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**REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN
PARLIAMENT**

**ON THE IMPLEMENTATION OF DIRECTIVE 94/62/EC ON PACKAGING AND
PACKAGING WASTE AND ITS IMPACT ON THE ENVIRONMENT, AS WELL AS
ON THE FUNCTIONING OF THE INTERNAL MARKET**

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INTRODUCTION

When Directive 94/62/EC on Packaging and Packaging Waste (hereinafter the “Packaging Directive”) was adopted, little information on the costs and benefits of packaging and packaging waste management was available. Such information started to be compiled when more emphasis was put on cost-benefit analysis and impact assessment, before the last revision of the Packaging Directive was launched. However, at this time the focus of the cost-benefit analysis was put on the effects of the revised directive, i.e. on the effect of increasing recycling. This was done by calculating the costs and benefits of increasing recycling from the 1998 recycling levels to optimal recycling rates.

During the legislative process, the European Parliament and the Council called upon the Commission to present a more complete evaluation of the overall impacts of the directive in a report on the implementation of the Packaging Directive and its impact on the environment, as well as on the functioning of the internal market¹. This report should also assess options for further measures on packaging prevention and address other relevant issues in the framework of the Sixth Environmental Action Programme.

This report gives an ex-post assessment of environmental, economic, social and internal market aspects of the directive and an evaluation of the need for complementary measures for the prevention and recycling of packaging waste and the free circulation of packaging in the internal market.

The report also takes into account the Communication on the Thematic Strategy on the prevention and recycling of waste² and the proposal to revise waste framework legislation³ adopted by the Commission on 21 December 2005.

1. EX-POST ASSESSMENT OF THE IMPACTS OF THE PACKAGING DIRECTIVE

In order to prepare this report, two studies were commissioned: one on the environmental, economic and social impacts⁴ and another one on the internal market aspects of the directive⁵. Both studies were subject to intensive stakeholder consultation which is documented on the Commission's website⁶. Additionally, the European Environment Agency also prepared a pilot study on the effectiveness of packaging waste management systems in selected countries⁷.

¹ Art. 6(8) and 6(9) of Directive 94/62/EC on Packaging and Packaging Waste, text of this clause in Annex I to this Report.

² COM(2005)666 final.

³ COM(2005)667 final.

⁴ Study on the Implementation of Directive 94/62/EC on Packaging and Packaging Waste and Options to Strengthen Prevention and Reuse of Packaging, Ecolas and Pira for the European Commission 2005, http://europa.eu.int/comm/environment/waste/studies/packaging/050224_final_report.pdf; Annexes: http://europa.eu.int/comm/environment/waste/studies/packaging/050224_final_%20report_annexes.pdf; Information on stakeholder consultation: http://europa.eu.int/comm/environment/waste/studies/packaging/implementation_background.htm.

⁵ Study on the Progress of the Implementation and Impact of Directive 94/62/EC on the Functioning of the Internal Market, Percharde and FFact for the European Commission 2005, http://europa.eu.int/comm/enterprise/environment/reports_studies/studies/report_packaging_direct.pdf.

⁶ http://europa.eu.int/comm/environment/waste/studies/packaging/implementation_background.htm.

⁷ Effectiveness of packaging waste management systems in selected countries: an EEA pilot study, EEA Report No 3/2005, http://reports.eea.eu.int/eea_report_2005_3/en.

As far as possible, the studies include information on all 25 Member States. However, a large part of the tasks focused on the evaluation of the implementation of the directive in the past, when the ten new Member States were not yet members of the European Union. Information on the packaging waste management in the new Member States before accession is scarce. Therefore, large parts of the analysis had to be limited to the fifteen EU Member States who were members before 1 May 2004 (hereinafter “EU15”).

This section gives a summary of the findings of these studies and an evaluation of these results by the European Commission. A more detailed explanation is given in the annex to this report.

1.1. Overall impacts related to packaging

Packaging is a relatively small but not insignificant product and waste stream. In 2002, around **66 million tonnes of packaging waste** were generated in EU15. This is around 5% of total waste generation. Packaging waste accounts for around 17% of municipal waste by weight⁸ and between 20% and 30% by volume⁹. However, weight is not the best indicator for the environmental impacts of packaging waste and the impacts of packaging throughout its life cycle. The overall environmental impacts of packaging are in the order of magnitude of one to a few percent of the overall economy. For example, the greenhouse gas emissions related to packaging consumption in the EU15 are estimated at around 80 million tonnes of CO₂ equivalent per annum¹⁰. This is around 2% of total greenhouse gas emissions of EU15. The share of packaging for other environmental impacts, such as air acidification, fine particles and eutrophication is of a comparable magnitude.

⁸ Assuming that around half of the packaging waste originates from municipal waste, total municipal waste accounts for approximately 200 Mt in EU15.

⁹ Estimate based on studies indicating that the volume of packaging has a significantly higher share of municipal waste than its weight. Very frequently, a figure of 30% by weight and 50% by volume is quoted. However, as the 30% are clearly an over-estimate, also the figure for the volume was reduced. For more information see: <http://www.merit.unimaas.nl/tep/reports/ppwd-synthesisreport.pdf>; <http://www.mindfully.org/Sustainability/EPR-Extended-Producer-Responsibility.htm>.

¹⁰ Bio Intelligence and O2 for the European Commission 2003, Study on external environmental effects related to the life cycle of products and services, p. 91, http://europa.eu.int/comm/environment/ipp/pdf/ext_effects_finalreport.pdf. The study estimates the per capita greenhouse gas emission at 216 kg CO₂ per annum.

1.2. Packaging recycling, recovery and incineration at waste incineration plants with energy recovery¹¹

Packaging recycling¹² is not a new waste management option. For some packaging fractions, recycling always took place because it was cheaper than disposal. Significant amounts of packaging were recycled as a result of national legislation and programmes even before the Packaging Directive took effect. Out of the 66 million tonnes of packaging waste, around **36 million tonnes or 54% were recycled in 2002**. Compared to 1997, this is an increase of 9 million tonnes and an increase of the recycling rate by 8%. This increase mainly took place in the Member States where recycling levels were initially low. Packaging **recovery and incineration at waste incineration plants with energy recovery** increased from 31 million tonnes or 52% in 1997 to **41 million tonnes or 62% in 2002**.

In 2002, all of the 75 different targets applicable to EU15 have been achieved¹³.

Recycling and recovery of packaging waste have led to positive environmental effects on most parameters. This includes **greenhouse gas savings of around 25 million tonnes of CO₂ equivalent** (around 1 million tonnes as a direct result of the Packaging Directive) and **resource savings of around 10 million tonnes of oil equivalent** (around 3 million tonnes as a direct result of the Packaging Directive) as a result of recycling and recovery of packaging waste compared to a scenario where all packaging waste was sent to landfill or incineration without energy recovery, which corresponds to around 0.6% of total EU15 greenhouse gas emissions in 2002, or between a third and a half of the total greenhouse gas emissions of countries like Denmark, Ireland or Sweden. Taking into account the difficulty to achieve the 8% reduction target under the Kyoto Protocol, this is a significant contribution. Other major environmental benefits relate to reduced emissions of particulate matter, decreased acidification and less disamenity effects (traffic noise, odours, visual disturbances etc. affecting the population living around landfills and incinerators).

Recycling resulting from the Packaging Directive and national programmes and legislation is not significantly more expensive than if the same material had been sent to disposal. The total costs of packaging waste management¹⁴ in 2001 were evaluated in three scenarios. In a scenario corresponding to the real recycling and recovery rates in 2001, the costs were estimated at 6.6 to 6.8 billion €. However, even in a scenario of zero packaging recycling and

¹¹ For reasons of simplicity and readability, “recovery and incineration at waste incineration plants with energy recovery” is referred to in this report as “recovery” even though this also includes incineration at waste incineration plants with energy recovery, which is in most cases a form of disposal pursuant to the terminology of Directive 75/442/EEC on waste.

¹² In the following text, much of the focus of the analysis is on recycling in the sense of the recycling definition of the Packaging Directive (“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”). This includes in essence material recycling, some of various recycling methods sometimes called chemical or feedstock recycling and organic recycling. The choice to focus on recycling was made because of the assumption that the main effect of the Packaging Directive is an increase in recycling rates. The effect on recovery and incineration at waste incineration plants is deemed much smaller, as this rather depends on national decisions whether or not to build waste incinerators for waste management in general rather than the direct effect of the Packaging Directive. The cost-benefit patterns of incineration with energy recovery are also considered to be less favourable than those of recycling for most of the packaging waste fractions covered by current recycling programmes.

¹³ For details see Annex II, table I.

¹⁴ Recycling and energy recovery plus disposal of the remaining part of packaging waste with mixed municipal or industrial waste.

100% disposal, disposal costs would have been around 6.1 billion €. In a scenario with the likely levels of packaging recycling in the absence of the Packaging Directive, the total costs of packaging waste management were estimated at 6.6 billion €. Taking into account the uncertainty of any such estimates, it can be concluded that the additional **costs** related to the recycling obligations of the Packaging Directive **are not higher than several hundred million € per annum**. These additional costs are likely to grow smaller as the implementation of EU legislation improves the environmental conditions under which disposal of waste takes place in the EU, for example as a result of the implementation of Directive 1999/31/EC on the landfill of waste¹⁵.

The cost of reducing 1 tonne of CO₂ equivalent through packaging recycling has risen from 12 €/t in 1997 to 23 €/t in 2001 (compared to emission trading market prices ranging from about 9 to around 12.5 €/t of CO₂ between October 2005 and October 2006¹⁶). Since packaging recycling has also other environmental benefits, it can be classified with a relatively high degree of certainty **among the most cost-efficient options to reduce CO₂ emissions and other environmental impacts**. There are, however, major differences between various packaging materials and applications. Studies also indicate that an increase of recycling targets beyond the current levels would not be cost-effective¹⁷. Geographical differences between the Member States influence the results on cost-effectiveness only to a minor extent.

The impact on certain industry and private sectors can however be larger than the above figures might suggest as the directive implies a shift of the costs of waste management from the public (especially local authorities) to the private sector (that is now co-financing the management of packaging waste) and internal administration costs incurred by companies are not included in the above estimates.

The **direct and first round indirect employment** rate in the packaging recovery and recycling industry is estimated at 42,000 full-time job equivalents. This number needs to be compared to possible job losses in the waste disposal sector as a result of macroeconomic effects (the funds spent on recycling are not available for spending on other economic activities – such effects will decrease as disposal costs increase). It is unclear how many jobs may have been affected as a result of these effects. **Overall, the employment balance is likely to be neutral or slightly positive.**

The main impact of recycling obligations of the Packaging Directive on the internal market was a stabilisation of collection and recycling markets. Differences between the Member States in financing for recycling were levelled out to some extent as all Member States have put in place financing mechanisms to support packaging recycling. Recently, internal market problems arose through divergent interpretations of the voluntary or obligatory nature of material identification systems pursuant to Article 8 of the Packaging Directive and Decision 97/129/EC.

¹⁵ Directive 1999/31/EC, OJ L 182 of 16.7.1999, p. 1.

¹⁶ Figure as of 11 October 2006, www.pointcarbon.com.

¹⁷ In particular RDC/Pira for the European Commission 2003 available at: <http://europa.eu.int/comm/environment/waste/studies/packaging/costsbenefits.pdf>.

1.3. Packaging prevention

Prevention of packaging at source is far more complex than recycling. Recycling is one of the available waste management options, with other options including recovery or disposal. Prevention not only influences the entire life cycle of packaging from raw material extraction to disposal, but also the life cycle of the packaged products. Any more substantial changes in volumes of packaging placed on the market can only be achieved through changes in production, consumption and distribution patterns. This is reflected in the limited success of all prevention measures undertaken so far. Although there seems to be some decoupling of packaging waste generation from GDP growth, in almost all Member States the absolute quantity of packaging waste is increasing. Prevention measures such as enforcement systems for the essential requirements, packaging prevention plans and strong producer responsibility systems might have had some effect on the reduction of packaging generation. However, the overall patterns of packaging waste generation are not significantly different between the Member States applying different prevention tools and the Member States applying none of these tools.

The European Parliament has raised the issue of using a Packaging Environmental Indicator (PEI) for the purpose of packaging policy. Such an indicator is a conceptual tool that measures the environmental impact of packaging and produces a simple result allowing to improve packaging and facilitate the selection between different packaging systems. The main advantage of PEI is that it gives guidance on key environmental impacts to be considered in life cycle assessment and life cycle thinking approaches. Nevertheless, practical constraints make it difficult to use PEI in order to identify single numbers which could be used to justify favouring one type of packaging over another or to inform the consumer. Therefore, it seems appropriate to focus the potential use of PEI on giving guidance to companies using life cycle approaches rather than trying to calculate single numbers on the basis of this tool. Such application of PEI could be integrated into the framework of a future conformity assessment procedure.

There are no indications that the current levels of heavy metals and other hazardous substances present in packaging pose any particular risks to health and the environment. Therefore, it appears unlikely that a further reduction of heavy metal limits would result in significant health and environmental benefits.

Prevention targets may seem appealing due to their apparent simplicity. However, their implementation raises a number of problems which are not less complex than other measures. In particular, weight-related targets would pose in disadvantage heavier but not necessarily less environmentally friendly packaging materials. Targets applied equally to every producer would disfavour those producers who already use the minimum possible amount of packaging. For such producers, further reductions may lead to product spillage which is often likely to cause significantly more environmental damage than the possible environmental benefits related to savings on packaging.

Landfill bans and landfill reduction targets have a similar effect as recycling targets in redirecting waste streams. However, they need to be seen in relation to which waste management option could possibly be used subsequently to achieve the greatest environmental benefit. Recycling targets cannot be simply replaced by landfill bans and landfill reduction targets if this would result in an increase of incineration at the detriment of recycling and the overall environmental benefits of the Directive.

2. THE IMPACT ON THE INTERNAL MARKET

The Directive has brought about a significant convergence between Member States' recycling rates, and the notification procedure has allowed to solve many internal market issues before they became a real problem. However, despite the directive's aim to contribute to the functioning of the internal market and to reduce trade barriers, these goals have not yet been fully achieved for all types of packaging. Past experience and ongoing cases show that unilateral measures adopted in different Member States still pose problems by requiring market operators to adapt their packaging to the requirements of each individual Member State which makes it more difficult for them to benefit from business opportunities within the internal market by selling the same product in the same packaging in different markets. In particular, the infringement procedures in the beverage sector show that national measures can lead to distortions of competition and in some cases partitioning of the internal market, which contradicts the objectives of the directive. The beverage packaging sector has signalled such impacts from mandatory deposit systems for non-refillable containers (e.g. in Germany). The German case also highlights that the phase of a changeover from one deposit system to another is critical for market operators, since legal and factual insecurities can lead to instabilities in the market. Besides, the use of taxation to drive packaging policy can potentially disrupt the internal market if the taxes are applied in a way that protects local producers.

The Commission is committed to react on any measures that risk disrupting the functioning of the internal market and are not environmentally justified, and will further evaluate the need to clarify or amend the provisions of Articles 5 and 7 of the Packaging Directive in order to facilitate the free circulation of goods within the internal market.

The Commission also considers that a proper enforcement of the essential requirements will further contribute to create a level playing field. Lack of progress on essential requirements represents a major problem in the implementation process of the Directive with respect to the internal market. All Member States have duly transposed the essential requirements, but only three Member States (the UK, France and the Czech Republic) have put an enforcement mechanism in place. The enforcement of essential requirements will bring additional benefits in terms of prevention, recycling and reduction of hazardous substances in packaging. Evidence shows that countries monitoring compliance with the essential requirements (France and the UK) have achieved similar levels of decoupling of growth in packaging use from GDP as the countries which have implemented packaging prevention plans (e.g. Belgium and Spain).

For these reasons, the Commission reiterates its commitment to promote a proper implementation of the essential requirements in relation to both Article 9 and 18 of the directive. Besides, Member States could use the enforcement of essential requirements as a priority in setting their waste prevention programmes.

Finally, despite the progress achieved so far, the remaining uncertainties regarding some of the definitions of packaging and the reporting procedures need to be clarified, also with respect to ensuring a level playing field for all economic operators. The Commission will continue to work in partnership with the Member States to address these issues.

3. PACKAGING REUSE

Reuse systems for packaging operate very successfully for transport packaging. However, most of the debate on packaging reuse in the European Union focuses on consumer beverage packaging (roughly 20% of total packaging by weight¹⁸). The question of whether and by how much reusable consumer beverage packaging is preferable to one-way packaging is subject to lively debates. Many life cycle assessment studies have been conducted on this subject. There is a reasonably strong agreement on the fundamental patterns of the results but the absolute values differ to some extent. Most studies found reusable packaging to be better in situations with generally low transport distances and high return rates, and one-way packaging to be better in situations with generally high transport distances and low return rates.

Given this background, it seems currently neither possible nor appropriate to propose harmonised measures to encourage reusable consumer beverage packaging at the Community level.

However, there is evidence that the beverage sector of the internal market is becoming increasingly partitioned as a consequence of unilateral measures taken at Member State level to promote environmental concerns related to packaging. For example, refill systems can be more difficult to apply over long distances and can lead to additional costs for importers that have to adapt their packaging to the specifications of each individual Member States' market. In general, appropriately designed national measures encouraging reusable packaging have environmental benefits. On the other hand, such measures can have impacts on the internal market. Finding a right balance between the involved economic and environmental interests remains one of the main tasks in this sector. Therefore, with respect to beverage packaging, the Commission will further evaluate the need to clarify or amend the provisions of Articles 5 and 7 of the Packaging Directive in order to facilitate its free circulation within the internal market.

4. NEED FOR COMPLEMENTARY MEASURES

The Packaging Directive has contributed to reducing the environmental impact of natural resources' use through packaging prevention, reuse and recycling. It also created a more stable economic framework for separate collection of packaging waste and its recycling and recovery. In this way, it has created business opportunities and a number of new jobs. Any future plans to review the directive should aim at preserving and increasing those benefits while improving the efficiency of packaging and packaging waste management through simplification, streamlining in line with the 'better regulation' initiatives by the Commission and the Council Presidencies and preventing the possible negative impacts on the internal market.

4.1. Prevention and reuse

As shown by the ex-post assessment of the directive, the scope for measures on prevention and reuse in isolation from the packaged product is relatively limited. Any measure that is effective on prevention or reuse will also have impacts on packaged goods and their production, distribution and consumption patterns as well as on trade within the internal

¹⁸ Estimate on the basis of GVM data for Germany, personal communication.

market. The studies used for the preparation of this report do not show a clear preference for one of the options to encourage prevention and reuse of packaging.

Therefore, a flexible approach to preventing packaging waste should be taken at the European level that encourages Member States to take action while leaving them the choice of the most appropriate instruments and measures. The proposal to incorporate in the waste framework legislation an obligation for Member States to develop waste prevention programmes tabled by the Commission in the context of the Thematic Strategy on the prevention and recycling of waste provides such a flexible instrument. The Commission is ready to support Member States in drafting their national prevention plans.

In order to achieve good implementation of the Packaging Directive and with a view to the improved functioning of the internal market, it is important that all actors contribute to the efficient functioning of the system of notification provided by Article 16 of the directive.

4.2. Recycling and recovery targets

Article 6(8) of the Packaging Directive calls for this report to be accompanied, as appropriate, by proposals for a revision of the provisions related to prevention and reuse of packaging. Article 6(5) provides that “not later than 31 December 2007, the European Parliament and the Council shall [...] fix targets for the third five-year phase 2009 until 2014 [...]”.

The targets contained in Article 6 of the Packaging Directive have recently been revised¹⁹. A new set of targets for recovery and recycling has been adopted and is to be attained by the end of 2008. At the same time, due to the specific situation in the Member States which joined the European Union on 1 May 2004, Directive 2005/20/EC²⁰ postpones the attainment of the “2008 targets” until 2012 for seven Member States, and until 2013, 2014, and 2015 for one Member State in each of these years.

The assessment contained in this report is based on the data and information collected around the years 2001 – 2002. The latest report on the implementation of waste directives (including the Packaging Directive) covers a period between 2001 and 2003, while the subsequent report for years 2004 – 2006 will be available in 2008 at the earliest. This report could possibly provide information needed to reassess the levels of 2008 targets. Member States still have to make a lot of progress to implement the existing targets. Only once the situation as regards packaging waste management in the New Member States becomes clearer and the data for the subsequent reporting periods are available to the Commission, will it become possible to assess the environmental, economic and social impacts of a potential new set of targets.

Therefore, it appears premature to propose new recycling and recovery targets at a stage when the previous set of targets has only recently been transposed into national legislation and the latest implementation deadline for those targets is as late as 2015²¹. There are also no indications that the cost and benefit patterns for different levels of packaging recycling and recovery have changed significantly since the new targets agreed in 2004 were set. It is therefore considered that the levels of the targets decided in Directive 2004/12/EC should remain valid well beyond 2008.

¹⁹ Directive 2004/12/EC, OJ L 47 of 18.2.2004, p. 26.

²⁰ Directive 2005/20/EC, OJ L 70 of 16.3.2005, p. 17.

²¹ Directive 2005/20/EC, OJ L 70 of 16.3.2005, p. 17.

5. CONCLUSIONS

The ex-post assessment of the impact of the Packaging Directive on the environment shows an increase of packaging recovery and incineration at waste incineration plants with energy recovery by 9% and an increase of packaging recycling by 8% between 1997 and 2002. At the same time, all the targets established in the directive were met in 2002. Recycling of packaging had positive environmental effects, including greenhouse gas savings and resource savings. Other environmental benefits include reduced emissions of particulates, decreased acidification, less traffic noise, odours, visual disturbance etc. These are noticeable and significant benefits of the industry's efforts to implement the requirements of the Packaging Directive. The data demonstrate that the additional costs related to the recycling obligations of the Packaging Directive as compared to other waste management options (e.g. disposal) are not significantly higher and show a decreasing trend. The costs for packaging recycling are in the same order of magnitude as the most cost-efficient alternatives to reduce CO₂ emissions and other environmental impacts.

The Commission considers that the recycling and recovery targets contained in the Packaging Directive are currently optimal and should remain stable to enable all the Member States to catch-up with these targets. A substantial progress on prevention can only be achieved through the application of measures tailored to specific conditions in which packaged goods are marketed such as, for instance, consumption and distribution patterns. Incorporating in waste framework legislation an obligation for Member States to develop waste prevention programmes as proposed by the Commission in the context of the Thematic Strategy on the prevention and recycling of waste constitutes an appropriate instrument to promote waste prevention in general as well as prevention of packaging waste in particular.

In the longer term, recycling of packaging waste must be seen in the general framework of EU waste recycling policy as defined in the Thematic Strategy on the prevention and recycling of waste. The Commission intends to include an assessment of the progress made by the Member States in preventing, recycling and recovering waste in the 2010 review of the Thematic Strategy on the prevention and recycling of waste. This assessment shall build, *inter alia*, on an update of the assessment of the impacts of the Packaging Directive and take into account the progress of the Member States towards the increased recycling rates set by the European Parliament and the Council in the 2004 review of the Directive.

There is evidence (particularly in the beverage sector) that the Directive has not yet fully achieved its internal market objective. This is partly due to incorrect implementation of the provisions of the Packaging Directive, but also due to the increasing number of unilateral measures leading to a partitioned market. Therefore, the Commission will further evaluate the need for action that could be taken on the EU level to avoid constraints as regards the internal market in the future. Progress towards the proper enforcement of the essential requirements and harmonized definitions and reporting procedures across Member States will further contribute to the creation of a level playing field for all economic operators.