

Technical report No 24

Information on waste management practices

A proposed electronic framework

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July 1999

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Printed in Copenhagen

Printed on recycled and chlorine-free bleached paper

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Executive summary

The European Topic Centre on Waste (ETC/W) has prepared this technical report on the design of catalogues on waste management and waste minimisation. During the initial stages of the work, it became evident that basic work related to data, structure and definition of common code-lists was necessary to ensure that the catalogues, at a later stage, can be used as integrated parts of the ETC/W data and information structure, and hopefully also link in a meaningful way to other datasets available at the European Environment Agency (EEA).

The objective of this report is thus to connect the information in the catalogues with the proposed data structure. For each catalogue the general frame and objectives are presented and explained.

- Catalogue (I) regarding waste management and cleaner technology institutions/centres has the objective to provide information on institutions/centres that on the basis of a continuously evolving work can provide a free or very low-cost information service on the issue of waste management and cleaner technology. The information will be collected through a questionnaire that will be sent directly to the institutions/centres. The first part of the questionnaire contains questions to identify the centres, the second part aims at giving a more detailed characterisation of the activities performed by the centres.
- Catalogue (II) regarding waste management plans, has the objective to give an overview of waste management plans, on local, regional and national level, notified to the Commission. It is the intention to make structured abstracts of selected plans and ensure that the abstracts will be comparable.
- Catalogue (III) regarding competent authorities has the objective to give a comprehensive overview of the competent authorities related to the issue of waste management and minimisation. This listing of competent authorities in the Member States is directly related to catalogue (II) on waste management plans and catalogue (IV) on waste management strategies and instrument. This listing gives an introduction to the administrative system in the Member States and thereby to the level of the decision makers.
- Catalogue (IV) regarding waste management strategies and instruments has the objective to describe the actual situation concerning waste management practices in the Member States. The notified waste management plans already received by the Commission cover strategies for the long term, e.g. four, five or ten years, for only a few Member States.
- The objective of catalogue (V) is to describe preventive approaches. The different Member States' strategies and instruments to further cleaner technology and waste minimisation are described in some detail. The catalogue will also characterise cleaner technology/waste minimisation schemes and provide a tool for evaluating successes and drawbacks of different approaches. There is a lack of general definitions in this field but data collection is being organised with this taken into account.

The target groups of all the catalogues are to a large extent identical and very broad. In addition it is recognised that the potential users of the catalogues will have different needs. In general the target groups will be the European Commission, national and regional administrations, industrialist federations, local administrations, individual companies and interested individuals.

1. Background and objectives

1.1. Background

The problems related to waste generation and treatment in the EU have attracted increasing political attention in the last decade. Interest has focused both on the direct environmental problems related to treatment of waste (leaching from landfills, emissions from incineration etc.) and on the wider implications of establishing a sustainable society with increased efficiency in the use of natural resources.

In 1990 the Commission adopted a general community strategy¹ for waste establishing a hierarchy of priorities with prevention as the first priority and disposal on landfills as the lowest priority. The strategy also emphasises the need to establish waste management plans in order to pursue the strategy goals and secure adequate capacity for the treatment of waste.

The legally binding rules for waste management planning are not very explicit. Specific targets in relation to the waste hierarchy have only recently been introduced. Only the directive on packaging waste which sets binding goals for recycling and energy recovery is adopted.

The Commission's Directorate General XI (DGXI) has reviewed the notified waste management plans and concluded that only two Member States have fulfilled their legal obligations in relation to waste management plans.² The Commission has consequently initiated infringement procedures against the remaining Member States. This result may reflect a lack of political priority on waste management planning in the Member States, but it may also reflect a high degree of uncertainty in the specific requirements for the planning process.

The fulfilment of both the legally binding goals and the political goals cannot be reached overnight since they imply quite massive investments in both development of preventive technologies and investments in collection and treatment capacity. A survey of strategies and waste management plans can be one way of analysing whether the general objectives can be expected to be met in practice by the Member States.

1.2. Objectives

The objectives for developing a set of catalogues of related information on waste management practices are:

- To support the development of waste prevention and management strategies by providing the instruments needed for more efficient use of knowledge already existing at national and international centres on waste management and waste minimisation. An important part of this work will be to provide links and/or references to central databases, case studies and periodicals.
- To provide a thorough documentation of waste management practices in all Member States, securing easy updating and improvement of the baseline documentation in order to follow the progress in waste management practices in Member States.
- To provide an overview of the administrative structure in relation to obligations established in EU directives on waste

¹ The Commission's Waste Management Strategy (SEC(89)934, 18.09.89).

² A press release from the Commission, Brussels, 17 October 1997 with the title: Commission decides action against thirteen Member States for inadequacies in waste planning.

In order to achieve the objectives, a number of meta-information catalogues will be established. This report is a first step and presents the design for the catalogues on waste management and waste minimisation.

The list below encompasses the catalogues and related report to be published:

- Waste management and cleaner technology institutions
- Notified waste management plans
- Competent authorities on waste
- Waste management strategies
- Cleaner technology strategies
- Technical Report on practices and strategies on waste management and cleaner technologies

1.3. Information on waste management practices

High priority is given in order to secure maximum compatibility of the data/information included in the catalogues. This will ensure that the information in the different catalogues can be used interactively and not just as a number of separate catalogues. Further it is the ambition that the information collected should be available as far as possible for integration into other EEA projects and products/services. A great deal of effort has therefore been put into collecting and analysing definitions of the different entities and identifying possible code-lists already existing within EEA, DGXI and Eurostat.

This work has resulted in a general data model and systematic analysis of code-lists across the ETC/W tasks, which is documented in a separate report (Report on an overall data model for ETC/Waste, also to be published as an EEA Technical Report in 1999).

1.3.1. Integrated search facilities

In this report the proposed search facilities are described for each catalogue. It should however be noted that it is the ambition to design a common entry to all data so that the user will not only meet a choice between a number of separate catalogues, but will be offered the possibility of making cross-cutting inquiries drawing on information in several of the catalogues.

1.3.2. Diagram of waste management practices

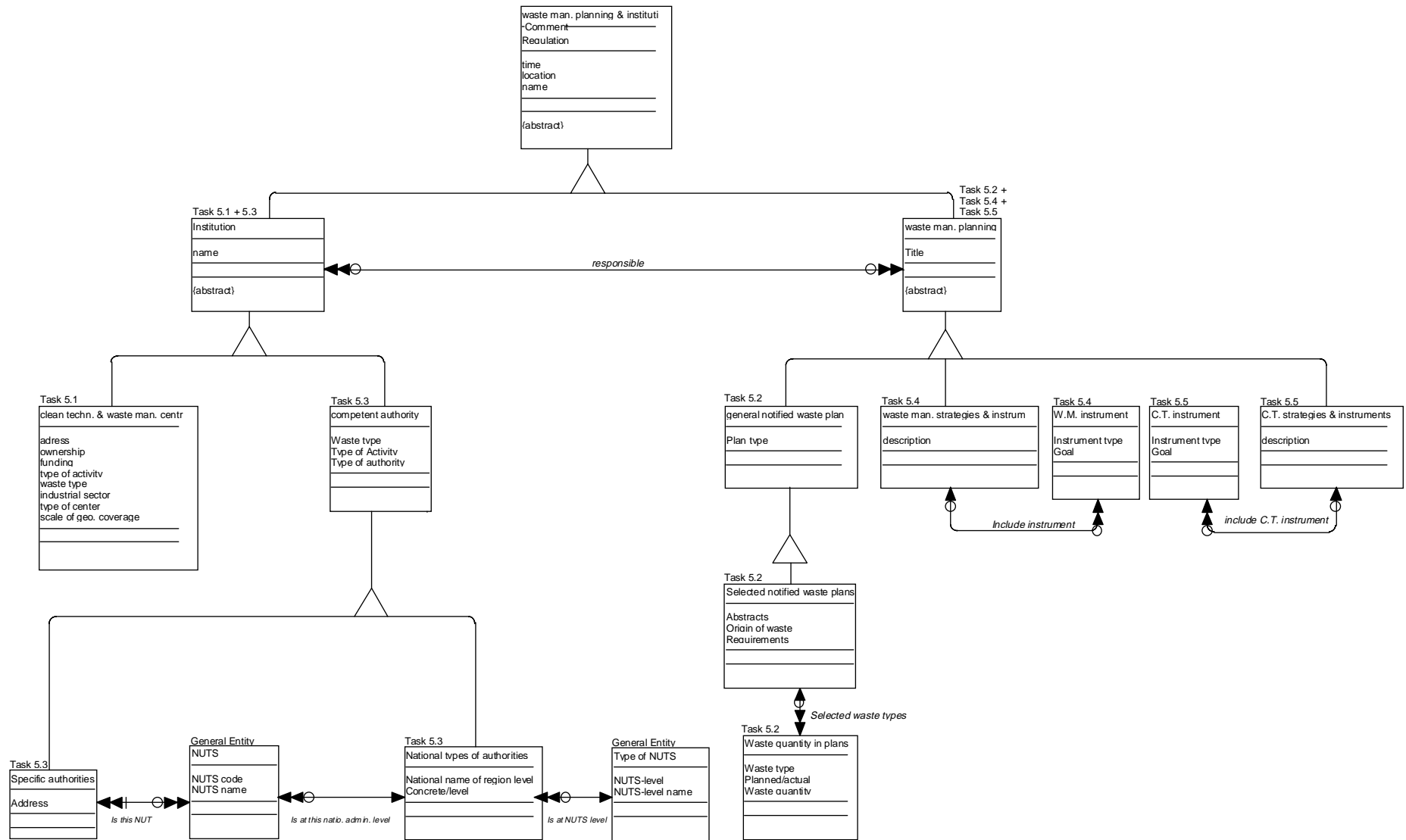
The information model for the work on waste management practices is described graphically in the figure 'Waste management practices'. The figure shows that the information structure can be basically described as a catalogue of the institutions involved in waste management planning and a catalogue of the planning activities themselves.

The part relating to institutions is divided into competent authorities and information centres. The part relating to activities is split into three separate catalogues (waste management plans, waste management strategies and instruments and cleaner technology strategies and instruments).

These entities are primarily interconnected via time and space e.g. year and administrative area (NUTS). The main link between planning/strategies/instruments and institutions is the competent authority responsible for the planning or the instrument described.

Further linking of information contained in the catalogues requires that a common dimension is identified and connected with a common classification list. The entities applying to each subcatalogue are described in more detail in the report.

Waste management practices



2. Waste management and cleaner technology institutions/centres (Catalogue I)

2.1. General framework

The initial specification for work to be carried out by a European Topic Centre on Waste identified a need for:

- identifying waste prevention schemes and initiatives in the Member States
- providing linkages to national and international databases and case studies on waste prevention.

While the task of identifying waste prevention schemes and initiatives in general are dealt with in a separate catalogue, the initial task identified is to compile a list of waste management information bureaus and cleaner technology centres from across Europe.

2.1.1. Objective and scope of the catalogue

The objectives of this catalogue is to compile and make available in an electronic form information concerning:

- waste management institutions, waste management bureaus in the Member States,
- waste prevention and clean technology centres in the Member States.

The catalogue is described as 'a structured list of institutions/bureaus having information on waste management and waste prevention practices', which will be available through EIONET and contain for example:

- Geographical coverage: states/regions/municipalities etc.;
- action basis: international/national/regional/local;
- ownership: public/private/mixed;
- profit oriented/non-profit oriented centres;
- size, staff qualifications;
- steering Committee, structural dependencies.

Thus, the catalogue is designed to provide meta-information, rather than detailed technical data/statistics on waste management and waste prevention practices.

The primary aim of this catalogue will be to help inquirers, in need of both general and specific technical information, to *find the right place to ask*. Thus, the idea is not only to give the above mentioned basic information but also to get more detailed information on which activities are performed and which publications and databases are available. The aim is thus to list relevant institutions, describe their basic organisation and give information on which type of information can be accessed from the institution.

A basic step in the work has been to define what is meant by waste management bureaus and cleaner technology centres. For the first step of development the catalogue is limited to centres devoted to the collection and dissemination of information on waste minimisation and cleaner technology. In this first stage, research centres and consultants will in general not be included.

The institutions should have an obligation for continuous work and systematic collection and dissemination of information. That means, centres with a continuous obligation to create and develop strategies, action plans, etc., in order to avoid centres which only work temporarily within Waste Management or Clean Technologies. To ensure the continuation

of work and active publication of results, only centres with public funding from regional and/or national government should be considered. Thus, it is also important that the institutions or centres can provide free or very low-cost information services.

A set of criteria for the entry into the catalogue has been developed in order to select, in a first step, centres with a steady activity in the field of waste management and cleaner production, which can provide free or low cost information. In this manner the users of the catalogue will find centres where it is possible to get answers by telephone, access to free or low-cost databases and copies of relevant papers. It is not the intention that the centres listed should provide consulting jobs free of charge.

The limitation of the immediate scope to non-profit or public information centres is based on two arguments:

- research centres relying on scientific journals are only rarely geared towards giving a service to a wider public;
- inclusion of consultants would increase the number of entries to be updated to a level far beyond what can be practically managed within the project.

Inclusion of research centres may, however, be considered an important means of monitoring the activities in the member countries and could help build future networks of institutions working with waste minimisation/cleaner technology. This could be considered in future work programmes.

2.1.2. Projects with close relations to the catalogue

The EEA has already established a database 'Cleaner Production: a Guide to Information Sources' elaborated by KINT-IRGT, Royal Institute for the Sustainable Management of Natural Resources and the Promotion of Clean Technology, Brussels and VITO, Flemish Institute for Technological Research, Mol. This database contains, among other information, an extensive list of centres and institutions of cleaner production and organisations and cleaner production related initiatives in EU Member States. This list has been used to obtain contact with relevant centres, institutions and organisations in connection with distribution of questionnaires.

2.1.3. Target groups

The potential users of the catalogue will have different needs:

The European Commission

The needs of the Commission, in relation to this catalogue, may be an overview of the level of activities in the Member States. The need for access to detailed technical information is considered to be limited.

National and regional administrations, industrial federations

The primary need is seen as access to more detailed technical information to support work on national/regional guidelines etc. if appropriate links are established. Secondly, a catalogue with more details on the actual capability of various centres may be of use in relation to preparation of public tenders and choice of consultants for studies etc.

Local administrations and individual companies

At the local or individual company level the needs are more likely to originate from more concrete problems, such as: What is a normal waste production from a certain process? How can this type of waste be recycled or treated? etc. The need will be either access to specific technical information or at least information on who is the appropriate person/institution to ask. This catalogue will only provide help to find the right place to ask but not aim at including fact-sheets on processes etc.

Interested individuals

Individual citizens may have an interest in more general information, for instance references to newsletters or consumer information pamphlets, details of which will be included in the catalogue.

2.1.4. Data collection

The catalogue will be based on information from the relevant centres selected by EEA National Reference Centres (NRCs) for Waste. A draft questionnaire has been elaborated for collection of information on relevant Cleaner Production/Waste Minimisation and Waste Management Centres.

Draft questionnaires were sent to NRCs in the summer of 1998. The NRCs were asked to assist by filling in the questionnaires jointly with one relevant centre of their own choice. To show the NRCs in which context the information is applied, the NRCs were provided with a list of examples of the target groups and a guideline for choosing institutions and centres.

At the same time NRCs were provided with a 'long list' of centres extracted from the VITO database. The NRCs were asked to shorten and/or amend the list, in order to test the usefulness of the list. The main conclusion was that the list was incomplete and hence of limited use.

In general the questionnaire was perceived as easy to understand and covering all relevant fields of information. The main comments on the questionnaire concern the need for a clearer explanation of some of the definitions and a discussion on the use of the catalogue. One Member State mentioned that some of the centres included in the catalogue may have a limited capacity to deal with inquiries coming from a broad target group. Therefore, they probably may not be interested in being part of an actively used international catalogue.

To facilitate more consistent replies to the questionnaire, a more detailed explanation of definitions will be elaborated and attached to the revised questionnaire before the final mailing.

Regarding the question concerning the limited capacity in some of the centres to deal with inquiries coming from the target group, an effort will be made to make the centres understand the importance of being known to a wide audience within Europe. The idea is that the centres, by being part of the catalogue, will be able to benefit from each others' work and experiences.

The revised questionnaire will be, with assistance from the NRCs, distributed to the centres on the initial list from Junta de Residues, Barcelona.

2.1.5. Updating

The information concerning the centres has to be updated regularly to ensure proper benefit from the catalogue. It is the intention that the centres themselves should be responsible for updating the information. The centres will be given access to their own information for updating via a password. It should be in the interest of the centres to update the information in the catalogue at regular intervals.

However, a procedure for reminding the centres on the need for updating will be established to ensure that the catalogue remains relevant. Centres not responding to the query for updating regularly may be deleted from the catalogue.

2.1.6. Output/User interface

As discussed in point 2.1.2 the target groups have different needs. The main purpose of the catalogue is to give access to know-how in the field of cleaner production/cleaner technology/waste minimisation/waste management. It will be possible for the users to generate reports from the catalogue on specific issues (waste type, type of centre, type of activity, industrial sector), on geographical area, on specific names and addresses and/or a combination of these.

Specific technical information will not be included in the catalogue. Institutions accepted in the catalogue will however be urged to facilitate links to their own home pages, databases etc.

2.2. Contents of the catalogue

It is expected that waste management centres and cleaner technology centres in some cases will be separate activities. The questionnaire has been designed to cover both kinds of centres. First part of the questionnaire contains information to identify the centre such as name, address etc. The second part of the questionnaire aims at giving a more detailed characterisation of the activities performed by the centre and information about the kind and form of services provided by the centre.

The table shows a summary of the questionnaire which directly reflects the main entries to be found in the catalogue.

General information

Identification	Name, address, tel., fax, E-mail address, website address etc.
Information about website	Facilitating the establishment of a direct link from the database to the website of the institution
Definition of institution and ownership	Governmental institution, semi-public, NGO, private company commissioned by the state etc.
Geographical coverage	International, European level, national level and regional level
If the institution belongs to an organisation/ programme/network related to WM or CT	Geographical coverage of the activity. Name, address and short description of the organisation etc.
If the institution has a steady basic/core funding	Public authorities, non-profit private organisations and others
Publications edited by the institution	Name and type of publication

Characterisation of activities

Field of activities	<ul style="list-style-type: none"> • Waste Management (WM) • Industrial • Municipal Clean Technologies (CT)
The primary fields of knowledge in relation to Waste Management	<ul style="list-style-type: none"> • Type of activity (waste disposal, recycling, composting legislation collection system etc.) • Type of waste (according to the European Catalogue 94/3/EC)
The primary fields of knowledge in relation to Clean Technology:	<ul style="list-style-type: none"> • Type of activity (Cleaner production, pollution control, waste reduction / minimisation, renewable energy, waste management system etc.) • Industrial sectors (according to the NACE codes)

Information and technical services provided

Scope of the services provided by the centres	<ul style="list-style-type: none">• Information• Technical services
Information provided	<ul style="list-style-type: none">• Topics• Cost• Language• Media (Phone, fax, library, Web page, audio-visual media, workshop/conferences/courses and Email)• Access to information
Technical services provided	<ul style="list-style-type: none">• Topics (Awareness programs, pilot and demonstrations projects, training, certifications technical assistants to companies etc.)• Performed (directly performed by the institution, subcontracted)

2.3. Technical description of catalogue I

Clean technology and waste management institutions		
<p>Definition of entity: Official institutions (with a steady activity on waste management and cleaner production, which can provide free or low cost information)³</p> <p>Unique identifier: Time, geography and name.</p> <p>No. of occurrences: Approx. 300 - 500 (core data set).</p>		
Inf. Type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Foundation date 	
Geography	Location <ul style="list-style-type: none"> • Reference to administrative area • Address of the institution Scale of geographic activity areas:	<ul style="list-style-type: none"> • NUTS code list level 5 • International level, European level, national level and regional level.
Name	Name of the institution: <ul style="list-style-type: none"> • official name • acronym • name in English 	
Industrial sector	Only relevant for the CT-Centres,	NACE Code and descriptive keywords.
Waste type	Only relevant for the WM-Centres <ul style="list-style-type: none"> • detailed • head types 	<ul style="list-style-type: none"> • EWT/W 5.1b • EWC + descriptive keywords. • Code-list in questionnaire
Type of centre		WMC, CTC.
Type of activity	<ul style="list-style-type: none"> • If WMC: • If CTC: 	<ul style="list-style-type: none"> • Waste disposal, recovery, planning, etc. • Cleaner production, waste reduction, product design, etc.
Ownership		Governmental institution, semi-public, foundation NGO, etc.
Stable funding		None, public, private, others - to be specified

³ At a later stage of development the catalogue is planned to also comprise consultants and research centres within the field of waste management and clean technology.

3. Waste management plans (Catalogue II)

3.1. General framework

According to Article 7 of the Directive on Waste (91/692/EEC), the competent authorities assigned by Member States are required to draw up waste management plans.

Such plans shall in particular relate to:

- the type, quantity and origin of waste to be recovered or disposed of;
- general technical requirements;
- any special arrangements for particular wastes;
- suitable disposal sites or installations.

Such plans may, for example, cover:

- the natural or legal persons empowered to carry out the management of waste;
- the estimated costs of recovery and disposal operations;
- appropriate measures to encourage rationalisation of the collection, sorting and treatment of waste.

Further, Member States are obliged to notify the European Commission of the plans. Some countries have notified only plans on national scale, while others, have chosen to notify large numbers of plans at local or regional level.

3.1.1. The objective and scope of the catalogue

The catalogue will contain a computerised list dealing with all the Waste Management Plans notified by DGXI. The plans will be connected with core data such as the national code, the level for the competent authority, the type of waste (hazardous waste, non-hazardous waste and packaging waste) and the year of adoption, notification and validity of the plan.

Furthermore, the catalogue will contain abstracts of selected plans. The abstracts will be based on keywords related to the Waste Framework Directive, national legislation and other kinds of instruments. Plans for further studies will be selected by the following criteria:

- Approved WMP by the Commission
- Plans elaborated at national level (Nuts 0) and examples on plans at regional and local level;
- The latest elaborated plans, e.g. plans adopted or published after the year 1995 (approx. 70 notified plans);
- Plans representative of the different areas within the EU;
- Exclude plans dealing only with hazardous waste and examined in detail in a report from COWI Consult (se part 4.1.2).

In the case where new plans at national level are notified to the Commission, abstracts will be prepared and relevant information incorporated in other catalogues.

The catalogue will, as a starting point, give a survey of the total number of notified waste management plans and an impression of the type of plans, (while Catalogue IV should give a more general impression of different National Waste Management Strategies). The practical implementation of strategies in the planning process can be studied through the abstracts of selected plans.

In the long term, new plans accessible in electronic form will be imported into the catalogue and will be available in full text. Furthermore, there will be a possibility for Member States themselves to make their plans available (in electronic form) by establishing a link to a national website or providing a file for inclusion in the catalogue. When the ongoing project on 'Evaluation Plans of Waste Management' (mentioned below) is ready, the possibility of establishing a link from the list to the descriptions in this study will also be available.

3.1.2. Projects with close relations to the catalogue

When establishing the catalogue, duplication should be avoided and resources used in an optimal way. A project 'Evaluation Plans of Waste Management' is being undertaken by the consultants 'Golder Association' with support from DGXI. According to the description of the project, the aim is to go through all the notified plans (approx. 500-600) and provide an assessment of the plans. The objective is to estimate whether the requirements for the content of Waste Management Plans, as laid down in Article 7(1) of the Framework Directive, have been fulfilled in the plans. The project will be finished in 1999.

Furthermore, a report from COWI Consulting Engineers about *Hazardous Waste Plans in EU* was finished in July 1997. This project has the same objective as the one above-mentioned, but specifically in relation to hazardous waste.

3.1.3. Target groups

The users of the catalogue could be on all levels of public administration in the Member States. The European Commission will get access to a database for easy updating of the situation in the field of waste management planning. Additionally, the Commission will get an overview of waste management policies, and detailed information, e.g. about treatment and the amount of waste in some Member States.

The national, regional and local authorities/administrations, including the NRCs, can use the catalogue as a source of inspiration in their development of waste management plans. Depending on how and where the catalogue is made available, it could also be a source of information to NGOs and a broader public.

3.1.4. Data collection

At the present stage the catalogue is limited to waste management plans notified to DGXI. The primary data source is therefore information from DGXI on notified plans. ETC/W receives updated lists from DGXI at regular intervals while copies of the plans are received either from DGXI or requested directly from Member States.

More detailed information on hazardous waste management plans has been provided through co-operation with COWI Consulting Engineers, Denmark, who as part of the contract for DGXI has established a database containing basic information on these plans. ETC/W now has access to these data. Further data on the remaining plans will become available through the study performed by the consultants Golder Associates. Access /links to this database will be secured by close co-operation between DGXI and the ETC/W.

3.1.5. Updating of the catalogue

To properly benefit from the catalogue it has to be updated regularly. This task could be carried out in co-operation between the Competent Authorities, DGXI and ETC/W. Concerning plans notified to the Commission in future an initial service of studying and incorporating these plans upon request will be provided. At a later stage, however, abstracts should be delivered by NRCs.

3.1.6. Output/User interface

Search engines will be designed to enable several different searches:

- geographically listing the plans notified for a certain country or region;
- by main topic covered – e.g. giving a list of plans covering only packaging waste or hazardous waste;
- by type of authority – e.g. a list of plans at NUTS level 3;
- by keyword selected from a list of keywords.

3.2. Contents of the catalogue

The catalogue should be visualised as three different but interconnected datasets/catalogues:

3.2.1. List of notified plans including some core information

This part of the catalogue will be at a general level where all plans notified to DGXI will be incorporated into the catalogue and identified by unique codes.

The catalogue will contain *fields* relating to:

- The name of the plan;
- The name in English;
- NUTS code of the responsible authority;
- Year of adoption;
- Year of notification;
- Period of validity;
- Responsible authority/ competent authority.
- Waste type (hazardous waste/non-hazardous waste/packaging waste).

3.2.2. Abstracts of selected plans

From selected plans on the list, there will be a link to a subcatalogue of abstracts, based on a more detailed study of the waste management plans. The abstracts will be made in a structured form based on keywords. This type of structured abstract will make it possible to compare the information in different waste management plans through individual searches. (At the same time, the abstracts can be read as a 'text file').

The list of keywords for examination will take the starting point in the Waste Framework Directive including the specific demands in the directive. The keywords will also deal with other types of demands to a plan related to a continuous planning process such as the necessity of updating, a discussion of legislative and economical instruments and a valuation of the public consultation as a part of the planning process.

The abstracts will include the following information, if the information is available in the planning document:

- Competent authorities
- Geographical coverage
- The included waste fractions (definition)
- Objectives and principles
- Instrument: legislation and economy
- The aim of the plan (e.g. percentage for recycling)
- Definition of waste/source/amount/recycling
- Data on present waste situation
- Data on future waste situation
- Collecting schemes
- Treatment facilities
- Waste prevention

- Action plan for the next period (e.g. 8-10 years)

3.2.3. Library of full text waste management plans

Whenever available in electronic form, the full text of the plan will be installed in a separate catalogue which can be accessed from both the list of plans and the abstracts. It is expected that most new plans will become available electronically in English as well and this catalogue will thus eventually give direct access to planning documents.

3.3. Technical description of catalogue II

The catalogue will be organised in three different types of information. A general part containing name, number and core information, a part containing abstracts of plans and a part used to organise more specific information obtained from the plan document:

Notified waste management plans – general level:		
Definition of entity: Plans notified by DGXI.		
Unique identifier: Time (year of adoption), geography (National code and NUTS level of the competent authority) and title.		
No. of occurrences: approx. 600.		
Inf. type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of adoption • Date of notification Duration: <ul style="list-style-type: none"> • Date of plan period start • Date of plan period end 	
Geography	Responsible authority Area covered Comment on area coverage	NUTS list level 0-5 NUTS level 0-5 Free text
Title	Name of the plan Number of the plan	
Plan type	Based on directive requirements for Member State waste plans	hazardous waste, non-hazardous waste, packaging waste

Selected notified waste plans		
Definition of entity: Selected – primarily national – actual plans notified by DGXI.		
Unique identifier: Time (year of adoption), geography (NUTS-code of the competent authority) and title		
No. of occurrences: approx. 15		

...continued

Inf. type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of adoption • Date of notification Duration: <ul style="list-style-type: none"> • Date of plan period start • Date of plan period end 	
Geography	Responsible authority Area covered Comment on area coverage	NUTS list level 0-5 NUTS level 0-5 Free text
Abstract	Based on keywords related to the Framework Directive, national legislation and other kinds of instruments ⁴ – a common disposition has to be created	

Planned/factual waste quantity		
Definition of entity: Selected – primarily national – plan/fact data.		
Unique identifier: Time (year of adoption), geography (NUTS-code of the competent authority) and title?		
No of occurrences: approx. 20 * 15		
Inf. type	Description	Classification list
Time	<ul style="list-style-type: none"> • Plan year 	
Geography	<ul style="list-style-type: none"> • Area covered 	NUTS list level 0-3
Information type	Is the figure a planned waste amount (goal) or a factual amount mentioned in the plan?	plan/factual
MS Waste type	Free text	MS Code lists
Waste type	⁵	EWC/National list
Waste quantity	The weight measured in tonnes?	
Waste source	MS description – free text.	
Waste treatment		R/D+ MS Classification
General technical Requirements		
Comments	Free text	

4 Connected to the keyword concerning waste treatment there should be a possibility to link to specific waste treatment facilities (task 4)

5 The classification of waste types in this data set should follow the guidelines of task 1 in order to enable comparison of the waste amounts

4. Competent authorities (Catalogue III)

4.1. General framework

According to Article 6 of the Directive on Waste (91/156/EEC) Member States are required to establish/designate the competent authorities responsible for the implementation of the directive.

Implementation of the waste directives is reported in the first summary report in the waste sector published by the Commission, covering the period 1989-93. The report was based on questionnaires filled in by Member States. The summary report gives an aggregated view of competent authorities responsible for the implementation of the Waste Framework Directive but does not give information on addresses etc. In 1998 the Commission sent out questionnaires for a summary report covering the period 1995-97 to be published by the Commission in mid-1999.

4.1.1. Objective and scope of the catalogue

The objective of this catalogue is to give a comprehensive overview of the competent authorities relating to directive defined tasks in the Member States. This directly reflects Article 6 of the Directive on Waste (91/156/EEC):

‘The Member States shall establish or designate the competent authority or authorities to be responsible for the implementation of this Directive’

The directive specifies a number of different tasks to be fulfilled by the Member States (planning, permits, inspection, registration of waste collectors and brokers etc.). In reality a large number of different authorities can be involved in each Member State. As these different tasks may be divided further according to the waste type, the initial scope of the task includes a quite detailed survey of the administrative structures of the Member States.

Thus establishing a meaningful catalogue of competent authorities entails a quite detailed analysis of the distribution of tasks within each Member State.

4.1.2. Target groups

The needs of the **European Commission** in relation to this catalogue are to obtain a survey of which authority is competent, in which fields. Direct contact will mostly be via the national competent authority. The primary needs for **national, regional and local administrations** are to get contact with competent authorities in other Member States on specific questions. Authorities in one country need to know which level of authority corresponds to their own in various fields, allowing them to exchange information, plans, guidelines etc. Also on specific questions the catalogue will be a help for the administrative level. Thus, it can be relevant for this group to get information about the competent authorities responsible for import/export of waste in other Member States and information about competent authorities for giving permissions of disposal facilities, etc.

For **private companies** it will also be interesting, to establish contact with competent authorities in concrete matters, e.g. in relation to import/export, permits, expansion or introduction of cleaner technology (waste prevention/minimisation).

4.1.3. Data collection

The initial plan was to collect data for this catalogue through a questionnaire to the NRCs. After trying this approach in relation to Denmark, Germany, Spain, Austria and Ireland (ETC/W partner countries) it has become clear, however, that a common understanding of both the obligations according to the Directive and the administrative structures is very difficult to obtain through a questionnaire. It has therefore been decided to collect

information for this catalogue through visits to the NRCs, where a more detailed discussion of the actual organisation can be conducted.

4.1.4. Updating

Updating and maintenance is important if the catalogue is to be really useful. In a first stage it is suggested to ask the NRCs regularly for any change in name and address of competent authorities. In a second stage it will be fruitful for this issue and for the general co-operation with NRCs to visit them possibly once a year to discuss this catalogue in connection with the other issues and objectives of the work on catalogues.

4.1.5. Output/User interface

In a first stage two kinds of reports have been proposed:

- A **report** describing all the competent authorities in one of the Member States divided into the specific types of waste (search on Member States);
- a **report** describing the competent authorities in all the Member States concerning one or more types of waste (search on waste types etc.).

Single questions about e.g. a specific competent authority or a specific type of waste can, of course, also be answered.

4.2. Content of the catalogue

In relation to the catalogue the initial work showed that the term 'competent authorities' is not well defined. A survey of replies from Member States to the questionnaires from DGXI according to the Reporting Directive (91/692/EEC) showed that different competent authorities are assigned for different tasks. This reflects directly Article 6 of the Directive on Waste (91/156/EEC).

As the Directive states a number of different tasks to be fulfilled by the Member States (planning, permits, inspection, registration of waste collectors and brokers etc.) in reality a large number of different authorities can be involved in each Member State. Thus establishing a meaningful catalogue of competent authorities entails a quite detailed analysis of the distribution of tasks within each member state.

To ensure consistency in the compilation of information, the basic code in the catalogue will be the NUTS levels. The catalogue will be elaborated so the competent authorities at the national level (NUTS 0) will be incorporated for all Member States with full addresses. Thus, it will always be possible for the users to get a high-level entrance to the national legislation.

For the different objects in the catalogue in the first stage, competent authorities (in total approx. 200) will be entered with full addresses at NUTS 0 to 2. If there is more than one competent authority in a single category, it is necessary to explain the issue with a few *keywords* to establish in which area the authority has competence.

Within one country, the administrative structure can be different from one region to another. This means that the basic catalogue shall contain all the authorities in the Member States on NUTS level 0-2 divided into all the areas of competence (the questions).

If the competent authorities are placed on NUTS level 3 to 5 it will appear in the catalogue but no address will be included except the national code. It will be convenient if the Member States/NRCs can provide an electronic link/list with the addresses to establish a link in the catalogue to a database or to a list in this phase or in the future.

In relation to the collection of information in the Member States, the investigation will also focus on the issue related to 'Producer Responsibility'. If it makes sense, this information will be covered by the catalogue.

From the identification of the competent authorities there will be a link to a text file where it will be possible to make a short description of the issue.

The list of competent authorities in the Member States in pursuance of the Regulation on the supervision and control of shipments of waste within, into and out of the European Community will be incorporated in the catalogue. It will be essential and a good service to provide easy access to updating of the list.

The table below illustrates how the survey of competent authorities will be conducted in a systematic way to cover all types of tasks for all the main waste streams.

National Competent Authorities (NUTS 0)		Full address, telephone no., e-mail, etc.			
Waste prevention		e.g. NUTS 1			
Waste handling Sources	Waste Management Plans	Collection	Treatment/disposal	Permits, exemption and inspection	Shipment of waste
Municipal or Household	e.g. NUTS 0	e.g. NUTS 5	e.g. NUTS 3		
Trade/office Institution					
Hospital		E.g. NUTS 1			
Hazardous waste or from Municipal Household					
Trade/office Institution					
Hospital					
Industrial					
Construction/demolition					
Residual					
Other sources					
Packaging waste or Packaging waste from household					
Packaging waste from other sources					
Commercial waste or Construction/demolition waste					
Industrial waste					
Residuals					

4.3. Technical description of catalogue III

Competent authority		
<p>Definition of entity: An official institution/administrative level in charge of a specific competence within the field of waste management – covers five entities in the diagram, including two general entities.</p> <p>Unique identifier: Time, geography and name.</p> <p>No. of occurrences: approx. 200.</p>		
Inf. Type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of foundation • Time stamp: time of update 	
Geography	<ul style="list-style-type: none"> • NUTS level • full address 	NUTS level 0 to 2
Name	Name of institution/administrative level	
Type of activity	Combined with the area of competence	[Plans; collection; Treatment and disposal] combined with [municipal waste; household waste; trade- and office waste]
Waste type	<ul style="list-style-type: none"> • detailed 	<ul style="list-style-type: none"> • National or regional defined.
Waste type	<ul style="list-style-type: none"> • head def. 	<ul style="list-style-type: none"> • Code-list in questionnaire
Area of competence	NUTS level 0 to 5	
Type of authority	Independent or part of a higher level of authority. Juridical or implementing authority	

5. Waste management strategies and instruments (Catalogue IV)

5.1. General framework

5.1.1. Objective and scope of the catalogue

The objective of this catalogue will be to give a full description of the actual situation concerning waste management practices and strategies in the Member States. The catalogue covering waste management strategies and instruments is designed to become a central tool for later analysis of waste management practices in the EU. This analysis will centre around a comparison of the goals set in both EU strategy and national strategies and try to identify successes and shortcomings of the present policies applied.

In order to make this analysis possible the catalogue will be divided into a part describing the officially pronounced strategies and a part describing in more detail the actual instruments in place or planned in reasonable detail. Both parts of the catalogue will as far as possible be organised according to the topics addressed and keywords will be attached in order to facilitate cross-cutting analysis of different topics – i.e. it should be possible to search for the topic landfill taxes and get an overview of both the strategy and actual status of landfill taxes in the Member States.

To the extent where national waste management plans are in place the information covered by the waste management plan may cover much of the same information. However this will not necessarily be the case in countries basing waste management planning on local plans. Local plans tend to focus only on the items handled by the local authority and will in most cases not describe national agreements with industry, waste taxes etc.

5.1.2. Target groups

The target group of a catalogue of strategies and instruments is primarily policy-makers and administrators in a broad sense, e.g. the European Commission, the European Parliament, national and regional governments, associations of industries and NGOs.

5.1.3. Data collection

Initial data will be collected through country visits where a more thorough discussion of what is actually behind the strategy and instruments can be conducted. In the first stage the five partner countries will be covered in order to finalise the design of a template for the collection of information.

5.1.4. Updating

Once the catalogue has been established and initial information have been installed the catalogue should be updated by NRCs. The optimal situation will be a continued updating process where NRCs at their own initiative correct the information whenever new strategies have been adopted or new legislation or agreements have been adopted. On top of this, NRCs should be formally asked to check the contents of the catalogue twice a year to ensure the information is correct/ up-to-date and to add relevant news in the field of strategies and instruments.

5.1.5. Output/User interface

The main idea of establishing a the catalogue on strategies and instruments is to facilitate both full overview at country level and cross-cutting search and analysis of the structured data. Thus facilities for both comprehensive country reports and search on topics will be established – e.g. it should be possible to search for ‘landfill tax’ and obtain a report describing the landfill tax for all countries where such a tax exist.

5.2. Content of the catalogue

The main entries in the two sections of the catalogue are described below.

5.2.1. Waste management strategies

The aim of this part of the catalogue is to give a picture of the officially agreed upon strategy on waste management of the country. This part should be derived from existing strategy papers and the following points should whenever possible be described in separate, searchable text fields:

Field	Comment
General information: Title and data of paper (s)	Should enable identification of the source. Facility for link to strategy on national URL should be made available
Geographical coverage	Text and NUTS code
Time horizon of strategy	
Waste types/sectors covered (based on common list of waste types/streams)	In some cases only strategies of a less general scale may be in existence i.e. a strategy on building and demolition waste
Status of strategy	Is the strategy approved by parliament, government, minister or administrative level
Relation to EU strategy	Description of how (if at all) the strategy takes the EU waste strategy and the waste hierarchy into consideration
Main targets	A listing of the main targets of the strategy, i.e. 60% recycling of demolition waste. If targets are meant to be legally binding this should be noted
Main instruments/approaches:	Should describe the main existing or planned instruments to achieve the set targets. For each instrument should be a brief description of the actual or perceived content
Legislation governing management of waste	Should only list legislative measures explicitly mentioned to achieve the set goals. Under this category falls legislation on local statutory orders, rules on permits for installations etc.
Preventive Economic Instruments: waste taxes waste fees deposit/return fees product or compound taxes	Brief descriptions of each initiative in the context of the strategy
Economic incentives: subvention schemes tax deduction systems	

...continued

Field	Comment
Information instruments	
Agreements	Description of the general role of agreements with industry and trade organisations as part of the strategy. Brief description of actual or planned agreements
Environmental management systems	Introduction of environmental management systems in industries and institutions is often an important step in making the problems of waste generation visible

The contents of the strategy may be more extensive than above and the list can be extended as the work goes on. In order to make the catalogue a useful tool for cross-cutting analysis of the practical measures used in the fulfilment of the strategy each theme in the strategy should be described by keywords. The keywords will be the primary link to the part of the catalogue describing instruments.

5.2.2. *Description of instruments in use or planned*

This part of the catalogue is designed to give more detailed information on the instruments actually in place or planned to an extent where further details are meaningful. The idea is to prepare a fact sheet for each instrument containing basic information on the instrument and a description of the main context in a text field. The general layout of the fact sheets is outlined below:

Field	Comment
Type of instrument	Relating to the general types used in the strategy-part (preventive economic instrument, subvention scheme, agreement etc.)
Waste type covered	
Title of instrument in English	
Title of instrument in national language	
Identification of legislative act	Whenever the instrument is based on legislation a valuable information will be to get the precise title and no of the act.
Competent authority responsible of the implementation	Described by NUTS code to enable link to catalogue on competent authorities
Description of the instrument	Purpose, administrative framework, effect in 'real life'. The content of this field will of course vary very much according to the instrument described
Planned changes in the instrument	Description of any concrete plans of changes in the instrument. I.e. the tax of landfills will be increased by 20% in 1999

At a later stage it may be considered to provide a link to a catalogue of the actual legal acts in full text or links to national URLs containing legal acts.

5.3. Technical description of catalogue IV

Waste management strategy		
<i>Definition of entity:</i> typical one per state/larger region.		
<i>Unique identifier:</i> Time, Geography and Title.		
Inf. Type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of adoption Duration: <ul style="list-style-type: none"> • Date of coming into action • Date of expire (optional) 	
Geography	Area covered	NUTS list level 0-1
Title	The official title of the strategy	
General objective	Text	
Description	Keywords	

Waste management instrument		
<i>Definition of entity:</i> typical one per state/larger region.		
Unique identifier: Time, Geography and name.		
<i>No of occurrences:</i>		
Inf. Type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of adoption Duration: <ul style="list-style-type: none"> • Date of coming into action • Date of expire (optional) 	
Geography	Area covered	NUTS list level 0 to 1
Name	The official title of the instrument	
Goal:	specific objective (free text	
Instrument type:		regulatory, economic, voluntary etc.
Text		

6. Cleaner technology/waste minimisation strategies and instruments (Catalogue V)

6.1. General framework

In the last decades European countries have launched a large variety of initiatives to achieve environmentally sound waste policies. But the amount of waste is still increasing in the Member States and new problems related to end-of-use products are arising, e.g. electronic scrap, and end-of-life vehicles.

In this context the application of cleaner production approaches and improvement of eco-efficiency becomes more and more important issues for political decision making on national and international level.

New policies/strategies often have a more comprehensive, preventive and integrated approach. These new strategies try to consider all media and thus cut across the traditional media-oriented organisation of environmental protection activities. They aim to integrate environmental protection into production and they use a wide range of instruments:

- **plans and programmes**, e.g. the action plan for recycling construction and demolition waste in Denmark;
- **mandatory instruments**, e.g. the German cycle law which implements a responsibility of the producers for the whole product life cycle;
- **product bans and restrictions**, e.g. batteries and accumulators regulations in UK;
- **economic instruments**, e.g. Austria's disposal fee which is levied when waste is delivered to landfilling;
- **persuasive instruments**, e.g. distribution of sector specific waste minimisation studies to enterprises in Spain.

This also shows that regulation is only one of several possible instruments. Agreements with industry, economic incentives and information will play a more important role in the future. This is not only due to the discussion of deregulation, but also necessary, as integrated measures often involve change in production processes and product design which are the responsibility of the enterprises, not of the authorities.

Cleaner technology, eco-efficiency and ecological design of products are supposed to play the key role when realising sustainable development. These measures are integrated in the production and product design process and reduce environmental impacts by a more efficient use of materials and energy. Thus, based on this integrated approach, win-win strategies can be developed, which can be accepted by society as well as industry. These strategies seem to be suitable to de-link economic growth from waste generation and to pay back by a more efficient use of materials and energy.

6.2. Objective and scope of the catalogue

All European countries are currently applying or developing these new strategies. The main objective of Catalogue V is to:

- give a more detailed description of the different strategies of the Member States;
- characterise and structure cleaner production/waste minimisation schemes and;
- provide a tool for the evaluation of the success and drawbacks of the different approaches.

6.2.1. Definitions

Before designing questionnaires, a clear definition of cleaner technology and waste minimisation strategies will be provided. This comprises an agreement about which information will be compiled in catalogue II (waste management plans) and catalogue IV (waste management strategies and instruments) and which will be presented in catalogue V.

Cleaner production

There is no commonly agreed definition of cleaner production available on international level. But all definitions are related to the concept of sustainable development⁶ which states the need to consider simultaneously economic, ecological and social aspects. In USA, pollution prevention is often used as an equivalent to cleaner production. This illustrates that cleaner production is a preventive approach.

UNEP defines cleaner production as follows⁷:

Cleaner production is the continuous application of an integrated preventive environmental strategy to process products and services to increase eco-efficiency and to reduce risks to humans and to the environment.

- For production processes, cleaner production includes conserving raw materials and energy, eliminating toxic raw materials and reducing the quantity and quality of all emissions and wastes before they leave a process;
- for products, the strategy focuses on reducing impacts along the entire life cycle of the product, from raw material extraction to the ultimate disposal of the product;
- for services, includes incorporating environmental concerns into designing and delivering services.

As the UNEP definition indicates cleaner production is a continuous process, the schemes to enforce the application of cleaner production have to be adapted to the situation in the specific country or region and they have to be adapted regularly, according to the success or the constraints appearing. This means also that recommendations cannot be fixed recipes but have to be related to the special situation in different countries.

The UNEP definition comprises:

- **production:** the objective is to implement production processes that use materials and energy in a more efficient way, produce less emissions and wastes and reduce the toxicity of the emissions. The additive (reactive) measures, like waste water treatment, or air cleaning are not included in this definition;
- **the product:** the objective is to reduce environmental impacts that are related to the generation of the raw materials used for the product, to the production of the product, to the use of the product and to the disposal/recycling of the product. On the one hand, this objective can only be met, when information on the use of environmental goods for the whole life cycle is available and a life-cycle assessment therefore is needed. On the other hand, the designing process of a product should not only consider the aspect of the functionality, but also aspects related to the environmental impacts from the generation of raw materials used, the emissions during the use of the product and the aspects of the re-use of products, recycling of the materials and disposal of product scraps;

⁶ Brundtland Commission

⁷ United Nations Environment Programme (UNEP)

- **the services:** the objective is to implement a preventive approach in design, production, delivery, consumption and recycling. For the delivery services this comprises the logistic system, the transportation of products and the use of package materials. For the consumption, new systems are arising that are selling services instead of products, e.g. leasing systems for copy machines or car pooling and sharing systems. In future recycling will shift more and more to an inverse production, which means that e.g. the end-of-use product is remanufactured or parts of the product are used for the construction of new goods.

Waste minimisation

The term cleaner production comprises all environmental media. Waste minimisation is related to waste. At a workshop in Berlin⁸ organised by OECD, a definition of waste minimisation was worked out according to which it encompasses these three elements in the following order of priority:

- preventing and/or reducing the generation of waste at source;
- improving the quality of the waste generated, such as reducing the hazard; and
- encouraging re-use, recycling and recovery.

This definition is very broad. It gives priority to the preventive measures like cleaner production and also includes dealing with and reducing unavoidable waste. The ultimate goal is to keep as much waste as possible away from final disposal. This goal has an overlap with the objectives of the waste management plans as shown in Figure 1.

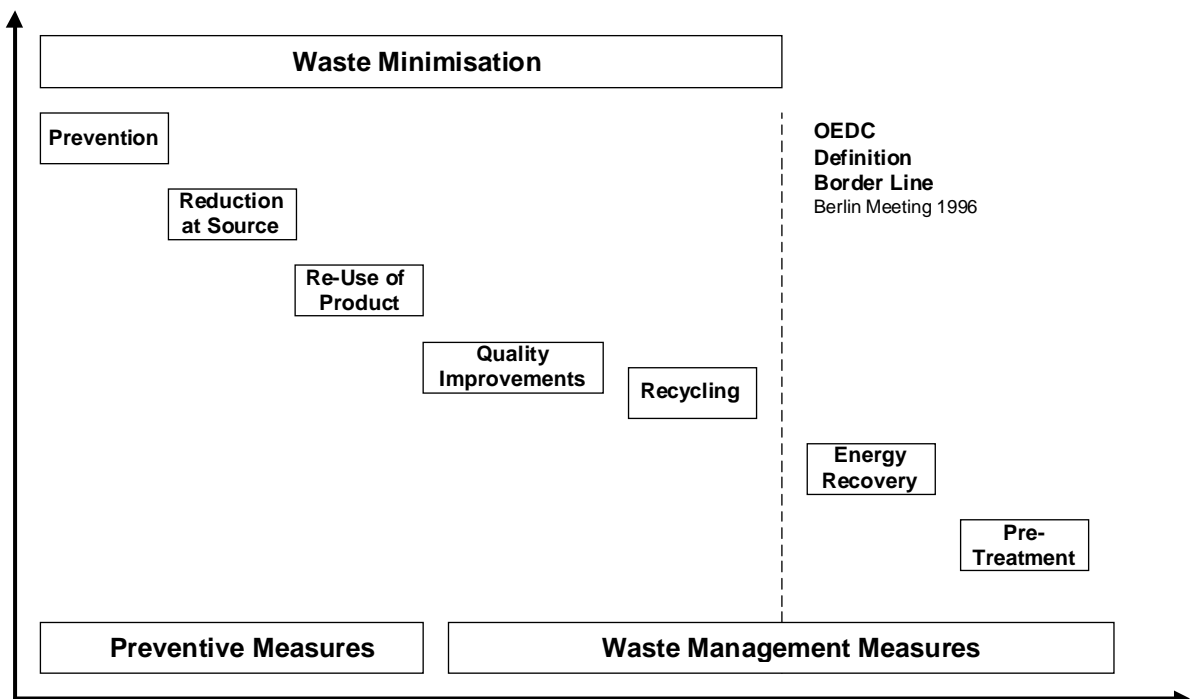


Figure 1: OECD Working definition on waste minimisation agreed at the Berlin Workshop

In order to avoid double work and to co-ordinate the five catalogues a more strict definition for waste minimisation was agreed upon. In this definition, cleaner production/waste minimisation is related to preventive measures.

In detail, this means that waste minimisation includes:

⁸ „Building the Basis for a Common Understanding on Waste Minimisation“, OECD Workshop October 1996 in Berlin, hosted by the German Government.

- waste prevention, i.e. the reduction of waste by application of more efficient production technologies;
- internal recycling of production waste;
- source oriented improvement of waste quality, e.g. substitution of hazardous substances, or bans on hazardous substances;
- re-use of products or parts of products, for the same purpose.

According to the definition, waste minimisation does not include:

- external recycling;
- improvement of waste quality by sorting of waste;
- re-use of product or part of products for any other purpose than the original;
- any kind of energy recovery.

The definition is closely related to the generating source only, on the one hand to the production process and on the other to the end-of-life product. Any other measure is defined as waste management and will be covered by Catalogue II.

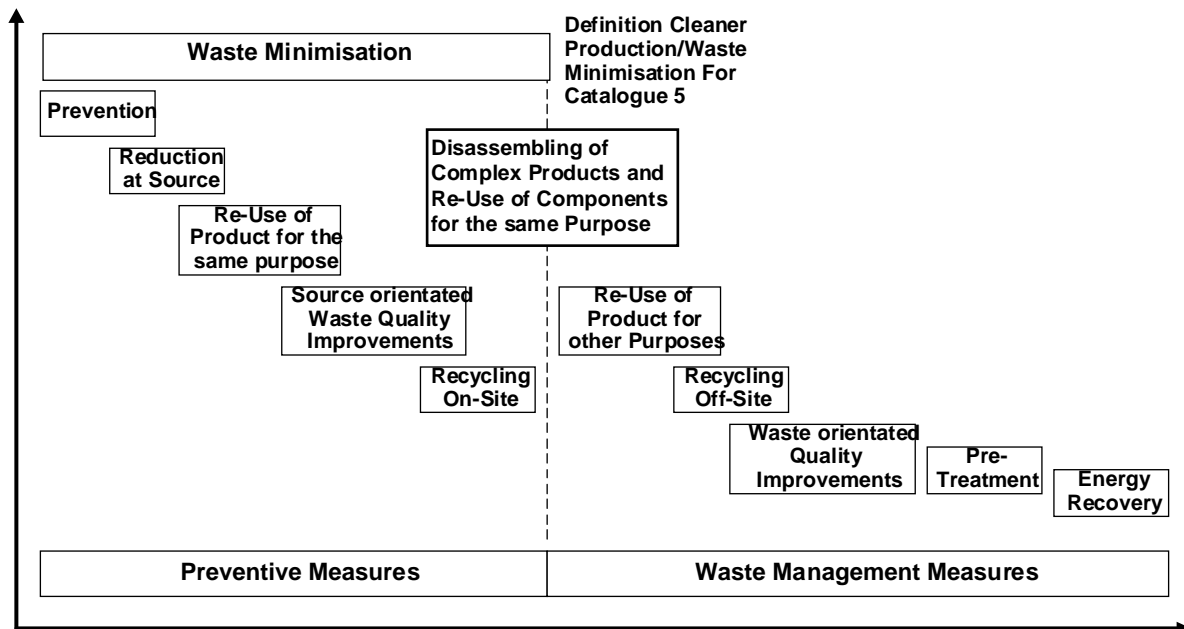


Figure 2: ETC/W Definition of cleaner production/waste minimisation⁹.

The ranking of the different measures as shown in figure 1 and 2 is only valid from a general point of view. In reality the ranking and the valuation of alternatives has to be worked out by a comprehensive analysis.

6.2.2. Target groups

The target group of a catalogue of strategies and instruments is primarily policy-makers in a broad sense, i.e. the European Commission, European Parliament, National and Regional Governments, Associations of Industries and NGOs.

6.2.1. Data collection

Due to the complicated matter and lacking general definitions within this field, the collection of data will be organised in several steps:

Step 1:

⁹ Agreed at the task team meeting in Stuttgart, 7th Sept. 1998

Already existing information (reports and databases) concerning national strategies will be compiled, evaluated and analysed. The most prominent existing data source is a newly completed OECD report covering 10 of the 18 EEA member countries. The questionnaire used in this study has been based on the OECD questionnaire already designed.

Step 2:

This questionnaire has been sent out for comments to the ETC/W partner countries in order for them to fill in the questionnaire to give information about their national strategies.

Step 3:

A report will be drafted based on the information compiled in step 1 and on the questionnaires (step 2). The report will mainly focus on the situation in the ETC/W partner countries.

The report will comprise:

1. the description of the different approaches in the ETC/W partner countries and an evaluation of the different experiences made;
2. the comparison of the different approaches and instruments in the countries;
3. the description of the successes and drawbacks related to target groups;
4. description of the experiences, the present trends and the future policies;
5. conclusions concerning waste minimisation strategies.

Step 4:

Based on the report and the experiences from the survey amongst the ETC/W partners a final questionnaire will be drafted and sent out to the NRCs and the final layout of the database will be designed.

6.2.4. Updating

Once new factsheets on waste minimisation have been established the NRCs should be responsible for updating them whenever new strategies or instruments are approved.

6.2.5. Output/User interface

A basic output will be country specific reports describing strategies and instruments. Furthermore, search according to topics should be possible across the catalogues – e.g. to generate a report on countries having subvention schemes for development of waste minimisation technologies.

6.3. Content of the catalogue

The catalogue can be seen technically as two interconnected catalogues. In one catalogue fact sheets will describe the strategy of the country (if existing) and in another, fact sheets will describe the actual instruments and initiatives employed. All information will be in the form of text fields but organised according to keywords describing different elements of the strategy and instruments. The final layout of the catalogue will be decided based on a test phase covering the five ETC/W partner countries.

The content of the catalogue is however expected to follow the general fields surveyed by the questionnaire.

6.4. Technical description of catalogue V

Cleaner Production/Waste Minimisation Strategy		
<p>Definition of entity: typical one per state/larger region.</p> <p>Unique identifier: Time, geography and title.</p> <p>No of occurrences: approx. 200.</p>		
Inf. Type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of adoption Duration: <ul style="list-style-type: none"> • Date of coming into action • Date of expire (optional) 	
Geography	<ul style="list-style-type: none"> • area of regulation 	NUTS level 0-1
Title	Official title of the strategy	
Responsible org.	Name of the responsible organisation (some times alias a competent authority)	
Status	describes the legal status of the strategy	Voluntary/mandatory
Waste type	waste type included in the strategy	
Description	Free text	

Cleaner technology instrument/initiative		
<p>Definition of entity: typically several different instruments/initiatives per state/larger region.</p> <p>Unique identifier: Time, geography and title.</p>		
Inf. Type	Description	Classification list
Time	Real world events: <ul style="list-style-type: none"> • Date of adoption Duration: <ul style="list-style-type: none"> • Date of coming into action • Date of expire (optional) 	
Geography	Area covered	NUTS list level 0-1
Goal	specific objective (free text?)	
Instrument type		regulatory, economic, voluntary etc.