

Reporting on environmental measures: Are we being effective?

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Note

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Preface

This report is the summary output from the EEA's REM (Reporting on Environmental Measures) project.

The report builds on various papers written by IEEP (Institute for European Environmental Policy) as consultants to the project.

This project had a steering group whose composition was:

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Nigel Haigh, member of the EEA management board, and expert on this field, wrote the foreword.

Foreword

It is now well known that there is an important body of EU environmental legislation which is influencing the Member States. Increasingly policy makers — not least the European Parliament — want to know about the extent of this influence. Is the legislation effectively reducing the problem for which it was designed? If not, is this because the legislation is defective? Or is it because there is a lack of will to make it work? Or are there other reasons?

It is not so well known that some items of EU legislation require the Member States to report to the European Commission about aspects of the legislation. These reporting requirements are not all designed for the same purpose. Some are concerned with the state of the environment e.g. the quality of air or bathing water; others with what has been done e.g. plans or programmes; while others go further and require information on the extent to which the legislation is achieving its objectives (without necessarily being clear about how this should be done). Not surprisingly the resulting data is not always comparable, or as useful as it could be, and the Member States may react by losing the motivation to supply it. The Commission has therefore said — in its draft 6th Action Programme — that it will review reporting requirements.

Against this background the European Environment Agency now presents the results of its REM project (Reporting on Environmental Measures). This has four objectives, one of which is 'to produce an awareness-raising paper showing through practical examples how much or how little we know about the links between environmental policy measures and their actual impacts on the environment'. Other objectives are to review existing reporting requirements and to identify practical options for a new EU reporting regime.

I believe that this timely report will indeed succeed in raising awareness among those wanting assessments of the effectiveness of policy and among those concerned with collecting information relevant for the making of better policy. It shows that the

subject is not at all an easy one. While it draws some useful conclusions it wisely only opens the debate on what a new reporting regime will look like. We certainly need that debate.

Let me make my own contribution to the debate by saying that the report challenges both the European Commission and the European Environment Agency. It is not just a question of what information we need in order to evaluate effectiveness, or of how to do it, but also of who does it or at least contributes to doing it. The Commission has not been systematically evaluating the effectiveness of EU legislation, and the data it has is incomplete to enable it to do so. The Agency has concentrated on collecting information about the state of the environment, and has not been encouraged to collect other relevant data such as on the institutional arrangements within Member States and what they do to make the legislation work. Yet such data on 'state of action on the environment' is as necessary as that on 'state of the environment'. The Commission has perhaps not encouraged the Agency to collect all the necessary data, because it feels some of it is too close to the making of policy which is not the Agency's job. It cannot therefore be repeated too often that evaluating effectiveness of existing policy is not the same as making new policy. An evaluation of existing policy is information relevant for the making of new policy, and it is indeed the Agency's task to provide information relevant for the making of policy. Certainly the European Parliament expects the Agency to help it with its own evaluations.

This report should thus stimulate not just a debate among experts, but also some clarification of what sort of information the Commission and Parliament would like the Agency to provide in the future. That in turn will stimulate the Agency into thinking how it must develop to meet the new demands.

NIGEL HAIGH

Member of the Management Board of the EEA nominated by the European Parliament

Contents

1. Introduction	6
1.1. What is the challenge?	6
1.2. What was the REM project about?	6
1.3. Who should read this report?	7
2. Why is it important to assess effects and effectiveness?	9
2.1. Scenario development	9
2.2. Distance to target analysis	10
2.3. Comparing the cost-effectiveness of policy measures	11
2.4. Shared policy-learning	12
3. How far do reporting obligations in EU environmental legislation help us to assess effects and effectiveness?	14
3.1. How does the current legal reporting system work?	14
3.2. What are current reporting requirements on environmental measures?	14
3.2.1. What are the requirements to describe policy measures?	15
3.2.2. To what extent are there requirements to report on effects and effectiveness?	16
3.2.3. How much guidance is provided to Member States for reporting?	17
4. What information and methodologies do we need for evaluating effects and effectiveness?	19
4.1. What do we mean by effects and effectiveness? A policy evaluation framework	19
4.2. How can we best describe policy measures?	21
4.3. What methodologies are available for establishing the effects of environmental measures?	22
4.3.1. Establishing causality	22
4.3.2. Choosing a methodology	22
4.4. Judging and comparing effectiveness	23
5. How can the evaluation of effects and effectiveness be built into the design of legislation?	25
5.1. Evaluation should not be an afterthought	25
5.2. How to link evaluation into the policy process?	25
5.3. How can we build evaluation into reporting requirements?	26
6. What other mechanisms exist for us to assess effects and effectiveness?	28
6.1. Introduction	28
6.2. Options	28
6.2.1. Improving legal reporting	28
6.2.2. Self-reporting by Member States, or external evaluations?	28
6.2.3. Voluntary reporting?	29
6.2.4. Selective measures only?	30
6.2.5. Who pays?	30
6.3. How should we disseminate the results of evaluations?	30
6.4. Where do we go from here?	30
7. Conclusions and further work	32
References	33
Annex: Summary of REM outputs	34

1. Introduction

1.1. What is the challenge?

For more than a quarter of a century, the environmental policy of the European Union (EU) has developed rapidly so that there are now more than 100 major pieces of legislation in place. They cover the entire spectrum of environmental issues from global climate change and stratospheric ozone depletion to the protection of local biodiversity. These European Community laws now set the framework for the environmental policies of all 15 current Member States, and will soon be applied in 13 further countries as the Community enlarges.

We have now reached the stage when we need to assess what the effects of all this legislation have been on the ground in the Member States, and whether specific measures have actually been effective in delivering the results expected of them. Tempting as it may be, it cannot be assumed a priori that policy targets or the intentions of policy-makers will necessarily be realised in practice. While it is true that in a few cases the links between policy measures and their effects are strong and straightforward to establish, for the majority of EU measures greater efforts are required to demonstrate a causal relationship.

In order to begin to assess whether Community environment policies are working, the right kinds of data and information will need to be collected by the Member States and reported and analysed at EU level. Although there are a myriad reporting obligations at the international, EU and national levels — so much so that Member States often complain of ‘reporting fatigue’ — much of the information gathered is of limited use in assessing the impact of environmental measures. As the conference, *Bridging the Gap*, in 1998 concluded:

‘... some of the systems for monitoring and gathering information about the environment in European countries are inefficient and wasteful. They generate excessive amounts of data on subjects which

do not need it; and they fail to provide timely and relevant information on other subjects where there is an urgent policy need for better focused information, and for consistent environmental assessment and reporting’ (EA, 1999).

This message has now been fully taken on board by the European Commission and the Member States. The common position on the proposed sixth environmental action programme (6EAP) highlights the need to: ‘review and regularly monitor information and reporting systems with a view to a more coherent and effective system to ensure streamlined reporting of high quality, comparable and relevant environmental data and information’ and to undertake ‘*ex ante* evaluation of the possible impacts, in particular the environmental impacts, of new policies and *ex post* evaluation of the effectiveness of existing measures in meeting their environmental objectives.’

So the twin challenge is to revise the reporting system to enable us to know more about the effects and effectiveness of the Community’s environmental measures — but at the same time to decrease the burden of reporting, so that only the most essential types of information need to be collected and reported. This is a joint challenge for both the Member States and the Community institutions, working together and sharing ideas.

1.2. What was the REM project about?

The response of the European Environment Agency (EEA) to this challenge was, in May 1999, to commission the so-called REM project — short for Reporting on Environmental Measures. The focus of REM has been to assess how far the reporting obligations contained in EU environmental legislation can — and in the future, could — help us evaluate the effects and effectiveness of EU policies on the ground in the Member States. The key role of the EEA in taking forward this work is highlighted in its recently amended regulation (see Box 1).

Box 1: The EEA's role in evaluating the effects and effectiveness of policies

Article 2 of (amended) EEA Regulation 933/1999: '(T)he tasks of the Agency shall be...

(ii) — to provide the Community and the Member States with the objective information necessary for framing and implementing sound and effective environmental policies; to that end, in particular to provide the Commission with the information that it needs to be able to carry out successfully its tasks of identifying, preparing and evaluating measures and legislation in the field of the environment;

— to assist the monitoring of measures through appropriate support for reporting requirements...'.¹

The terms of reference for the project were to:

- produce an awareness-raising paper showing through practical examples how much or how little we know about the links between environmental policy measures and their actual impact on the environment;
- review the scope and contents of reporting requirements in all major items of EU environment-related legislation in order to assess how useful these are for evaluating their effects and effectiveness;
- develop methodologies for monitoring and reporting on policy measures, and for evaluating their effectiveness;
- identify practical options for a new EU reporting regime in relation to policy measures, coordinated with parallel reporting obligations at international level.

REM has therefore been intended to make a contribution to the development in the longer term of a multi-purpose and streamlined system of reporting by Member States. As such, it is one of three parallel EEA studies reviewing and assessing different aspects of Member States' reporting obligations. The other two are:

- **ROD** — the Reporting Obligations Database, which has aimed to provide a comprehensive description of all current monitoring and reporting obligations, particularly in respect of biophysical data;
- **REC** — Reporting Obligations in the framework of international environmental Conventions, which has reviewed the process of reporting to international convention secretariats ⁽¹⁾.

In respect of the relationship between these three parallel projects, REM has been focused only on EU legislation, and not international environmental conventions. Moreover, it is not centrally concerned with state-of-the-environment data, nor information on legal compliance, except to the extent that it is relevant to assessing the effects of EU policies.

The work undertaken by REM was overseen by a steering group comprising representatives of Member States (specifically Belgium, the Netherlands and the UK); the European Commission (DG Environment); the EEA; and the Organisation for European Co-operation and Development (OECD). The specific role of the steering group was to create a forum for identifying priorities, to discuss findings of the reports (see Annex) and to create a common view of shared needs.

1.3. Who should read this report?

This report is directed at a range of actors involved in both policy formulation and specific reporting processes on EU environmental policy at the national and EU levels. More specifically, these include:

- Those in the Commission and the Member States who are:
 - involved in policy and legislation formulation and the assessment of their effects and effectiveness;
 - responsible for establishing and responding to reporting obligations under EU legislation.
- Members of EU networks responsible for reporting data and formulating indicators outside the EU legislative process — in particular, EIONET (the European Environment Information and Observation Network), the European Statistical System and the EPRG (Environment Policy Review Group) Expert Group on Indicators.

The report is a synthesis of the findings and conclusions of REM during the two years of the project. It provides an overview of the issues and examples of good practice, as well as suggestions on ways forward.

(1) More information on http://reports.eea.eu.int/Technical_report_No_62/en/page001.html.

8 Reporting on environmental measures: Are we being effective?

Chapters 2 to 6 address the following key questions:

Chapter 2: Why is it important to evaluate the effects and effectiveness of EU environmental policies?

Chapter 3: How far do reporting obligations in current EU environmental legislation help us to assess effects and effectiveness?

Chapter 4: What information and methodologies do we need for evaluating effects and effectiveness?

Chapter 5: How can the evaluation of effects and effectiveness be built into the design of legislation?

Chapter 6: Are there alternative mechanisms, other than through reporting obligations, for assessing effects and effectiveness?

2. Why is it important to assess effects and effectiveness?

In its conclusions in March 1999 on the global assessment of the EU's fifth environmental action programme (5EAP), the Environment Council observed that the lack of

'a systematic *ex-post* evaluation process, appropriate monitoring mechanisms and indicators, does not allow a thorough assessment of the effectiveness, in terms of reducing environmental impacts and risks, of different Community environmental policy measures, and further work is needed to develop these systems'.

Two years later, the Environment Council's common position on the proposed sixth programme (6EAP) seeks to put this right by calling for:

- '*ex ante* evaluation of the possible impacts, in particular the environmental impacts, of new policies...
- *ex post* evaluation of the effectiveness of existing measures in meeting their environmental objectives' (Council, 2001).

Ex ante evaluation refers to forward-looking assessments of the likely future effects of new policies or proposals. This work can be done through the use of models and development of different policy scenarios. It can be used, for example, for assessing whether the EU (country, region, etc.) is expected to meet particular environmental targets, and for a priori cost-benefit analysis of alternative policies.

Ex post evaluation relies on the collection of information about what has actually happened following the introduction of a particular measure — thereby establishing the actual effects of the measure and allowing for comparison of the relative effectiveness of different measures in meeting their objectives as well as their relative cost-effectiveness. *Ex post* evaluations can provide feedback information for policy-makers about the actual impact of a measure

or policy and therefore are crucial for policy-learning. Results can be used to construct and calibrate evidence-based models and to underpin *ex ante* evaluation.

Box 2: Definitions of 'effects' and 'effectiveness'

Effects of an environmental measure: the results of a measure that can be directly attributed to its implementation. This requires that a causal link exists between the policy action and its intended impacts on human behaviour and the environment.

Effectiveness of a measure: a judgement about whether or not the expected objectives and targets of the policy measure have been achieved. This requires comparing the effects of the measure with its intended objectives.

Cost-effectiveness of a measure: a comparison of the effects of a set of measures with the costs of implementing them. A more cost-effective measure will have achieved greater results for less money.

The importance given in the 6EAP to *ex ante* evaluations of the expected effects of policy measures and *ex post* evaluations of the actual effects of measures, supports the main four reasons why it is important to assess effects and effectiveness, namely:

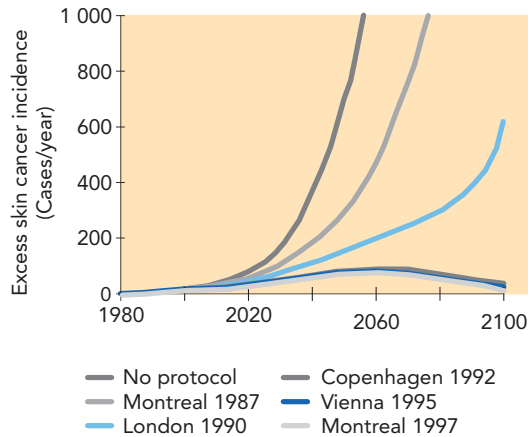
- scenario development
- distance to target analysis
- comparing the cost-effectiveness of policy measures
- shared policy-learning.

2.1. Scenario development

The development of baseline scenarios (counter-fact) and alternative policy scenarios make use of (and provide) information on current and expected effects of existing policies on the state of the environment, and the consequent impacts on human health and/or the state of the environment. One example is the assessment of the future beneficial impact on the incidence of skin cancer of international initiatives to protect the ozone layer (see Figure 1).

Figure 1. Projected impact of the Montreal Protocol on the incidence of skin cancer

Source: EEA, Environment in the European Union at the turn of the century, 1999



The figure shows the past and future effects of five international initiatives to protect the ozone layer. When compared with the ‘no-action’ scenario, it is possible to gauge the individual future effects of each initiative. The 1997 Montreal Protocol is expected to have significant effects on decreasing the incidence of skin cancer in Europe — an important message for policy-makers and the public.

2.2. Distance to target analysis

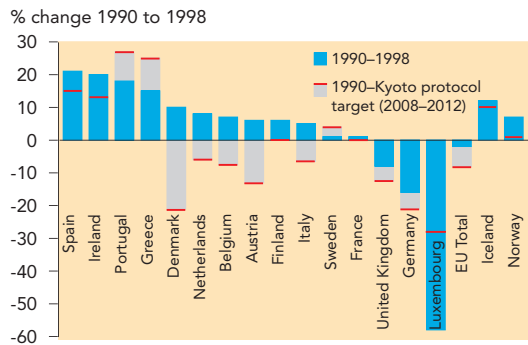
Increasingly, items of EU environmental legislation set quantitative targets and timetables for their achievement, sometimes differentiated by Member State. Policy-makers, other stakeholders and the wider public need to know whether current measures are on track. Such ‘distance to target’ information allows policy-makers to fine-tune policies in order to reach the ultimate objectives, and keeps the public informed about the current state of their environment and what can be expected in the future.

A key example of the use of ‘distance to target’ analysis is provided by the EU decision establishing a greenhouse gas monitoring mechanism. This requires Member States to show how progress towards commitments under the UN Framework Convention on Climate Change (UNFCCC) is being achieved. Detailed reporting requirements under this decision are based on those linked to the convention, and request information on measures taken to attain the objectives of each measure, and on related intermediate indicators of progress. This allows the Commission to assess whether or not the EU is on track to meet its commitments under the convention and the Kyoto Protocol. It should be stressed that such detailed EU reporting requirements on policy measures and their effects is very unusual.

Other examples are provided in the report *Environment in the European Union at the turn of the century* (EEA, 1999) where results of ‘distance to target analysis’ were presented for some environmental targets (see Table 1 below).

Figure 2. Percentage change in total greenhouse gas emissions in EEA member countries from 1990 to 1998 compared with their Kyoto Protocol targets

Source: EEA, Environmental signals, 2001



Progress in achieving key EU environmental targets (Index 1990 = 100) EU15

Table 1.

	1985 level	1990 level	1995 level	expected level in target year	target	progress?
Greenhouse gases (GHG) and Climate change						
basket GHG emissions	–	100	98	106	92 in 2008–2012	☹️
CO ₂ emissions	96	100	97	98–102	100 in 2000	😐
Ozone-Depleting Substances						
CFC production	160	100	11	appr.0	0 in 1995	😊
HCFCs production	–	100	108	appr.0	0 in 2025	😊
Acidification						
SO ₂ emissions	119	100	65	53* 29	60 in 2000 16 in 2010**	😊 ☹️
NO _x emissions	95	100	89	81* 55	70 in 2000 45 in 2010	☹️ ☹️
non-methane volatile organic compounds (NMVOC) emissions	98	100	89	81*	70 in 1999	☹️
Regional scale problems						
Municipal waste (per capita)	79	100	103	109	79 in 2000	☹️
* based on Current Reduction Plans of Member States						
** proposed targets which may be reviewed in the framework of the combined ozone/acidification strategy						

Source: EEA, Environment in the EU at the turn of the century, Summary, 1999

The assessment of distance to targets is usually only approximate but it serves to emphasise the need for better information and methodological approaches towards evaluating policy effects and effectiveness.

2.3. Comparing the cost-effectiveness of policy measures

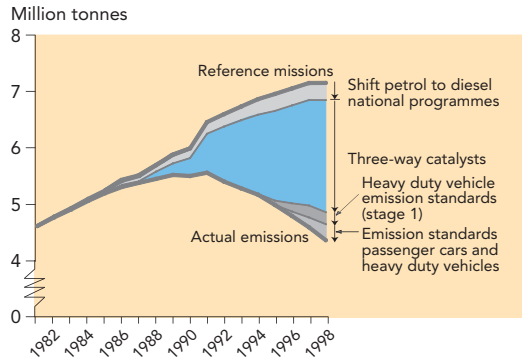
In many policy areas, more than one type of measure can be used to deliver desired environmental outcomes. These may include various forms of legislation; economic instruments; the provision of EU finance; voluntary agreements; information and awareness campaigns — or a combination of all of them. The costs of each of these types of measure can vary widely, and so can their relative effectiveness.

The proposed 6EAP, the EU's sustainable development strategy, and the current process of Commission reform, have all emphasised the key importance of ensuring that EU policies and the measures taken to implement them are cost-effective both in absolute and in relative terms — in other words, the environmental, social or economic benefits they bring should not be outweighed by any costs imposed on businesses, public authorities or individuals. Such costs are relatively straightforward to compile, but cost-effectiveness assessments also require precise information on the relative environmental improvements secured.

Figure 3.

Reduction of nitrogen oxide emissions from road traffic, EU-15

Source: EEA, Environmental signals 2001



The figure above illustrates the separate effects of four measures taken to reduce nitrogen oxide emissions from road traffic. The figure shows that the measures together have been effective in reducing emissions from the ‘reference emissions’ (i.e. the expected emissions if no additional measures had been taken). By comparing the individual effects of the four measures one can say something about their relative effectiveness in working towards a common goal. Of the four measures the diagram shows that the introduction of three-way catalysts has achieved the largest proportion of the total emissions reduction within the same time period. With information on the costs of these measures, one can also

generation, as well as demonstrating the relative effectiveness of these measures.

Again, it should be stressed that such studies evaluating the effects and cost-effectiveness of different policy measures are rarely undertaken, and these two examples are exceptions.

These two figures, by allowing the assessment of the relative effectiveness of different measures, are also fundamental for the process of shared policy-learning.

2.4. Shared policy-learning

Learning from experience and from sharing experiences allows for improving policy- and decision-making processes.

Box 3: Shared policy-learning in action

A recent example of shared policy-learning is found in the UK climate change levy scheme.

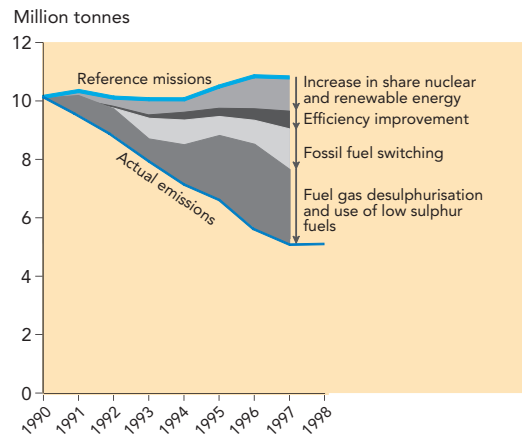
The scheme includes climate change agreements. These agreements, concluded with energy-intensive sectors, provide for an 80 % discount of the climate change levy if commitments are being made to improve energy efficiency and to reduce environmental impact. Such a provision can also be found in the Danish carbon dioxide system that has operated since the early 1990s.

Another tool applied in connection with the climate change levy scheme is the system of enhanced capital allowances for machinery and plant. This enables business to take relief on the full costs of relevant investments in the first year, which results in a cash flow boost. Such a system has run successfully in the Netherlands since the early 1990s.

Figure 4.

Reduction of sulphur dioxide emissions from electricity generation, EU-15

Source: EEA, Environmental signals 2001



compare their relative cost-effectiveness.

Similarly, Figure 4 shows the separate effects of four measures taken to reduce sulphur dioxide emissions from electricity

Increasingly Member States seek to accomplish the objectives set out in EU directives using a variety of approaches reflecting differences in institutional frameworks as well as cultural, geographical and socio-economic circumstances. This partly reflects the increasing importance in the EU of the principle of subsidiarity, which seeks to limit EU action to those areas where it can be more effective than Member States acting separately, thus enlarging the scope for independent Member State initiatives. Knowledge about the comparative effectiveness of these different approaches can be shared in order to establish the most efficient and effective means for reaching similar goals in the future. It may even mean that some items of legislation are found to be ineffective and should be repealed.

This shared policy-learning will be particularly useful for the large number of new EU Member States expected to accede to the Community during the next few years.

Drawing on the (sometimes hard) lessons learned by existing Member States can help them develop more cost-effective approaches to implementing EU obligations.

Key messages of Chapter 2

- We need more information on the effects and effectiveness of EU measures.
- Evaluating effects and effectiveness will increasingly become a requirement in EU environmental legislation.
- Evaluative information can usefully serve several purposes, including allowing the assessment of future impacts of environmental policy measures, and informing choices between alternative policy options.

3. How far do reporting obligations in EU environmental legislation help us to assess effects and effectiveness?

3.1. How does the current legal reporting system work?

Almost all items of EU environmental legislation require Member States to report in some way to the European Commission. Originally, the principal purpose of reporting was to enable the Legal Unit of DG Environment to check on legal compliance, but the scope of reporting obligations has since expanded to include different kinds of information. Currently, the information requested falls into the following five categories:

- legal transposition — details of Member States' national laws enacting EU legislation;
- practical compliance — data on exceedances of environmental standards, limit values, national derogations, etc.;
- environmental data — on environmental pressures and state of the environment;
- descriptions of policy measures — plans, programmes and instruments put in place by Member States to comply with EU legislation;
- policy effects and effectiveness — the effects of these measures and the extent to which they achieve their objectives.

All these different kinds of information are channelled from the Member States to the Legal Unit of DG Environment through periodic, national reports on implementation.

Information about policies — the last two categories of information — has been the principal concern of the REM project. Nevertheless, evaluations of policy effects and effectiveness also depend on the availability of other types of information, such as baseline environmental data and indicators of progress.

Very few items of EU environmental legislation request information on policy effectiveness — the last category — even though some EU measures are very costly to

implement and should be subject to some kind of cost-effectiveness scrutiny.

The system as it currently stands has grown incrementally as the Commission and the Member States have independently agreed reporting requirements for separate laws or sectors. The growth in the types of reporting requirements has therefore been organic rather than strategic. As a result, some valuable types of information are not collected at all; some officials who need access to the information that is available do not get it; and Member States sometimes fail to report at all in response to a growing burden of reporting obligations, the value of which may not be immediately obvious to them. The EU institutions and the Member States all suffer from this unsatisfactory situation.

An attempt to address some of the shortcomings of the reporting system was made in the 1991 standardised reporting directive (SRD), Directive 91/692/EEC. This aimed to make existing reporting requirements more consistent and more complete by grouping reports by sector (waste, water and air to begin with); staggering the reporting timetable; and issuing standardised questionnaires for each directive. However, as each questionnaire was developed independently, the extent of reporting harmonisation between directives has been limited. Moreover, the SRD covers only one third of the major environmental directives and regulations, and some recent EU legislation has by-passed it altogether. It has also suffered from delays in the agreeing and publication of questionnaires, and from low response rates.

3.2. What are current reporting requirements on environmental measures?

The REM project examined the details of reporting requirements in more than 100 major items of EU environmental legislation. This was to identify those which:

- requested **descriptions of the policy measures** Member States put in place to attain objectives set in EU legislation;
- requested **evaluations of the effects and/or effectiveness** of those measures;
- provided standard **guidance for reporting** on measures and their effects/ effectiveness, in order to facilitate comparisons and aggregation at EU level.

Percentage of major items of EU legislation requiring reporting on measures and their effects and effectiveness Table 2.

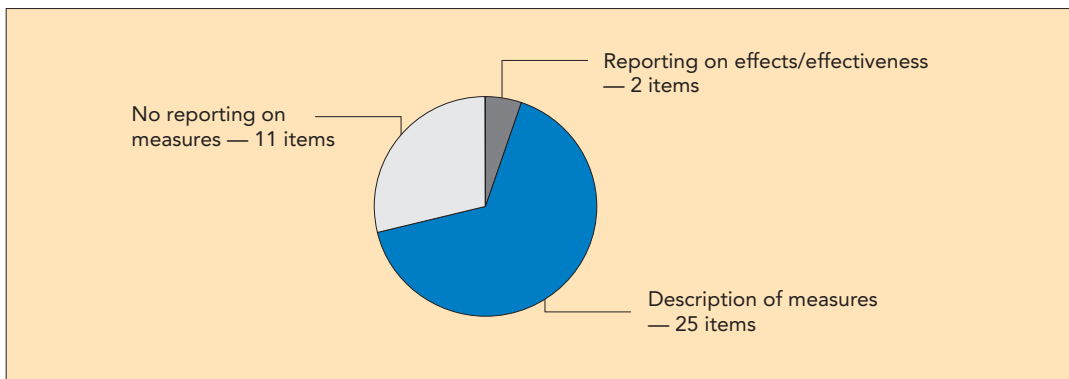
No descriptions of measures required nor evaluations of these measures	50 %
Descriptions of measures required	38 %
Evaluations of the effects or effectiveness required	12 %

Source: EEA

The results indicate that half of these key items of EU environmental legislation contain no requirement to describe policy measures taken to implement their objectives. In only 12 % of cases are Member States required to provide any evaluative information on the effects of measures. An overview of the statistical results is presented in Table 2. Table 3 reviews reporting requirements on describing measures, while Table 4 provides some specific examples of requests in relation to effects and effectiveness.

Figure 5 below shows that the standardised reporting directive (SRD) suffers from the same shortcomings. The SRD only applies to one third of the major items of EU environmental legislation. SRD questionnaires, which each relate to a different item of legislation, pay very little attention to policy measures and evaluations of their effects and effectiveness. Only two questionnaires ask evaluative questions about measures, and for almost a third of the items of legislation covered by the directive no reporting on measures is requested at all.

Reporting under the standardised reporting directive Figure 5.



Source: EEA

3.2.1. What are the requirements to describe policy measures?

Where reporting requirements request descriptions of Member States’ programmes and measures, these vary from vague requests for details of ‘improvement measures’ to more explicit requests for ‘details of national

policies and measures, types of instruments used and status of implementation’. The table below provides examples of the types of requests made in the 40 or so items of legislation requiring some kind of description of measures.

Table 3. Examples of reporting requirements on descriptions of measures taken

Source: EEA

Item of legislation	Requirements for descriptions of policy programmes and/or measures
75/439 waste oils	Have required measures been taken? Identify constraints
75/440 surface water	Action and management plan or programme for improvement
75/442 waste framework directive	Details of waste management plans; general measures
76/160 bathing water	Short description of improvement schemes; timetable; investments
76/464 dangerous substances in water — framework	Programme description and objectives; expected reduction; new programme foreseen
77/312 screening for lead	Inform the Commission of measures taken in cases of exceedance of reference levels
78/659 freshwater fish	Measures foreseen in improvement programmes (very brief)
82/884 air quality — lead	Report on improvement measures
91/689 hazardous waste	Have measures been taken or plans made?
92/43 habitats and species conservation	Inform the Commission of conservation measures, including plans and statutory, administrative or contractual measures
93/500 renewable energy (ALTENER)	Submit list of adopted measures and bodies to undertake them
94/62 packaging	Necessary measures taken? Economic instruments?
96/61 integrated pollution prevention and control	Measures taken to ensure guidelines followed; developments in best available technologies

The diversity of the requests and the lack of guidance on exactly how Member States are meant to describe measures mean that Member States have responded in a variety of ways. This makes it difficult to get an accurate picture of what is actually being undertaken and to compare responses from different Member States. Yes/No questions are particularly troublesome. If the question is ‘Have you taken measures?’, the answer ‘Yes’ poses the question, ‘What measures have been taken’ (or conversely, ‘No’ poses the question, ‘Why not?’). Notably, very few questions are asked about the cost of measures being implemented, which deprives policy-makers of useful information for comparing cost-effectiveness.

Only a small number of directives require detailed reporting on measures. These include the EU’s greenhouse gas monitoring mechanism; the air quality framework, nitrates from agricultural sources, and dangerous substances in water directives, and some of the standardised reporting directive questionnaires. Of these the greenhouse gas monitoring mechanism requests the greatest amount of detail. This is partly a reflection of the reporting requirements of the UNFCCC on which it is modelled. This is presented in more detail in Chapter 4.

3.2.2. To what extent are there requirements to report on effects and effectiveness?

While it is important to have descriptions of measures, on their own these say nothing about their effects or effectiveness. But only 13 items of legislation (12 % of the total) require Member States to evaluate programmes and measures in this way. In less than half of these instances — six items of legislation — are Member States actually required to include the evaluations in a report. The rest require only that Member States should ‘inform’ the Commission of such evaluations, or more vaguely that they ‘shall’ undertake evaluations.

Closer examination of these requests (see Table 4) reveals that there is very little uniformity of approach and for the most part the requests for information on effects and effectiveness are very vague. Information requested varies in depth from, for example, a request to ‘review programmes’ to a request to ‘quantify effects of measures taken, indicate progress, economic impact and evaluate effectiveness’. Many of the requirements remain vague, e.g. ‘an assessment of impact’.

Requests for information on effects and effectiveness in EU environmental legislation

Table 4.

Source: EEA

Item of legislation	Detail of reporting requirements requesting evaluations of policy programmes/measures
AIR QUALITY	
85/210 lead in petrol	Inform the Commission (upon request) of the effects of the implementation of this directive on human health/energy policy
R3528/86 monitoring of forest damage	Report on information regarding possible causes of damage and socio-economic impact of damage, and evaluate data collected annually
96/61 integrated pollution prevention and control (SRD)	Report every three years on how Member State views the effectiveness of the directive in comparison with other instruments
96/62 air quality framework (second report within framework of SRD)	Report on progress every three years
HARMFUL SUBSTANCES	
77/312 screening for lead	Provide the Commission annually, for four years, with information on the causes or factors leading to high lead levels in lead
90/219 genetically modified organisms (GMOs) — contained use	Report annually on the evaluation of risks and inform the Commission of the effectiveness of measures taken, including recommendations to limit effects and avoid similar accidents in future
WASTE	
86/278 sewage sludge	Report every four years on difficulties encountered
WATER	
78/176 titanium dioxide (SRD)	Report every three years on the effects on environment of waste and assessment of surveillance results
91/676 nitrates from agricultural sources	Assess effectiveness of action programmes in a report every three years and inform the Commission every four years on the effectiveness of action programmes/assess the cost-effectiveness and effectiveness of additional measures in relation to other possible measures
WILDLIFE AND COUNTRYSIDE	
92/43 habitats and species conservation	Inform the Commission every six years of the evaluation of impact of measures on conservation status of habitats and species
FINANCIAL AND ECONOMIC INSTRUMENTS	
1164/94 cohesion fund	Ensure that Member States and Commission shall evaluate implementation and impact (and environmental impact)
1750/99 rural development regulation	Member States to commission independent <i>ex ante</i> , mid-term and <i>ex post</i> evaluations of impacts, effectiveness, efficiency, etc.
INTERNATIONAL CONVENTIONS	
D1999/389 greenhouse gas monitoring mechanism	Publish periodically estimates of effects of policies and measures (plus intermediate indicators of progress); assess the economic impact; evaluate the effectiveness

In terms of the evolution of reporting requirements, there does not seem to be any discernible pattern over time. No one sector is particularly advanced in terms of requiring assessments of effects and effectiveness. But two categories stand out in relation to the detail of evaluation that is required. These are international conventions and financial instruments. In the case of the former, the detailed reporting requirements are those of the UNFCCC. In the case of Community financial instruments the accountability required for Community expenditure is a key driver behind the detailed evaluation requirements. In both cases, some useful lessons can be applied to other items of EU legislation.

3.2.3. How much guidance is provided to Member States for reporting?

Little attention is paid to providing Member States with guidance, frameworks or methodologies for describing policy measures or for evaluating their impact. To take the example of the shellfish waters Directive 79/923, the standardised reporting directive insists only that descriptions of improvement programmes should be 'very brief'. This is in marked contrast to data collection, where detailed monitoring methodologies are normally prescribed. Only in the cases of the nitrates directive, the rural development regulation and the greenhouse gas monitoring mechanism are guidelines made available on how Member States should

report on the effects of their measures. And only in the case of the rural development regulation is an existing evaluation methodology proposed, although the greenhouse gas monitoring mechanism committee is developing one.

Due partly to this lack of guidance, Member States have again responded in widely differing ways (if at all). More explicit guidance is needed on the kinds of data and indicators required to evaluate effectiveness. This would improve the comparability and usefulness of Member States' reports, and would help to make clearer to the provider of data how the information is to be used. The frustrations experienced by the Commission from inadequate information from the Member States in relation to measures to implement the nitrates directive are illustrated by Box 4.

Similarly, the Commission's 2000 summary report on implementation of the waste directives for the period 1995–97 (Report, 2000) cites the lack of common approaches and standardised methodologies as a major barrier to a Community-wide evaluation of progress. The Commission points out that Member States have used widely differing interpretations of the directive and its definitions. And while the questionnaire for the waste framework directive asks for 'details of measures to promote recovery of waste', the Commission accepts that a formula to evaluate success is lacking.

These examples demonstrate the Commission's increasing awareness of the need for clearer guidance on reporting to be given to Member States. In both cases the inadequacy of the original reporting requirements has resulted in confusion over

Box 4: Member States 1996 reports under the Nitrates Directive

The Commission finds, in its report to Council ⁽¹⁾ on implementation of the directive, the following in relation to Member States' reports due in 1996:

Poor implementation by Member States

- Many reports were late, and some did not arrive at all.
- Few Member States had implemented action programmes.

Lack of comparability of reports

- 'Reports were of differing formats and content, with considerable variations in length'.

The Institute for European Environmental Policy (IEEP) independently reviewed the Member State reports and found that:

Reporting on effects/ effectiveness...

- Few Member States reported on monitoring effects and effectiveness (only four), despite the reporting requirements of the directive to do so.
- Misinterpretation of the term 'effectiveness' is common in Member State reports.

As a result of these poor results the Commission states in its report that it intends to present a framework in which results should be submitted, 'in order to increase the usefulness of the final document'. The resulting guidelines are discussed later in this report.

(1) The Implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources, Report of the Commission to the Council and European Parliament, COM(97) 473.

definitions and interpretations, leading to non-comparable responses. Late reports — or the complete failure to report — point to wider reporting issues, such as the resource burden on Member States and the inability of the reports to bring tangible benefits to Member States.

Key messages of Chapter 3

- The current legal reporting system is not delivering enough information on the effects and effectiveness of measures.
- The standardised reporting directive has not been able to address all the shortcomings of the system.
- Where information on measures is requested, insufficient guidance on how to report results in the provision of inadequate and non-comparable information from Member States.

4. What information and methodologies do we need for evaluating effects and effectiveness?

In the light of the shortcomings of the current reporting system identified in the last chapter, this section focuses on the nature of the information and guidance needed to allow policy-makers and stakeholders to arrive at a better understanding of:

- what kinds of environmental measures are being applied in response to EU environmental legislation;
- national and local institutions who administer the measures;
- their effects on the environment;
- their effectiveness in meeting objectives and in comparison with alternatives.

The analysis of the information requirements draws on existing policy-evaluation literature, and on reporting requirements in a few existing items of EU legislation. The first part of this chapter presents an evaluation framework, and shows how evaluations of effects and effectiveness sit within this and how the framework can be extended to consider environmental pathways. In the second part, recommendations are made about the nature of information required, both for describing environmental measures, and for evaluating their effects and effectiveness.

4.1. What do we mean by effects and effectiveness? A policy evaluation framework

Statements about the effects of environmental measures are different from statements about their effectiveness, although the two terms are easily confused and are often used interchangeably. ‘Effect’ implies causality between a policy and its impact on the outside world. The process of identifying effects — both intended and unintended — is based upon scientific and social observation and analysis, and should

be judgement-free. By contrast, assessing ‘effectiveness’ involves the further step of judging whether and how far the observed effects of a policy measure up to the explicit objectives set for it, and this involves comparing intentions with performance.

The process of assessing the effects and effectiveness of policy measures falls within the larger framework of policy evaluation research. Figure 6 illustrates how effects and effectiveness questions fit into a wider policy evaluation framework, which seeks to answer a broader set of evaluative questions. While these broader evaluation questions, such as questioning the appropriateness of the original objectives, are also important to address, this report is focused around the evaluation of effects and effectiveness only.

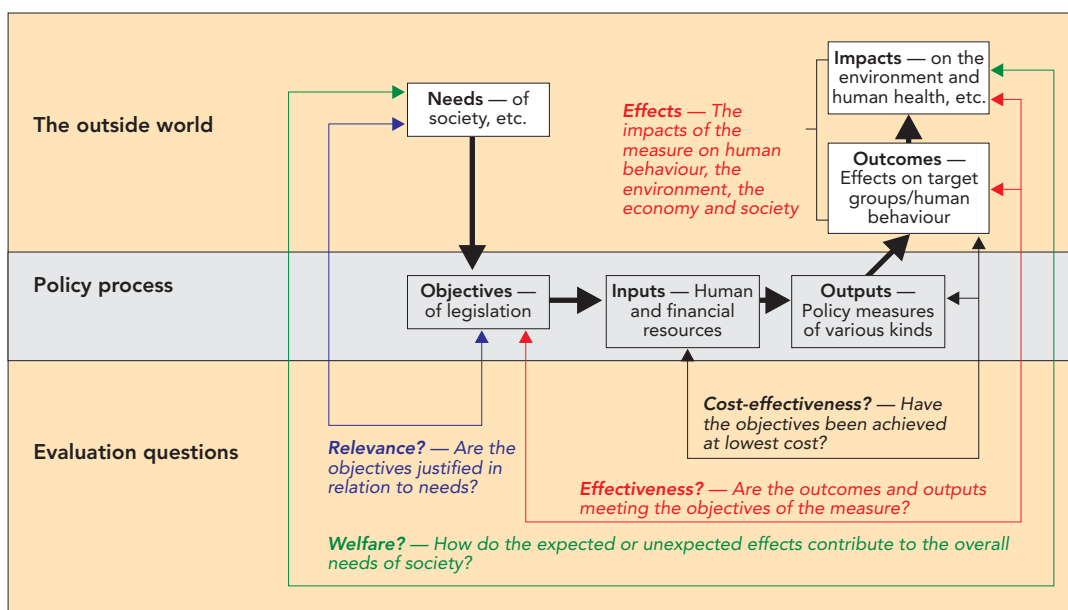
Figure 6 ‘unpacks’ the relationship between a policy measure and its ultimate impact on human behaviour and the environment into a number of key elements:

- inputs — the resources dedicated to the design and implementation of a measure, e.g. staff, administrative structures, financial investment, training, awareness raising, etc.;
- outputs — the tangible results of a measure, e.g. number of purification plants constructed, number of conservation sites designated, or the number of organisations certified under EMAS (the European Eco-Management and Audit Scheme);
- outcomes — the response of target groups to these outputs — e.g. reductions in emissions from industry, increased recycling rates, shifts in the use of different transport modes;
- impacts — the ultimate effect of these changes in behaviour on the environment and human health.

Figure 6.

Policy evaluation

Source: EEA



The collection of information related to each of these categories allows one to make various evaluations related to the implementation of a particular measure, as illustrated in Figure 6. For example, by comparing the financial and resource inputs to a specific measure with its outcomes and/or impacts one can say something about its cost-effectiveness. Figure 6 also demonstrates the importance of paying attention to the entire chain of effects throughout the policy process, and the need to collect information at each stage along this chain.

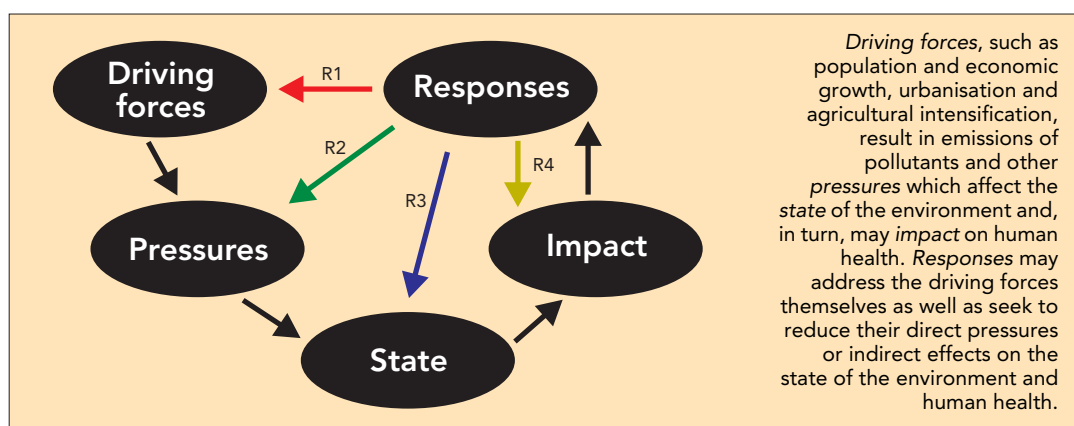
Policy evaluation research has traditionally focused mainly on social and economic measures, in fields such as education, criminology or taxation. While there are many transferable lessons from these policy areas, environmental measures differ from most of them in that their ultimate target is not just to influence patterns of human behaviour, but to impact upon the state of the biophysical environment through human behaviour changes. Therefore the evaluator of environmental policy requires an understanding of the environmental media

involved (e.g. air, water, soils, etc.), in addition to understanding social and economic phenomena.

The DPSIR (driving forces — pressures — state — impact — responses) framework, developed by the EEA (see Figure 7), is a commonly used framework for describing environmental pathways. Essentially, the DPSIR framework unpacks what is happening in the 'Impacts' box of Figure 6, thereby leading on from outcomes in terms of changed human behaviour to the consequences for the biophysical environment. It also emphasises the importance of tracing through the causality of effects, thus linking, for example, the effects of a decrease in car use (driving force) to a decrease in pollutants (pressure) to a change in air quality (state) to a decrease in respiratory illness in humans (impact). To evaluate the effects of a policy measure (R) we need to trace through the strength of the arrows linking the different DPSIR elements, as well as tracing the policy process chain of outputs to outcomes.

Tracing effects through environmental pathways with the DPSIR framework

Figure 7.



Driving forces, such as population and economic growth, urbanisation and agricultural intensification, result in emissions of pollutants and other pressures which affect the state of the environment and, in turn, may impact on human health. Responses may address the driving forces themselves as well as seek to reduce their direct pressures or indirect effects on the state of the environment and human health.

Source: EEA, Europe's environment: The second assessment, 1998.

Box 5 provides a further example of how environmental measures (or responses) can be categorised according to whether they seek to impact upon the driving forces, the pressures, the state of the environment or the ultimate impacts on human health.

4.2. How can we best describe policy measures?

Detailed descriptions of measures on the basis of standard definitions and categories are an essential component of any evaluation of their eventual effects and effectiveness. We need to know what kinds of measures have what effects, in what circumstances. So descriptions of measures should include the following information:

- What type of measure is it? For example, fiscal, regulatory, information provision, etc.
- What is the stage of implementation of the measure at the time of reporting? This is useful for prospective analysis, e.g. is it just a proposal, have funds been allocated for its implementation, is it already in operation?
- What are its specific objectives and targets? This is necessary for distance to target analysis.
- How is the measure expected to achieve its objectives? For example, what are the expected outputs and outcomes of the measure and any indicators to track progress in relation to these?
- What are the inputs to the measures? For example, costs of (or resources devoted to) implementation.

The more detailed the guidance provided to Member States on how to report, the higher are the chances of being able to compare the relative effectiveness and efficiency of

Box 5: Reporting in the DPSIR framework for climate change policy

The following illustrates the range of policy measures that are being adopted to combat the causes and results of climate change and how the DPSIR framework can be usefully applied to classify these policy responses. In the response typology described below, R1, R2, R3, R4 are the responses to D, P, S or I, respectively.

Types of responses:

R1: slowing driving forces (changing demand and supply)

- Example 1: Reducing consumer demand for unsustainable energy, transport, forest and agricultural products (types of policy or measure: education programmes).
- Example 2: Correcting market distortions (types of policy or measure: economic — tax on gasoline, coal etc., or subsidies to renewable energy; research into alternative forms of energy; fiscal support to capacity building in public transport).

R2: reducing pressures at source (without changing production outputs)

- Example 1: Capturing methane emissions from landfill (types of policy or measure: *voluntary agreement, regulation*).
- Example 2: Switching fuel sources for power production.

R3: Offsetting the effects on the state of the environment arising from pressures

- Example 1: Building sea walls to protect land from flooding.

R4: protecting humans/biodiversity from impacts of changes in the state of the environment

- Example 1: Measures to provide alternative livelihoods for those threatened by climate change.
- Example 2: Inoculation programmes against unfamiliar diseases.

The reporting guidelines of the UNFCCC focus most attention to the description of policies and measures which constitute R1 and R2 types responses (Section V: Policies and Measures and Section VI: Projections and the Total Effect of Policies and Measures). The brief Section VII: Vulnerability Assessment, Climate Change Impacts and Adaptation Measures, addresses R3 and R4 by asking Parties to prepare an 'outline of the action taken... with regard to adaptation'.

alternative measures, and thus of improving policy performance. Guidelines to help Member States describe their measures for reducing greenhouse gas emissions are provided under the EU's greenhouse gas monitoring mechanism (see Box 6).

Box 6: Description of measures: guidelines under the EU's greenhouse gas monitoring mechanism

Member States are to include in national programmes details of national policies and measures including:

Objective of the measure

'The description of the objectives [should] focus on the key purposes and benefits of the policies and measures. Objectives [should] be described in quantitative terms to the extent possible.'

Type of policy instrument:

'To the extent possible the following terms should be used: economic, fiscal, voluntary, regulatory, information, education and other'

Status of implementation

Under consideration
Decided (year _____)
Implemented (year _____)
Funding allocated (years, amount)
Funding planned (years, amount)

These guidelines seek to provide clear categories for responding, but there is still room for refining the guidance, especially in relation to the definition of some terms (e.g. what exactly is meant by 'economic' and what by 'fiscal' instrument?). This is clear from the responses from Member States in the first reporting round, which showed that the guidelines were interpreted differently, and sometimes ignored.

4.3. What methodologies are available for establishing the effects of environmental measures?

4.3.1. Establishing causality

Calculating the effects of a measure requires establishing a causal link between the measure — as it is actually experienced on the ground — and its ultimate environmental impact. It is important here to distinguish between causality and simple association. For example, in several Member States in the 1980s, reductions in the purchase by motorists of leaded petrol occurred at the same time as governments sponsored television advertising campaigns highlighting the benefits of using 'lead-free'. There was indeed an association between these two developments, but research suggests that the

principal causes of the switch to unleaded petrol had more to do with the introduction of three-way catalytic converters in new cars (which are damaged by lead in petrol), and tax differentials in favour of unleaded.

Similarly, regular state of the environment reports which show an improvement or deterioration in environmental quality cannot on their own be used to draw conclusions about the success or otherwise of particular policies. Changes in the state of the environment can be caused by several factors operating simultaneously, such as parallel policies, or by exogenous factors such as changes in general economic activity. So it is essential for identifying the effects of a specific measure to try to trace a link between the outputs and outcomes of the measure, and its eventual impacts, while discounting the effects of other factors. For this it is necessary to collect data and identify suitable indicators, not just in relation to the state of the environment, but also in respect of outputs and outcomes of the measure at the appropriate geographical or sectoral level.

In summary, any evaluation of the effects and/or effectiveness of a policy measure requires the collection of:

- baseline data on the situation before the measure is put in place;
- data and information on the practical, socio-economic outcomes of the measure — that is, its effects on the behaviour of key actors;
- careful analysis to discount the effects of exogenous factors not related to the measure, such as changing economic or social trends, or parallel policy measures.

The new water framework directive requires an integrated approach to assessing all of the pressures on water quality and use. It is likely to result in a variety of analyses by Member States of the effects of non-environmental policies on water (e.g. agricultural policy) as well as the effectiveness of other environmental policies. To improve the comparability of these analyses, early guidance from the Commission to the Member States will be important.

4.3.2. Choosing a methodology

Despite these common features, the most appropriate way of gathering this information will not be the same for all environmental measures. The different problems that environmental measures seek

to address, the varying number and nature of the socio-economic actors involved, and the type of policy instrument chosen mean that no single evaluation approach will be equally applicable to all types of environmental measures in all circumstances.

Box 7: Modelling the effects of waste regulation measures

The European Topic Centre on Waste has been developing coefficients or 'factors' that model the effects of various waste policy measures on different elements in the DPSIR chain.

These are used as a broad basis for making more precise projections of future wastes arising and for assessing the effects of different policy scenarios.

Waste factors describe, for example, emissions linked to a certain industrial process. Examples of waste factors are quantity of waste generated per inhabitant per year and quantity of paint sludge per car produced.

The following are some of the factors that will need to be taken into account in choosing an appropriate evaluation methodology:

- Where causal links are few and predictable, standard models may be derived from examining a small number of case studies (e.g. in the case of air, many well-established models already exist. See also Box 7).
- Conversely, where implementation chains are long and policy players are numerous, the use of models may not be appropriate, and more specific empirical data will need to be collected.
- Where the application of a measure is differentiated geographically or by target sector, within or between Member States (or both), comparative case studies may be used to help identify causal relationships.
- Where a target sector is small (e.g. farmers in nitrate vulnerable or environmentally sensitive zones) the effect of measures may be established by in-depth interviews.
- Where the link between a policy and its impact on the environment is too diffuse or extended — as with some framework directives or directives which establish only procedures — it may not be possible to evaluate the ultimate impact of the measure on the environment. In this case, it may be more practical to focus an evaluation on immediate outputs and outcomes as a rough proxy for impact. For example, we know that reductions in the production of ozone-depleting substances

in a particular Member State (outcome) will eventually have some beneficial effect on the level of stratospheric ozone, without being able to compute exactly how much, or when.

So in the light of these considerations, it is necessary to undertake an initial process of screening and scoping to identify the most appropriate methodological approach, similar to that used for *ex ante* project-level environmental impact assessments (EIAs). This exercise seeks to answer the following key questions:

- Can an evaluation assess ultimate effects on the environment — or should it focus on intermediate outputs and outcomes only?
- What is the range of effects on the environment that need to be investigated?
- Does the nature of the measure, or the problem it seeks to address, lend itself to modelling?
- What available tools and methods are most appropriate, given the constraints of budget and timescale?

The answers to these questions will influence the type of guidance provided to Member States by the Commission on how to evaluate and report on the effects of measures taken. It should also influence the mechanism by which such reporting takes place, the subject of further discussion in Chapter 6.

4.4. Judging and comparing effectiveness

Having established what the effects of a specific measure are, or are likely to be, it is then possible to make a judgement as to how adequate these are in relation to judging benchmarks. In relation to judging effectiveness, this requires the prior clarification of the objectives of the measure (preferably quantitative), and clear timetables within which they are to be achieved.

Information on the costs of particular measures is also required for comparing the cost-effectiveness of alternative options. All of this information should form part of reporting in relation to the description of measures, as discussed above. If the information requirements for describing measures and their effects have been met, then judgements on effectiveness should be relatively straightforward.

Commission guidance to Member States in relation to mid-term and *ex post* evaluations of Structural Fund programmes pose a number of questions in relation to their effects, effectiveness and cost-effectiveness. The benefit of requiring Member States themselves to evaluate the effectiveness of their policy measures is that this can encourage policy-learning at an early stage, and may influence the design of measures so

as to facilitate evaluations. But of course, evaluations of effectiveness can also be undertaken by other stakeholders, or the Commission, the EEA, or independent experts. The issue of who should undertake evaluations is discussed in Chapter 6. In any case the process should remain transparent and be clearly related to identified objectives and targets.

Key messages of Chapter 4

- Evaluations of effects depend on identifying a chain of causation linking the outputs, outcomes and final impacts of a measure.
- It is important to disentangle the effects of other external factors. The association of changes in human behaviour or the state of the environment is not necessarily proof of causation.
- All evaluations require the same types of basic information that should be collected when reporting on environmental measures.
- Several methodological tools already exist for evaluating effects. Which is most appropriate depends on the nature of the policy in question, and its targets.
- Evaluations of effectiveness are judgements, which must be based on information about effects, and the existence of clear objectives and targets.

5. How can the evaluation of effects and effectiveness be built into the design of legislation?

5.1. Evaluation should not be an afterthought

As discussed earlier, for most existing items of EU environmental legislation, reporting requirements in relation to effectiveness are limited. This means that any evaluations of existing measures will inevitably be very rough and ready in the absence of basic data and information.

However, in relation to the development of new EU legislation, the needs of evaluation should be made integral to its design. This can be undertaken in a number of ways:

- Explicit objectives (preferably quantified), together with timetables for their achievement, should be included, in legislation to provide benchmarks against which progress may be assessed.
- Some policy instruments are inherently more ‘evaluation-friendly’ than others, and all things being equal these should be chosen in preference to the less evaluation-friendly measures. (For example, the effects of economic instruments are easier to model and quantify than, say, information and awareness campaigns).
- Baseline monitoring, both of environmental data and of the policy

context, should be required before the measure is implemented — possibly at the time of initial transposition. This facilitates ‘before and after’ comparisons.

- Greater provision for pilot projects to test the assumptions of proposed measures could facilitate fine-tuning before they are launched across the Community.
- Greater national and/or regional differentiation in the implementation of EU environmental policy would enable comparisons of the relative effectiveness of different approaches to achieve the same objectives.
- Appropriate indicators and procedures, both for reporting and regular review, should be included in proposed measures to facilitate evaluations and continuous policy-learning (see the air framework directive case study in Box 8).

5.2. How to link evaluation into the policy process?

Building evaluation into the design of new policy can take place at a number of stages in the policy process. This is illustrated by Table 5 below, which is derived from a model developed by the OECD.

Linking policy process with evaluation procedures

Table 5.

Stage	Policy process	Link	Stage	Evaluation procedure
1	Identifying and defining the environmental problem			
2	Discussing the need for policy intervention and setting objectives			
3	Designing and assessing effective and efficient options (measures)	→	1	Description of the measures and of the institutional context, definition of relevant internal and external factors (baseline inventory)
4	Selecting, discussing and adopting measure chosen	←	2	Definition of evaluation criteria
			3	Construction of evaluation model and definition of all data to be gathered
5	Introduction of mix of measures, implementation of control and enforcement	←	4	Continuous collection of data and reassessment of influential factors and ex post evaluation
			5	Possible adaptation of the evaluation model, evaluation criteria and data
6	Possible modification of mix of measures after evaluation	←	6	Conclusions, recommendations, and feedback into the policy process

Source: OECD, Evaluating economic instruments for environmental policy, 1997

- At stage 1 of the evaluation procedure, in response to the selection by government of a set of measures, a description of measures is required, as well as collection of the baseline data against which future effects can be compared, and the institutional context (such as the existing policy framework).
- In stage 2, the criteria for evaluating effectiveness (such as intermediate targets and monitoring indicators) can be defined in relation to the objectives of the legislation.
- In stage 3, before the measure has been introduced, the evaluation methodology should be decided upon, as well as the required data and appropriate monitoring arrangements for the model or methodology adopted.
- Changing conditions as a result of implementation might require a reassessment of the data needs and the evaluation methodology required (stage 4).
- An *ex post* evaluation of effects should be undertaken at the end of stage 5.
- Finally, in stage 6, the results of this evaluation should feed back into the policy process providing insights into the effectiveness of the legislation. This could lead to modifications to the legislation and/or the measures used to implement it.

It is clearly going to be a challenge to bring current reporting requirements in line with the information needs of evaluation. The process of instilling an evaluation culture in Member States and the Commission and improving historic databases and research on environmental and human systems will be a gradual learning process. The Commission has begun to address the need to develop an evaluation culture with the communication on evaluation agreed in July 2000, which requires DG Environment (as all Directorate-Generals) *inter alia* to set up a dedicated evaluation function and to assess the adequacy of existing monitoring systems in relation to the needs of evaluation.

5.3. How can we build evaluation into reporting requirements?

Box 8 describes the steps that could be taken to evaluate the effects of local air quality management plans required by the air quality framework directive. These were developed by the REM project as an informal contribution to the work on reporting frameworks of the Commission's Air Quality

Steering Group established as part of the CAFÉ (Clean Air For Europe) programme.

Box 8: Proposal for information requirements for air quality framework questionnaire in relation to local air quality management plans

Descriptions of programmes should contain a sequence of logical steps that increase transparency and make subsequent evaluation of effectiveness easier. They might look like this:

1. Describe suspected causes of exceedances.
2. Set quantitative objectives and timetable for improvement.
3. Set out chosen measures to address each cause identified in (1).
4. For each measure, describe the 'logic of intervention' (i.e. explain exactly how policy outputs are expected to influence the behaviour of e.g. car drivers/industry (outcomes), and what impact this will then have on air quality).
5. Identify appropriate indicators for policy outputs (e.g. increases in parking fees; financial support for public transport) and outcomes (increased use of public transport or cycling) — as well as for impacts on air quality. This is in order to trace through the causal links between the programme and any improvements in air quality.
6. Describe monitoring systems to track these indicators.
7. Describe 'parallel' policies which are not a part of the programme, but which could have an effect on air quality in the programme area.
8. To find out whether any changes in air quality are in fact the result of the programme, and not external factors (e.g. national changes in fuel taxes), or that local improvement programmes do not push the problem somewhere else, it is also important to monitor a comparable 'control' area which is not subject to the programme. This should be done according to the same indicators as in (5). Comparisons between the control and the programme area help establish causation.

Source: Proposal by REM to the CAFÉ process

The rural development regulation (Regulation 1999/1750) might be one of the few examples where very detailed evaluative reporting requirements are already included, together with guidelines on how to fulfil them (see Box 9). These could be used as a model for more general application.

The fact that such detailed evaluation and reporting requirements exist for the rural development regulation is a reflection of the need for financial accountability in relation to Community expenditure. This is an argument which can be extended to other items of environmental legislation which also have major expenditure implications, although in this case for Member States rather than the Community. The urban wastewater treatment directive, for example,

has required Member States to invest heavily in new infrastructure, and so it is important that the cost-effectiveness of this directive should be subject to evaluation. This would

be in the interests of the Member States as well as the Commission.

Box 9: Rural Development Regulation 1999/1750 — reporting requirements for evaluations

Annual progress reports to contain the following information:

- assessment of relevance of the measure, (including any major socio-economic trends, or changes in national, regional or sectoral policies);
- progress with respect to operational and specific objectives, (expressed as quantitative indicators based on common indicators to be provided by the Commission);
- action taken to ensure high-quality and effective implementation;
- measures taken to ensure compatibility with Community policies.

Evaluations shall be performed by independent evaluators in accordance with recognised evaluation practice.

Evaluations shall respond to common evaluation questions defined by the Commission to be accompanied by achievement-related criteria and indicators.

The evaluation reports shall contain:

- methodologies applied and the implications for the quality of the data and the findings;
- context and contents of the programme;
- financial information;
- the answers to the common evaluation questions and to the evaluation questions defined at national or regional level, including the utilised indicators;
- conclusions and recommendations;
- shall follow a recommendation for a common structure for the evaluation reports to be provided by the Commission.

The *ex ante* evaluation (due at same time as plans) shall:

- analyse the disparities, gaps and potentials of the current situation;

- assess the consistency of the proposed strategy with the situation and targets;
- assess the expected impact;
- quantify targets;
- verify the proposed implementing arrangements and the consistency with the Common Agricultural Policy and other policies;
- form a part of the rural development plan.

The mid-term evaluation shall assess:

- relevance and consistency of initial achievements with the rural development programming; and document:
- the extent to which the targets have been attained;
- the use made of financial resources;
- the operation of monitoring and implementation.

Ex post evaluation shall address:

- utilisation of resources;
- effectiveness;
- efficiency;
- impacts;
- contributions to the Common Agricultural Policy.

The mid-term and *ex post* evaluations are to be performed in consultation with the Commission under the responsibility of the authority in charge of managing the rural development programming.

The quality of individual evaluations shall be assessed by the authority in charge of managing the rural development programming document, the monitoring committee, if any, and the Commission using recognised methods. The results of the evaluations shall be available to the public.

Key messages of Chapter 5

- The needs of evaluation should be built into the design of policies and legislation from the beginning.
- Evaluation requires the setting of clear objectives. It should determine reporting and review requirements, and influence the choice of policy instrument and the extent of regional or sectoral differentiation.
- Existing practice in relation to structural funds and rural development programmes is an example that EU environmental measures might follow.

6. What other mechanisms exist for us to assess effects and effectiveness?

6.1. Introduction

Requiring Member States to evaluate the effects and/or effectiveness of their policies has only recently begun to feature in legal reporting requirements, and so far for only a small number of measures. There is therefore no necessary reason why reporting on effectiveness should be channelled through this legal mechanism — and there may be very good reasons why it should not be. Indeed, recent strategic developments in the Community's environmental policy now require the construction of entirely new approaches to monitoring, reporting and evaluation. These include the future development of thematic strategies in the framework of the sixth environmental action programme (6EAP); the need to review and evaluate the sectoral Council integration strategies produced under the so-called 'Cardiff' process; and new commitments in relation to evaluation contained in the Commission's White Paper on Governance.

Against this background the following set of interlinked questions need to be addressed when considering alternative mechanisms for reporting on policy effects and effectiveness:

- What type of mechanism? Should reporting on effects and effectiveness be a legal obligation, and if so how could this process be improved?
- Who should evaluate effects and effectiveness? Should Member State governments be required to evaluate their own policies, or should evaluations be the job of some third party?
- How will the quality of the information be affected? Will the chosen mechanism produce data, information and analysis that is methodologically sound, reliable and comparable?
- How wide should the scope be? Should evaluations be required of all measures, or only in relation to those of key importance? Should all Member States report on the same measures, or could selective case studies be used?
- Who will pay? Is the proposed mechanism excessively costly for Member States and

Community institutions? How far can these costs be covered, and from what source?

- How will the results be disseminated? How can effectiveness evaluations of which type of measures work, and in which circumstances, be used for policy-learning among other Member States?

These considerations are explored further below.

6.2. Options

6.2.1. Improving legal reporting

There is no doubt that a legal reporting mechanism will continue to be required to enable the Commission to monitor the formal and practical compliance of Member States with their legal obligations. So one option is to continue to build on this mechanism by including additional requirements for Member States to report on effectiveness — but to make major improvements to the way in which this has operated so far.

As discussed in Chapter 4, one essential requirement would be to ensure that the types of data and information requested from Member States should be determined by what is needed to evaluate effectiveness. In this respect, a useful role could be played by the establishment of a 'horizontal' mechanism within DG Environment and/or the EEA for advising on the content of reporting requirements in all proposals for new EU environmental legislation. Alternatively, reporting requirements might be removed altogether from individual items of legislation, and instead channelled through a restructured standardised reporting directive. A revised SRD might focus only on some key items of legislation, or across entire sectors.

6.2.2. Self-reporting by Member States, or external evaluations?

Legal reporting requirements in relation to effectiveness oblige Member States themselves to undertake and report on their own evaluations. As discussed earlier, this can have a number of benefits, including the

development of an ‘evaluation culture’ in Member States and the design of better policies. But in other EU policy areas — particularly in relation to expenditure programmes such as the structural funds and agri-environment schemes — evaluations must be undertaken by external, professional evaluators. This is the normal practice for most policy evaluations, since it can serve to enhance the technical quality of the evaluation, and its objectivity.

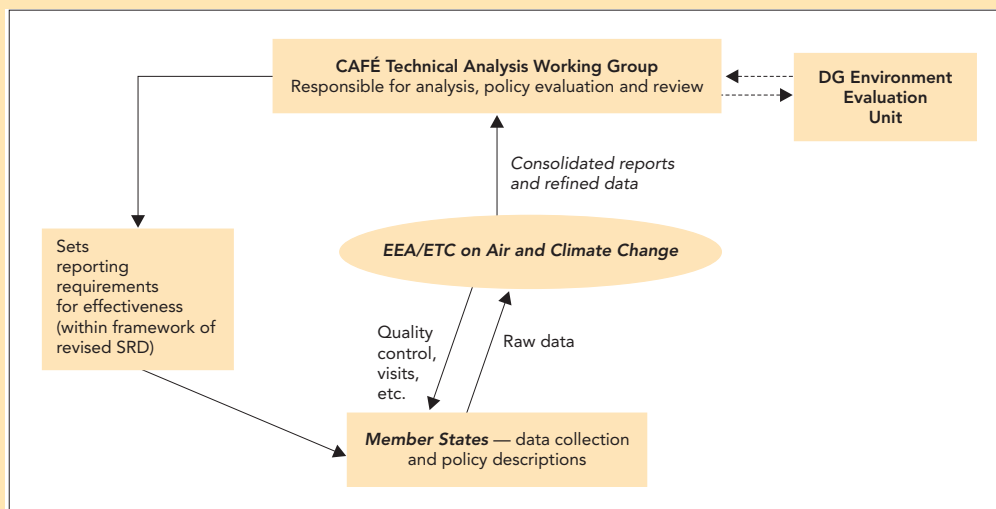
External evaluations might be undertaken in a variety of ways — by DG Environment, the EEA or possibly a newly established EU Evaluation Agency. Performance reviews by teams of peer reviewers are another option. OECD environmental performance reviews are the classic example — although it should

be borne in mind that such reviews focus on the entire range of a country’s environmental policy, rather than on individual measures, and that judgements are based mainly on the opinions of stakeholders and experts rather than on rigorous evaluation.

A variation of the peer review approach might be established in the context of 6EAP thematic strategies. Evaluations of relevant EU and national measures could be made the responsibility of a technical working group comprising representatives of all Member States, Community institutions and independent experts. A possible model for this approach is illustrated in Box 10 below, using the CAFÉ (Clean Air for Europe) programme as an example.

Box 10: Possible reporting/evaluation mechanisms for a 6EAP thematic strategy

The figure below uses the example of the CAFÉ programme (Clean Air for Europe) to illustrate how monitoring, reporting and evaluation might be structured for future 6EAP thematic strategies.



An important role is assigned to the EEA and the appropriate topic centre in the collection and refining of data and information from Member States — both on the state of the environment, and on the nature and effects of policy measures. The evaluation of the effectiveness of policies could be undertaken for the Thematic Strategy Steering Group by a technical analysis working group comprising representatives of the Commission, the EEA and Member States, working closely with a newly established DG Environment Evaluation Unit.

6.2.3. Voluntary reporting?

Reporting requirements in individual items of legislation are legal obligations which can give rise (and recently have) to infringement proceedings against Member States that fail to comply. The collection and supply to Eurostat by Member States’ statistical authorities of defined categories of data is also a legal obligation. However, the threat of legal sanctions for non-compliance may give rise to resentment on the part of Member States, and so far it has not guaranteed the quality of the information provided.

Voluntary reporting on the effectiveness of particular measures by definition has no legal underpinning, but in some circumstances it may foster greater willingness on the part of Member States to cooperate. It is already used successfully in other EU bodies, such as the EU Network for the Implementation and Enforcement of Environmental Law (IMPEL) (see <http://europa.eu.int/comm/environment/impel/about.htm>).

6.2.4. Selective measures only?

With the growth in the Community's environmental remit, and the likely eventual enlargement of the EU to 27 Member States, the burden of attempting to assess the effectiveness of all items of legislation in all Member States will become very difficult. A more selective approach might be adopted, in which either:

- all Member States are required to evaluate the effectiveness of some key measures only, such as those involving global obligations or substantial investments (e.g. the greenhouse gas monitoring mechanism, CAFÉ programme, water framework directive, urban wastewater treatment directive, biodiversity strategy etc.); or alternatively,
- individual Member States volunteer to evaluate and report on case studies of their own policy experience, in order to draw more general conclusions.

However, in this respect, it should be borne in mind that:

- Case studies may be useful for evaluating the effectiveness of different types of measure, but by definition they cannot establish their overall environmental effects at EU level.
- Transferable lessons about effectiveness may be derived from some case studies, but not all. This depends on the nature of the problem, i.e. whether the linkages between DPSIR are relatively routine and predictable, and the type of policy instrument used. In some cases the specific experiences of one Member State may not support generalisations across the Community as a whole.

6.2.5. Who pays?

Evaluations of effectiveness are resource intensive. In addition to the collection of data that might not otherwise be monitored, they also depend on the existence of staff trained in evaluation methodologies. Requiring Member States themselves to undertake and report on evaluations will impose significant costs. For some EU policies — such as cohesion, rural development and agri-environment measures — these costs are partly covered by the relevant EU funds, but no such finance is currently available in respect of evaluating environment policy. This could well affect the quality of the evaluations undertaken, or the

willingness of some Member States to undertake them at all.

6.3. How should we disseminate the results of evaluations?

Two of the major problems associated with the current reporting system are:

- the burdensome and expensive duplication of reporting requirements between international, EU and national levels;
- the frequent inaccessibility of Member States' reports to those who might benefit from studying them, including other Member States, officials or stakeholders.

One solution to both these problems is to establish a 'one-stop-shop' on the internet, where countries could put all their state-of-the-environment and policy-related information. This could be accessed by all interested parties, thus addressing the issue of transparency. Moreover, if the facility were designed properly, the Commission and international organisations could themselves obtain the information they need without demanding separate, often duplicated reports from Member States or signatories.

The EEA is considering the implications of establishing such a facility, currently dubbed 'ReportNet'. In relation to evaluations of effects and effectiveness, ReportNet could be used by Member States and the Commission as a virtual forum for sharing good practice and learning from others' mistakes, at minimal cost.

6.4. Where do we go from here?

The answers to the questions raised in this chapter are likely to be different for different kinds of EU environmental policy initiatives, and different items of legislation. It is unlikely that a 'one size fits all' approach will be appropriate in view of the wide variety of measures to be evaluated, and the differences in capacity between current and future Member States.

In identifying alternative reporting mechanisms, the following steps will be important:

- The Commission, the EEA and the European topic centres, Eurostat and the Member States should work together to identify appropriate data needs, evaluation

methodologies and a suitable division of responsibilities between themselves.

- Reporting for the purposes of checking legal compliance should as far as possible be separated from other forms of reporting, to encourage shared policy-learning in a spirit of mutual trust.
- Technical capacity and resources in relation to evaluation should be strengthened throughout the EU institutions, the EEA and in the Member States.
- Reports from Member States, the Commission and the EEA on the effectiveness of EU and Member States' policy measures should be accessible to all stakeholders in the interests of maximum transparency.

Key messages of Chapter 6

- There is no reason why reporting on effects and effectiveness should always be channelled through the legal reporting mechanism.
- Other institutional options could be developed, based on a number of different parameters.
- Nevertheless, the legal reporting mechanism could continue to play a role, but it would need significant strengthening.
- A cost-effective way of reporting, disseminating the results of evaluations and learning from them would be to establish ReportNet - a one-stop-shop internet site accessible to all.
- The design of new mechanisms for reporting on effects and effectiveness requires a joint approach by the Member States, the Commission, the EEA, Eurostat and independent experts.

7. Conclusions and further work

In seeking to improve our knowledge of the effect and effectiveness of environmental measures, the REM project has touched upon a wide range of issues, pointing out that evaluative information can usefully serve several purposes, including allowing predictions of the future consequences of environmental policy measures, informing choices between alternative policy options and allowing policy-learning and sharing. The following main conclusions were drawn:

- We need more information on the effects and effectiveness of EU measures.
- The current legal reporting system is not delivering enough information on the effects and effectiveness of measures:
 - the standardised reporting directive has not been able to address all the shortcomings of the system;
 - where information on measures is requested, insufficient guidance on how to report results in the provision of inadequate and non-comparable information from Member States.
- Several methodological tools already exist for evaluating effects. Which is most appropriate depends on the nature of the policy in question, and its targets:
 - evaluations of effectiveness are judgements which must be based both on information about effects, and the existence of clear objectives and targets;
 - evaluation requires the setting of clear objectives; it should determine reporting and review requirements, and influence the choice of policy instrument and the extent of regional or sectoral differentiation.
- The needs of evaluation should be built into the design of policies and legislation from the beginning;

- all evaluations require the same types of basic information that should be collected when reporting on environmental measures;
- existing practice in relation to structural funds and rural development programmes is an example that EU environmental measures might follow.
- A discussion is needed for the most appropriate mechanism to assess effects and effectiveness:
 - there is no reason why reporting on effects and effectiveness should always be channelled through the legal reporting mechanism and other institutional options could be developed, based on a number of different parameters;
 - the design of new mechanisms for reporting on effects and effectiveness requires a joint approach by the Member States, the Commission, the EEA, Eurostat and independent experts, working together;
 - a cost-effective way of reporting, disseminating the results of evaluations and learning from them would be to establish ReportNet — a one-stop-shop internet site accessible to all.

Evaluating effects and effectiveness will increasingly become a requirement in EU environmental legislation and further work is needed. As reporting is a growing concern for all actors, there are several parallel initiatives being developed, under the auspices of the EU and international institutions. It is fundamental that the various strands in each of these organisations and working areas are brought more closely together to secure maximum synergy and avoid overlaps.

References

- Council, 2001. Council Common Position on a proposal for a Decision of the European Parliament and of the Council laying down the Community Environment Action programme 2001–2010 (6EAP), Article 9, 7 June 2001.
- EA, 1999. *Bridging the gap: Proceedings: New needs and perspectives for environmental information*, Environment Agency in England and Wales, Bristol.
- EEA, 1999. *Environment in the European Union at the turn of the century, Summary*, European Environment Agency, Copenhagen.
- EEA, 2000. *Environmental signals 2001*, European Environment Agency, Copenhagen.
- OECD, 1997, Evaluating economic instruments for environmental policy.
- Report, 2000. Report from the Commission to the Council and the European Parliament on the implementation of Community waste legislation for the period 1995–1997, COM(1999)752, Brussels, 10.01.2000.

Annex: Summary of REM outputs (2)

Inputs to first steering group meeting

- ‘The contribution of EU monitoring and reporting to “sound and effective” environmental policy-making’, David Wilkinson, IEEP, September 1999

This paper highlights the need for a better system at EU level for monitoring, evaluating and reporting on the actual effects of policy measures on the state of the environment, and their effectiveness in relation to policy objectives. It examines four very different case studies: measures to reduce pollution from lead in petrol; Directive 91/676 reducing nitrates pollution from agriculture; the EU’s eco-label regulation; the EU’s strategy for developing renewable sources of energy.

- ‘Reporting by EU Member States on environmental policies and their effects: Summary of EU reporting requirements and the example of CO₂ reduction programmes’, IEEP, November 1999

This paper summarises the reporting requirements of major items of EU environmental legislation, drawing from a database of reporting requirements relating to measures, and their effects and effectiveness, and analyses one case study example in detail. The case study looks at the directive on the carbon dioxide monitoring mechanism and the related UNFCCC guidelines for reporting on progress under the convention, with respect to policies and measures and their effects and effectiveness.

Responses to questions raised at first steering group meeting — three short papers:

- ‘Defining criteria for evaluating the effectiveness of EU environmental measures’

This paper arose from a discussion at the REM steering group meeting concerning the criteria that should be used for judging the effectiveness of EU environmental measures. A specific question that was posed was whether social and economic impacts should also be considered, in

addition to environmental. The paper concludes that REM should be focused on environmental aspects only.

- ‘Types of information requested by reporting requirements in EU environmental legislation’

This short paper seeks to differentiate between the different types of information requested in the reporting requirements of EU environmental legislation, and attempts to identify the EU actors with a leading interest in receiving each category of information, as well as the purpose for which the information is collected. It looks at the ‘vertical’ links between categories of information and examines different approaches to the collection and analysis of different types of information.

- ‘Possible institutional mechanisms for evaluating effectiveness’

This paper briefly looks at the parameters to be considered in seeking to develop a system of evaluation and the criteria that should be used in choosing between options.

Outputs from second steering group meeting discussions — three presentations:

- ‘Reporting and the proposed water framework directive’

The presentation concludes that reporting under the directive will be an enormous challenge for the Commission and the EEA and that it is important to address the issues as soon as possible. If implemented properly the directive would enable a more complete look at the effectiveness of a number of EU directives, including how each contributes to, for example, achieving ecological quality.

- ‘Nitrates directive — reporting on implementing measures and their effects’

The presentation reviews reporting under the directive to date and assesses the adequacy of newly developed reporting

guidelines. These are found to have several shortcomings. The rural development regulation is then presented as a possible model to follow.

- ‘Reporting by EU Member States on policies and measures: The experience of CO₂ reduction programmes’

This presentation reviews the quality of the first reports from Member States under the EU’s CO₂ monitoring mechanism.

Outputs from third steering group meeting discussions — two papers:

- ‘Reporting on the effects and effectiveness of measures taken to implement EU environmental legislation: Case study — the waste directives’

The paper provides an overview of EU waste legislation and its reporting mechanism — the EU’s standardised reporting directive (SRD). It looks at the Commission’s recent evaluation report on the implementation of waste legislation and the frustrations expressed by the Commission with respect to inadequate reporting. It then goes on to focus on the shortcomings of the questionnaires themselves, providing suggestions for additional information under the headings of ‘measures’, ‘effects’ and ‘effectiveness’. This discussion uses the DPSIR framework as a basis for analysis and borrows from several evaluation tools and concepts.

- ‘Towards a methodology for evaluating the effects of measures taken to implement EU environmental legislation’

This paper responds to a request from the steering group to develop a methodological framework that Member States could use to evaluate the effects of measures taken to implement EU environmental legislation. Building on the existing evaluation literature, the paper describes the various methodological options available for evaluating the effects of environmental measures and the criteria to use in deciding upon the appropriate option. The paper sums up the information requirements that are common to most evaluations of effects and provides a set of recommendations for

taking forward good practice in the context of reporting on EU environmental measures.

Other:

- **Paper to greenhouse gas monitoring mechanism committee**

‘Methodology for the evaluation of progress and for the contents of national programmes: Comments on draft of December 1999 by IEEP London’

This paper comments on a proposed evaluation methodology in the light of the findings of the REM project.

- **Paper on reporting under the air quality framework directive**

‘Draft reporting questionnaire for Directives 96/62/EC and 1999/30/EC: Lessons from REM’

This paper comments on a proposed questionnaire to Member States requiring information on the effects of local air quality management plans.

- **Paper for input to draft sixth environmental action programme (6EAP)**

‘Monitoring, reporting and evaluation in the 6EAP’

This paper was a contribution to the process of drafting the Commission’s proposal for a 6EAP and sets out proposals for reviewing systems for monitoring, reporting and evaluation of the effectiveness of EU environmental measures.

- **Other case studies:** Summary of reporting requirements on measures and their effects, and evidence of implementation so far for:

- Cohesion Fund
- Structural funds
- Habitats directive
- *EU agri-environment schemes* (Regulations 2078/92 and 1750/1999).