

# Reporting on the effects and effectiveness of measures taken to implement EU environmental legislation:

## *Case Study - the Waste Directives*

This paper, produced for the fourth steering group meeting of the EEA project, REM (Reporting on the Effects of Measures), takes a close look at EU waste legislation with a view towards developing a common framework for reporting on the effects and effectiveness of measures taken under EU environmental legislation.

The first section provides an overview of EU waste legislation and the reporting mechanism that governs reporting on waste legislation through a series of questionnaires - the EU's standardised reporting directive (SRD). This section also 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. The second section then focuses 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.

### 1.0 Background

#### 1.1 Waste legislation and questionnaires

There are currently nine items of EU environmental legislation which deal with waste. These are listed in Box 1 below.

<b>Box 1: EU Waste Legislation</b>	
75/442	Waste framework directive
1999/31	landfill of waste
96/59	Disposal of PCBs
75/439	Waste oils
86/278	Sewage sludge
R259/93	Transfrontier shipment of toxic waste
94/62	packaging
91/689	hazardous waste
91/157	batteries and accumulators

All of these, with the exception of Directive 91/157 (batteries and accumulators) fall under the remit of Directive 91/692 on the rationalisation and standardisation of reporting (the Standardised Reporting Directive, SRD). The SRD asks Member States to report every three years in the form of a sectoral report on related items of legislation. Reports are only 'standardised' in the sense that Member States all respond to the same questionnaires drawn up by the Commission for each item of legislation. For waste legislation three Decisions produced by the Commission contain the relevant questionnaires for six of the eight items of legislation. For the remaining two - on the landfill of waste and the disposal of PCBs - no questionnaires have yet been published. See the table below for details.

**Table 1**

**Decisions containing questionnaires for Waste Legislation reporting under the Standardised Reporting Directive**

<i>Waste</i> 94/741 (OJ L296 17.11.94)	-waste framework (75/442) -waste oils (75/439) -sewage sludge (86/278)
97/622 (OJ L256 19.9.97)	-packaging (94/62) -hazardous waste (91/689)
99/412 (OJ L 23.6.99)	-transfrontier shipment of waste (R 259/93)

**1.2 Description of reporting requirements**

The questionnaires for waste legislation focus heavily on compliance data. Questions are generally placed under two separate headings:

1. INCORPORATION INTO NATIONAL LAW
2. IMPLEMENTATION OF THE DIRECTIVE

The questionnaires generally stop short of asking for key information required for assessing the effects and effectiveness of measures taken. Box 2 below describes the standard, generalised model followed by the questionnaires.

**Box 2: General model of Questionnaires for Waste Legislation**

**I. IMPLEMENTATION IN NATIONAL LAW**

- Has the Commission been provided with details of the laws, regulations and administrative provisions introduced to comply with the Directive?(Yes/No) If 'No', state the reason why.
- Have measures been taken pursuant to Article X....?(Yes/No) If Yes, has the Commission been informed. If 'No', state the reason why.

**II. IMPLEMENTATION OF THE DIRECTIVE**

- Have required measures been taken...limits been set...management plans been drawn up....records been kept...rules been adopted....etc...pursuant to Article X...?(Yes/No). If 'Yes', please give details.
- With regard to Article X, please complete the following table/ give following details, stating whether any of the information given is an estimate.

Questions are mainly in the form of 'yes' or 'no' with some tables asking for compliance data. In requesting further information the wording employed by the questionnaires is often vague, asking only for 'details', 'reasons why', 'if no, why', etc. There is no systematic request for descriptions of measures taken, neither is there an attempt to classify measures in order to make them comparable across Member States. No mention is made in the questionnaires of either 'effects' or 'effectiveness' of measures taken, even when quantitative

targets are set, eg in the case of the Packaging Directive. The only exception is a request to “provide details of national campaigns and ... any *assessment of the effectiveness of the campaign* if this has been carried out (.. expressed in terms of any increase of waste oil collection for treatment or regeneration)” – an odd exception.

### **1.3 *The Commission Report on implementation of the waste Directives***

The Commission’s summary report<sup>1</sup> – based on the Member States’ reports - reveals frustration about the inability of these questionnaires to extract comparable and adequate information from Member States. The summary report, published in January 2000, covers the period 1995-1997 and focuses on those Directives for which questionnaires are found in Decisions 94/741 and 97/622 (with the exception of the packaging waste Directive).

The Commission cites the lack of common approaches and standardised methodologies as a major barrier to a Community-wide evaluation of progress. Member States differed widely in respect of: interpretation of the waste hierarchy; approaches to collection of waste statistics; implementation of waste management plans; and the definition of ‘waste’ and ‘hazardous waste’. Only two Member States, Spain and Finland, correctly transposed and implemented the definition of hazardous waste and the hazardous waste list. And, while the questionnaire for the waste framework Directive asks for details of measures to promote recovery of waste there is no formula to calculate success, and thus make reports comparable.

In addition, the Commission casts doubt on the validity of a reporting mechanism which depends on reports compiled by Member States themselves, pointing out rather sceptically that this approach ‘limits the possibility to identify omissions of applications or weaknesses of existing Community waste legislation’.

The report foresees several adaptations of the waste questionnaires in order to address the need, as the Commission perceives it, for a greater balance of information on the experience gained by the ‘application in practice’ of the Directives. In addition, it is envisaged that the European Topic Centre on Waste (ETC/W), which had a hand in compiling the Commission’s report, will also have a role to play in future reporting through, for example, the establishment of uniform databases.

The next section considers how to address the weaknesses of the waste questionnaires in addressing the assessment of the effects and effectiveness of measures, taking note of work currently being undertaken by the ETC-W and Eurostat.

## **2.0 Addressing the weaknesses of the waste questionnaires**

### **2.1 *Measures (DPSIR)***

In the context of DPSIR framework for waste (as developed by ETC-W, presented as an annex to this paper), items of EU waste legislation are *Responses* to the environmental impacts created by waste production, and the measures taken by Member States in reaction to this legislation are also responses. Such measures include waste strategies, national items of

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<sup>1</sup> *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

waste legislation, instruments for waste minimisation, etc. In order to assess the effects and effectiveness of such measures, information is first required on the measures themselves. The waste questionnaires do not adequately request such information. They ask *whether* measures were taken, but not *what* measures and *when*.

ETC-Waste has started to collect data on national waste minimisation strategies and instruments from the relevant national institutions and centres. An electronic, web-based catalogue is being designed to accommodate the collected data, which will allow policy-makers and others to search for specific information within this category. If Commission SRD questionnaires are to be the main mechanism for collecting information on national measures and their effects, then these questionnaires need to be redesigned with a view towards incorporating the information they collect on measures within the ETC-W database. Given that ETC-W is currently involved in putting the SRD questionnaires into an electronic format, accessed on their website, such a task of co-ordination should be straightforward.

The ETC-W catalogue of national measures, and the questionnaires, should both be designed so that measures are reported and classified according to a common format. This task would have to be addressed specifically by a waste expert with EU waste legislation in mind, but might follow the model set out in the UNFCCC reporting guidelines on policies and measures. In these guidelines, measures are classified according to whether they are, for example, financial instruments, economic instruments, education or research, regulations, etc.

In addition, the UNFCCC guidelines request information on the implementation of measures reported – ie are they proposed, adopted, implemented, completed, etc. In order to address the issue of *causality*, the timing of measures, in this context, is very important. The waste questionnaires do not ask when measures were proposed, adopted or implemented and hence it is not possible to assess the baseline situation for measures – ie whether they were the result of EU legislation or whether they were planned already.

## 2.2 *Effects (DPSIR)*

Responses to the environmental problems linked to waste generation (ie EU waste legislation and the measures taken to comply with it) generally aim to influence the *Driving forces* (see Diagram 1) that give rise to waste and its final products – emissions to air, soil and water - which in turn impact on the state of the environment and human health. These driving forces can be subdivided into *general* and *specific*. General driving forces include socio-economic and technological development and specific driving forces include primary waste sources (household, industrial, imported), collection and transport of waste, and waste treatment (export, recovery, landfill, incineration). While measures may be aimed at improving the development of cleaner technology (through subsidies, etc.), waste legislation clearly will not attempt to reduce waste by aiming to change socio-economic development. Hence, most responses are aimed at the specific driving forces.

Since the environment is open to a variety of influences it is often impractical to establish an empirical connection between measures and their effects on driving forces on the one hand, and impacts measured in terms of a changed state of the environment, on the other. Hence, we are initially concerned with first establishing the effects of measures on specific driving forces. Much research is still required on developing models, which link changes in driving forces to impacts on the environment and human health. In addition, waste impacts on the state of the environment are more difficult to assess than, for example the impacts of air

pollution as there are no common classification systems, no highly developed models and we are dealing with more complex environmental and industrial interactions.

The ETC-W has a work programme on developing ‘waste factors’ (or coefficients) to be used as a broad basis for making more precise projections of future waste arising and for assessing the impact of different policy scenarios. Waste factors are related to driving forces and describe, for example, emissions linked to a certain industrial process. Examples of waste factors are 1) quantity of waste generated per inhabitant per year and 2) quantity of paint sludge per car produced. A recent ETC-W report<sup>2</sup> finds that there are various problems with the development of waste factors by different institutions – namely the lack of comparability between results and limited transferability of methodologies.

The development of a system of common ‘factors’ could help Member States to make comparable estimates of future effects of measures. Once again, if we compare the approach taken in the UNFCCC guidelines, Parties are requested to estimate the effects of individual measures, using models – for which details are to be provided. In the context of waste legislation, implementing such an approach within a reporting framework for waste legislation may also be desirable.

Diagram 1, below, provides the basis for a discussion of effects and illustrates the difficulties of assessing the effects of individual measures in light of the existence of ‘exogeneous’ factors, which also effect the baseline situation.

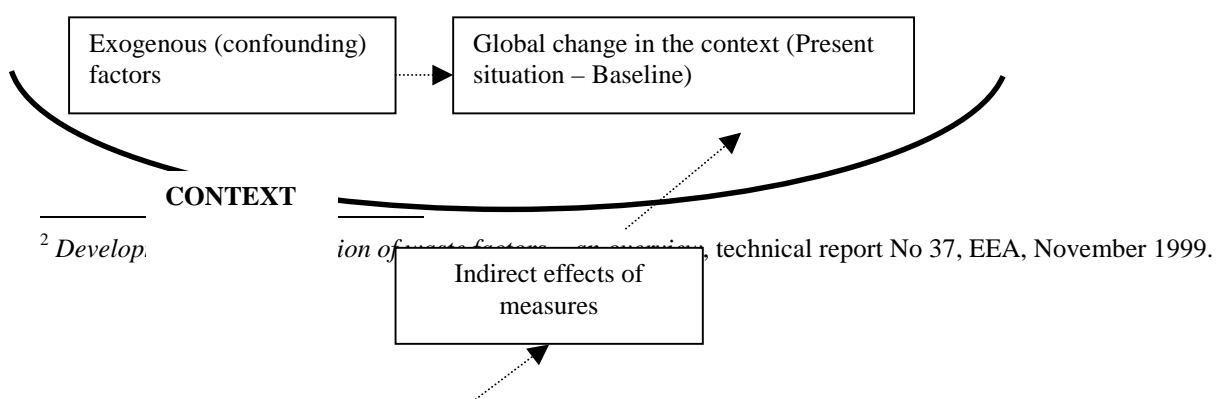
Diagram 1 can also be summarised as the following equation:

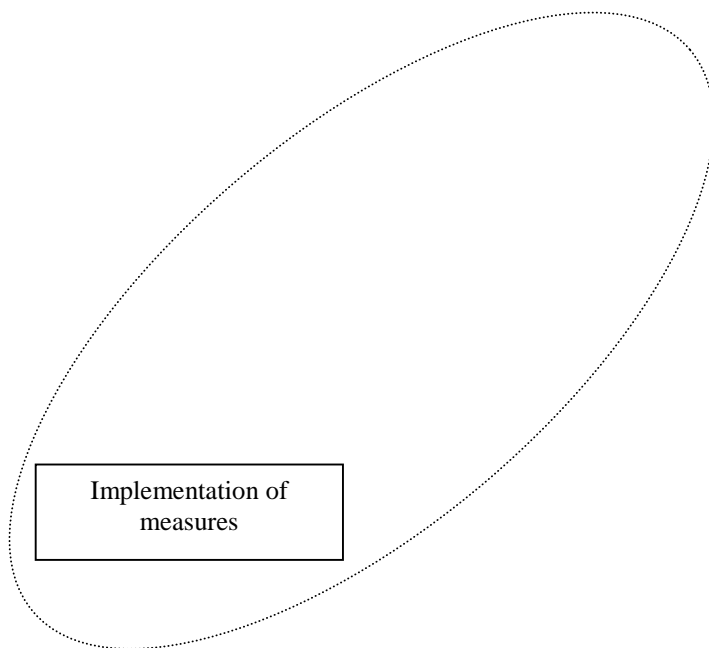
$$\text{Initial state of the context (baseline) + All the effects of a measure + Changes due to other (exogenous) factors = Final state of the context}$$

Both the equation and the diagram below illustrate the basic information needs. In order to assess effects on driving forces, we need:

- *baseline data* on these driving forces (ie what were the sources, transport and treatment of waste before the arrival of EU legislation on waste);
- information on the expected and actual *effects of the measures* taken on driving forces (ie reduction in landfilling by *x*, increased municipal collection by *y*, decreased imports of hazardous waste by *z*);
- estimation of effects of exogenous factors (eg changes in GDP, effects of other legislation or industry voluntary measures, etc)

**Diagram 1: Links between the effects of measures and changes in the context (or baseline) situation (adapted from means vol 2)**





An obvious exogenous factor is a change in socio-economic development (eg a drop in GDP might result in less waste being produced). However, there are clearly many other possible exogenous factors (other items of EU legislation included), which might impact upon the way waste is produced, transported and treated. Once again, using the UNFCCC guidelines to reporting as a benchmark, there exists a provision for reporting on the existence of measures that impact negatively upon climate change. A waste expert would be able to develop an initial list of possible exogenous factors, including other relevant policies, which could be used as a prompt for Member States to report upon such information in the national reports.

There are various methodologies that can be used for establishing actual (vs predicted) effects of measures on driving forces through the study of *causality*. These include quantitative and qualitative methods such as econometric regressions and questionnaires, among many others (these methodologies are summarised in the *MEANS vol 2*). Ideally, questionnaires would be designed with a specific set of appropriate methodologies in mind, so that the necessary information for assessing causality is collected by all Member States.

To monitor the implementation of EC waste policy, a proposal for a Recommendation on waste management statistics (COM(1999)31, 27.1.1999) was put forward in the draft European Parliament and Council Decision on the review of the 5EAP. The aim is to ensure that the Commission is provided with regular, comparable, recent and representative data on waste production, recycling, reuse and disposal. It is expected that the proposal will secure the need for a reliable system of data collection for waste, based on common terminology, definitions and classifications.

The expectation is that the Regulation will be able to provide part – if not all of - the information needed to paint a picture of the context and changes in the baseline situation. Until the Regulation is in place, the ETC-W has a work programme to focus on already existing data with the aim to provide harmonised data sets on all major waste flows in the Member States. However, there has been much criticism of the Regulation from the Member States who feel that it has been in the pipeline for a long time and hence does not reflect the current situation in data collection practices. The Regulation will not, for example, be able to incorporate the work done by ETC-W on harmonisation of data.

In general, while there seems to be a high degree of informal co-operation between Eurostat, the ETC-W and the Commission, more could be done to ensure that the outputs of each are better co-ordinated.

### 2.3 *Effectiveness (R ↔ DPSI)*

The evaluation of effectiveness relates to what is obtained to what was expected. When talking about effectiveness, it is preferable, for the sake of clarity, to specify whether the reference is to the effects on *D*, *P*, *S* or *I*. An effectiveness indicator can be calculated by dividing the observed value at a given date (for example, increased recycling by x percent) and the objective initially set. This requires, of course, that waste legislation contains clear objectives against, which to measure progress (a key recommendation in the Kinnock reforms?).

By classifying measures, as was suggested earlier, we may also be able to say something about the relative effectiveness of different types of measure and therefore be better positioned to predict the future effects of similar, planned measures. Policy makers will also find it useful to have information on cost-effectiveness. For this to be possible, questionnaires will need to ask questions relating to the resources spent in undertaking clearly delineated measures.

### 3.0 **Conclusions – towards a common framework**

The previous section has introduced several suggestions for improvements in waste questionnaires. To summarise, these are:

- **description of measures:** what measures are being undertaken? what kind of measures are they (classification system for waste measures required)? at what stage of implementation are they (adopted, planned, implemented)?
- **effects:** provide baseline data on the driving forces of waste (eg sources, transport and treatment of waste); assess the future effects of measures on driving forces through the use of various, approved methodologies to establish causality; assess the impact of these effects on the environment and human health through the use of common waste factors; provide information about the effects on the baseline/context from exogenous factors.
- **effectiveness:** what are the costs of different measures? measure progress against specific DPSIR objectives.

The appropriate answers for some of these questions may well differ, reflecting different kinds of environmental problem (eg water, air, climate change, nature conservation) and different approaches made by EU legislation (framework, Regulation, etc). The example of the UNFCCC guidelines for reporting was used frequently throughout this paper and may prove a good model. However, the details are best reviewed by waste experts who can decide in advance on appropriate methodologies to be applied by all and the necessary accompanying information which will allow any reader of the reports to assess causality, effects and effectiveness. Transparency, comparability and reliability here are key.

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15 June 2000