2002) for a discussion of how unfortunate timing with other processes influenced the process of developing a National Emission Ceilings Directive.

ENDS Report (1993), Brussels Drafts Framework Law on Air Quality, no. 219, April 1993, pp. 38-9.

- (1994), Framework Directive opens New Phase in EU Air Quality Policy, no.234, July 1994, pp. 41-42.

- (1996), Battle in Brussels over Auto/Oil Programme, no.256, May 1996, pp.22-24.

- (1996), Car Industry Lashes out at Auto-Oil{ XE "Auto-Oil I process/programme" } Proposals, no. 257, June, pp. 41-3.

- (1998), Ministers Agree Air Pollution Rules, Lengthy Deadline on Water Quality, no. 281, June, p. 47.

ENDS Environment Daily (2001), EU 'likely to miss air quality goals, September 24 September, 2001.

- (2001). Fourth EU air quality directive delayed, December 20, 2001.

- (2002). Commission back-pedals on metals in air limits, October 30, 2002.

Environment Watch (1999), Executive Finalizes EU Proposals on Emissions Ceilings, Ozone{ XE "Ozone Strategy" } Pollution, June 18, pp. 7-9.

- (2001), (2001), Commission Launches Clean Air for Europe{ XE "Clean Air for Europe Programme (CAFE)" } Programme, May 11, pp. 5-6.

{ XE "European Parliament" } { XE "Ozone Strategy" } Europe Environment (1996), Auto-Oil{ XE "Auto-Oil I process/programme" }: Commission Proposes New Emission and Fuel Standards, no. 480, June 27, p.1.

{ XE "Ozone Strategy" } { XE "Ozone Strategy" } { XE "Ozone Strategy" } { XE "Ozone Strategy" } - (2001), Council and MEPs Agree on Ozone in Ambient Air, no.601, December 4, p.1.

European Environment Agency (2002), Environmental Signals, Copenhagen, EEA.

Friedrich, A., Tappe, M. & Wurzel, R. (2000), A new approach to EU environmental policy-making? The Auto-Oil I Programme, *Journal of European Public Policy*, 7, pp.593-612.

Haigh, N. (ed.) (2002), *Manual of Environmental Policy: The EU and Britain*, IEEP, Elsevier Science, London.

International Environment Reporter (1994), European Union: Commission Proposes Framework Directive to Create Single Approach to Air Quality, July 13, 1994, pp. 589–590.

- (1998), Legislation Setting Auto Emission, Fuel Quality Standards Approved by Union, July 8, p. 671.

Oberthur, S. and Gehring, T. (2001), Conceptualising Interaction between International and EU Environmental Institutions, Ecologic, Berlin. { XE "Ozone Strategy" }

{ XE "European Parliament" } { XE "Ozone Strategy" } Weale, A., Pridham, G., Cini, M., Konstadakopulos, D., Porter, M., and Flynn, B. (2000), *Environmental Governance in Europe*, Oxford University Press, Oxford.

Wettestad, J. (2000), 'The complicated development of EU climate policy', Ch.3 in Grubb, M. and Gupta, J. (eds.), *Climate Change and European Leadership*, Dordrecht, Kluwer Academic Publishers, pp.25-47.

- (2001), 'The Ambiguous Prospects for EU Climate Policy – A Summary of Options', *Energy and Environment*, vol.12, no.2&3, 2001, pp.139-167.
 - (2002), *Clearing the Air – European Advances in Tackling Acid Rain and Atmospheric Pollution*, Aldershot, Ashgate.
 - Wettestad, J. and Farmer, A. (2001), The EU Air Quality Framework Directive: EU Pitcher; International Catcher, inventory paper, FNI/IEEP:
 - Young, A.R. and Wallace, H. (2000), Curbing vehicle pollution: 'end-of-pipe' and end of the road?, Chapter Two in *Regulatory politics in the enlarging European Union*, Manchester, Manchester University Press, pp.30-61.
-

EU Documents:

- EU Commission (1993). 'Towards sustainability – A European Community programme of policy and action in relation to the environment and sustainable development', Commission of the European Communities.
- (1996), The Commission's Auto-Oil Communication (COM (96)248).
 - (2001), 'The Clean Air for Europe (CAFÉ) Programme: Towards a Thematic Strategy for Air Quality', Commission Communication, COM (2001) 245), May 4, 2001.
-

Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management (OJ L296 21.11.1996).

COM(97)500, 08.10.1997, Explanatory memorandum to the proposed first daughter directive.

Council Directive 98/69, Directive relating to passenger cars and light commercial vehicles

Council Directive 98/70, Council Directive relating to the quality of petrol and diesel fuels.

Council Directive 99/30, Directive relating limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.

Council Directive 2000/69, Directive relating to limit values for benzene and carbon monoxide in ambient air.

Communication from the Commission: A Review of the Auto-Oil II Programme, COM(2000) 626, 05.10.2000.

Internet information

www.who.int/environmental_information/Air/Guidelines.