I International Conference
SOIL AND COMPOST ECO-BIOLOGY
September 15th – 17th 2004, León - Spain

ORGANIC MATTER AND COMPOST QUALITY IN THE FUTURE EU-25 SOIL THEMATIC STRATEGY

Florian Amlinger

European Compost Network, ECN

Compost – Consulting & Development, Hochbergstr. 3, A-2380 Perchtoldsdorf,

f.amlinger@kabsi.at

Introduction

As a first step in the development of an comprehensive EU policy to protect soils against degradation, and to combat threats like sealing, erosion, land floods and pollution the Commission has published a Communication "Towards a Thematic Strategy for Soil Protection" on 16 April 2002 (COM(2002)179). A demanding timetable had been established until autumn 2004 when the Commission is willing to present the so-called "Soil Package". This is based on final reports and key recommendations elaborated by five interdisciplinary technical working groups (TWGs) which have been established in February 2003. This paper summarises the outcomes of the working groups and the inherent link to soil quality aspects as far as the use of exogenous organic mater and specifically compost is concerned. Further we outline the envisaged steps possibly undertaken by the Commission as regards future legislative measures on biowaste management.

General framework of the Soil Thematic Strategy

After having published the Communication "Towards a Thematic Strategy for Soil Protection" on 16 April 2002 (COM(2002)179) the Commission launched a second phase, where *five working groups* coordinated by the *advisory forum* where established. More than 300 active participants represented MSs and stakeholders who act on European scale.
For public participation the Commission installed the Internet Forum *CIRCA* (http://forum.europa.eu.int/Public/irc/env/soil/library). This communication platform supports the development of Soil Policy and a Thematic Strategy on Soil. All relevant documents are publicly available.

The following threats for European soils where identified

- Erosion
- Decline in Organic Matter (and Biodiversity)
- Soil Contamination
- Salinisation
- Compaction
- Soil Sealing

- Floods and Landslides

Since *erosion, decline in organic matter* and *soil contamination* were considered to have highest priority, for those topics TWGs where installed.
The Idea was that the TWGs provide their ideas on monitoring and research needs from their specific perspective to the monitoring and the research group respectively. Nonetheless there is a close relationship between monitoring and research following identified gaps of knowledge in the different areas.

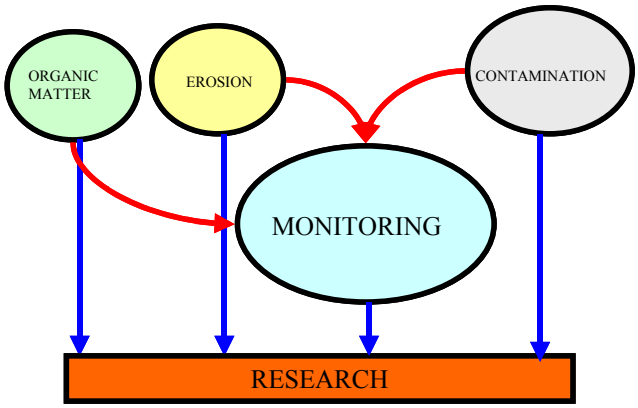

Figure 1: interaction between the cosultation working groups of the soil thematic strategy Feb. 2003 to May 2004

From the very beginning the commission highlighted the need to integrate the soil strategy and the outcome of the reports into future or currently elaborated EU legislation and communications as there are:

- Directive on Mining Waste - 2003
- Revision of the Directive on Sewage Sludge
- Directive on biological treatment of biodegradable waste (compost and anaerobic digestion and mechanical biological treatment)
- Directive on the Monitoring of Soil
- Communication on Erosion, Organic Matter and Contamination

All TWGs had been mandated with fairly detailed tasks to be covered (see Table 1)

Table 1: Mandate of the technical working groups in the frame work of the thematic strategy on soil protection

MANDATE TWG MONITORING	**MANDATE TWG CONTAMINATION**
○ Develop mechanism to reflect soil diversity in the EU monitoring scheme ○ Identify indicators to monitor the impacts of soil degradation on sustainable development (for each of the 8 threats) ○ Analyse and compare existing monitoring and survey systems ○ Provide recommendations on the network of observation points, periodicity, monitoring procedures, etc ○ Identify and assess gaps in harmonisation pertaining to definitions, sampling and analytical procedures, methodologies, etc. ○ Analyse the difficulties to set up a monitoring scheme linked to private ownership of the land ○ Assess: * the aspects of public access to information * the costs involved for all monitoring options presented * the most appropriate level of intervention * the costs involved for all monitoring options presented ○ Establish some recommendations in support for the Proposal for a Directive	○ Develop criteria for a common definition of contaminated soil ○ Assess consequences of contamination hindering sustainable development ○ Identify the major sectors and release sources causing contamination ○ Identify mechanisms to fund the remediation of "orphan" sites ○ Assess the aspects of right of ownership and contamination ○ Identify measures to encourage the participation of landowners ○ Assess the suitability of "Report/Statement on land status" ○ Develop principles for a national strategy for remedial actions ○ Assess the most appropriate level of intervention ○ Establish some recommendations in support for the Communication
MANDATE TWG ORGANIC MATTER	**MANDATE TWG EROSION**
○ Assess the status of European soils ○ Highlight the multiple functions of OM ○ Obtain a better insight in the processes of build-up and depletion ○ Formulate actions and good practices to maintain and increase OM ○ Formulate specific actions for sensitive areas at risk	○ Assess the impact of erosion on sustainable soil management ○ Identify existing measures/legislation in MS applicable at EU level ○ Identify EU policies/measures which can be used to protect against erosion (integration of soil protection objectives in relevant policies cap, structural and cohesion funds, community legislation on water) ○ Characterise actions to fight against desertification (e.g. in agriculture, such as identification of vulnerable zones, anti-erosion measures included in the rural development plans) ○ Develop the criteria for programmes in training ○ Present options for action and recommendations [economic impact of erosion]
MANDATE TWG RESEARCH ○ **Present an analysis of existing information**: *strengths and weaknesses and driving forces * existing but not used * recommendations for maximum use ○ **Identify research gaps and new research areas**: * input also from other WGs (co-ordination) * assess according to a set of criteria ○ **Development of cross-cutting issues:** * exposure and risk management for soil types * functioning and structure of ecosystems? interactions with land use * development of early warning networks * innovation and barriers for the take-up of technologies * integration of socio-economic and ecological considerations * soil-water interface	

How do the soil strategy and the planed biowaste and revised sludge directive interact

In October 2003 the Commission proposed the merger of the planned revision of the *Sewage Sludge Directive* and the elaboration of a *Directive on the Biological Treatment of Biodegradable Biowaste* with the *Soil Strategy*.

On 18th of December the Commission (ENV.A2 - Production, Consumption & Waste) provided a working document *"Discussion Document on Biowastes and Sludges"* which served as a basis for discussions with stakeholders.

It indicates that common aspects that have to be considered and that are driven by the needs of soil protection in a balanced and scientifically justified way would require the combined discussion of both initiatives for the two directives on sludge and biowaste. These are:

1.) Organic matter maintenance, build-up and beneficial effects to the soil functions; organic carbon sequestration (especially valid for compost);
2.) Balanced short and mid term nutrient supply
3.) Potential drawbacks due to contamination by pollutants or a surplus of nutrients
4.) Monitoring and quality assurance of organic waste/compost management

However, the overall goal is to establish a system that should ideally minimise the drawbacks, and maximise the benefits. Simultaneously this system should balance the need for harmonised European measures and tools on national scale for flexible implementation.

Therefore TWG *'Organic Matter'* task group *'Exogenous Organic Matter'* and *'Contamination'* task group *'Diffuse Sources'* were asked to emphasise the potential need as well the impact of the use of *compost* and *sludge* on land in the view of a comprehensive soil protecting strategy.

Finaly it should be addressed that compost production, anaerobic digestion and sludge recycling must be seen as an integrated part of all waste treatment and disposal options as there are *material recycling, mechanical biological treatment of residual waste (MBT)*, *incineration* and *final disposal* in controlled landfill sites.

In this context a clear driver for the recycling of biodegradable (compostable) waste stems from the reduction targets for biodegradable municipal waste from landfills set in Directive 1999/31/EC, Article 5[22].

What are the next steps within the EU Soil Strategy ?

It was interesting that after all intensive consultation no clear and firm conclusion has been expressed regarding the for a long time announced initiatives on biowaste and sludge by the Commission representatives at the closing meeting of all working groups and the Advisory Forum in April 2004. What can be expected is the following:

- Final Reports of the Working Groups were sent to the Commission by end of May 2004 and are published on the web page http://www.forum.europa.eu.int/Public/irc/env/soil/library
- The Commission will prepare a *Soil Package* which may result in:
  1) a *Strategic "Framework" Document* (not binding Communication of the Commission) and / or

[22] The targets are: reduction to 75% (by weight) of total biodegradable municipal waste produced in 1995 by 2006; to 50% by 2009; to 35% by 2016.

2) a *Soil Framework Directive*

this *can* include:

a. a Soil Monitoring Directive
b. a Compost/Biowaste Directive
c. a revised Sludge Directive

- However all those *Initiatives* may only be developed under the umbrella of a soil frame work. In no case it is planned to produce stand alone regulations.
- Meanwhile the Commission launched two studies:
  - Extended Impact Assessment for an „EU Biowaste Directive" → Autumn 2004
  - Economical Impact of Soil Degradation → June 2004
- The New EU ‚Agriculture & Soil' Unit (within DG Environment) will develop a proposal for the structure of the soil package by end of 2004
- The new EU Commission will – based on the foregoing – discuss and decide the concrete steps to be taken until June 2005

This – as it stands – constitutes to some extent a contrast to the recommendations of the working groups.

The key results of the Working Groups

The EC Communication on the Soil Strategy has already focused on the potential pool of organic matter included in biowaste.
Arguably, the goal of "promoting the use", while concurrently "preventing contamination" may only be fulfilled through a wide implementation of strategies aiming at source separation of biowaste.
This has been prominently reflected by the recommendations of the technical working groups (TWG) *'Organic Matter'* and *'Contamination'*

Recommendations of the Working Group *ORGANIC MATTER,* task group *'Exogenous Organic Matter (EOM)'*

General Recommendations

It is concluded that Exogenous Organic Matter (EOM) use should be viewed as a positive activity that is to be recommended in production systems where good practices, soil and EOM quality issues are fully observed and accounted for.
Farmers and their advisers will need to be equipped with information on the types of EOM that are available to them and the way in which these materials can be used for wider benefit.

1. The application of EOM on soil is in principle recommended if it is of an appropriate quality and if it is applied according to good practices.

2. If these two requisites are fulfilled, the application of EOM is recommended because it can limit the decline of soil organic matter and assist with reducing soil erosion particularly in areas where degradation of soil is an issue. It can assist in the maintenance of minimum site-specific SOM levels and in sustaining different soil functions. It can supply stable and non-stable organic matter to soils in support of important soil functions.

3. Contrary to mineral fertiliser which does not contain organic matter, the application of EOM can also enhance biological activity in soil, which induces better aggregation and/or better porosity of soils.

4. Compost from separate collected biowaste fraction from municipal waste should be recommended in order to improve biological/physical and chemical soil functions and the application of nutrients in a valuable form.

5. The application of EOM can thus improve tilth and workability, increase buffer capacity, may reduce nutrient leaching, improves water retention, etc. of treated soil.

6. All of which impinge upon savings of energy, savings of non renewable resources (such as mineral phosphates), protection of organic soils from peat extraction (as compost can be added to soil improvers and growing media, partially replacing peat) and sustainable management of croplands.

7. The application of EOM is also recommended because it can close nutrient cycles, contribute to reduced nutrient leaching and less reliance on non-renewable materials such as mineral phosphates. EOM contains nutrients (mainly nitrogen and phosphorus) in different forms, quantities and availability according to the type of EOM.

8. Applying composted EOM to soils should be recommended because it is an effective way to divert carbon dioxide from the atmosphere and convert it to organic carbon in soils, contributing to combating greenhouse gas effect.

9. The application of limed sewage sludge could be recommended as mineral amendment to correct soil pH, where necessary.

10. Lastly, composting or anaerobic digestion of animal manure and slurry together with straw, green wastes or other EOM, in vulnerable areas, could also be useful to move the excess of nutrients from surplus nitrogen areas to deficient areas. Through composting or anaerobic digestion a stabilised organic amendment, whose weight is reduced (to 1/5 – 1/4 of the raw materials prior composting), is obtained, which makes storage possible and transport easier.

Recommendations for ensuring good quality of EOM for soil protection and for policy

The quality of the EOM is of paramount importance when recommending its application to soil. The authors of this report recommend the development of a consistent approach for the safeguarding of long-term sustainable application of any type of EOM on land.

1. In the short term Soil Protection Strategy should support the recycling of clean EOM on soils, and support the initiatives, in the frame of EU waste legislation of revision of the Sewage Sludge Directive and a Biowaste Directive along the lines already discussed in previous Working Documents.

2. In the medium term, this directive should also include the legal framework for slurry and manure to control the spreading of these EOM on land and prevent long-term soil contamination.

3. This means that the concepts used to choose priority contaminants and to derive limit values for contaminants must be the same for all EOM, and more generally for all

fertiliser and amendments (for organic fertilisers and amendments, as well as mineral ones such as phosphate).

4. In order to prevent soil contamination (by heavy metals and organic compounds), several source prevention actions are recommended (e.g. separate collection of biowaste, separate roadways streaming / storm overflow from urban waste water in the sewerage systems, a sewerage systems police/regulatory force, separate collection of toxic wastes from householders and manufacturing sites, reducing quantities of Cu and Zn added to the diet of cattle and pigs and improving their bioavailability and assimilation).

5. In order to prevent soil contamination from a part of organic compounds and to prevent pathogens dissemination, appropriate treatments must be promoted to sanitise EOM before use.

Recommendations for proper / good practices

The authors of the report recommend the application of EOM on soils if it is carried out according to good practice.

1. This means that the application of EOM to the soil takes into account the needs of the soil, the soil use and the climatic conditions. This should include, for the EOM, the nutrient supply (e.g. nitrogen, phosphorus and potassium), organic matter characteristics (i.e. stable and non-stable OM) and the potential impact of contaminants (such as heavy metals and organic compounds). It is important to have a proper fertilisation plan at the farm level and to take into account all the fertilisers inputs (i.e. inorganic fertiliser and EOM input of nutrients). This latter point is of great importance in vulnerable areas with high concentration of breeding animals, where nitrate pollution of water courses and eutrophication of surface waters are problematic (Nitrate Directive).

2. In order to achieve the previous recommendation, better characterisation of the nutrients and organic matter kinetics, it is also recommended to provide good tools to inform agronomists giving advice to farmers. This means that it is necessary to have normalised tests, "simple" models and references data bases to be able to give good advice to farmers (or other users), to be able to produce a proper fertilisation plan, to avoid nutrients losses, such as N and to adapt the type of OM from supplied by the EOM to the soil function which is to be improved. In order to be able to use models, software should be promoted. Several methods exist to characterise the form of OM in the EOM : (i) methods which determine a labile fraction (carbohydrates, proteins, cellulose polysaccharides) an intermediate fraction (non-cellulose polysaccharides, proteins) and a stable fraction (lignin, creatin), (ii) soluble C, (iii) respirometry incubation test, etc. Characterisation of the organic matter forms in EOM is a very important consideration so that the timescale over which benefits are delivered can be better understood. This is an area where novel techniques are being developed and where there is potential for harmonisation of approaches across the EU.

3. It also means that the application of EOM must be done within clear guidelines and restrictions depending on the properties of organic fertilizers/soil improver (i.e. restriction on timing of application, for example not on frozen ground, not within a certain distance from the water course, not on natural forests, no grazing period immediately after application, injection of untreated EOM, etc.) and that quality

assurance scheme / certification scheme for collection, treatment and land-spreading must be promoted.

4. An advisory service to farmers or other users (landscape gardener, etc.) must be promoted. This should include agronomic advice and also advice concerning possible pollutants and hazardous substances

Recommendations of the Working Group *CONTAMINATION;* Task group *'Diffuse Sources'*

Contamination is one of the main threats to soil identified in the EU soil communication (COM(2002) 179 final). Prevention of soil contamination has strong links with policies on chemical substances and with environmental protection policies for water and air. It has also strong links with policies concerning certain land uses, for instance agriculture. The relation between soil contamination and waste management is obvious as well. Bad waste management has led to a large number of contaminated sites (mainly disposals). Better waste management has led to recycling of waste as construction products, or as composts and sludges that can be used as fertilisers. Both ways of recycling may positively or, if badly managed negatively affect the quality of the soil. In fact many policies have significantly contributed to the protection of soil. However soils are still subject to many pressures leading to soil degradation, which calls for a policy which addresses soil in it's own right.
For agricultural land the farmer has to treat the soil in a balanced way in order to save the soil quality for future generations..

The European parliament stressed the importance of preventing the accumulation of hazardous substances in soils, but the task group could not agree on the basic principles to turn this EP statement into a concrete policy tools.

Preventing accumulation by balancing inputs and outputs was considered a too simple "arithmetic" approach by some. According to them it is not the accumulation of the substance as such but the accumulation of risk for human health or ecosystems that should be the key issue. Others found that focussing on risk is not preventive enough. The use of risk assessed with the limited knowledge we have today, and especially if the assessment is only related to the way the land is currently used, seems to be in conflict with sustainability. We should not want to endow future generations with risky soils and limit their freedom of choice to use the land differently.

In view of the lack op consensus for a strategic approach, the group decided to use a bottom up approach, because they felt that was the most practical when discussing inputs of contaminants in agriculture. Products like composts, manures, fertilizers sludges can be assessed according to agronomic value, the impurities and potential pollutants can be identified, the pathways of exposure can be tracked and the risks for soil functions, water resources, plants animals and man can be assessed. This discussion automatically leads to the question whether we should protect the multi-functionality of soils together with applying the precautionary principle or whether we should make a differentiation between different types of land uses according to their sensitivity for pollution. There is no consensus about this question. Some favoured the long term goal of preserving soil as a multifunctional resource for future generations, others favoured the more short term

risk based point of view where the risk of certain additions to soil depend on the use of the land.

The following recommendations summarise the results of the report on *biowaste and compost*

Recommendations for Policy

- It is recommended to go for a consistent approach for the safeguarding of long-term sustainable application of compost on land.
  - In the short term a Soil Protection Strategy should support the recycling of clean compost on soils, and support the initiatives, in the frame of EU waste legislation of revision of the Sewage Sludge Directive and a Biowaste Directive along the lines already discussed in previous Working Documents.
  - In such respect, it is particularly important to establish effective drivers for source separation of biowaste, fully in lime with the mandate of the Soil Strategy which aims at "preventing contamination and promoting the use of certified compost".
  - Most important instrument would be the definition of admissible clean source materials gained from source separation systems (organic waste from specified industries such as food processing as well as households)
  - Due to the manifold diffuse sources of contaminants and the approved lower quality stabilised materials gained from municipal solid waste or mechanical biological treatment plants should be excluded from the definition of compost. Those stabilised waste materials should be banned from the use in food and feeding stuff production and general landscaping
  - When sludges which are identified to be suitable for agricultural use are composted they should be regulated under a compost regime
  - Europe wide quality standards and minimum declaration requirements for composts are essential for creating a traceable market
  - Quality assurance systems should be an integrated partner within the regulatory framework in order to guarantee a comprehensive control and documentation system supporting the proper use of standardised products
- The application of compost on soils according to good practice is recommended because this would implicate reasonable application rates in line with environment needs (such as a limitation of heavy metals and organic compounds loads).

Recommendations for monitoring

General questions concerning heavy metals and specified organic pollutants
Due to the low quantity of pollutants and limited amount of material applied to land (following GAP) accumulation rates are generally low. If source materials as well as the gained exogenous organic materials (including manure) are well defined (limit values) it would be fairly enough to monitor changes on pilot scale where pure modelling would still leave considerable uncertainties. In this way (as mentioned below) basic data taking into account the most important management and site conditions can be considered.

Collecting these data may be useful for scientific purposes, to improve conceptual models of substance flows in agricultural systems. A number of farming systems maybe monitored through EU and such a monitoring system may help to improve GAP (good agricultural practice)

There exists research based evidence that the input of humified organic matter (compost) increases the sorption or fixation capacity for heavy metals in soil. So monitoring of heavy metal availability/solubility/mobilisation within *pilot schemes* with plots fertilised with EOMs is an important tool for further evaluation of potential impacts due to the input of contaminants by fertilisation systems.
Also persistent organic pollutants (POPs) and their breakdown/solubility behaviour which may be found in those EOMs could be considered to be monitored in this way.

The nitrogen and phosphor cycle
Various forms of nitrogen should be measured as input to soils and as concentrations in soil in view of prevention of eutrophication of surface water, prevention contamination of groundwater and acidification of soils. Special emphasis should be given to mineralisation/solubility processes and potentials of N- and P-fractions due to the input of compost or sludge or any other exogenous organic material (EOM). This is of considerable importance in terms of long-term SOM management under different site and management conditions. It might be possible to evaluate different existing analytical methods in advance. There is some concern about long-term health effect associated with changes in the global nitrogen cycle.[23] In the case of N the emission of greenhouse gasses (N_2O) is of importance in relation to air quality and climate change. The impact of adding well stabilised organic fertilisers in comparison to those with a high ammonium concentration (e.g. slurry, digestate) should be monitored on pilot scale.

However, all parameters relevant to nutrient and OM management should be measured on a regular basis in farm scale.

Recommendations for research
The regular use of EOM on Agricultural land imposes 2 main challenges to be covered:

1. optimisation of OM and nutrient supply (=soil improvement)
2. diminishing potential adverse effects due to load with accompanying contaminants.

A lot of applied research has been conducted for a number of materials such as animal manure, sewage sludge and, recently since 10 to 15 years also for compost.
Especially for compost from source separated organic waste long-term impacts on the soil-plant-groundwater system (agro-ecosystem) are still missing und do not reflect all typical ranges of soil, climate and land management conditions. Therefore in order improve GAP (good agricultural practice) for the organic fertilisation systems specific networks should be established covering the use of exogenous organic matter (EOM, such as compost and sludge). Existing mid and long-term field trials must be integrated in order to profit from the already existing data pool. Harmonisation of *what* is being measured and *with which methods* is needed as well as completion with missing soil, management and climate variations. Parameters identified as effective indicators for soil quality and function can easily be integrated in such a cooperative research/monitoring network.

[23] Townsend, A.R, et al. (2003). Human health effects of a changing global nitrogen cycle. Front Ecol Environ 2003 1(5): 240-246.

Key parameters related to soil contamination would be:

- Various forms of *nitrogen* (nitrogen pools) should be measured as input to soils and as concentrations in soil in view of prevention of eutrophication of surface water, prevention of contamination of groundwater, acidification of soils.
- In the case of N the *emission of greenhouse gasses (N_2O)* is of importance in relation to air quality and climate change. The impact of adding well stabilised organic fertilisers in comparison to those with a high ammonium concentration (e.g. slurry, digestate) should be investigated.
- Also the impact of spreading EOMs on *phosphorus-fractions* and their mobilisation potentials should be investigated more properly in order to prove the current assumption which counts the phosphorus applied with compost as fully available and give more clarification of compost affects the P leaching potential
- There exists research based evidence that the input of humified organic matter (compost) increases the *sorption or fixation capacity for heavy metals* in soil. However, the long term effects and dynamics are not fully understood in the view of precaution. Heavy metal availability/solubility/mobilisation within pilot schemes on plots fertilised with EOMs is an important tool for further evaluation of potential impacts due to the input of contaminants by fertilisation systems. In this context an important question is , what proportion of the added OM will remain in the soil for a long time.
- Accumulation, decay and solubility of *persistent organic pollutants* (POPs) which may be specified in the individual EOMs is not known satisfactory.
- Potential hygienic problems resulting from the use of "*fresh compost*" in agriculture (compost that has undergone the thermal hygienisation/sanitisation phase but is not fully stabilised due to a shortened maturation phase)
- Impacts of the one-time use of higher amounts of composts (100 to 400 t/ha) in *land reclamation* for the restoration of degraded sites (old mining areas , landfill surface restoration etc.) important parameters → leaching processes, N-mineralisation, N_2O emission, heavy metal availability.
- The above mentioned effects (point 1 to 9) of *digestate* as compared to compost.

Key elements of the Discussion Paper for an EU Biowaste Initiative (18 December 2003)

This initiative was already widely discussed among Member States between 1999 and 2001 resulting in 2 working documents. The Commissions decision to merge this initiatives with the Thematic Strategy on Soil Protection led to a discussion paper which removed the already far reaching and concrete regulative proposals of the second working document of 2001.
We here summarise the most important elements provided in the discussion document of 18 December 2003.
The main issues raised were:

- Encouragement of home and community composting schemes as an important tool of waste prevention;
- Promotion of source separation of organic waste from households and specified industries as a key tool for the management of biowaste (following the principle that only a good quality feedstock material will guarantee a high quality compost);

- Process standards in order to guarantee an effective reduction of potentially existing pathogenic organisms of epidemiological concern;
- Quality requirements for the final compost (proposing a classification including high quality marketable compost products, lower grade composts, and stabilised biowaste for restricted applications); and
- Following on from the quality classification, the eligible use of the different classes of outputs on land.

The most important issues for municipalities will relate to the first three of the above issues.

One of the most important provisions included in previous Working Documents was the mandate for Member States to implement programmes for source separation of biowaste. This would be consistent with the mandate - set out in the EC Communication on the Soil Strategy - to prepare '*a directive (...*on compost and biowaste…*) with the aim to control potential contamination and to encourage the use of certified compost*'. The last Discussion Document, intended to provide for the basis for a broader discussion in the context of the Soil Strategy, again considers source separation as a '*key-point in a successful strategy for compost promotion'*. Accordingly, it stated: *'Compost should be considered a product only if it has been produced from separately collected biowaste'*. The last Document does not go into details as to obligations on source separation, but the need to promote it is still regarded as a key element of the strategy, since the Document considers the need *'(...) to provide a "driver effect" for local authorities and the concerned industry'* through a comprehensive strategic approach (e.g. definition of targets or obligations).

The document already refers widely to the draft report prepared by the Task Group *"Exogenous Organic Matter"* in quoting the beneficial effects of the use of well defined compost and sludge when used as soil improvers or organic fertiliser. The main arguments are:

- The need of organic matter specifically on land where the level of organic matter is low (< 2-3 %) and thus the soil is endangered for erosion, desertification or degradation of other essential soil functions (water retention, transformation, buffer, filter).
- The fertilisation properties of composts and sludges present a considerable secondary resource of plant nutrients. This, in addition gives the chance of the substitution of mineral fertilisers for which the production needs energy.
- Compost as alternative to peat products
- Energy recovery from organic waste and sludge by anaerobic digestion *(AD; Biogas plants)* especially suitable for materials with high water content and fats.
- Compost as carbon sink; and therefore as a contribution to the abatement decrement of the greenhouse effect.

The application of compost and sludge on land has to be ensured in a cost effective way and potential adverse effects (potential pollutants; relevant pathogens) must be controlled by environmentally sound quality requirements. But – and this is most important – safety measures or limit values must consider the requirements of a beneficial soil management with compost and sludge.

The objectives of the two legislative instruments for sludge and biowaste can be summarised as follows:

- Extending the types of sludge to other than municipal sewage sludge

- Extending the scope of the Sludge Directive to non agricultural land and landscaping
- Promoting the biological treatment of biowaste providing a high level of environmental protection
- Achieving all possible benefits to agriculture or ecological improvement
- Ensuring human as well as animal and plant health
- Ensuring the functioning of the internal EU market

Further specific measures and considerations on *Biowaste* and *Compost*

For compost it is (as it already was in the 2nd Working Document from 2001) intended to make a clear distinction between *compost* derived only from source separated organic waste and *mechanical biological treatment of residual waste* (the current definition is *Stabilised Biowaste*).

Whereas compost may be marketed as high quality product for all areas of food production and private gardening, the latter one is considered as important complementary treatment option along the lines of the provisions of the Landfill Directive (requiring a pre-treatment of the waste to be landfilled to achieve further reduction of its biodegradability).

In other words, in order to achieve a high level of quality and to create a European wide market for compost separate collection of organic and industrial waste as well as garden waste is an undoubtedly pre-condition. Recycling targets with consequent composting or anaerobic digestion would therefore be a viable legislative instrument in fulfilment of the landfill directive targets.

A well specified list of allowed input materials for the production of quality compost would be most helpful in order to prevent confusion on the market.

Further instruments would be:

- Quality requirements for the final product differentiated for *quality compost* (→ to ensure a healthy compost market under the product regime) and *stabilised residual biowaste* (→ still to be used under the waste regime) as well as *digestate* from anaerobic digestion (→ the use of the digestion residues may be regulated in accordance with the requirements for sewage sludge with the inclusion of a monitoring system)
- Main parameters would be limits for *heavy metals*, *impurities* and *indicator pathogens*
- Minimum process requirements (time temperature regime for hygienisation)
- Acknowledgement of Biogas as from AD of biowaste as renewable energy in accordance with Directive 2001/77/EC[24]
- Stability requirements for MBT material (*stabilised residual biowaste*) for landfilling and restriction of the residues of MBT to non food areas
- Environmental obligations for plant permits (emission controls etc)
- Standards for sampling, analytical measurements, labelling and packaging of compost products, including recommendations for a sustainable proper use in accordance with the principles of *good agricultural practice (GAP)*

[24] Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market (OJ L 283, 27.10.2001, p. 33).

Relationship with the Animal By-Products Regulation (ABPR;EC) N° 1774/2002) [25]
The document clarifies that, the ABP Regulation should not affect the application of existing environmental legislation or hinder the development of new rules on environmental protection, (e.g. for biodegradable waste). Pending the adoption of EU rules (i.e. for a Biowaste Directive), composting and anaerobic digestion of biodegradable waste containing catering waste is subject to national rules.
Thus the elaboration of well balanced requirements for process control and final product approval in the framework of the new Biowaste Directive is of special importance.

In addition it is recalled that Article 22(1)(c) of the ABPR prohibits the application to pastureland of organic fertilisers and soil improvers[26], other than manure. Based on a Commission Declaration, a transitional three weeks waiting period between spreading and grazing was introduced for the use of composts or digestate stemming from Category 3 material. This relaxation must be approved by national authorities on individual basis and is given until harmonised measures will be implemented on EU level.

Some conclusions
Biowaste represents a valuable resource of organic matter and plant nutrients. This is well reflected by the Commissions new Discussion Document.
The strong link of the initiative for a new Biowaste Directive with the EU soil strategy is a reasonable step towards a sustainable organic resource management and involves the approaches of stakeholders and experts on a broad level.
The concepts of the presented Discussion Document include already important key elements for a successful implementation of EU Environmental policies and thematic strategies and are in line with recent communications of the EU Parliament and Council respectively.

Most important tools will be:

- Targets for source separation as flexible framework for Member States who may decide where and how to prioritise the implementation of source separation schemes followed by composting and anaerobic digestion for biowastes
- Minimum quality standards system for compost in order to identify compost as a standardised and safe product and to guarantee traceability from source materials to the market place.
- Leaving enough flexibility for Member States in order to set individual requirements for the use of sludge and biowaste according to local soil protection needs
- Establishing quality assurance and monitoring systems as an integrated element of the product manufacturing process
- A completely separated perception of residues from mechanical biologically treated (*stabilised residual biowaste*) with specific requirements under the waste regime for its use

[25] Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules concerning animal by-products not intended for human consumption (OJ L 273, 10.10.2002, p. 1).

[26] The definition of organic fertilisers and soil improvers in point 38 of Annex I reads "materials of animal origin used to maintain or improve plant nutrition and the physical and chemical properties and biological activities of soils, either separately or together; they may include manure, digestive tract content, compost and digestion residues".