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THE COMPETITIVENESS OF THE RECYCLING INDUSTRIES

TABLE OF CONTENTS

Page

SUMMARY AND CONCLUSIONS.....	III
1. INTRODUCTION -----	1
2. THE RECYCLING INDUSTRIES -----	2
2.1 <i>Scope and definitions</i> -----	2
2.2 <i>Factual elements (see table in Annex 1)</i> -----	3
2.3 <i>Structure of the recycling industries (see table in Annex2)</i> -----	4
2.4 <i>The role of collection and sorting in sector performance (see Annex 3)</i> -----	4
2.5 <i>Recycling of complex end-of-life products</i> -----	5
3. KEY FACTORS FOR COMPETITIVENESS -----	6
3.1 <i>Factors affecting production and supply cost</i> -----	6
3.1.1 <i>Structural aspects</i> -----	6
3.1.2 <i>Technical aspects affecting the cost of collection and sorting</i> -----	7
3.2 <i>Key factors affecting demand</i> -----	8
3.2.1 <i>The process of substitution</i> -----	8
3.2.2 <i>The need for innovation in products</i> -----	9
3.3 <i>Factors affecting the functioning of markets and the business framework</i> -----	9
3.3.1 <i>Lack of market transparency</i> -----	9
3.3.2 <i>The role of regulation</i> -----	10
4. PROPOSED ACTIONS TO IMPROVE THE COMPETITIVENESS OF THE RECYCLING INDUSTRIES -----	13
4.1 <i>Actions in the area of standardisation</i> -----	13
4.2 <i>Actions in the area of market development and transparency</i> -----	13
4.3 <i>Innovation</i> -----	14
4.4 <i>Regulatory measures</i> -----	15
4.4.1 <i>Improvement of the existing regulatory framework</i> -----	15
4.4.2 <i>Market-based instruments to promote the development of recycling</i> -----	16
4.4.3 <i>Possible new regulatory measures</i> -----	17
5. PROPOSED APPROACH FOR FOLLOW-UP: DISCUSSION WITHIN A RECYCLING FORUM	19

SUMMARY AND CONCLUSIONS

This communication is the outcome of an intensive survey of the industrial stakes involved in recycling activities. Such activities are being called upon to play an increasing role in industrial companies to attain the goal of sustainable development. It is just as important, however, that the development of recycling takes place in a context of competitive markets functioning correctly and efficiently.

Consequently, this communication addresses the major problems encountered by the recycling industries to achieve or maintain viability. To this end, it identifies key factors for the competitiveness of these industries, such as economic structures, the ways in which the markets function, the technical and regulatory context.

The communication contains chapters devoted to, respectively, a description of recycling activities, an analysis of key factors for their competitiveness, and an action programme which is capable of meeting the challenges raised and consistent with the Community industrial approach described in the communication entitled "An industrial competitiveness policy for the EU".

In addition, this communication may be regarded as a partial response to the Council Resolution of 24/2/97 on a Community strategy for waste management, which contains specific references to recycling¹.

1. Description of the recycling industries

Recycling is defined in the directive on packaging and packaging waste as the reprocessing in a production process of the waste materials for the original purpose or for other purposes, including organic recycling but excluding energy recovery. For the purpose of this communication, recycling industries also include companies which have activities such as collection, dismantling and sorting as far as they are followed by recycling in the sense of the mentioned directive.

This communication describes the most developed recycling industries, such as the recycling of metals, paper, glass, plastics and textiles. Furthermore, it touches upon the particular industrial and environmental problems of end-of-life consumer durables, which provide an illustration of the trend towards recycling on more complex sources which comprise several materials.

Whether the industries concerned are traditional or new, there is no avoiding the fact that their structures are not consolidated either at technological or economic level. This is particularly true with regard to the collection and initial sorting of materials, where structures continue to be fragmentary and of poor technological performance (textiles), or where the arrangements provided (private partnerships, agreements with the public sector, etc.) reflect certain shortcomings in the markets concerned.

¹ O.J. C 76/1 of 11.3.97

2. *The major key factors for competitiveness in recycling*

Recycling is not only an environmental priority but is also intrinsically profitable in an increasing number of applications, thanks to energy savings and economies in materials and of other types which recycling permits compared with traditional processes. It is vital, therefore, that the framework conditions, particularly those which fall within Community competence, do not hinder the development of these activities and, on the contrary, that Community action takes due account of the economic and job-creation potential of recycling activities. This communication highlights the key factors for competitiveness on the supply and demand side, as well as in the functioning of markets and the business framework.

- On the supply side, recycling is subject to pressure caused by the growing cost of collecting and processing waste, while finding itself in direct competition with the corresponding virgin raw materials. In these conditions, structural and technical weaknesses constitute a significant brake on the competitiveness of the sector. Ultimately, the efficiency of recycling could be improved by ensuring that product design takes into account the requirements of post-consumption collection, sorting and recycling.
- On the demand side, the competitiveness of recycling is limited by a lack of preference for recyclable and secondary materials on behalf of processing industries, due to their technical properties, limited applicability and /or negative image. Furthermore, recycling is likely to be hampered by the lack of pertinent industrial standards, or even by the tendency for some standards or specifications to ignore or discriminate against recycled materials or products.
- Lack of transparency in recycling markets is a major impediment for the investment required in order to achieve improvements in industrial structure, improve procedures for treating recyclable waste and develop new applications for recycled products. Furthermore, while they have helped to harmonise national legislation and to avoid the fragmentation of the Community market, Community regulations on waste are still perceived by industry as complex. Although the subsidiarity principle may imply different but valid implementation of Community legislation in Member States, it must be recognised that less than perfect transposition by the Member States is a major reason why the market does not always function properly and entails high costs for companies.

3. *Action plan*

An analysis of the factors mentioned above has led the Commission to propose actions to all economic players concerned (recycling industries, transforming industries, consumers' organisations etc.) and the authorities involved (EU, competent authorities in Member States), co-ordinated within a **Forum** for recycling, focused on the following priorities:

- to identify weaknesses in structures and in the functioning of markets, and to formulate proposals to remedy these;
- to promote intangible investment and to co-ordinate strategies for innovation;

to strengthen industrial co-operation in the various recycling industries and to exploit possible synergies;

to improve the existing business framework, including, where appropriate, economic instruments and/or voluntary or negotiated agreements between industrial actors, consumer organisations and/or public authorities.

In this way, a context will be created to facilitate also the promotion of competitiveness within the recycling industries through Community policies in areas such as research, training and quality assurance.

The Forum will analyse all the possible actions identified in this Communication, providing an assessment of their advantages and drawbacks and of their economic and environmental implications. In addition, the Forum may discuss the economic impact of environmental legislation and policies on industry. It will submit a report to the Commission within twelve months. When making its conclusions, the Forum should also evaluate the usefulness and the feasibility of setting up a possible permanent body, a type of European Recycling Centre, which could take on important tasks in the areas of the functioning and development of markets, and of information and innovation.

For its part, the **Commission** will devise its own actions, contributing to the improvement of the ways in which markets operate, and in particular focusing on transparency:

- at the economic level, by encouraging the development of markets for recyclable and secondary materials
- at the technical level, by co-ordinated action regarding standardisation and quality assurance, in particular through the fifth framework programme for research
- in the legislative area, by maintaining the smooth functioning of the Community market, in particular by seeking to harmonise the implementation by the Member States of Community legislation on waste, and, where appropriate, by new regulatory measures.

1. INTRODUCTION

- ♦ Recycling initially referred mainly to the recovery of steel scrap and non-ferrous metals. Recycling activities regarding other materials, such as glass, paper or plastic have been slower to develop, their economic profitability being less immediate than that of metals. In all cases, the growth of the traditional recycling industries has encountered limitations sooner rather than later, depending on the different materials concerned, in the form of insufficient demand, precarious and, for the most part, not very competitive market structures and of unbalanced competition from virgin raw materials.

- ♦ More recently, increased awareness of the environment and, in particular, the concern over guaranteeing sustainable development, and the pressing need to organise waste management have all contributed to enhancing the image of recycling as an important and even priority instrument to attain these environmental objectives. The importance of waste management improvement as an ingredient in a strategy for sustainable development was reiterated both in the Fifth Action Programme for the Environment and in the Community strategy for waste management. Environmental awareness has also awakened a recognition of the possible economic value of recyclable wastes through recycling into secondary raw materials. At the same time, a growth in the demand on the part of society for recycled products is likely to facilitate the exploitation of economies of scale when producing these goods upstream, thus opening up new prospects for the competitive development of the recycling industries and, in this way, for the promotion of the recycling activities. This is one example of the complementary character of industrial development and environmental protection.

- ♦ The environmental awareness was followed up by extensive thought giving rise to a considerable body of legislative texts at both Community and Member State level and aimed at supplying a framework for action by the economic players concerned (producers and consumers), in a way which would guarantee a high level of protection of the environment in the area of waste management. The environmental impetus has not always been matched by the economic considerations involved for the following reasons :

Economic operators, traditionally focusing on the reprocessing of materials, considered the sourcing-related aspects as less important, mainly because of the availability of primary raw material. Nevertheless, sizeable recycling rates have been achieved in some profitable sectors (e.g. metals, paper) on a commercial basis and despite a widespread lack of integration between collectors and the processing industry.

- The environmental approach takes the concept of end-of-life products as the starting point. Whether it is a question of packaging or durable goods (machines, cars, computers, TVs or other things), the problem begins when such objects become waste in the sense of the waste directive at the end of

their useful life². It is necessary, therefore, to guarantee the management of these waste products in the way which most respects the environment, and two basic principles which are cornerstones of environmental doctrine are brought to bear here: "the polluter pays" principle and that of shared responsibility.

♦ The implementation of recycling objectives in the context of an environmental policy has given rise to situations where the activity of recycling is not profitable unless some direct or indirect public intervention takes place. The basic question is therefore as follows: is it possible for these objectives to be reached with a recycling industry operating according to market rules? It can be stated that, if markets function correctly and in conditions of maximum efficiency and minimal costs, recycling may become profitable in an increasing number of cases.

♦ Throughout the whole process of recycling, therefore, from the collection of waste to the markets for recycled products, obstacles to the proper functioning of markets must be identified so that subsequently – while respecting the environmental principles mentioned above – the measures to be implemented can be decided, both by public administrations and by the economic players responsible, for creating conditions which will guarantee the competitive functioning of markets, both of secondary raw materials and of recycled products.

This Communication aims both to improve the competitiveness of the recycling industries and to promote recycling in an environmentally sound manner. It is structured in three chapters devoted respectively to the description of recycling, the analysis of key factors for its competitiveness, and an action plan which acknowledges the priority areas for action identified in the Communication entitled "An industrial competitiveness policy for the European Union"³.

2. THE RECYCLING INDUSTRIES

2.1 Scope and definitions

Recycling is defined in the Directive on packaging and packaging waste⁴ as the reprocessing in a production process of the waste materials for the original purpose or for other purposes, including organic recycling but excluding energy recovery. For the purpose of this communication, recycling industries also include enterprises which have activities such as collection, dismantling and sorting as far as they are followed by recycling in the sense of the directive cited above.

As in any other industrial activity, recycling implies the shipment of waste and materials between the various economic agents involved, which is

² Definition of waste: Directive 75/442/EEC, amended by Directive 91/156/EEC (Article 1), OJ N°L78 of 26.3.1991.

³ COM(94)319 of 14.9.94

⁴ Dir. 94/92/EEC, OJ N° L365/10 of 31.12.94

why shipments of waste and materials - including their international trade - is an important aspect of these industries.

The reflections and conclusions of this communication are in principle valid for all recycling industries, even if the attention is concentrated on the most developed sectors.

2.2 Factual elements (see table in Annex 1)

There are no systematic and harmonised statistics on the recycling industries. The information obtainable on these industries is always of a fragmentary, incomplete and often imprecise nature. Despite these limitations, the information which is available enables us to draw some significant conclusions.

- In absolute terms, it can be seen that the volume of waste which is reincorporated into the production circuit reaches considerable levels, particularly in the case of ferrous and non-ferrous metals, paper and glass. These are also the industries which have the highest rates of recycling. The textiles sector has made significant efforts in recent years with highly positive results. The fact that the plastics industry recycles only about 7% of waste generated in this sector, is essentially due to technical and economic difficulties (in particular at the stage of collection and sorting).
- Recycling is a complete industrial activity. As such, the implications in terms of *transport* requirements are very important. Thus, in special circumstances, such as when using river or maritime waterways which make it possible to exploit economies of scale, recyclable waste may be transported over large distances. In this way, trade in glass cullet in the United States is increasing in importance and *trade outside Europe* with ferrous and non-ferrous scrap is reaching highly significant proportions both in absolute and relative terms.
- With regard to *employment*, recycling processes are generally intensive users of labour, but few precise indications are available, unfortunately. The number of people currently working in these industries is estimated at approximately 350 000. In terms of sectors, recycling of steel and non-ferrous metals are the most important sectors with respectively 100 000 and 80 000 jobs.
- Recycling frequently produces *energy savings* compared with the corresponding industries based on the use of virgin raw materials. This applies in particular to ferrous and non-ferrous metals and to the glass sector.

2.3 Structure of the recycling industries (see table in Annex 2)

The ferrous and non-ferrous metals recycling industries have been well-established for a long time in the European Union. Although more recent in date, the paper, glass and textile industries are also well-established. Rapid progress is currently being made with the recycling of plastic and composite materials, but there are a great number of technical difficulties, especially in some Member States which have launched initiatives with regard to the recycling of packaging.

The principal recycling industries have some features in common but also display highly differentiated characteristics, reflecting differences in the technical and commercial processes involved with each recycled material. Quite apart from this diversity of materials and processes, the *diversity of sources* is no doubt a decisive element when determining the organisation of a sector and its profitability. Two major groups can be distinguished: on the one hand, the industrial source which generates fairly homogenous quantities of waste at a limited number of sites and, on the other hand, the post-consumption source, which is characterised by a large number of points of origin, a high degree of heterogeneous materials and sometimes a high degree of contamination.

From an organisational point of view, the combination of these sources generally gave rise to a collection structure which is vertically integrated up to the level of sorting, and which often uses low technology and important amounts of labour. Between the sorting level and reprocessing, traders are usually very important, and hence complete vertical integration is rather the exception. Only in the traditional recycling sectors, such as metals, the chain is entirely composed of private operators, whereas municipal waste is predominantly collected and sorted by public or semi-public operators.

2.4 The role of collection and sorting in sector performance (see Annex 3)

The degree of efficiency with which the activities of collecting, sorting and preparing (treatment) the recyclable waste are carried out has a significant effect on the profitability of the whole sector.

It will be observed that, generally speaking, the *cost* of collecting from households is relatively high unless there is separate collection. The cost of collecting from industrial origins is usually lower, sometimes negligible, to the extent that the undertakings which have generated the waste very often assume the cost of withdrawing the materials themselves. As for *quality*, wastes originating from households are generally of a lower quality than those provided from industrial sources.

There is likely to exist a considerable potential for cost savings in the collection and sorting phases, through specialisation and/or increase in scale of operation. This could be explored both in the private sector and in the public sector on the basis of experiences and practices within the Member States.

2.5 Recycling of complex end-of-life products

Alongside the recycling industries specialised in certain materials can be seen the development of systems for the collection and dismantling of end of life consumer durables representing significant flows of wastes.

Under legislative pressure in certain Member States, the industries concerned have set up specific collection systems for the taking back of end of life products. Often, they use their own distribution networks to take products back.

In its work on priority waste streams, the Commission set up several working groups, notably for construction and demolition waste, used tyres, hospital waste, end of life vehicles (ELVs), electric and electronic waste (see also 4.4.3 hereafter).

3. KEY FACTORS FOR COMPETITIVENESS

Despite the wide variety of situations in the different sectors which emerges from the description in the previous chapter, it is possible to highlight common factors which could improve the competitive performance of the recycling chain. This analysis could be done by a grouping into supply-, demand- and market-related issues.

3.1 Factors affecting production and supply cost

3.1.1 Structural aspects

The performance of the collection and sorting phase is crucial for the competitiveness of secondary raw materials, although some important technical bottlenecks also may exist at further stages of the recycling process (e.g. processing of plastics). Operators at the collection and sorting stage generally have the least flexibility in terms of their selling and (usually insignificant) buying price, whilst facing competition from other ways of waste elimination, such as incineration and landfill.⁵

The economic efficiency of the *collection and sorting* activities, and consequently their scale of operations, depend upon:

- * the quality (and price) of the recyclable waste delivered for reprocessing and the extent to which deliveries might be rejected by reprocessors for reasons of contamination ;
- * the quantity of recyclable waste collected in relation to the waste stream available (recovery rate) and the associated cost.

In this respect, the growth of stocks of recyclable household waste, as a consequence of economic growth and waste policy, and the structural fall in good quality industrial waste⁶ placed on the market, confront the sector with a "scissors effect" (increasing cost and prices out of control).

The *method of collection* (selective collection, take back systems etc.), as well as the way of involving the public sector and the consumer and/or the producer's responsibility have a decisive impact on the cost and efficiency of collection, although *the most efficient practices may differ geographically or according to the type of waste*.

Public authorities do play a part regarding many competitive parameters by using economic and regulatory instruments. As the main party responsible for the collection of household waste, they may control alternative solutions of waste elimination (including landfill and incineration) through the pricing

⁵ Incineration is an economic option, for instance when the price of used paper reaches low or negative levels.

⁶ For example : the reduction of new metal scrap in the metals processing industry.

system or even selective prohibition, as well as the methods and infrastructures for collection and sorting. They may stimulate innovation and encourage investment, thereby facilitating important economies.

At the other end of the scale, the absence of an established collection scheme and the presence of occasional collectors, as in the case of metals and textiles, may give rise to wide fluctuations in the level of activity throughout the business cycle. This phenomenon of *instability* may be the prime reason for the lack of capital investment in this activity, and persisting structural and technological deficiencies. *Industrial co-operation* between operators and/or reprocessors and the public sector seems the most appropriate way to explore in order to overcome these problems.

3.1.2 *Technical aspects affecting the cost of collection and sorting*

- The complexity of products hampering efficient recycling

Products and materials design plays a very important role in the development of recycling. It influences the recycling cost, as it will determine the amount of time needed to take an object apart. Design also influences the quality and the degree of impurity in recyclable waste and secondary raw materials, and thus determines the price of materials produced from recycling.

Dematerialization through lightweighting and miniaturisation of products has an important place in product design, but the result is very complex products and materials whose components are often difficult to separate. Therefore from an environmental point of view, a reasonable compromise often needs to be found between design for easy disassembly and dematerialization, taking into account both the interests of the producer and the recycler.

- Insufficient information on products impeding dismantling and sorting

The activities of sorting and processing end-of-life products are still in many cases based on manual operations. It is therefore vital to have a maximum of information on the identity and the composition of these products. This information may be supplied either through specifications devised by producers, which indicate how the product must be recycled, or through the identification of its components. At the moment, identification is inadequate, not appropriate or not harmonised; few companies make the necessary information available to the recyclers. There is still little use of harmonised identification codes affixed to product components, and allowing identification by machine and a considerable reduction in sorting costs. Identification plays a particular role in the elimination of hazardous substances to avoid the contamination of secondary raw materials by substances which are dangerous for health and the environment, which in turn greatly reduces the value of and the demand for these materials.

From the above, it is evident that the cost of supply of recycling could be favourably influenced by action in the field of

- * standards for product design with the aim of a better identification of the components and reduction of the cost of dismantling
- * identification and/or exclusion of dangerous substances
- * innovation in the production process (including collection and sorting)
- * industrial co-operation with the aim of improving industrial structures, notably in the field of collection and sorting
- * regulatory instruments affecting, directly or indirectly, the efficiency of collection and/or the cost of recycling

3.2 Key factors affecting demand

3.2.1 *The process of substitution*

The development of markets for secondary raw materials, and hence for recyclable waste, is first and foremost a matter of substitution between virgin and secondary raw materials.

For processing industries, the *industrial decision* to switch, even partly or temporarily, to recycling, is usually a *long-term* one involving investments. Such strategic decisions are taken with reference to long-term price trends, potential savings (notably in energy) linked to the use of secondary raw materials and other elements such as their quality and regularity of supply. From this point of view, cost control on the supply side and the functioning of markets are of paramount importance.

Furthermore, the options taken by the processing industry are evidently dependent on possible regulatory and/or economic instruments in favour of recycling.

Product standards as a potential barrier to substitution

Among product standards to be met by the processing industry, some are set out in such a way as to exclude the use of recycled materials in the production of products for which they serve as specifications. Other product standards exclude the use of recycled materials by imposing performance requirements which are too severe. In certain cases, restrictions in standards on the use of recycled materials are justified for reasons of health and environmental protection. As an example there is the case of packaging for foodstuffs which must respect hygiene standards set in the framework of foodstuff regulation.

- The problem of image

The choice of recycling depends not only on objective constraints, but, in some cases, on *subjective elements* too. For both the processor-recycler and the final consumer, the incorporation of secondary raw materials in a final product should globally result in a positive balance, not only in terms of price, but also in terms of quality and image. An increasing amount of consumers tend to pay attention to the environment. Eco-labelling schemes recognise the potential of consumer preference for products with a positive ecological impact.

3.2.2 *The need for innovation in products.*

Account must be taken of the fact that *substitution is often technically possible only to a certain extent, partly for reasons of quality, and of the phenomenon known as "downcycling"*. Recycled paper, for instance, requires the addition of virgin fibres to various extents, with the exception of newspaper, tissue paper and wrapping paper, which may contain up to 100% of recycled fibres; plastic recycled from beverage bottles can not be reused for the same application. Therefore, research and innovation into new applications for recyclables is required, through dissemination of research results, examples of good practice, pilot projects etc.

From the preceding, it is evident that markets for recycling could be boosted by the following instruments :

- * standards and labelling
- * innovation, essentially in the field of products and applications
- * regulatory and/or economic instruments in favour of recycling

3.3 Factors affecting the functioning of markets and the business framework

3.3.1 *Lack of market transparency*

Most of the markets for recyclable waste and secondary raw materials could be qualified as highly *imperfect*, given that they are characterised by a manifest lack of transparency and even a certain amount of fragmentation. So the markets can not play fully their role of guidance so as to develop the recycling sectors in the short and long term (through investment and innovation), nor do they make it possible to exploit the advantages connected to the size of the Community market as a whole.

The lack of transparency is revealed primarily by the fact that there is an almost total absence of economic indicators and statistics in the short term.

An illustration of this fact is that it is not often easy to find a representative price for these materials, except outside the market (in the case of scrap iron, for instance, the price commonly used as the reference price is the American composite price).

The scant number, not to say the total lack of technical specifications and joint test protocols, or ones which are widely recognised, is a major factor in the fragmentation of this market. When they do exist, such specifications have often been conceived to meet the requirements of specific contracts between undertakings.

Consequently market transparency could be enhanced by actions in the field of :

- * organisation of exchanges for recyclable waste and secondary materials
- * accompanying measures in the field of standards, market information and statistics

3.3.2 *The role of regulation*

The regulatory and administrative context is also perceived by industry as a factor leading to fragmentation of the market and giving rise to a lack of business confidence. Apart from the difficulties in applying the regulation concerning the shipment of waste, and despite steps taken by the Commission with the Member States, the diversity of national approaches in the area of waste is clearly perceived by companies as a source of market perturbation, not to say distortion of competition.

- The framework directive on waste

Directive 75/442/EEC created the basic legislative framework for Community policy on waste management. It was amended in 1991⁷ in order to incorporate the principles of the 1989 Community strategy for waste management. This framework obliges Member States to encourage the prevention of waste generation, promote re-use and recovery, and set up systems for authorising and monitoring operations involving waste. It defines waste as being "any substance or object which the holder discards or intends or is required to discard". The definition was clarified by the European Waste Catalogue⁸ which contains a classification of the materials which may be covered by this definition and which has been substantiated on several occasions by the Court of Justice. Hazardous wastes are defined by way of a list, i.e. the EC list of hazardous wastes⁹. Nevertheless, the definition is still causing much concern to industrial operators. The

⁷ Directive 91/156/EEC, OJ L 78/32 of 26.3.91

⁸ Decision 94/3/EC, OJ L 5/15 of 7.1.94.

⁹ Decision 94/904/EEC, OJ L 356/14 of 31.12.94

Commission has noted¹⁰ major differences between the Member States with regard to the implementation of the EC definitions and classification of waste and hazardous waste. Moreover, there is a lack of consistency between the different waste classifications which govern international trade. For the companies concerned, this situation may lead to confusion when they are trying to develop a strategy on a wider geographical scale.

The traditional recycling industry – at the level of collectors and traders – also complains that the assimilation of what they put on the market as raw materials, with wastes, involves high administrative costs, in particular in terms of authorisations and the handling of follow-up documents for the shipment of materials. They also complain that this situation creates a negative image which affects the confidence, not only of the public but also of insurance and credit institutions. To this end, Article 11 of Directive 91/156/EEC offers the flexibility to Member States to apply a simplified administrative framework to their recycling industries. However, this flexibility is unevenly and, according to industry, insufficiently applied throughout the Community.

- Regulation on shipments of waste

Regulation 259/93¹¹ on the supervision and control of shipments of waste within, into and out of the European Community is the Community instrument which provides the framework for exports, imports and intra-Community shipments of all kinds of waste except radioactive waste. It takes into account the provisions on the movement of waste adopted by the OECD and the Basle Convention. This marks a considerable step forward in relation to the previous situation, but the system being so detailed and rather complex, Member States needed some time to achieve effective implementation. This is due to the different national systems as regards financial guarantees, for example, or to a different interpretation by Member States' authorities as regards the classification of waste, in combination with the proximity principle, which is applied only to waste for final disposal. To overcome these problems regular meetings take place with a group of correspondents set up under Regulation 259/93. At the same time, many abuses in the field of hazardous waste led the Basle Convention to introduce a ban on 1 January 1998, which is in force for the Community, on the shipment of this hazardous waste from OECD to non-OECD countries. This also applies if the waste is intended for recycling. At the same time, the EU has asked non-OECD countries to state what types of non-hazardous waste they would be willing to accept for the purposes of recycling. Therefore, some control procedures will also apply to exports of non-hazardous waste for recycling to these countries, where so requested.

¹⁰ COM(97)23, report on the application of Community directives on waste management

¹¹ OJ L32/1 OF 6.2.93

Furthermore, with its Market Access Strategy policy, the Commission is actively engaged in the identification and dismantling of trade barriers for recyclable waste (e.g. export restrictions for metallic scrap which are maintained by certain CEECs), where this is not in accordance with the position of these countries in relation to the previous paragraph.

Conclusion

Regulation in the field of waste is necessary to ensure a high level of environmental protection as required by the Treaty, but the principle of proportionality should guide its implementation with regard to the recycling industries, given their particular role in waste management. In accordance with the principle of subsidiarity, a Community-wide framework will in some cases be necessary in order to ensure coherence between national approaches in obtaining environmental objectives.

A transparent and stable regulatory environment, and in particular clear and workable definitions, are essential for promoting innovation and investment.

More particularly, the Council Resolution of 24 February 1997 on a Community strategy for waste management urges the Commission and Member States to develop agreed terminology and definitions in order to facilitate the achievement of a greater degree of harmonisation in the application of Community legislation.

4. PROPOSED ACTIONS TO IMPROVE THE COMPETITIVENESS OF THE RECYCLING INDUSTRIES

The overview in the preceding chapter has allowed the identification of four main areas for action in order to improve the competitive position of the recycling industries and to boost recycling activities: standardisation in the broad sense, market development and transparency, innovation and regulatory measures.

4.1 Actions in the area of standardisation

Co-ordinated and integrated actions will be undertaken along the following lines:

- *Review of industrial standards so as*
 - to ensure that product design favours the aptitude of products for recycling
 - to eliminate obstacles to the use of secondary raw materials
 - to provide adequate opportunities for recycled products in standards which are relevant for public calls for tenders
- Substitution of *hazardous substances* in products, when justified by risk analysis and economic assessment, or in line with the precautionary principle¹² (Art. 130R).
- Harmonisation of existing *specifications and testing methods* for secondary raw materials.
- Development of *marking systems* for specific products, so as to guide consumers to separate collection systems and to facilitate the identification of substances, particularly toxic substances and materials suitable for recycling.

4.2 Actions in the area of market development and transparency

The following actions could be conducted with a view to develop and widen the markets for recyclable waste and secondary raw materials both in the short term (substitution) and in the long term (investment).

- Support for the creation of *Exchanges* for recyclable waste and secondary raw material.
This action is likely to be supported within the framework of the action programme for the Information Society, particularly the part concerning electronic commerce, following a detailed survey of

¹² "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." (Principle 15 of the Rio Declaration, 1992)

initiatives in progress and existing experiences (e.g. electronic exchange on recyclable plastics).

- Study of the *intrinsic savings* to be made when using secondary raw materials throughout the *life cycle* of the product. In addition, a sustained and properly targeted *awareness campaign* directed at industrial circles and final consumers could be envisaged to improve the perception of, and, where necessary, to rectify the negative image of secondary raw materials. The use of *voluntary eco-labelling schemes* for products could be explored.
- In parallel, the knowledge of markets could be improved by:
 - the compilation of community statistics on waste generation of waste types which are potentially recyclable and statistics on the actual recycling taking place, as well as the development of statistics on trade in commercially valuable waste materials. Furthermore, existing and future statistics should be adapted to the classifications found in Community legislation;
 - studies of long-term trends in the potential supply and demand of recyclable waste and secondary raw materials.

4.3 Innovation

Innovative action should be stimulated in fields ranging from research and development properly speaking, to training and quality management.

- Targeted use of the fourth and especially the fifth framework programme for *research*. Emphasis will be placed on selection and transformation methods, without excluding new technologies for the clean recycling of materials and end-of-life products, for optimising waste and inert shielding of final waste, as well as on basic research and the development of information-technology based systems.
- Promotion of *innovation* by disseminating research results and examples of good practices, etc., including national practices. This ranges from the sorting at source of recyclable fractions of waste and the improvement of waste collection logistics, to the use of secondary raw materials in industry. Pilot projects could, where needed, be encouraged within the framework of corresponding Community programmes.
- Development of *quality* management strategies in industries which have recycling activities, in order to strengthen consumer confidence and optimise technical and economic performance, as well as public image.
- Use of the Community *training* programmes to support these actions on a concerted basis among the various parties involved in recycling.

4.4 Regulatory measures

4.4.1 Improvement of the existing regulatory framework

Contacts with industry have revealed that Community regulations on waste, and especially the application of such regulations, is a source of numerous difficulties which may hamper the development of a competitive recycling industry. The need for economies of scale for certain sectors of the recycling industry must be recognised and therefore, undue limitations to the circulation of recyclable waste should be avoided. An analysis of the difficulties highlighted in the communication indicates the following action in the regulatory field, given that care will have to be taken to maintain the dialogue between industry and administrations and make this dialogue as effective as possible.

- *The regulatory framework must be transparent*
 - in agreement with the conclusions of the Report concerning the application of Community directives on waste management by the Member States, the Commission proposes the direct and integral transposition of the definition of waste and the European Waste Catalogue and the list of hazardous waste into national legislation. It will at the same time examine, on a case by case basis, whether there is a need to clarify definitions and/or to review classifications;
 - the Commission will insist that Member States notify it of measures to implement Community legislation on waste (the competent authorities, pre-authorisation, etc.); the Commission will try to ensure that companies or their associations have access to the information they need to profit from the dimension of the Community market.

- *Community legislation must be simplified and correctly applied*
 - amongst other things, the Commission will examine appropriate ways of simplifying the administrative procedures outlined in Regulation 259/93/EEC insofar as this is possible, taking into account the orientations adopted within the OECD or within the context of the Basle Convention. In particular, it will ensure that the competent authorities correctly interpret the principles of self-sufficiency and proximity which, in the view of the Commission in accordance with the legislation in force, are not applicable to recycling;
 - the Commission regards agreements negotiated between public authorities and economic operators to attain environmental objectives as important. Whilst respecting the need to guarantee a high degree of protection for the environment, such agreements may constitute a useful accompaniment to the legislative framework, depending on the speed and facility with which they can be implemented. These agreements have to be designed and implemented in compliance with the rules and the principles of competition policy and of the internal

market as the ~~recent communication~~ of the Commission on environmental agreements has made explicit.

4.4.2 *Market-based instruments to promote the development of recycling*

- In its Communication "Environmental Taxes and Charges in the Single Market" (COM(97)9 dated 26.3.97), the Commission supported the evolution of the use of environmental taxes and charges, as it opens up the scope for a more cost-effective environmental policy. Such charges can be an appropriate way of implementing the polluter pays principle, by including the environmental costs in the price of goods or services. However, the use of such taxes and charges could entail some potential conflicts with other aspects of Community policy and Member States need to ensure that national environmental taxes and charges are implemented in a way which is compatible with their Treaty obligations, in particular competition, single market and taxation policies.
- In order to ensure that recycling is a cost-competitive alternative to waste disposal operations such as landfilling, the true cost for disposal of waste needs to be reflected in the price charged for disposal. At present, the price charged for the landfilling of waste in several Member States does not reflect the true environmental costs of landfilling. Therefore, landfilling, being the cheapest option, is often favoured over recycling. The Commission Proposal for a Council Directive on the landfill of waste introduces an obligation for Member States to ensure that the price to be charged for the landfilling of waste takes into consideration the costs of establishment, operation, closure and aftercare of the landfill site.
- The greening of public procurement is a powerful instrument for tackling problems on the demand side, by creating outlets for recycled materials and giving a major push to the commercial development of recycling that the market alone would not provide. Several Member States have drawn up action plans for public green purchasing. The promotion of recycling is one goal which can be addressed in such plans, notably with a view to enhancing awareness of the potential and the quality of recycled materials, and to avoid discrimination between virgin and recycled materials. As was stressed by the Commission in its Communication on Public Procurement (COM(98)143 of 11 March 1998), the existing regime already offers a number of possibilities of taking environmental considerations into account in contract award procedures, such as for example recycling. Purchasing entities can already encourage firms to adopt a more active approach towards the environment by ceasing to reject tenders for goods that incorporate reconditioned components or recycled materials despite the fact that their technical characteristics satisfy the requirements laid down in the tender documents. Furthermore, purchasing entities can, in evaluating

the most economically advantageous offer, take account of costs of recycling. The Commission will clarify, in an interpretative document, the conditions under which purchasing entities can take such environmental considerations into account in public procurement.

4.4.3 Possible new regulatory measures

Environmental and product legislation could represent appropriate tools for the promotion of recycling beyond the demand for recycled materials resulting from market forces. Therefore, in line with the Community Waste Strategy, the Commission would explore possible future areas where legislation could lead to improved recycling of materials and products, without impeding existing recycling activities.

- *Reduction of the presence of hazardous substances*

In order to improve the recycling of hazardous waste or wastes containing environmentally dangerous substances, which is often not possible in 100 % closed loops, the focus should be put on the substitution of hazardous substances so that these are removed from the life cycle of new products, where less dangerous alternatives are available.

This should proceed on the basis of risk assessment and cost-benefit analysis, or in line with the precautionary principle (Art. 130R).

- *Specific waste streams*

The question of whether specific waste streams with a high quantity of recyclable waste or a high content of hazardous substances should be targeted through legislation could be explored.

Faced with numerous national initiatives underway, the Commission has recently adopted a draft directive¹³ on *end of life vehicles* (ELVs). Based on the environmental objectives proposed by the working group in 1994, this proposal seeks a high level of environmental protection and the functioning of the Internal Market. It lays down specific targets for recycling. By 2005 at least 80 % of the weight of the ELVs will have to be reused or recycled, and by 2015 this will be required to increase to 85 %. The specific targets for re-use and recycling are intended to promote the material recycling of components and materials contained in ELVs, so that, as far as possible, these wastes are not landfilled or incinerated.

The proposal also seeks to limit the creation of wastes coming from ELVs through improved product design, which integrates the problem of waste management starting from vehicle design. It underlines the special responsibility of the manufacturer who takes the crucial decisions for the

¹³ OJ C 337 of 7.11.97

future of its product. The proposal restricts the use of hazardous substances which would hamper the recycling loop, and seeks to limit the amount of hazardous wastes generated. It also introduced obligations for dismantlers to respect a high degree of environmental protection.

The Commission is also currently drafting a proposal for a directive on waste from electrical and electronic products. Similar to the Commission proposal for a directive on End of Life Vehicles, this proposal would seek to improve environmental product development by phasing out, where appropriate, certain hazardous substances and improving the recyclability of electrical and electronic products. The proposal would also lay the ground for collection, take-back schemes, re-use, recycling and recovery schemes, ensuring environmentally sound disposal operations for electrical and electronic waste, as well as for using, wherever feasible, negotiated agreements between producers and consumers of such products and, if needed, with the public competent authorities.

- *Minimum requirements for the content of recycled materials in specific products*

The use of recycled materials could be stimulated directly by setting minimum requirements for the content of recycled materials in specific product groups. This could be envisaged either through specific legislation or by product standard setting, whereas today, products containing recycled materials may be disqualified by existing standards. An example of this approach is the requirement for recycled fibre in newsprint which is in force in certain states of the USA. Obviously, the approach of introducing minimum requirements for the content of recycled material can only be pursued on a case-by-case basis, for specific product groups where the use of recycled materials does not adversely affect the quality or lead to "downcycling" of materials. Furthermore, its implementation should consider the costs and benefits, and avoid problems which could be triggered by national legislation as regards the principles and the functioning of the Internal Market.

- *Composting*

It should be recorded that the Commission is currently planning a new proposal for a directive on the composting of biodegradable waste. This initiative follows on from the Commission Waste Strategy, as well as the Commission Communication on Methane Emissions; and will aim at separate collection and composting of biodegradable waste in the Community.

5. PROPOSED APPROACH FOR FOLLOW-UP: DISCUSSION WITHIN A RECYCLING FORUM

In view of the heterogeneity of the different sectors and of the complexity of the respective factors of competitiveness, the discussion of the relative advantages and drawbacks of the possible actions previously identified in this Communication should be pursued within a **Forum** with the widest possible participation of public and private stakeholders.

This Forum will be made up of all the interested parties, primarily companies involved in the various phases of recycling, the consumer products and equipment manufacturing industries, as well as representatives from environmental and consumer organisations. It will also include the public administrations, both national and at EU level.

It will be up to the Forum to assess the key factors of competitiveness and identify the most appropriate mix of actions to be taken, by industry and/or by the public authorities, for each main sector. It may also define ways in which these can be put into practice with reference to national experience. The actions to be developed should focus mainly on the proper functioning and the creation of new markets, the improvement of economic structures and innovation in the broadest sense, taking into consideration activities already under way in the field of research financed by the Commission. In addition, the Forum may discuss the economic impact of environmental legislation and policies on industry.

Finally, the Forum will have to evaluate whether it is useful and feasible to set up a possible permanent body -a type of European Recycling Centre- on a par with centres which exist in other industrialised countries. This Centre could have as tasks, inter alia, to guarantee the "technology watch"; to disseminate best practices in recycling; to promote innovation through networks and to improve access to Community instruments; to disseminate economic data and information on regulations enabling operators to better benefit from the internal market dimension, in full respect of the guidelines set by competition policy on the exchange of information concerning company performance or market structures.

The Forum will have to submit a report to the Commission within twelve months of the approval of this communication. Following this report, the Commission will inform the Council and the European Parliament of how it intends to follow up this report and, if necessary, will extend the mandate of the Forum.

Factual elements

Materials	Waste generated (kt)	Year	Imports of secondary raw materials (kt)	Exports of secondary raw materials (kt)	Rate of recycling	Energy saving	Jobs
NON-FERROUS METALS	3 500 ^(a)	1994	1 211	734	57	60-95%	± 80 000
FERROUS METALS	70 000 ^(a)	1995	3 610	6 090	43	60-70%	± 100 000
PAPER	30 000	1995	1 065	1 278	46	(d)	± 60 000
PLASTICS	17 500	1994	88	330	6	(d)	± 30 000
GLASS	7 400 ^(b)	1995	224	44	50 ^(b)	20%	± 15 000
TEXTILES	4 200 ^(c)	1995	162	478	20	---	± 20 000

Source : Commission departments (except for employment: estimates by industry)

(a) Collection of old scrap

(b) Container glass

(c) Waste

(d) The result here is not necessarily positive. It depends on certain variable costs such as transport and those connected with preparing recyclable waste such as de-inking.

Structure of the recycling industries

Materials	Level of development	Industrial organisation	Role of the private and public sectors	Degree of vertical integration	Competition from new entrants	Technological dependency
NON-FERROUS METALS	High throughout the EU	Numerous local and regional operators (collection and sorting). SMEs for reprocessing.	Totally private	Low	Minimal, only at collection following local initiatives for waste management.	Low/medium high
FERROUS METALS	High throughout the EU	Numerous local operators (collection and sorting), less numerous regional ones.	Totally private	Higher on the Continent than in the UK.	Moderate entry of waste management firms following local initiatives.	Medium
PAPER	High throughout the EU	Few operators. Regional basis: close link with paper manufacture firms.	Private, with public participation in local collection.	High from processing onwards.	High at collection level: - voluntary activities - waste management undertakings.	Low/high
PLASTICS	Recently established industry in I, D, F and UK. Very little development in the rest of the EU.	Very few operators; very close links between sorting and processing/reprocessing.	Public intervention in local collection; processing is private.	High from processing onwards.	Very little, except at collection stage (as with paper).	High (treatment of polymers).
GLASS	High throughout the EU, except in Greece and Portugal where currently being developed.	Regionally-based operators; close links with glass companies.	Generally private; some public involvement with collection.	Generally high, especially in the north of the EU.	Waste management undertakings are becoming local authorities for recycling contracts (F, B, D, UK, N, DK).	Low/medium
TEXTILES	Well-established industry in the EU, especially in D, F, UK, B, DK, N, I.	Very few operators (regional basis with very widespread customers).	Private, with some voluntary and public sector intervention in collection.	None.	Voluntary and public collection.	Low (very labour intensive)

Source : Commission departments.

Role of collection and sorting preparation in sector performance

Materials	Origin of recyclable waste	Relative cost of collection	Quality of collected material	Sorting system	Cost of sorting
FERROUS AND NON-FERROUS METALS	Households	Medium/high (except for cans)	Medium/high	Automated	Low/high
	Industry	Low/negligible	High/good	Manual	Low
PAPER	Households	Medium/high	Medium/good	Manual	Medium/high
	Industry	Negligible/low	Medium/good	Manual	Medium
PLASTICS	Households	High	Good	Manual/automated	High
	Industry	Negligible/moderate	Medium/good	Manual	High
GLASS	Households	Low/medium/very high	Medium/very good	Manual/automated	Medium/high
	Industry	Medium/low	Medium/good	Manual/automated	Low/medium
TEXTILES	Households	High	Medium/good	Manual	Medium/high
	Industry	Medium/low	Good	Manual	Medium

Source: Commission departments

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