Unclassified **ENV/EPOC/GEEI(98)29/FINAL**

Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

OLIS : 10-Dec-1998
Dist. : 11-Dec-1998

English text only

ENVIRONMENT DIRECTORATE
ENVIRONMENT POLICY COMMITTEE

ENV/EPOC/GEEI(98)29/FINAL
Unclassified

Working Party on Economic and Environmental Policy Integration

VOLUNTARY APPROACHES FOR ENVIRONMENTAL PROTECTION IN THE EUROPEAN UNION

This report was prepared by Peter Börkey and François Lévêque, CERNA, Ecole des Mines de Paris, in the context of the OECD survey on the use of voluntary approaches in environmental policy.

72813

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format

English text only

TABLE OF CONTENTS

VOLUNTARY APPROACHES FOR ENVIRONMENTAL PROTECTION IN THE EUROPEAN UNION

by
Peter Börkey and François Lévêque
CERNA, Ecole des Mines de Paris

1. Introduction

The European Context

Global environmental problems (greenhouse effect, ozone depletion), economic globalisation (and its tightening effects on competition) or the necessity for the use of clean technologies (as opposed to end of pipe technologies) have convinced most policy makers and industrialists of the need for new environmental policy instruments. In most Member States of the European Union, the foundations of environmental policy are still represented by traditional command and control regulation, expressed under the form of emission standards and licences. The basic idea is thus, to develop the actual regulatory system by enriching it with new approaches. Among the envisaged advances, a closer cooperation between industry and public authorities in the definition of targets and their implementation is perceived as a necessity. Practically, this means that an increased use has to be made of instruments based on the voluntary implication of firms, such as voluntary agreements or codes of conduct.

The Commission expressed its positive attitude towards these instruments in the 5th Environmental Plan of Action (1992). The overall objective of this plan is to move policy making in the EU towards a sustainable framework of economic and social development: "In order to bring about substantial changes in current trends and practices and to involve all sectors of society, in a spirit of shared responsibility, a broader mix of instruments needs to be developed and applied. Environmental policy will rest on four main sets of instruments: regulatory instruments, market-based instruments (including economic and fiscal instruments and voluntary agreements), horizontal supporting instruments (research, information, education, etc.) and financial support mechanisms". A more recent communication of the Commission (CEC, 1996b) concludes that environmental agreements "can offer cost-effective solutions when implementing environmental objectives and can bring about effective measures in advance of and in supplement to legislation".

Aim of this Report

This report is a synthesis of the existing literature on the use of voluntary approaches in the EU. Its aim is to portray the use of voluntary approaches in the Member States and to identify both their common characteristics and those that separate them. The report relies mainly on four studies: a quantitative and qualitative inventory of voluntary agreements in the European Union (EU) by the Directorate General for Industry (DGIII) of the European Commission (CEC, 1996a), a study on the efficiency of 6 agreements by the European Environment Agency (EEA), the Communication of the European Commission on environmental agreements (CEC, 1996b), a study by IEA/OECD on voluntary

approaches in the field of energy efficiency (1996), a study on the diversity of voluntary approaches by ADEME (the French Environmental Agency) and the French Ministry of the Environment (Börkey & Glachant, 1997) and a study for DGXII of the European Commission (Öko-Institut, 1998). In addition to those we rely on several national studies and reports (Croci & Pesaro (1996) for Italy, Rennings et al. (1996) for Germany).

2. The Diversity of Voluntary Approaches in the EU

Voluntary approaches cover a large variety of different arrangements. This is reflected by a rich terminology. Self-regulation, voluntary initiatives, voluntary codes, environmental charters, voluntary accords, voluntary agreements, co-regulation, covenants, negotiated environmental agreements, accords de branche, programmi cooperativi e volontari are just a few of the terms used to refer to voluntary approaches.

In this report we use a broad definition of voluntary approaches, in order to embrace all examples commonly understood as such: they are voluntary commitments of the industry undertaken in order to pursue actions leading to the improvement of the environment. Several typologies have been developed in order to identify the main characteristics differentiating the vast number of voluntary approaches (Storey, 1996, Dowd, 1998, Solsbery & Wiederkehr, 1995). In this chapter we use a simplified version of a typology by Börkey and Glachant (1997), distinguishing three types: unilateral commitments, public voluntary schemes, and negotiated agreements. The key-characteristic differentiating voluntary approaches is the degree of public intervention involved in the schemes.

2.1 Unilateral Commitments

Definition

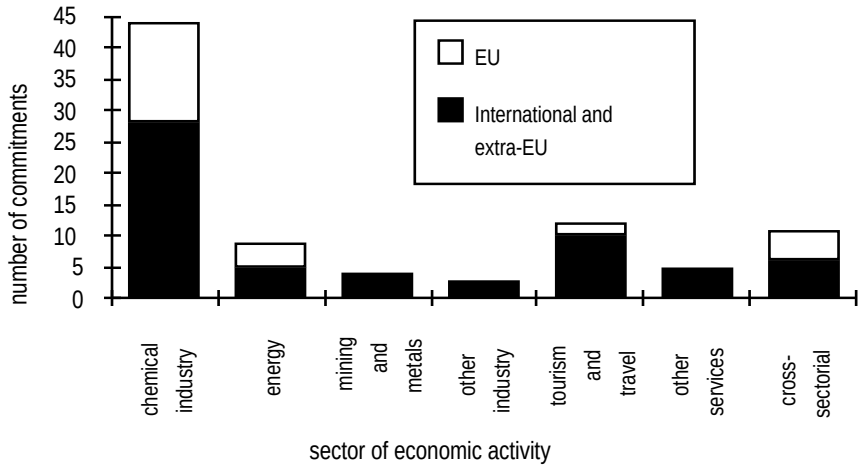
Unilateral commitments consist of environmental improvement programmes set up by firms themselves and communicated to their stakeholders (employees, shareholders, customers, etc.). The definition of the environmental targets as well as the provisions governing compliance, are determined by firms themselves.

This definition encompasses unilateral commitments by coalitions of firms as well as those made by individual firms. Although the latter are probably a massive reality in the EU (many large firms have developed company environmental plans in recent years), we will not consider them as a distinct type in this report. In fact, most of them are now designed in the framework of either ISO 14000 or the European Eco-Management and Auditing Scheme (EMAS) which are voluntary approaches belonging to the category of voluntary public schemes, reviewed in section 2.2.

Unilateral Commitments - the Empirical Phenomenon

Collective environmental commitments of industry normally take the form of codes of conduct, charters or guidelines for the environment. An inventory of such commitments has been established by UNEP IE (1998). It states the existence of 88 commitments world-wide, both at the national and international level (figure 1).

Figure 1. Unilateral commitments in the EU and in the rest of the world



Source: UNEP, 1998

For example, at the national level the UK petrol industry included a code of safe practice in its mission statement; at the European level electric utilities founded an organisation (the European Grouping of the Electricity Supply Industry, EURELECTRIC) and issued a statement of environmental policy including a code of conduct (Box 1); and at the international level the metals and mining industry founded an organisation (ICME, International Council for Metals and the Environment), grouping major mining and transformation companies all over the world and issued an environmental charter. Most of these initiatives are issued by industries that are under particular public scrutiny for their environmental performances, such as the chemical industry (44 commitments), the energy sector (petroleum and electricity) (9) and the mining and metal industry (4). 11 initiatives are cross-sector statements made by national and international industry confederations (e.g. a statement for the environment of the Business and Industry Advisory Committee to the OECD, BIAC) and 12 relate to travel and tourism. 27 initiatives can be identified as being EU based, the rest being either international or extra-EU initiatives.

Box 1. EURELECTRIC's efficient use of electricity guidelines

EURELECTRIC, the European Committee of the Electricity Supply Undertakings is a new association which represents the electricity sector as a whole in its dealings with the Community institutions.

The Committee comprises representatives of the Electricity Supply Industries of the twelve Member States of the European Community.

Association Members of the Committee are: the President of UNIPEDE (International Union of Producers and Distributors of Electrical Energy), the President of UCPTE (Union for the Co-ordination of Production and Transmission of Electricity), the President of NORDEL (Association of Representatives of Electricity Undertakings in Northern Europe), in their capacity as representatives of the said organisation, and two representatives nominated by those Undertakings interconnected with the European electricity grid but not belonging to the EC.

EURELECTRIC's guidelines for the efficient use of electricity are as follows:

1. To interest itself and be involved, alone or with partners, in research into efficient uses of electricity, and to make the results of this research widely available.
2. To lead studies, alone or with partners, into electrical techniques and economically competitive end-uses, which are non-polluting, or reduce pollutants.
3. To integrate in its commercial policy the importance of efficient use of electricity, and carry through sensibilisation of this theme both within and outside of the companies.
4. To make information, advice and lists of associations available to clients to help them make efficient use of electricity.
5. To encourage promotion of standards and labelling for products which have both high energy efficiency and high quality performance.
6. To research tariffs that reflect the structure of costs and permit users to make rational choices.
7. To organise, alone or with partners, actions to help those in positions of responsibility make economic and fiscal analysis of energy projects and effect the most suitable tariff.
8. To define a strategy of choices and a hierarchy of actions to be undertaken that will improve the efficiency of the end-users of electricity.
9. To participate in a synergy between the various integrated programmes of the European partners and facilitate the interchange of information and experience.
10. To ensure an active interface between the partners, manufacturers, energy consultancies, energy managers and consumers, at the time by giving an active hearing to their suggestions and by a progress report.

The Responsible Care programme is undoubtedly the most important of these initiatives (Box 2). 40 out of 44 initiatives of the chemical industry are related to this programme. The high number is due to the fact that Responsible Care has been adopted by the International Council of Chemical Associations (ICCA) and recommended for implementation at the national level. 38 national branch associations have adopted the scheme (among which are all EU Member States, with the exception of Luxembourg).

Typical industry initiatives set qualitative rather than quantitative pollution abatement targets and generally make no provisions for monitoring, reporting or sanctions. Assessing the environmental effectiveness of such approaches is therefore difficult. This and the fact that public authorities are completely absent from these schemes is the reason for a general lack of credibility in the public eye.

Many initiatives are therefore perceived as primarily aimed at communicating "no regrets"[1] pollution abatement measures towards the public opinion and policy makers. For example, EURELECTRIC's guidelines of efficient energy use explicitly state that EURELECTRIC is "a new association which represents the electricity sector as a whole in its dealings with the Community institutions". In the same way, the mining and metals industry founded the International Council for Metals and the Environment (ICME) representing its interests at international institutions and recommending an environmental code of conduct to its members (Bomsel et al., 1997).

Nevertheless, some initiatives are linked to relatively strong incentives, which may justify that companies go beyond compliance (with legislation) and "business as usual" practice (Box 2). These incentives can be reputation effects (pressure through local communities, consumers or employees) or the threat of stricter legislation. An example for such a case is the Canadian chemical industry's Responsible Care programme, which is strongly linked to reputation effects. After a series of major accidents in Canadian and foreign chemical plants at the beginning of the 80's, the industry feared that pressure from the public opinion would lead to new national legislation or to severe constraints on their operations at the local level. It was at that time that the idea of the Responsible Care programme was born, with the explicit aim to improve the reputation of the chemical industry in the public opinion and in local communities. Over the years provisions for monitoring and sanctions were introduced into the programme in order to render the initiative credible in the public eye. The provisions included the participation of third parties in monitoring procedures and the possibility of excluding deviators from the professional association. However, even this relatively ambitious initiative still lacks sufficient provisions for transparence (third-party verification is optional) and performance reporting (in Canada, only the implementation of codes of practice is monitored, not actual emissions).

[1] No regrets measures are pollution abatement investments that are profitable to firms. Such pollution abatement measures generate economies of raw materials and energy resulting in the reduction of production costs. The costs of abatement are offset by the cost reductions in production.

Box 2. Comparison of the French and the Canadian chemical industry's Responsible Care programmes

The Responsible Care programme was born in Canada in 1984 and since then has spread to over 30 countries world-wide. Its aim is to accelerate the environmental improvements in the chemical industry. The context of its creation was marked by a series of major accidents: Seveso in Italy, Bhopal in India, Love Canal in Canada. It is an international initiative promoting the adoption of rules for sound environmental management practice concerning the limitation of nuisances and the communication with local communities. The implementation of these general principles in a detailed action programme is undertaken by national professional associations. The contents and the implementation of the Responsible Care Programme therefore vary between countries

In Canada, the Responsible Care Programme is characterised by relatively ambitious targets and strict control procedures. This is the result of the pressure the industry was confronted with in the beginning of the 80s: the threat of new legislation, consumer boycotts of certain products, local pressure on the operations. In 1986 the programme is improved by the definition of 6 codes of practice, recommended by a group of independent consultants to the branch association. Whereas in the beginning monitoring relied exclusively on self-reporting, it has been performed by third parties since 1993. Each plant is assessed by a group of four persons, two of which are members of the industry (but independent from the plant) and two are non-industrialists (one from the local community). The assessment is then based on interviews with employees, suppliers, clients and residents. Companies not complying with the codes can be excluded from the branch association, although this sanction has never been applied yet. Additional legal sanctions are possible in court. Although the commitments have no legal value, they may have a negative impact on the verdict in a court case motivated by an environmental nuisance (Webb, 1998).

In France the Responsible Care Programme is implemented under the name of "Engagement de progrès". It has currently 360 signatories. These firms account for 90% of the industry's turn over. The French charter was adopted in 1990 in a context, very different to the Canadian case. No major accidents had occurred recently and no threat of new legislation existed at that time. The contents and the implementation of the French charter are therefore very different to the Canadian. It is less ambitious as to the targets (the codes of practice are not mandatory, but only recommended for implementation), monitoring is based on self-reporting and the only sanction is the exclusion from the branch association (codes of conduct have no influence on French court decisions). These elements suggest that the French "Engagement de progrès" will probably not have much impact on firms' environmental performances, which seems to be confirmed by recent monitoring data. This points at the central role of pressure from authorities and the public opinion (Börkey & Glachant, 1997).

Unilateral commitments by coalitions setting provisions for monitoring and sanctions, as the Responsible Care programme of the chemical industry, are rather an exception than the rule. Most of these initiatives are conceived in the perspective of industry lobbying aimed at communicating no regrets pollution abatement measures to authorities and the public opinion.

2.2 Public Voluntary Schemes

Definition

Within this type of voluntary approach participating firms agree to standards (related to their performance, their technology or management) which have been developed by public bodies such as environmental agencies. The scheme defines the pre-conditions of individual membership, the standards to be complied with by the firms, the monitoring criteria and the evaluation of the results. Incentives such as R&D subsidies, technical assistance or positive effects on reputation (for example by the use of an environmental logo) can be provided by the public body. They are voluntary in the sense that they are take-it-or-leave-it options for firms.

Public Voluntary Schemes - Some Examples

An example of such a non-mandatory regulation is the Eco-Management and Auditing Scheme (EMAS) implemented within the European Union since 1993. In order to register under EMAS firms must establish a company environmental policy; conduct an environmental review of its sites; set up and implement an environmental improvement programme and an environmental management system; and have its policy and sites reviewed, and its improvement programme and management system examined. In order to verify that they meet the EMAS requirements. Registered firms are then able to use and display a statement of participation (Biondi et al., 1996). Other examples are the European Ecolabelling scheme (Box 3), and experiences with Ecolabels that exist at the national level such as the Blue Angel in Germany.

Box 3. The European Ecolabelling Scheme

The EU eco-label award scheme has been set up to label products with reduced environmental impact. It is a voluntary scheme, and manufacturers can choose whether or not to apply for the eco-label. The scheme is based on Council Regulation (EEC) N°880/92 of 23 March 1992. It excludes food, drink and pharmaceuticals from the scheme's scope. The label is only awarded to products meeting the environmental criteria that have been defined previously for the relevant product group. These definitions have been prepared gradually in recent years.

Ecological criteria for washing machines, dishwashers, toilet paper, kitchen rolls, soil improvers, detergents, paints and varnishes, light bulbs, refrigerators, Bed-linen and Tee-shirts were published already. Further product groups are still under consideration. Manufacturers or importers wishing to make their application for eco-labelling must direct it to the competent body in the Member State where their product is manufactured or where it was first marketed or imported from a third country. A fee for the use of the eco-label, calculated as a percentage of the annual volume of sales of the eco-labelled product is charged (0,15%). The label is valid for three years from the date of adoption of the criteria.

However, problems with the adoption of the eco-label have occurred on several product groups (e.g. detergents, cosmetics). They were due to industry's opposition to the criteria that had been set by the Commission and resulted in the eco-label not being used on products. On other product groups, as for example "indoor paints and varnishes", industry cooperated with the European regulator and finally adopted the eco-label. A recent survey shows that these discrepancies in the development and use of eco-labels are linked to two contextual elements: the heterogeneity of innovation costs for reaching the eco-criteria among firms and the importance of the final demand for eco-labelled products (Nadaï, 1997).

While the former schemes involve no sanctions for firms that would not participate, some voluntary schemes are linked to background regulation. For example, the Danish scheme on greenhouse gas (GHG) emissions is linked to a tax on CO2 emissions (Box 4). In this case, firms have the choice between being subject to the CO2 tax or joining a voluntary scheme on CO2 abatement and being (partly) exempted from the tax. Some Portuguese schemes on pollution abatement are linked to command and control regulation (Box 4).

Box 4. The Danish scheme on GHG emissions reduction and the Portuguese scheme with the pulp and paper industry

- **The Danish voluntary scheme on the reduction of GHG emissions**

This scheme is strongly linked to the national CO2-tax introduced in 1993 for industry. The overall objective of the scheme is to contribute to a reduction of 5% in CO2 and SO2 emissions by the year 2000, while avoiding an excessive burden on energy intensive industries. It is aimed at exempting a "small fraction of very exposed industries" while keeping the tax towards the large body of firms. Two types of companies are eligible to join the voluntary scheme:

- The first type is heavy industry. 35 specific heavy industry processes are listed according to EU criteria. They benefit from a flat tax of 3 DKK/ton of CO2 compared to 5 DKK/ton for the rest of heavy industry in the first year. This will then gradually be increased to 25 DKK/ton in the year 2000.
- The second type of firms is defined by the ratio of tax liability over value added. When it exceeds 3% firms are eligible for the scheme. The tax rebate for light processes is about 30%.

Initially it was expected that out of 200.000 taxable firms, 600-800 would be eligible to the scheme.

Before they become signatories to the scheme, eligible firms must present a letter of intent to document their will to enter the scheme. The firm has then to pay independent consultants to perform an energy audit. According to criteria of profitability, heavy industry has then to commit on undertaking all CO2 reduction investments with pay-back periods of less than 4 years that have been identified in the audit, other eligible firms must commit to all investments with pay-back periods of less than 6 years. Further commitments are to follow guidelines for the purchase of new technology, to appoint an energy manager, to train staff and to report progress. Some financial support is available under the form of investment grants (only until 1999). Subsidies are to cover 30% of the initial outlay for energy-saving projects, with pay-back periods of at least 2 years. Progress in the implementation of investments is monitored. Those companies failing to their commitments become subject to the full amount of the CO2-tax and must retroactively reimburse the avoided tax amount.

In 1996 19 firms, representing 20% of industrial energy consumption, had become signatories to the scheme (Ministry of Finance, 1995, Krarup & Kraemer, 1996, Enevoldsen & Brendstrup, 1997).

- **The Portuguese voluntary scheme with the pulp and paper industry**

The pulp and paper industry was the first to be offered a voluntary scheme in Portugal. It is strongly linked to pre-existing regulation.

The scheme intervened in a particular regulatory context. In fact, due to its membership in the EU and the EU's legislative power with respect to environmental matters at that level, Portugal has adopted fairly advanced environmental regulation. Many Portuguese companies have been unable to follow the pace of tightening of environmental regulation and went out of compliance. The Portuguese voluntary scheme is an attempt of the government to close that gap, without leading to plant closures. Via a precise time-table for progress in environmental performances, it gives signatories a delay for total compliance with existing regulation. In addition to that, financial assistance is available. Companies which are not signatories to the voluntary scheme do not benefit from these advantages and instead are fined if non compliance with standards is detected.

The scheme was not a clear-cut success, as compliance with the regulatory standards had to be forced upon firms via fines and court cases. However, only one out of the 8 mills covered by the scheme had to close down (EEA, 1997).

These examples illustrate a central characteristic of voluntary schemes: they are pieces of a menu of different regulations firms may choose from. The choice is either between a voluntary scheme and another instrument or between a voluntary scheme and the status quo. In the former case the schemes are intended to facilitate the transition towards new regulation and avoiding a possible loss of competitiveness of the concerned firms. In the latter case, the aim is to provide incentives for going

beyond existing regulation and eventually inducing technological or organisational innovation. Voluntary schemes are thus conceived as a complement to other policy instruments.

2.3 Negotiated Agreements: the European Model of Voluntary Approaches

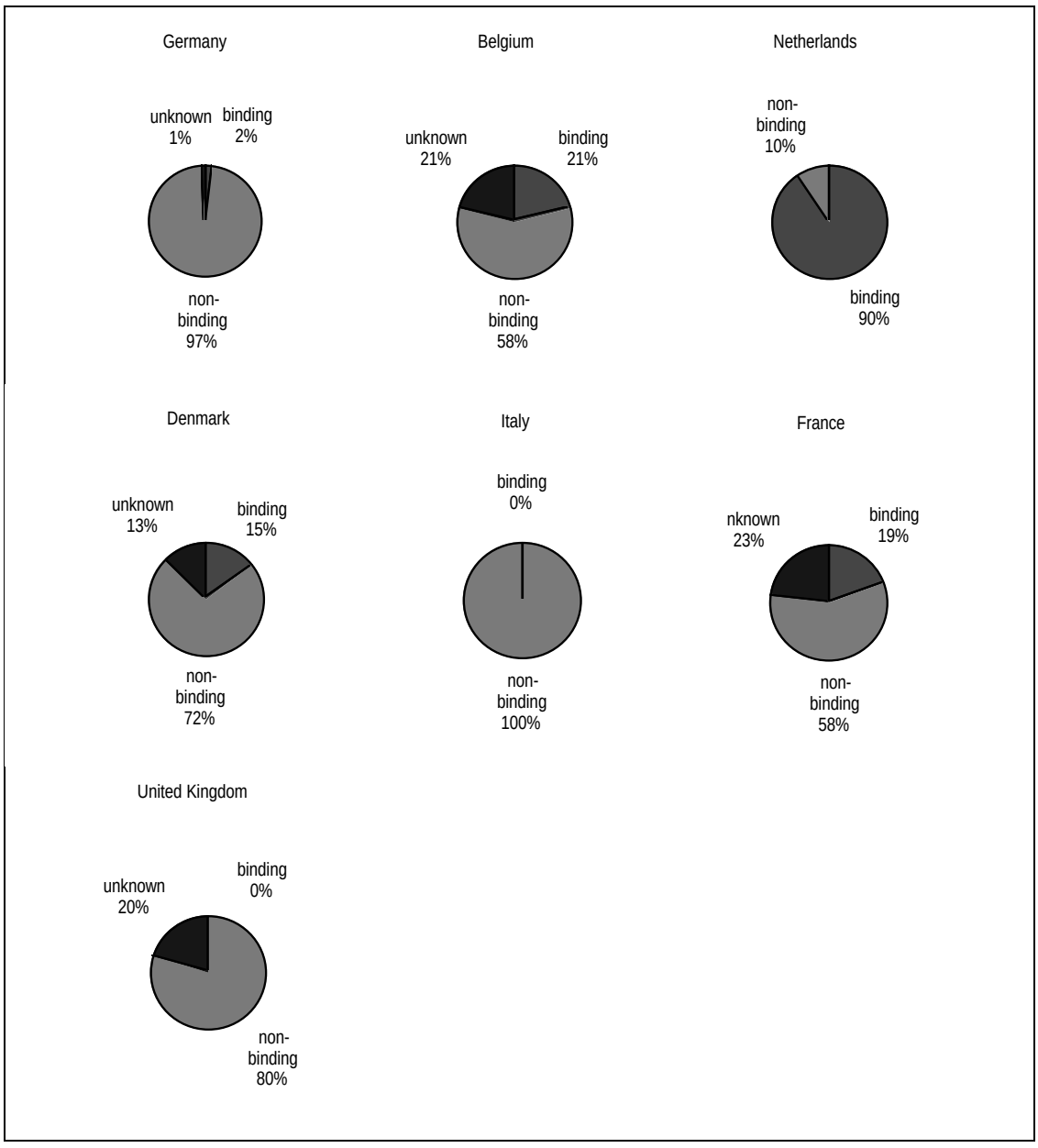
Negotiated agreements are the most numerous type in the EU and are used in the widest range of Member States. This is why our attention in this report will have a particular focus on this type of voluntary approach.

2.3.1 Characterising Negotiated Agreements

Negotiated agreements (NAs) are contracts resulting from negotiations between public (national, federal or regional) authorities and industry. Unlike the two former types of voluntary approaches, their contents is not defined unilaterally by either industry or public bodies, but jointly by both.

The contracts may be legally binding or non-binding depending on whether executive branches of government are empowered by national constitutions to sign such agreements with organised interests. In Germany, the constitutional law does not allow for the government to sign negotiated agreements. They are therefore non-binding, although public authorities participate to the negotiation of targets and subsequently recognise the agreement informally (for example in a press conference). A study by Öko-Institut shows that binding agreements are rather the exception than the rule in the European Union (Figure 2). The only Member State where agreements are systematically binding are the Netherlands. In this country, although binding contracts with branch associations are not possible, bindingness is achieved by the means of an individual contract with each firm, joining the agreement (Box 5).

Figure 2 . Share of legally binding and non-binding agreements in a sample of 7 EU Member States



Source: Öko-Institut, 1998

Box 5. The Dutch model of negotiated agreements

Negotiated agreements for pollution abatement are called "covenants" in the Netherlands. They constitute the key instrument of Dutch environmental policy, which has been defined in the NEPP (the National Environmental Policy Plan) and the NEPP Plus in 1989 and 1990. This plan sets stringent quantitative pollution abatement targets for over 200 substances. They are meant to bring the national economy towards sustainability. A central conviction in the NEPP is that these ambitious pollution abatement targets can only be reached if industry accepts to take a greater share of responsibility in the development and in the implementation of pollution abatement measures. This is why the "target group approach" (another term to designate "covenants") with priority sectors of industry is considered the central means in achieving the targets. In 1996 107 covenants were in force in the Netherlands, covering all major polluting industries (printing and packaging printers, base metals, chemicals, dairy, metal products and electronics, textiles, meat industry, paper and paper products, leather, rubber and plastic products, brick and roofing tiles, concrete and cement products, other mineral products).

Covenants do have the status of contracts of civil law. In fact a covenant stands for two contracts. One is a declaration of intent which is signed by the government and a branch association. This contract has no legal value, but it serves as a framework for a series of agreements between the government and individual firms, willing to join the covenant scheme. These individual contracts can engage a firm's liability in a civil court.

Furthermore, covenants are tightly linked to the licensing system. This system is administered and monitored by local public bodies. The licenses define detailed emission standards for each industrial site. Covenants are linked to this system, because their pollution abatement targets are eventually integrated into the licenses.

The procedure of the devising of a covenant is as follows:

First, a declaration of intent on the pollution abatement targets for 1995, 2000 and 2010 is agreed upon following a consultation process between public bodies (national, regional or regional) and a branch organisation of industry. These targets, also called the "Integrated Environmental Target Plan (IETP), must be consistent with the general targets of the NEPP.

Then each firm has to draft a Company Environmental Plan, if the sector is considered as being heterogeneous (large firms and a diversity in production technologies), or a standardised Company Environmental Plan is drafted at branch level, if the sector is considered as being homogeneous. The Company Environmental Plans indicate the pollution abatement targets, the schedule and the measures for their implementation. They are drafted in cooperation with the licensing authorities and are revised every 4 years. In addition to that, the licensing authorities are meant to evaluate and agree to the plans and to integrate them into the licenses.

Individual monitoring and sanctioning of firms in the covenant scheme is executed via the licensing system. Firms who's Company Environmental Plans are repeatedly rejected by the licensing authorities will then be subject to stricter emission licenses.

In April 1993, the association of chemical industries signed such an agreement with several public bodies: the ministries of the environment, of economic affairs and of transport, and several local and regional authorities (provinces, municipalities and water agencies).

The agreement is consistent with the National Environmental Policy Plan (NEPP) and the general pollution abatement targets it sets for the national economy. It sets quantified emission reduction targets for the years 1995, 2000 and 2010 in relation to 6 environmental themes: the green house effect, acidification, diffusion of toxic substances, eutrophication, waste disposal and other nuisances (odour and noise). These targets are considered as being comparatively stringent in the European context (ERM, 1996).

As the chemical industry is considered to be a heterogeneous industry (there are both large firms and heterogeneous production technologies) firms have to draft company environmental plans.

Historically, the covenant with the chemical industry is one of the pioneering agreements. The negotiations between the public bodies and the branch association took place under considerable pressure, due to the fact that the agreement was intended to be used as a model for future agreements and that the government was not willing to sign an agreement encompassing less than 50% of the industry.

Since then, the covenant is considered by the Dutch Ministry of the Environment as a success. The participation rate of chemical firms in the agreement is of 91%, 114 out of 125 firms being in the covenant and having elaborated a Company Environmental Plan indicating abatement measures and the schedule. The licensing authorities evaluated and agreed to 108 of these plans. The great majority of pollution abatement targets for the year 2000 will be realised. Nevertheless, the targets for 14 out of 62 substances covered by the covenant, will be difficult to reach due to the lack of adequate abatement technology. The major problem being the abatement of NOx from combustion processes (Börkey & Glachant, 1997, EEA, 1997).

The pollution abatement objective is generally a collective target, set for the branch as a whole, although some agreements have been signed with only one firm, when they account for a significant part of the sector. The German agreement on the reduction of greenhouse gases (GHG) sets branch objectives for 14 industry sectors and an aggregate reduction target for the whole of industry of 20% (Box 6). The French agreement on the reduction of GHG in the aluminium sector is an agreement with just one firm. Signatories to the agreement are the Ministry of the Environment and the company Péchiney, accounting on its own for more than 70% of primary and secondary aluminium production in France (Box 6).

The public authority commitment generally consists in undertaking not to introduce new legislation (e.g. a compulsory environmental standard or an environmental tax) unless the voluntary action fails to meet the agreed upon target.

Box 6. The German and French agreements on GHG emissions reduction

- **The German agreement on the reduction of GHG emissions**

It was signed in 1995 and amended in 1996. Industry's commitments are at two levels: at industry level via a declaration of five federations representing the whole of industry, and at branch level via the commitments of 19 branch associations, each setting a specific target for the reduction of CO2 emissions.

The 1996 commitment at industry level sets a reduction target of 20% of specific energy consumption by the year 2005 (base year 1990). Branch targets vary from -30 to -15% of GHG emissions, either in absolute (volume) or in specific terms. For example, the potassium industry's target is of -25% in volume, the cement industry commits to a reduction of 20% in specific terms and the chemical industry aims at -30% of specific reduction. The signatories account for more than 70% of industrial energy consumption. The monitoring of these targets is performed by an independent institution, the Rheinisch-Westfälisches Wirtschaftsinstitut (RWI).

Subsequent to these commitments, the Federal Government announced that it would refrain from introducing two new pieces of legislation (an ordinance on the use of waste heat and one on energy audits) and has committed itself in a press conference to make the necessary efforts so that the industry commitments will be taken into account at the European level.

Since the first commitments were published in 1995, criticism as to the ambitiousness of targets has been intense. The DIW (Kohlhaas & Praetorius, 1995) states that the reduction target initially announced by the Federal Government was more ambitious: the initial target was of -25 to -30% of CO2 emissions in absolute terms by the year 2005. Another criticism is linked to the coverage of the agreement. Industry's commitment only covers about 70% of industrial energy consumption, while alternative regulatory measures (energy-taxes or the ordinance on waste heat) would have covered 100%. Finally, the targets appear to be modest when compared to past technological reduction trends. From 1970 to 1993, energy efficiency has improved by an annual rate of 1,8%, while the agreement sets an average rate of 1,2% for the period 1987-2005 (Jochem & Eichhammer, 1996).

- **The French agreement on GHG emissions with the aluminium industry**

The agreement on green house gas emissions with the French aluminium industry was signed in mid-1996. Parties to the agreement are the Ministry of the Environment and PECHINEY, the largest aluminium company in France accounting for over 70% of primary and secondary aluminium production in the country.

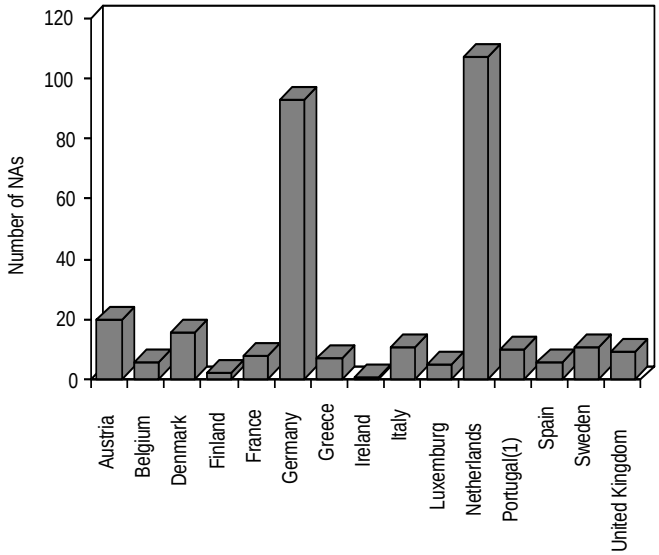
In the agreement, PECHINEY commits to reduce its specific energy consumption (energy consumption per unit of output) by 19% in terms of CO2 emissions by the year 2000 (base year is 1990) and to cut specific CF4 emissions (CF4 has a very high warming potential, 1 ton of CF4 is equivalent to 5100 tons of CO2) by 73%.

Taking the increase in output into account that is projected by the company up to the year 2000 (30%), the specific reduction targets will result in an increase of total CO2 emissions of 2% and a decrease of 63% in total CF4 emissions. The total reduction of CO2 equivalent substances will therefore be 34%.
This agreement fits into the French policy for CO2 abatement in energy intensive industries. It is aimed at excluding those industries from the application of fiscal instruments by negotiating industry specific reduction targets. Up to date four further agreements have been signed with the glass, the plaster, the cement and the steel industries. They set collective targets and are signed with the respective branch organisations.

2.3.2 Number and Areas of Application of NAs

The CEC study (1996a) inventories more than 300 negotiated agreements in the EU (figure 3). The total number of negotiated agreements is probably even greater, knowing that the CEC inventory is not exhaustive (e.g. 11 agreements have been inventoried in Italy, while Croci & Pesaro (1996) find that there are at least 24 in this country). However, the total figure is biased. Two countries (Germany and the Netherlands) are accounting for two thirds of the agreements. Nevertheless, the survey shows that all Member States make an increasing use of negotiated agreements since the beginning of the nineties. In the EU figures of new NAs have risen from 6 in 1981 to over 45 in 1995.

Figure 3. Number of NAs in the EU Member States



(1) The CEC (1996a) study includes the Portuguese agreements, which we classify as public voluntary schemes (see 2.2)
Source: CEC, 1996a

Industry and Energy are by far the most important sectors of economic activity where negotiated agreements are in use (figure 3). All Member States use them to abate industrial pollution and 8 Member States use them in the energy sector.

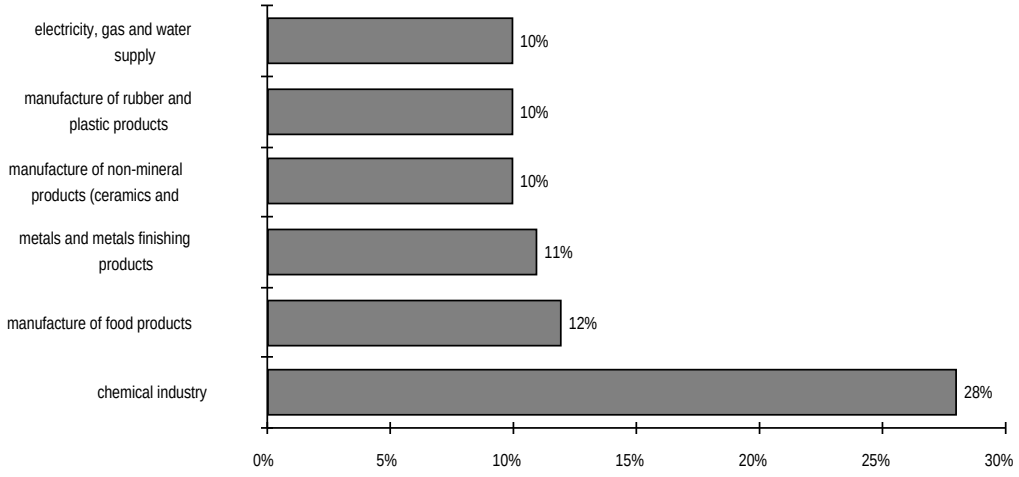
Figure 4. Negotiated agreements by sector of economic activity

Member State	Agriculture	Energy	Industry	Transport	Tourism	Number
Austria	✘		✘			20
Belgium		✘	✘			6
Denmark	✘	✘	✘			16
Finland			✘			2
France		✘	✘			8
Germany		✘	✘			93
Greece		✘	✘		✘	7
Italy			✘			11
Ireland			✘			1
Luxemburg		✘	✘			5
Netherlands	✘	✘	✘			107
Portugal	✘		✘			10
Spain			✘			6
Sweden	✘	✘	✘			11
United Kingdom			✘			9
Total						312

N.B.
"Transport" sector refers to the transportation of freight and people.
Changes that affect the transport industry (i.e. vehicle manufacturing, recycling, petrochemical production) are reflected under "industry" sector.
"Energy" refers to activities by any firm that derives it's main revenues from supply, distribution or sale of energy.
"Agriculture" is defined as activities at the farm level. Thus, the agro-chemicals, farm packaging and forest products sectors are not included.
Tourism is defined as related economic activities (e.g. hotel services).
Source: EEA, 1997

Furthermore, a large number of NAs so far initiated in Member States are found in the economic sectors where the most polluting activities take place (metals and metal finishing, chemicals, energy). The survey by CEC (1996a) suggests that almost one third of NAs are in the chemical industry. The other sectors representing around 10% each (figure 5). The percentage numbers in figure 4 are slightly misleading though, owing to double counting.

Figure 5. Main industry sectors for the use of NAs



Source: CEC, 1996a

Figure 6 shows that negotiated agreements are used for all types of pollution. All Member States use NAs for waste management. This is due to a great extent to the proliferation of agreements for household waste management and battery recycling. Climate change and ozone depletion are two other environmental themes where policies throughout Member States make use of NAs. These initiatives are tightly linked to the international agreements on those themes in Montreal (the Montreal protocol for the phase out of CFCs) and Berlin (the necessity for the reduction of GHG emissions in industrialised countries). Agreements on the themes of water and air pollution as well as soil quality are more heterogeneous, relating to different industries and different pollutants.

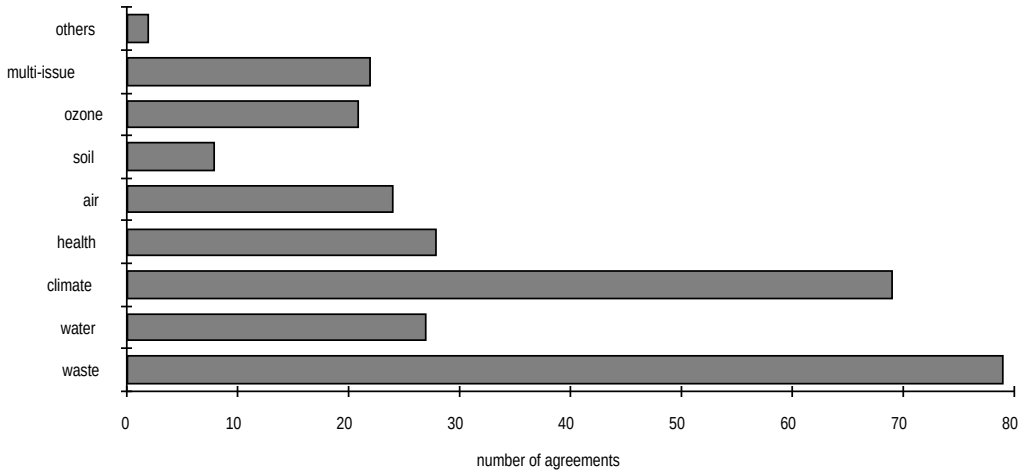
Figure 6. The types of environmental areas covered by NAs

Member State	Climate change	Water pollution	Waste management	Air pollution	Soil quality	Ozone depletion	Number of NAs
Austria	✘		✘	✘			20
Belgium		✘	✘	✘	✘	✘	6
Denmark	✘	✘	✘	✘	✘	✘	16
Finland	✘		✘				2
France	✘	✘	✘		✘		8
Germany	✘	✘	✘	✘		✘	93
Greece	✘	✘	✘	✘		✘	7
Ireland			✘	✘			1
Italy			✘				11
Luxemburg	✘		✘				5
Netherlands	✘	✘	✘	✘	✘	✘	107
Portugal		✘	✘	✘			10
Spain		✘	✘	✘		✘	6
Sweden	✘		✘	✘		✘	11
United Kingdom	✘	✘	✘				9
Total							312

Source: EEA, 1997

The Öko-Institut study confirms the picture. On a sample of seven EU Member States, the greatest numbers of agreements deal either with waste or with climate change (Figure 7). The preference of governments for negotiated agreements in these areas is linked to different causes however. Agreements have been preferred for waste management in most countries on the grounds of the technological uncertainty that prevailed when these problems were first addressed. In fact, public authorities needed close industry cooperation in order to define realistic objectives to be realised. In the case of agreements on climate change, a main reason for the use of NAs lies in their greater acceptance by industries compared to environmental taxes. Governments use them as a lesser evil in terms of the distortion of competition in a context where no uniform means for the reduction of greenhouse gases has been defined at the international level yet. However Figure 7 also documents the fact that NAs are used in all areas of environmental concern, with equal shares for water, air, ozone and health.

Figure 7. Environmental focus of agreements in a sample of 7 EU Member States



Source: Öko-Institut, 1998

2.3.3 The Diversity of Negotiated Agreements

Although the 300 NAs in the EU share some key characteristics - they are negotiated between public authorities and industry and define collective pollution abatement targets for branches of industry - different patterns exist with respect to the scope and the implementation of agreements.

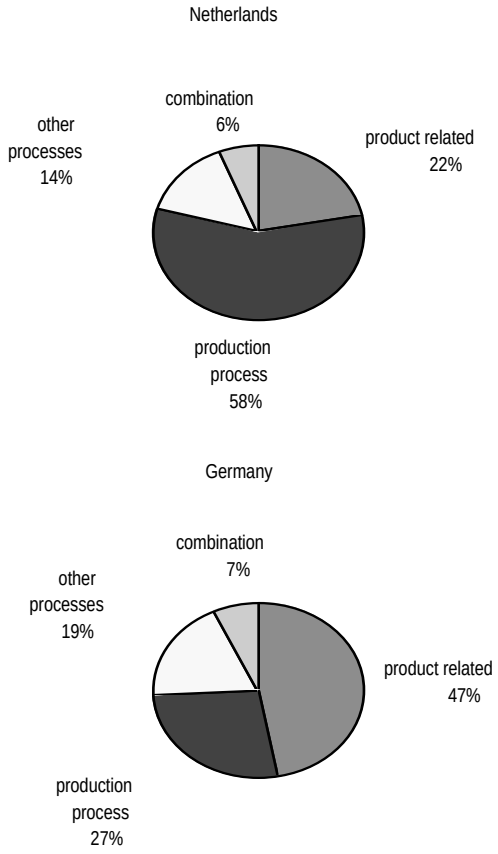
Difference in Scope

While all Member States use NAs as a substitute to traditional regulation or market based instruments, only one Member State, the Netherlands, uses negotiated agreements for dealing with all major environmental themes (figure 5). Most countries have a rather selective use of agreements.

In fact the Netherlands are the only Member State where negotiated agreements have become the key instrument of environmental policy. In this country, negotiated agreements are now pervasive. In the 1990 National Environmental Policy Plan (NEPP), the "target group approach" (which relies on the use of NAs) has been elected to be the main tool of environmental policy, addressing all areas of priority environmental concern. Subsequently to the NEPP, NAs have been signed or are planned in 13 industry sectors among which the most polluting industries are found: inter alia, the chemical industry, the primary metals industry, the cement industry and the pulp and paper industry (Börkey & Glachant, 1997).

In most of the other Member States traditional regulation is substituted by negotiated agreements on a rather limited range of environmental themes. Most of these countries concentrate the use of NAs in specific areas such as those identified in 2.3.2: CFC phase out, waste management, the reduction of GHG emissions. Many NAs, namely in Germany, are also dedicated to the phase out of certain substances in detergents or paints. This situation is illustrated in Figure 8. Whereas a majority of agreements in Germany deal with the regulation of products, most agreements in the Netherlands are aimed at regulating the production process.

Figure 8. Target classification of agreements in Germany and the Netherlands



Source: Öko-Institut, 1998

Several elements explain these contrasted situations in Germany and the Netherlands. A first one pertains to the object of negotiation in both types of agreements. While in Germany negotiations are on the ambitiousness of the target, this part of the agreement is not subject to negotiations in the Netherlands. There, the targets are set within a democratic process involving parliament. What is being negotiated are the means and the timetable for their realisation. For example, within the Dutch agreement with the chemical industry, negotiations concerned to a great extent the possibility of establishing pollution bubbles at plant level. The agreement with the base metal industry led to negotiations about the timetable of reductions. Thus, as the agreements in the Netherlands are based on a stronger legal foundations, their use on a large scale within environmental policy poses less problems than in Germany, where the lack of democratic procedures in negotiated agreements is heavily criticised by environmental groups and opposition parties.

Another explanation for the difference in scope between the Dutch NAs and those in other Member States lies in a different approach towards implementation. While NAs in most Member States provide for collective liability rules, the Dutch agreements allow for individual liability of firms. It is therefore important to explain this difference.

Different Liability Rules

Collective Liability

In this type of negotiated agreement, not only are targets collective, but industry is also collectively liable for their implementation. Typically, there is no explicit sanction included in the agreement, but in case the agreement fails, public authority will issue new legislation. This means that in case of failure all firms will be sanctioned, independently of individual pollution abatement efforts. In the framework of this type of negotiated agreement, pollution abatement supplies a collective good: escaping new legislation. The problem of free riding is therefore a major issue (see chapter 3 on efficiency).

As Germany accounts for approximately 50% of these agreements in the EU, we further on characterise this type of agreement as the G-model. Examples are the German agreement on the reduction of GHG emissions and the French agreement on ELVs. In the German agreement industry committed to a reduction target of 20% for the year 2000 (base year is 1990), each of the 14 branches having set a specific target. Should the agreements fail to reach branch targets, the government would introduce new legislation on mandatory energy audits and an ordinance on waste heat (Box 6). The case of the French agreement on ELVs is of particular interest, because it shows that a threat at the national level is not always necessary to induce an agreement (Aggeri & Hatchuel, 1996, Glachant & Whiston, 1996). In this case it were the preparations for an ordinance on ELVs that the German Ministry of the Environment had undertaken in 1992 that constituted the background threat to the French industry. French car manufacturers feared that the German ordinance might have a dominant influence on environmental policy on ELVs at the EU level. They therefore committed to an agreement with the French Ministry of the Environment in order to pre-empt EU regulation and influence its possible contents.

Individual Liability

Another type of NA sets collective targets, but it monitors firms' individual environmental performances and allows for individual sanctions in case of non-compliance.

The main example of NAs with individual liability rules are the Dutch covenants (Box 5). In these NAs, individual liability is achieved by linking the agreements to the system of operation licences for firms. Firms have to draft environmental plans for each of their plants, describing environmental targets and the measures for their implementation. These plans have to be approved by the local licensing authorities, which provides a regular monitoring of companies pollution abatement efforts. Should a company environmental plan be definitely disapproved, a subsequent tightening of its operating license is programmed as means of sanctions.

The only other example of NAs with an individual liability rule is in Denmark. In 1992, the Danish government adopted a framework for negotiated agreements which provides for the possibility of individual liability rules. Contrary to the Netherlands, the scheme has not lead to many applications. Only one agreement on car battery recycling was signed in 1993. The reason seems to be that unlike the Dutch agreements, the Danish framework does not assign the policing responsibility to public authorities, but to the branch association. Professional associations are reluctant to play this role because it is incompatible with their role as a service provider for their members (CEC, 1996a).

2.3.4 Conclusion

There are two national variants of negotiated agreements in Europe: the D- and the G-model. Both are negotiated agreements between a public body and a branch organisation of industry, setting collective pollution abatement targets. But while monitoring and sanctions apply to individual firms in the

D-model, both of these elements of implementation are collective in the G-model. Thus, because of the weaker possibilities of control of firms environmental performances in the G-model, the scope for negotiated agreements is smaller in countries that make use of it. It is concentrated on distinct areas of environmental concern, such as the phase out of certain substances (e.g. CFCs or Phosphates in detergents) and GHG emissions reduction. In the Netherlands, where the D-model is applied, negotiated agreements constitute the key element of environmental policy, covering virtually all areas of environmental concern.

3. The Efficiency of Voluntary Approaches

Empirical and theoretical results on the efficiency of negotiated agreements are still lacking. This is due to a great extent to the fact that most agreements have only recently started and many do not provide detailed information on performance. In this chapter we are making general remarks on the efficiency of voluntary approaches and where this is possible, we are giving empirical illustration.

3.1 Environmental Effectiveness

The first question in the assessment of environmental policies in general and voluntary approaches in particular is their impact on the environment. To what extent and in what manner do these mechanisms allow for the improvement of environmental quality compared to an initial situation?

Two levels of environmental effectiveness are to be distinguished:

- The environmental ambition of the target, or ex ante environmental effectiveness, is the result of the policy devising process. It depends on the bargaining power of the agents involved in the setting of the target. The suspicion of regulatory capture (a domination of industry interests over social interest, resulting in relatively unambitious pollution abatement targets) is therefore particularly strong in the case of negotiated agreements, because of the important role that industry has in the negotiation process.

- The effectiveness of implementation, or ex post environmental effectiveness, is measured by the gap between the initial target and the effectively achieved environmental improvement. Negotiated agreements are subject to particular criticism on this point, because of the important role that is often given to branch associations and firms in the implementation process.

Ex ante environmental effectiveness (the environmental ambition of targets)

A pollution abatement target is effective when it maximises social welfare, which requires that environmental benefits and pollution abatement costs be balanced. The main cause for a gap between an effective target and the target that has actually been adopted in an environmental policy lies in the notion of regulatory capture. The participation of firms, or more generally speaking of private interests, in the process of policy making may lead to the distortion of the environmental target to the detriment of social welfare. More than other policy instruments, voluntary approaches are prone to that doubt, because they give firms a central role in the process.

In reality, negotiations on environmental agreements are frequently taking place in the framework of a strong regulatory threat though. Examples are the German agreement on GHG emissions and the Dutch agreement with the chemical industry (see Box 5). In both cases concrete threats influenced

the negotiations. Nevertheless, the targets that were set in these agreements have been assessed quite differently. While the German agreement has been criticised as being nothing more than business as usual in improving energy efficiency (Jochem & Eichhammer, 1996), the Dutch agreement is perceived as having set relatively ambitious targets. The reason for this discrepancy might lie in the different credibility of regulatory threats in both cases. The German agreement intervened in a situation where the priorities of the government lied more with preserving firms' competitiveness than improving their environmental performances (one reason for the use of a negotiated approach was namely the fact that it was felt that additional financial burdens on industry should be avoided after the rise of the fiscal level subsequent to the reunification, EEA, 1997). More generally, the policy that seems to have been adopted by most countries on GHG emissions is one of no-regrets measures (Storey, 1996), none of the industrialised countries willing to be the leader in imposing additional costs on industry. The Dutch agreement with the chemical industry was signed shortly after the publication of the ambitious National Environmental Policy Plan in 1989 and 1990 meant to bring the Netherlands towards sustainability. The commitment to that policy was very strong in the Netherlands and not joining negotiations on an agreement would most likely have meant that the same targets would have been imposed on industry by traditional regulation.

The ambitiousness of pollution abatement targets in the case of negotiated agreements depends mainly on the degree of political commitment to an improvement of the environmental quality. By means of a threat of regulation, state authority is able to impose a target on industry as long as it respects its participation constraint[2] in the voluntary scheme. Insofar, negotiated agreements are similar to command and control regulation, itself being subject to the influence of industry lobbying. In fact, empirical evidence shows that the initial target of command and control regulation is reduced due to industry's intervention in the policy devising process (Lévêque, 1997).

Ex post environmental effectiveness (the effectiveness of implementation)

Ex post environmental effectiveness depends on the ability of an environmental policy to minimise the gap between the initial pollution abatement target and the final result. This is also called the "implementation gap" in the sense that the explanation for a possible gap lies in problems at the level of implementing the policy.

A first cause for an implementation gap lies in the choice of the instrument. For example, a pollution abatement standard which is not backed by sufficiently expensive sanctions or not frequent enough monitoring, may lead firms to prefer the risk of being fined rather than complying with the standard. It is obvious that this problem is particularly present in the case of unilateral commitments or some negotiated agreements that are lacking sanctions or provisions for monitoring, but it is also valid in the case of traditional regulation or economic instruments, when informational reasons prevent the setting of optimal incentives.

A second cause is specific to the case of negotiated agreements: the problem of free riding. It is threatening those negotiated agreements where firms are collectively liable for the implementation of targets. The rationale for free riding is as follows: even if pollution abatement generates a collective benefit (e.g. via escaping new legislation), an individual firm may be tempted not to reduce its emissions and bet on other firms to reduce theirs. The problem is that all firms together benefit from pollution abatement, but each firm individually has an even greater benefit if it doesn't abate pollution while all the others do.

---

[2] The benefit firms achieve by participating in the agreement has to be superior to the benefit they achieve when no agreement is signed.

The problem of free riding obviously applies to voluntary approaches not providing for any individual sanctions, such as unilateral commitments and negotiated agreements relying on collective liability. The fact that escaping new legislation or improving the reputation of an industry is a collective good to the branch and that firms cannot be sanctioned individually for non-compliance with the erected rules (except for peer pressure and the exclusion from the branch association, but both are rather weak sanctions) explains this.

In the different environmental studies there is only little information supporting this though. Due to the fact that most initiatives are very recent, there is only very little information on ex post environmental effectiveness. In the very rare cases where this information exists at least partially, the evidence does not support our conjectures. For example, the German agreement on the phase out of CFCs has been a great success, targets having been over passed (Rennings et al., 1996). It is said though, that the conditions for a success were particularly good in this case because of the availability of substitute substances at the same price than former inputs and substantial pressure from consumers.

The Dutch agreements, relying on individual liability rules are not exposed to the problem of free riding. Experience confirms that they are rather efficient as far as implementation is concerned. This is certainly also linked to the tight monitoring procedures that are involved in the Dutch covenants (see Box 9). The signatories to the agreement believe that the targets for the year 2000 will be achieved in the great majority of substances. Only three of the set targets are foreseen not to be achieved, mostly for economic reasons.

3.2 Economic Efficiency

The economic efficiency of an environmental policy poses the question of its capacity to reach environmental targets and minimise the pollution abatement costs in the same time. Economic theory shows that economic efficiency of environmental policies depends on how the pollution abatement efforts are allocated among the different sources (economists therefore talk about allocative efficiency). In theory costs are minimised when the marginal costs of pollution abatement of all firms are equalised. In practice this leads to the differentiation of pollution abatement targets among firms (when the industry can be supposed to have some heterogeneity concerning abatement costs).

Room for the differentiation of targets among firms is given in voluntary approaches where targets are set at branch level. Theoretically there is therefore the scope for negotiations on burden sharing within these schemes. Nevertheless, empirical evidence seems to indicate that rather than differentiating individual targets according to costs, firms adopt a rule of equal burden sharing. In the Dutch agreement with the chemical industry companies roughly have the same emission targets to achieve. A paragraph of the agreement constrains the possibilities of target differentiation even more. Reducing emissions on one production line where this is cost effective in order to avoid expensive and inefficient investment on an other production line is explicitly prohibited in the agreement because it might give the possibility for competitive price reductions (Börkey & Glachant, 1997). However, this very restrictive agreement is an exception. Generally, negotiated agreements (even when they are signed by only one firm) allow at least for the creation of pollution bubbles at the firm level.

3.3 Administration and Compliance Cost

Generalities:

Administration and compliance costs are defined as composed of the costs that public bodies bear when applying regulations and those borne by companies complying with the regulation.

- The following cost items figure among the costs that are borne by public bodies when applying regulation: ministries and regulatory agencies, the costs of measurement, monitoring and information gathering, the costs of the collection of taxes and charges and the costs of sanctions.

- The costs that are borne by firms include all administrative, organisational and management costs that appear when measures are taken for achieving compliance with the regulation.

In the framework of negotiated agreements, costs are simply transferred from public bodies to private firms and their branch organisations. Monitoring and sanctioning tasks that public bodies perform in traditional regulation are transferred to industry associations and their member firms. It should therefore *a priori* not be expected that negotiated agreements have significantly lower administration costs than traditional regulation, unless firms are more efficient in administrative tasks than public bodies. No information on this point is available to our knowledge.

3.4 Other Efficiency Issues

Other efficiency issues include:

- Wider economic effects: the costs and benefits other than pollution abatement, administration and compliance costs that are linked to an instrument of environmental policy. They may inter alia stem from: impacts on the price level, competition or income distribution.

The ZEW (Rennings et al., 1996) study seems to indicate that negotiated agreements may have severe impacts on competition and industry structure. The case of the German agreement on ELVs is cited as an example. Competition in the car recycling industry would be in danger of being harmed to the detriment of small and medium-sized businesses owing to cooperation between large manufacturers and suppliers. This would happen because of the dominant influence of car manufacturers and suppliers on the licensing criteria for recyclers, leading to criteria erecting unnecessary barriers to entry and thereby favouring financially strong companies. The resulting concentration would again harm competition. Similar criticism has been made concerning the German packaging recycling agreement (DSD). However, it is not sure whether this criticism applies to negotiated agreements in general or is restricted to such agreements that use a "cradle to grave" approach. Such an approach is indeed said to favour vertical integration and concentration of industry.

- Soft effects refer to various possible effects of policy instruments in terms of e.g. changes in attitudes and awareness, capacity building, and the generation and diffusion of information.

In a general manner, negotiated agreements provide evidence for increased cooperation and trust, awareness rising and consensus building. "It would appear that, by their nature, NAs are likely to be

more efficient than taxes or regulations at generating these benefits (such benefits are rarely claimed for, or attributed to, regulations or taxes, except as possible stimulants to technical change)" (EEA, 1997).

Also, via the communication that they require, negotiated agreements are most likely to initiate collective learning when firms and regulators are faced with shared uncertainty on an environmental problem (Glachant, 1996).

- Dynamic effects and innovation concerns the question whether the instrument will effectively stimulate innovation in pollution control technologies.

The effectiveness of negotiated agreements in generating innovation may in the first place be compared with that of command and control regulation. Both schemes generally set quantitative standards for emissions. Once a firm has reached compliance with the standard, it has no incentive in pushing for further going innovation on pollution abatement. Eco-taxes have the advantage that they provide incentives for innovation and pollution abatement for every single unit of emissions, because each of it is a cost to the firm. Insofar, negotiated agreements are less innovation pushing than taxes or other market based instruments. Ashford (1996) pushes the argument further, saying that the lack of ambitiousness of environmental targets in voluntary approaches further reduces incentives for innovation. Voluntary approaches would therefore be even less efficient in generating innovation than traditional regulation. No data supporting this is available though.

On the contrary, Aggeri & Hatchuel (1996) show how in the case of the French agreement on ELVs, collective learning leading to innovation is facilitated in negotiated agreements. In their paper, the authors show that uncertainty about recycling and dismantling technologies could be removed by building up a network of complementary expertise and experience existing among the signatories.

- Viability and feasibility refer to the political and social acceptance and credibility of measures.

The large number of voluntary approaches now existent is evidence that it is feasible to develop and implement these instruments. What is more is that some examples seem to indicate that voluntary approaches are more likely to be accepted by industry than other instruments. The proliferation of negotiated agreements in GHG emissions reduction throughout Europe show that when industry is confronted with the choice between a negotiated agreement and a tax or a regulation, it will choose the former. However, it is also clear from experience that the design of an effective voluntary approach is far from simple and takes time. The biggest political threat to voluntary approaches arises when they lack credibility in the eyes of the public opinion and non-governmental organisations. Citizens and environmental groups may perceive that voluntary approaches are being used by firms as well as by governments in order to avoid more substantive environmental improvement.

4. Conclusion

This review shows that voluntary approaches have become a massive reality in the EU. To date more than 300 of these schemes are in force in the different Member States. Different types exist though, their main distinction being the degree of public intervention in the scheme. We differentiate three types: unilateral commitments by branch associations without any state intervention, public voluntary schemes which are set unilaterally by public authorities and negotiated agreements elaborated jointly by industry and public bodies.

Whereas unilateral commitments are merely a tool for communicating no regrets pollution abatement to authorities and the public opinion, voluntary schemes and negotiated agreements are policy instruments by their very nature.

Voluntary schemes are designed as a complementary instrument to other regulations. They are either used to weaken the economic impact of new environmental legislation on sectors that would otherwise be particularly affected, or as a means to induce innovation and pollution abatement beyond compliance with existing regulation.

Negotiated agreements are the most numerous voluntary approaches in the European context. They can therefore be considered as the European model of voluntary approaches. Their common characteristic is that they are negotiated between industry and public bodies and that they set collective targets for industry. Two models, relying on different liability rules exist: the G-model relies on collective liability of firms while the D-model allows for sanctioning individual firms. The former model is used by most Member States, but merely as a selective means, substituting to traditional regulation. The D-model has become the key instrument of environmental policy in the Netherlands, but it has not been used yet in other Member States.

Only few information is available as yet on the efficiency of voluntary approaches and most of it has been gathered on negotiated agreements. In several cases negotiated agreements seem to have proved that they are environmentally effective, although theoretical considerations indicate the contrary. In fact, the lack of individual sanctions in many agreements expose them to the risk of free riding, even when the regulator backs them with a strong threat of regulation. As for economic efficiency, NAs are theoretically superior to command and control regulation, because they allow for a greater flexibility on individual pollution abatement targets than e.g. emission standards do. Empirical evidence indicates though, that the potential for cost minimisation is not used by firms, themselves obsessed by maintaining a level playing field in order to avoid distortions of competition. As to the possible reduction of administration and compliance costs, frequently put forward by the supporters of voluntary approaches, no evaluation has been performed yet. These examples indicate that no solid results on the efficiency of voluntary approaches are available yet and that further research is needed on these questions. All stakeholders involved in negotiated agreements agree though that negotiated agreements provide for some important positive effects: they improve communication and trust, rise awareness of environmental problems and are consensus building.

REFERENCES

Aggeri F., Hatchuel A. (1996), "A dynamic model of environmental policies: The case of innovation oriented voluntary agreements", conference on "Economics and law of voluntary approaches in environmental policy", 18 and 19 Nov., organised by CERNA and FEEM, Venice.

Biondi V., Frey M., Iraldo F. (1996), "EMAS: first evaluation of a policy instrument", paper presented at the conference on "The economics and law of voluntary approaches in environmental policy", 18 and 19 Nov., FEEM, Venice.

Bomsel O., Börkey P., Glachant M., Lévêque L. (1996), "Is there room for self-regulation in the mining-sector?", Resource Policy, vol. 22.

Börkey P., Glachant M. (1997), "Les engagements volontaires de l'industrie dans le domaine de l'environnement: nature et diversité", Study for the French Ministry of Spatial Planning and the Environment and French environmental protection agency Ademe.

CEC, Commission of the European Communities (1996a), "Study on Voluntary Agreements Concluded Between Industry and Public Authorities in the Field of the Environment", Enviroplan, Copenhagen.

CEC, Commission of the European Communities (1996b), "Communication from the Commission to the Council and the European Parliament on Environmental Agreements", COM(96) 561 final.

Croci E., Pesaro G. (1996), "Voluntary agreements and negotiations: evolution at the Italian and European level", unpublished paper, Iefe, Milan.

Dowd J. (1998), "A typology of voluntary agreements used in energy and environmental policy", DoE, United States Department of Energy, Washington.

EEA, European Environment Agency (1997), "Environmental Agreements - Environmental Effectiveness", Environmental Issues Series No.3 - Vol. 1 and 2, Copenhagen.

Enevoldsen M., Brendstrup S. (1997), "Mixing Green Taxes and Agreements: Considerations over Danish CO2-Policy Instruments", presented at the workshop "The institutional aspects of economic instruments for environmental policy", Copenhagen, May 20 and 21.

ERM, Environmental Resources Management (1996), "International Comparison of Environmental Controls on Industry", Utrecht.

Glachant M. (1996), "The cost efficiency of voluntary agreements for regulating industrial pollution: a Coasean approach", conference on "Economics and law of voluntary approaches in environmental policy", 18 and 19 Nov., organised by CERNA and FEEM, Venice.

Glachant M., Whiston T. (1996), "Voluntary agreements between industry and government - the case of recycling regulations", in Lévêque F., *Environmental Policy in Europe - Industry, Competition and the Policy Process*, Cheltenham, UK, Edward Elgar.

Jochem E., Eichhammer W. (1996), "Voluntary agreements as an instrument to substitute regulation and economic instruments? Lessons from the German voluntary agreement on CO2-reduction", conference on "Economics and law of voluntary approaches in environmental policy", 18 and 19 Nov., organised by CERNA and FEEM, Venice.

Kohlhaas M., Praetorius B., Ziesing H.J. (1995), "German industry's voluntary commitment to reduce CO2 emissions - no substitute for active policy against climate change", Economic Bulletin, DIW, 32(5), pp.31-36.

Krarup S., Kraemer T.P. (1996), "Agreements as Policy Instruments", paper presented at the 17th Annual North American Conference of the USAEE/IAEE, October 27-30, Boston.

Lévêque F. (1997), Environmental Policy in Europe - Industry, Competition and the Policy Process, Cheltenham, UK, Edward Elgar.

Lévêque F. (1997), Voluntary Approaches, Environmental Policy Research Briefs No. 1, edited in the framework of the EU Concerted Action on Market Based Instruments.

Ministry of Finance (1995), "Energy Tax on Industry in Denmark", Copenhagen, Denmark.

Nadaï A. (1997), "Les conditions de développement d'un écolabel de produit. Responsabilités et Environnement", n° 7, juillet, pp. 15-23.

OECD, Organisation for Economic Cooperation and Development (1997), "Evaluer les instruments économiques des politiques de l'environnement", Paris.

Öko-Institut (1998), "New Instruments for Sustainability - The New Contribution of Voluntary Agreements to Environmental Policy", Final Report, Darmstadt.

Rennings K., Brockmann K. L., Bergmann H. (1996), "Nachhaltigkeit, Ordnungspolitik und freiwillige Selbstverpflichtung", ZEW, Zentrum für Europäische Wirtschaftsforschung, Mannheim.

Solsbery L., Wiederkehr P. (1995), "Voluntary Approaches for Energy-related CO2 Abatement", The OECD Observer No. 196 (Oct/Nov).

Storey M. (1996), "Policies and Measures for Common Action - Demand Side Efficiency: Voluntary Agreement with Industry", OECD, Paris.

UNEP (1998), Voluntary Industry Codes of Conduct for the Environment", Technical report Nr.40, ISBN 92/807/1694/8

Webb K. (1996), "Voluntary approaches, the environment and the law: A Canadian perspective", conference on "Economics and law of voluntary approaches in environmental policy", 18 and 19 Nov., organised by CERNA and FEEM, Venice.

ANNEX

Overview of the Use of Voluntary Approaches in Each of the 15 EU Member States

(Sources: CEC, 1996a; CEC, 1996b; EEA, 1997)

Austria

Number of negotiated agreements:	25
Date of first agreement:	1986
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Comments:
Austrian authorities have begun to use negotiated agreements at the beginning of the eighties, starting with an agreement on detergents. Since then, NAs have mainly been used for the setting of product standards and for waste management (ELVs, tyres, car accumulators and packaging waste). An agreement on the reduction of GHG emissions, grouping mainly municipalities, was signed in 1994. The government sees NAs a good complement to command and control regulation, although it has never expressed itself in favour of NAs. Two types of agreements co-exist in Austria: formal agreements that are signed by both industry and public bodies and agreements that are only informally recognised by authorities. The difference however is only of symbolic nature, both types being non-binding agreements. Austrian law does not allow for the substitution of agreements to legislation. This is also the reason why Austrian agreements do not provide for sanctions, but they are generally backed by the threat of regulation.

Belgium

Number of negotiated agreements:	14
Date of first agreement:	1988
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies, regional authorities and the Ministry of the Environment

Comments:
In Belgium, negotiated agreements are used at two administrative levels: national and regional. This is due to the important legislative competencies of the regions in the field of the environment. At the regional level NAs deal mainly with waste management (e.g. batteries and packaging). At the national level, agreements are used to set product standards (e.g. phase out of CFCs or certain substances in batteries) and for emissions reduction (e.g. SO2 and NOx in the electricity sector). 50% of the agreements deal with pollutions from the chemical industry. The Belgian agreements generally do not provide for sanctions in case of non-compliance, which lead some agreements to fail reaching the objectives. Flanders has therefore adopted a formal framework for negotiated agreements in 1994. It sets rules for transparency, monitoring and sanctions. Because industry finds the framework to cause too much administrative costs, it has never be used though.

Denmark

Number of negotiated agreements:	16[3]
Date of first agreement:	1987
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Commitments:
Since 1994, a formal framework for the drafting of negotiated agreements exists in Denmark. It gives the minister the possibility to sign binding pollution abatement contracts with firms (or branch associations). However, the framework has not had much success yet, industry associations not being ready to assume the policing role that is assigned to them in the scheme. Only one agreement on car accumulator recycling was signed according to this framework in 1996. The other agreements that are in force in Denmark are of an other type: they are non-binding and provide for no sanctions. Generally, they are linked to a threat of new regulation. Most of these agreements were signed at the beginning of the nineties. They mainly deal with waste management (e.g. tyres, packaging waste), the phase out of certain substances (e.g. in detergents and products containing CFCs) and air pollution. The Danish agreements on the reduction of GHG emissions are public voluntary schemes that are linked to a tax on CO2 emissions. Energy intensive companies joining these agreements can benefit from some exemption to the tax.

Finland

Number of negotiated agreements:	5
Date of first agreement:	1989
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies, local and regional authorities and the Ministry of the Environment

Comments:
The Finnish agreements are characterised by their focalisation on energy efficiency. They are strongly linked to the international commitments of Finland on the reduction on emissions in the energy sector. 3 agreements were signed at the regional and local levels. One agreement deals with the phase out of CFCs.

[3] among these is the public voluntary scheme on the reduction of GHG emissions.

France

Number of negotiated agreements:	14
Date of first agreement:	1971
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Comments:
The first agreement to be signed in France, was with the cement industry in 1971. In the following years about twenty agreements were signed between industry and the new Ministry of the Environment. They were intended to underline the authority of the new Ministry and to bring companies into compliance with already existing regulation. At the end of the 80's another series of agreements were signed, mainly on the phase out of certain substances (CFCs and certain substances in detergents). More recently, a series of agreements on the reduction of GHG emissions has been signed. 5 energy intensive sectors are covered: aluminium, steel, plasters and glass industry. These agreements are signed by the Ministry of the Environment and a branch association or a large company. In case the agreement is signed by only one large company, it should normally represent the major part of industrial pollution of the sector. this is the case for the aluminium industry, where Péchiney (70% of the national production) signed. The agreement are non-binding and do not provide for sanctions in case of non-compliance, although there generally is a background threat of regulation associated to them. Monitoring procedures are not always defined, for example the agreement on ELVs, does not provide for any.

Germany

Number of negotiated agreements:	93
Date of first agreement:	1980
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies, local and regional authorities and the Ministry of the Environment

Comments:
A great number of agreements were signed in the eighties and at the beginning of the nineties. Most of them are very simple agreements, dealing with only one pollutant linked to the use of products. They main products that were concerned by these agreements are detergents, paint and varnishes and products containing CFCs. A series of agreements on the reduction of GHG emissions, covering the majority of energy intensive industries, was signed in 1995. These agreements are representative of a second wave of agreements that are more complicated in design and dealing with pollutions caused by the production or post consumption (agreements on ELVs and on packaging waste). The German agreements are generally linked to a strong background threat of regulation. Although the German agreements do not provide for any direct sanctions, the threat of regulation is to be interpreted as an indirect sanction. The Government has repeatedly expressed that it will give priority to negotiated solutions to environmental problems wherever that is possible (this point is also part of the coalition contract from 1994 of the actual government).

Ireland

Number of negotiated agreements:	1
Date of first agreement:	1996
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies, local and regional authorities and the Ministry of the Environment

Comments:
The only Irish agreement deals with packaging waste. In its design it is very similar to Eco-Emballages in France and DSD in Germany. The grouping of industrialists managing the scheme is REPAK.

Italy

Number of negotiated agreements:	24
Date of first agreement:	1988
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies, local and regional authorities and the Ministry of the Environment

Comments:
The Italian agreements at the national level are characterised by the fact that they are generally not collective agreements. The signatory to the agreement is normally a large company: 9 agreements have been signed with FIAT and 3 with Agip Petroli. The agreements at the regional and local levels are predominantly dealing with domestic waste management (organic waste and paper). They are defined in the framework of national legislation and are signed by a regional or local authority and one or several branch associations. The focus of the Italian agreements is therefore essentially on air pollution and on waste management.

Luxembourg

Number of negotiated agreements:	5
Date of first agreement:	1989
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Comments:
Some of the voluntary approaches in this country are used as a complement to existing command and control regulation.

The Netherlands

Number of negotiated agreements:	107
Date of first agreement:	1987
Legal status:	binding
Sanctions:	via the licensing system
Signatories:	Branch associations, large companies, the Ministry of the Environment and local authorities

Comments:
Negotiated agreements (which are called "covenants" in the Netherlands) constitute the key instrument of Dutch environmental policy. They are part of an ambitious national policy (defined in the National Environmental Policy Plan, NEPP) intended to bring the Netherlands towards sustainability in the year 2010. In 1996 107 covenants were in force in the Netherlands, covering all major polluting industries (printing and packaging printers, base metals, chemicals, dairy, metal products and electronics, textiles, meat industry, paper and paper products, leather, rubber and plastic products, brick and roofing tiles, concrete and cement products, other mineral products). Negotiated agreements cover 16 industrial sectors and more than 12.000 firms, accounting for about 90% of industrial pollutions in the Netherlands.
Covenants do have the status of contracts of civil law. In fact a covenant stands for two contracts. One is a declaration of intent which is signed by the government and a branch association. This contract has no legal value, but it serves as a framework for a series of agreements between the government and individual firms, willing to join the covenant scheme. These individual contracts can engage firm’s liability in a civil court.
Furthermore, covenants are tightly linked to the licensing system. This system is administered and monitored by local public bodies. The licenses define detailed emission standards for each industrial site. Covenants are linked to this system, because their pollution abatement targets are eventually integrated into the licenses.

Portugal

Number of negotiated agreements:	10[4]
Date of first agreement:	1988
Legal status:	non-binding
Sanctions:	none
Signatories:	Large companies and the Ministry of the Environment

Comments:
The Portuguese agreements are used as a complement to existing command and control regulation. In fact, due to its membership in the EU and the legislative power on environmental matters at that level, Portugal has adopted fairly advanced environmental regulation. Many Portuguese companies have been unable to follow the pace of tightening environmental regulation and went out of compliance. The Portuguese voluntary scheme is an attempt of the government to close that gap, without leading to plant closures. Via a precise time-table for progress in environmental performances, it gives signatories a delay for total compliance with existing regulation. In addition to that, financial assistance is available. Companies who are not signatories to the voluntary scheme don't benefit from these advantages and are fined instead if non compliance with standards is detected.
In 1994 the Government issued the "Global agreement protocol for branch commitments". It was derived through negotiations between the Ministries of the Environment, Agriculture and Industry on the government side and several national and regional confederations of Portuguese Industry and Agriculture. It sets the obligation of signatories to develop environmental plans, describing how they will reach the targets and to set a time table. These plans are to be approved by public authorities.

Spain

Number of negotiated agreements:	6[5]
Date of first agreement:	1989
Legal status:	binding and non-binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Comments:
Like in Portugal, Spanish voluntary approaches are used as a complement to existing regulation in order to bring industry towards compliance with national ordinances or European directives. Several agreements are planned in the field of GHG emissions reduction and waste management.

[4] the report by CEC (1996) classifies the Portuguese schemes as negotiated agreements, while we consider them as public voluntary schemes (take it or leave it options), where the contents of industry's commitments is unilaterally defined by public authorities.

[5] some of the Spanish negotiated agreements in the CEC (1996) study belong to the category of public voluntary schemes (take it or leave it options), unilaterally defined by public authorities.

Sweden

Number of negotiated agreements:	13[6]
Date of first agreement:	1978
Legal status:	non-binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Comments:
Swedish negotiated agreements are typically linked to the threat of new legislation, in the case the agreement should fail. Enforcement is performed by the branch association, and thus relying on peer pressure. NAs are used as a very selective means for the recycling of car accumulators, certain product standards and energy efficiency of cars. The Swedish approaches for the reduction of GHGs are public voluntary schemes that are obviously similar to EMAS or the European eco-labelling scheme.

United Kingdom

Number of negotiated agreements:	10
Date of first agreement:	1972
Legal status:	non binding
Sanctions:	none
Signatories:	Branch associations, large companies and the Ministry of the Environment

Comments:
The first negotiated agreement in the United Kingdom was signed in 1972. It concerned the phase-out of a toxic substance in detergents. Negotiated agreements in the UK are used as a very selective means to tackle particular pollution problems. The implementation of agreements is totally delegated to industry, meaning that the only possible sanction in case of non-compliance is peer pressure.

Apart from 10 negotiated agreements, 12 other voluntary approaches have been undertaken in this country (mostly unilateral commitments by industry). Examples of these are:

- tanker owners responsibility concerning liability for oil pollution (TOVALOP and CRISTAL)
- efficient use of energy (MACC - Making a Corporate Commitment)
- labelling of detergents and cleaning products
- used tyres
- the chemical industry's Responsible Care Programme

[6] among these are the schemes on energy efficiency, which obviously are very similar to public voluntary schemes like EMAS or the European eco-labelling scheme, as they are related to a certification procedure allowing for the use of a logo.