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

on future steps in bio-waste management in the European Union

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1. INTRODUCTION

Bio-waste as defined in the revised Waste Framework Directive (WFD)¹ includes garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises as well as comparable waste from food processing plants. It does not cover forestry or agricultural residue and it should not be confused with the wider term "biodegradable waste" which includes also other biodegradable materials such as wood, paper, cardboard, sewage sludge.

In the EU between 118 and 138 million tonnes of bio-waste are produced every year, of which about 88 million tonnes is municipal waste. It is projected to increase on average by 10% by 2020.

Presently, a variety of approaches are applied by EU Member States²:

- Countries relying heavily on incineration of waste diverted from landfills, accompanied by a high level of material recovery and often advanced strategies promoting biological treatment of waste;
- Countries with high material recovery rates but relatively little incineration, with some of the highest composting rates in the EU;
- Countries relying on landfills, where diversion of waste from landfills remains a major challenge due to lack of alternatives.

On the EU average 40% of bio-waste is still landfilled (up to 100% in some Member States). However, landfilling (1) invokes major environmental risks such as emissions of greenhouse gases and pollution of soil and groundwater and, (2) withdraws valuable resources (compost, energy) irrevocably from economic and natural cycles. It thus violates guiding principles of EU waste and sustainable resource management policy, notably the "waste hierarchy" which should underlie all national waste policies.

2. EU LEGISLATION RELATED TO BIO-WASTE

The management of bio-waste is covered by several pieces of EU legislation. The WFD requires Member States to develop waste management policies that protect the environmental and human health and ensure a sustainable use of natural resources. Member States are thus legally bound to optimize the treatment of bio-waste according to their specific conditions.

¹ 2008/98/EC

² EEA Report (7/2009) - *Diverting waste from landfill*

Article 4 on the “waste hierarchy” states that the prevention of waste is the best option, followed by re-use, recycling and energy recovery. Disposal (landfilling, incineration with low energy recovery) is defined as the worst environmental option. Member States may depart from this hierarchy where for specific waste streams this is justified by life cycle thinking on the overall impacts of such waste.

The WFD encourages Member States to separately collect and recycle bio-waste and allows to include it when calculating the binding recycling target for municipal waste. Furthermore, the WFD enables the setting of EU minimum requirements for bio-waste management and criteria for the quality of compost from bio-waste, including requirements on the origin of the waste and treatment processes. Such criteria have been called for to enhance user confidence and strengthen the market in support of a material efficient economy.

The WFD also sets energy efficiency levels below which the incineration of municipal solid waste may not be regarded as recovery. It thus could discourage the incineration of bio-waste with low calorific value.

The Landfill Directive³ requires Member States to progressively reduce landfilling of municipal biodegradable waste to 35% by 2016 (compared to 1995). Member States which relied heavily on landfilling in 1995 have a four year extension period⁴. The objective of these measures is to reduce the production and release of greenhouse gases from landfills.

However, the Landfill Directive does not prescribe specific treatment options for the diverted waste. In practice, Member States are often inclined to choose the seemingly easiest and cheapest option disregarding actual environmental benefits and costs. This has triggered a long standing discussion on the possible need for supplementary regulation.

3. CONTEXT OF THE COMMUNICATION

In 2002, the Sixth Environment Action Programme⁵ called for EU legislation on biodegradable wastes. In 2005 the Thematic Strategy on Waste⁶ proposed to replace specific bio-waste legislation with a set of actions addressing individual issues of bio-waste management. More recently the WFD required the Commission to carry out an assessment on the management of bio-waste with a view to submitting a proposal if appropriate. The analysis prepared by the Commission forms the basis for this Communication.

As a contribution to its analysis the Commission has carried out a broad stakeholder consultation, including the issuing of a Green Paper⁷. A first round of consultation on the Green Paper ended mid-March 2009. Stakeholders were asked their views on policy and technology options and expected future developments in bio-waste management. Almost 150 comments were received and made public on a specific CIRCA website⁸.

³ 1999/31/EC

⁴ Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, UK

⁵ Decision 1600/2002/EC

⁶ COM(2005) 666 final

⁷ COM(2008) 811 final

⁸ http://circa.europa.eu/Public/irc/env/biowaste_prop/home

On 9-10 July 2009, the Commission together with three Member States co-organised a conference which gave stakeholders an opportunity to further comment. Around 200 participants attended⁹. On 25 June 2009, the Environment Council adopted its conclusions on the Commission's Green Paper¹⁰. Expressing concerns about the increasing volume of bio-waste and related environmental impacts and agreeing that improved bio-waste management could contribute to fighting climate change, help to improve soil quality (composting) and reaching targets for renewable energy (biogas) the Council urged the Commission to take into account local conditions when weighing up policy options. It invited the Commission to present an EU legislative proposal on biodegradable waste by 2010, if appropriate. A draft report of the European Parliament in response to the Green Paper is under discussion.

Additional stakeholder consultations in May-June and October 2009 allowed stakeholders to verify and comment on scenarios developed for the Commission's analysis. They confirmed a wide consensus on the economic and environmental opportunities linked to better bio-waste management but revealed a wide disparity of opinions on the need for EU legislative initiatives.

4. SCOPE AND OBJECTIVES

This Communication explains the steps considered necessary by the Commission at this stage for optimizing the management of bio-waste. In particular, the Communication:

- draws conclusions from the Commission's analysis ;
- lays out recommendations on the way forward to reap the full benefits of proper bio-waste management;
- describes the main potential courses of action at EU and national level and how to implement them best.

5. IMPROVED MANAGEMENT OF BIO-WASTE - AN UNTAPPED POTENTIAL

The following benefits could be reached if recycling and recovery of bio-waste are maximized:

- Financial savings for citizens (for example, one third of food bought by UK households (approximate value of €19 billions) becomes waste. Up to 60% of this waste could theoretically be avoided.¹¹
- Avoiding about 10 million tonnes CO₂-equivalent emissions, i.e. a 4% contribution to the 2020 EU target of 10% reduction compared to 2005 emissions for the sectors not covered by the Emission Trading Scheme. In case of ambitious prevention policies up to 44 million tonnes CO₂-equivalent could be avoided¹²;

⁹ <http://ec.europa.eu/environment/waste/eventspast/biowaste.htm>

¹⁰ 2953rd Environment Council, document: 11462/09

¹¹ "The Food We Waste" report for the WRAP (UK). April 2008

¹² Mostly from avoided emission related to food production and transport

- About one-third of the 2020 EU target to use renewable energy in transport¹³ could be met by using the biogas produced from bio-waste as vehicle fuel and around 2% of the overall renewable energy target could be met if all bio-waste is turned into energy.
- Increased market for quality compost by a factor of 2.6 to reach about 28 million tonnes¹⁴;
- Resource savings by substituting 10% of phosphate fertilizers, 9% of potassium fertilizers and 8% of lime fertilizers¹⁵ with compost;
- Improving 3% to 7% of depleted agricultural soils in the EU with compost and addressing the problem of degrading soil quality in Europe¹⁶.
- These estimates cannot be added up, as for a part they concern alternative solutions. However, there are also synergies: for example anaerobic digestion can contribute to CO₂ and biofuels targets and to soil improvement if digestate is used on soil. The benefits demonstrate a considerable potential that can help to meet environmental objectives, in particular where they are the most cost-effective solution.

6. MAIN FINDINGS OF THE COMMISSION'S ANALYSIS

Policy options discussed in this Communication relate to a baseline scenario which is assuming that legislation already in force, and in particular the Landfill Directive is fully implemented but that no additional initiatives are taken in the next 20 years. They are therefore focusing on the costs and benefits of additional measures, including a better application of the waste hierarchy of the WFD.

The analysis confirmed significant and cost-efficient opportunities. It revealed no policy gaps at EU level that could prevent Member States from taking appropriate action but showed that additional supporting action at EU level, together with more incentives at national level and a proper application of the waste hierarchy, would be of value in creating significant economic and environmental advantages for the whole EU.

The most significant benefits of improved bio-waste management would be avoided emissions of greenhouse gases, which would translate into significant societal gains when compared to any additional costs. At the same time, production of good quality compost and bio-gas would contribute to enhanced soil quality and resource efficiency, as well as a higher level of self-sufficiency of energy.

Aligning the management of bio-waste better with the waste hierarchy and other provisions of the WFD could result in environmental and financial benefits of €1.5 billion (moderate increases of recycling) to €7 billion (ambitious recycling and prevention policies)¹⁷. Combining moderately ambitious recycling and prevention policies would result in savings of €5.5 billion (out of €4.1 billion due to waste prevention). About 34 million tonnes CO₂

¹³ As outlined in Art 3(4) and Art 21(2) of Directive 2009/28/EC on the promotion of the use of energy from renewable sources

¹⁴ ORBIT/ECN, “Compost production and use in the EU”, 2008

¹⁵ *ibid.*

¹⁶ Around 45% of EU soils lack humus

¹⁷ total benefits for EU-27 for the period 2013-2020 – calculated from actions beyond implementation of existing legislation.

equivalent could be saved (80-90% due to prevention). It would also create stronger markets for compost and bio-gas and direct financial benefits for EU households by preventing food waste.¹⁸

7. PRIORITY ACTIONS TO OPTIMISE BIO-WASTE MANAGEMENT IN THE EU - WHAT SHOULD BE DONE IN ADDITION TO IMPLEMENTING THE LANDFILL DIRECTIVE

The initiatives outlined in this section are designed to promote best possible use of existing legislation, leaving Member States a wide margin of discretion in choosing the avenues of action that are best suited for their respective circumstances.

7.1. Initiatives at EU level

While a large number of possibilities exist already for Member States to improve bio-waste management, supporting initiatives at EU level will be crucial for accelerating the progress and ensuring a level playing field across the Union. Accordingly, the Commission is intending to take the following steps:

7.1.1. Prevention of bio-waste

Under the WFD, Member States are obliged to develop national waste management plans in line with the waste hierarchy. In addition they have to develop national waste prevention plans not later than end 2013 with benchmarks that make progress measurable. Including national bio-waste prevention targets in these programmes could be a powerful additional measure.

In the vast majority of Member States, no clear and measurable steps to increase bio-waste prevention have been taken. This is partly due to the lack of clear guidance including measurable quantitative targets but also largely due to the sensitivity of what it is negatively perceived as limiting consumers' choices. Due to uncertainties regarding different national circumstances, the impacts of binding EU prevention targets cannot yet be assessed. Nevertheless, indicators for prevention measures could be adopted by Comitology under the WFD in support of Member States' measures.

In addition, the Commission could provide further support for the widest up-take of best practice. It envisages proposing under the Comitology procedure, **specific guidance on bio-waste prevention** for national waste prevention plans and to continue working towards **proposing a set of indicators to assess the appropriateness of setting in the future waste prevention targets at EU level**. These actions should provide the necessary incentive for moving to more prevention while ensuring the respect of the subsidiarity principles.

7.1.2. Treatment of Bio-waste

For bio-waste that cannot be prevented, Member States should choose the best management options in view of their specific conditions (e.g. population density, demand for compost or energy etc). A number of Member States have already reduced or are expected to dramatically reduce landfilling of bio-waste and to increase its biological treatment. It is however

¹⁸ see Annex (8.3)

improbable that without further incentives the less advanced Member States will in the foreseeable future take significant steps towards composting and bio-gas production. More likely, they will continue choosing the seemingly easiest options, disregarding overall environmental benefits and costs. This explains why some Member States and stakeholders continued to call for EU action in this area.

The cost/benefit analysis detailed in the Annex shows that at societal level and for the whole EU, the potential benefits appear to be significant. However, due to the different conditions in Member States, further work is needed notably from the subsidiarity perspective before considering whether to propose an EU target for biological treatment. The Commission will continue its analysis with a view to conclude on the appropriateness of setting targets by 2014 at the latest under the WFD. It is likely that a target for biological treatment would have to go hand-in-hand with enhanced separate collection to ensure good quality of compost and digestate.

Choices between centralised or de-centralised composting, energy production by digestion and various ways of using the energy produced - transport, electricity, heat production will depend on local conditions (energy mix, possible synergies with other policies) and should be left to Member States.

The proposed Directive on Industrial Emissions¹⁹ aimed to replace the current IPPC Directive²⁰, is laying down the main principles for the permitting and control of larger bio-waste treatment installations (above a capacity of 50 tonnes per day). Regulation on bio-waste could complement, but should not affect health rules for the collection and treatment of Animal By-Products.²¹

7.1.3. *Protecting EU soils*

Compost and digestate from bio-waste are under-used materials. While offering an excellent contribution to EU resource efficiency and to the improvement of carbon-depleted soils, in many Member States demand suffers from a lack of end-user confidence.

To address this concern, the use of these materials should be regulated in such a way that no adverse effects are generated on soils.

Standards for compost and digestate should be established to enable their free circulation on the internal market and to allow using them without further monitoring and control of the soils on which they are used. The "end of waste" procedure under the WFD could be the most efficient way of setting such standards. The Commission is starting work to assess the technical basis for a possible proposal²².

It is expected that not all biologically treated bio-waste will comply with the "product" standards. Nevertheless, those materials could offer a valuable contribution to carbon-depleted soils if applied in a safe manner. Full harmonisation across the EU for this purpose would not be feasible in view of different local conditions (e.g. soil quality and needs) but EU minimum rules should be set as "safety net" against unsafe use.

¹⁹ COM(2007) 843 final

²⁰ 96/61/EC

²¹ (EC) No. 1774/2002

²² See JRC-IPTS *End of Waste Criteria – final report*

The Commission is presently looking into the possibility of introducing such minimum requirements via the Sewage Sludge Directive²³, which is under review. An impact assessment is planned for end 2010, and a proposal by 2011, if appropriate.

7.1.4. *Research and Innovation*

Research and innovation can result in new technologies and uses for bio-waste (advanced fertilising and bio-energy applications, biochemical applications, biomaterials) The Seventh Framework Programme of the European Community for research and technological development (2007–2013) is instrumental for such developments. Several themes of its Cooperation Programme support activities aimed at preventing bio-waste and/or maximising its economic value.

7.1.5. *Re-enforced focus on full implementation of the existing EU acquis*

As demonstrated by the progress in several Member States, the existing waste legislation is an excellent basis for advanced bio-waste management. It is however paramount that the available tools are used to their full potential and properly enforced. Additional new regulation cannot be expected to compensate for bad implementation or lenient enforcement of existing legislation. Therefore, the Commission – in parallel to assisting Member States – will significantly re-enforce its attention to better implementation of legislation. With this aim, **the Commission is preparing guidelines on the application of life-cycle thinking and assessment in the waste sector**²⁴.

The effective enforcement of the diversion targets of the Landfill Directive is one of the top priorities in this regard. A number of actions can be taken, as appropriate, to strengthen the implementation of this directive, including **close monitoring** of the attainment of the diversion targets, **in-depth analysis of Member States' strategies for biodegradable waste management**, European financial support through **regional policies**. Furthermore, the Commission is in the process of evaluating its means for better monitoring and giving more support to Member States where needed with a view to enabling early guidance, training and intensified co-operation.

The steps described above would make best use of existing legislation, using already agreed Comitology procedures and review processes. Leaving the necessary leeway for national policies they could significantly help achieving a good implementation of waste legislation in support of EU resources efficiency.

7.2. **Actions to be taken by Member States**

7.2.1. *Waste Management Planning according to the "waste hierarchy"*

While respecting specific local conditions, first and foremost Member States should implement the provisions of the WFD and **properly apply the "waste hierarchy"** in national bio-waste management planning. Proper use of these provisions, which will become a legally binding approach for Member States on 12 December 2010, would make a significant

²³ 86/278/EEC

²⁴ <http://lct.jrc.ec.europa.eu/eplca/deliverables/international-reference-life-cycle-data-system-ilcd-handbook>

contribution to optimized bio-waste management and complement the effects of the Landfill Directive.

7.2.2. *Prevention of bio-waste*

In line with the "waste hierarchy", waste prevention should be increased, making best use of the WFD's waste prevention programmes, including appropriate national bio-waste prevention objectives to break the link between economic growth and the environmental impacts of generating of bio-waste, national benchmarks for bio-waste prevention measures, monitoring, assessment and periodical reporting on progress in their achievement. The Commission could provide assistance by creating framework for such activities (see 7.1.1.).

7.2.3. *Promote separate collection and biological treatment of bio-waste*

Composting and anaerobic digestion offer the most promising environmental and economic results for bio-waste that cannot be prevented. An important pre-condition is a good quality of the input to these processes. This would in the majority of cases be best achieved by separate collection.

Member States should make strong efforts for introducing separate collection in order to meet high quality recycling and anaerobic digestion. Highly efficient systems based on source separation of various streams of bio-waste exist already in Austria, Germany, Luxembourg, Sweden, Belgium, the Netherlands, Cataluña (Spain) and certain regions in Italy²⁵. Systems of separate collection can differ significantly depending on, for instance, the types of waste collected (food waste, garden waste etc.) and the availability of treatment options. The key for success lies in adaptation to local conditions and user-friendly design

The Commission recommends that Member States make **fullest use of the possibilities opened by Articles 11 and 22 of the WFD** to introduce separate collection systems as a matter of priority in line with the competition rules of the Treaty on the Functioning of the European Union. Information on implementing those articles will likely form part of the reporting requirements under the WFD.

7.2.4. *Protecting EU soils*

The Commission is considering proposing minimum standards for use of compost and digestate in agriculture via the revision of the Sewage Sludge Directive (see 7.1.3). These rules would likely be equal or less stringent than national rules already in place in some Member States, thus causing minimum needs for re-adjustment and additional costs.

7.2.5. *Compost – a product of highest quality for better resource efficiency*

Member States should promote the production and use of compost from "clean" (separately collected) bio-waste. They should pro-actively **support the wide up-take of this material by end-users**. This would improve resource efficiency by partially replacing non-renewable mineral fertilizer as well as by maintaining the quality of EU soils. Member States should proactively participate in the definition of quality criteria as described in section 7.1.3 and support their application to accelerate market growth.

²⁵ ACR+: Managing biodegradable household waste: What prospects for European Local Authorities?

7.2.6. *Towards "zero landfilling"*

With regard to landfilling, national efforts should focus on the full implementation of the Landfill Directive's diversion targets and other provisions of the directive related to safe and sound landfilling of stabilised bio-waste residue.

"Zero landfilling" of untreated waste and high-quality biological treatment has been achieved by some Member States who already took the appropriate national initiatives. The Commission highly recommends that all Member States **aim at "zero landfilling" of untreated bio-waste** at the fastest possible pace, in line with the provisions of the WFD.

In the strive towards least possible landfilling, all options that are higher in the waste hierarchy can play their role. Also energy efficient incineration can contribute to improved overall waste management. However utmost care must be taken to avoid over-investment on incineration capacity that could limit later options towards more biological treatment or prevention. National waste management plans should include an explicit mid- to long-term consideration of this issue.

7.2.7. *Producing energy from wastes*

The decarbonisation of the energy sector is one of the main challenges for the EU. Bio-waste can be converted to electricity, heat or transport fuels at relatively low cost, thus limiting the use of fossil fuels and increasing security of supply. Member States should consider this opportunity when working on measures to reach their national binding renewable energy target for 2020 under the Renewable Energy Directive.²⁶ The Directive particularly acknowledges the benefits of using waste to produce transport fuels by counting them double towards the 10% transport fuel target.

7.2.8. *Better Implementation*

Proper **implementation of EU legal instruments** addressing the management of bio-waste must be made a **key priority** by Member States. General waste management requirements such as environmental and human health protection during waste treatment, priority for waste prevention and recycling are laid down in the WFD which also contains specific bio-waste related elements (recycling targets for household and similar waste, which can include bio-waste, separate collection requirements). Together with the Landfill Directive they form a key legislative framework on bio-waste.

In line with the evidence presented in this Communication and the *better regulation* principle, it is imperative that Member States use all opportunities of the existing EU legislation to optimise their bio-waste management.

8. CONCLUSIONS

The analysis conducted by the Commission confirms that improved management of bio-waste in the EU holds an untapped potential for significant environmental and economic benefits. This Communication outlines actions to unlock this potential by making best use of the

²⁶ 2009/28/EC

existing regulatory framework while safeguarding a wide margin of discretion for Member States in choosing the best options for their respective circumstances.