

BIO-WASTE GREEN PAPER FNADE contribution

FNADE is the professional organisation representing waste management and environmental services in France. The 360 member services companies and manufacturers design and build sites, and process 81 million metric tons of household waste, and hazardous/non-hazardous industrial waste at 2,750 facilities. With a turnover of over 10.4 billion € / year, member companies of FNADE are involved in every aspect of waste, from collection to final treatment, ensuring that it is recycled, recovered organically, used for energy or stored. These companies, which employ over 75,000 employees in France, operate sorting and recycling centres, composting units, waste-to-energy plants and controlled storage centres. Its members also include specialist environmental engineering offices that provide assistance for project management, companies which build equipments and plants, and other ones that decontaminate soils or clean roads. FNADE also plays an important part in giving advice to French and European legislators when regulations are being prepared, and aims to ensure environmentally sound management of waste.

FNADE is registered on the Register of Interest Representatives as Identification number 8812253451-94.

FNADE welcomes the publication of this Bio-Waste Green Paper - evidence of the European Union's interest in developing recycling and the recovery of organic waste. Management of these wastes offers an opportunity which has not yet received all the attention it deserves, and its development will make a major contribution to achieving the 50% recycling target established in Waste Framework Directive 2008/98/EC.

In France it is also a matter of becoming part of a movement for recycling (Grenelle environment aims), and also of helping to comply with the thresholds in Landfill Directive 99/31/EC by 2016.

The present contribution is organised into 2 parts:

- 1 **FNADE's general position statement,**
- 2 **FNADE's comments and proposals in reply to the 8 questions raised in the Bio-Waste Green Paper.**

FNADE's general position statement

1 Limiting the scope to bio-waste is too restricted

The present status of bio-waste management is concisely described in the Bio-Waste Green Paper which consistently identifies challenges. **FNADE is however disappointed that the problem has been considered from the narrow point of view of bio-waste alone** (as defined in Waste Framework Directive 2008/98/EC) **and does not take into account biodegradable waste as a whole**: bio-waste + sewage sludge + the decomposable part of household waste (soiled or unsorted paper and board, some textiles, etc.).

By way of illustration, before some kinds of waste are collected separately, a person living in France will on average produce 455 kg/year of waste, of which 29% consists of compostable material and 25% paper and board. Once separate collection has been introduced (for packaging, paper and board, etc.), the residual waste amounts to between 300 and 350 kg/year/inhabitant (depending on the local situation), comprising 30% kitchen waste, 3% garden waste, 11% paper and 6% board. Thus in the case of household waste considering only bio-waste restricts the potential scope for recovery by more than one third on average. But this could be as much as a half in urban areas where the contribution from kitchen waste is less and the contribution from paper and board is much greater.

As collection systems for bio-waste and bio-degradable waste and the tools for processing it (and in some cases recycling systems), are jointly designed and implemented, a uniform overall approach through a single regulation would have been preferable.

In the absence of a single regulation we would call for **regulation with harmonised principles** (promoting recycling or recovery, a requirement for results rather than means) **and a harmonised technical approach** (limiting values for pollutants, etc.).

From FNADE's point of view there should be one regulatory text encouraging the recycling or recovery of bio-degradable waste, and this should also apply to sewage sludge, so that its recycling or recovery can be developed (see current remarks on revision of the Sludge Directive 86/278/EEC).

2 Respecting the hierarchy of waste treatments, and emphasising recycling

With regard to the **management of biodegradable waste** (and therefore bio-waste), FNADE fully supports **compliance with the hierarchy** established by Waste Framework Directive 2008/98/EC: prevention, reuse, recycling, other recovery methods (in particular energy recovery) and finally disposal.

✓ **Prevention:**

With regard to prevention (see question 1 in the Bio-Waste Green Paper), we feel that the primary duty of consumers (and the producers of food products) is to **restrict the proportion of unconsumed food in wastes**, and with regard to garden and park waste, to **restrict waste production using ad-hoc cultivation techniques** (watering, pruning, etc.). Nevertheless it is obvious that bio-waste (kitchen waste and garden waste) will inevitably be produced, and will need to be best managed.

Apart from restricting production, prevention in the context of biodegradable waste (including bio-waste) should have 2 aspects:

- **Limiting the quantities entering collective management systems (collection and treatment),**
- **Limiting the contamination of bio-waste for optimised upstream management (qualitative aspect).**

With regard to point 1 (limiting the quantities entering collective management systems), home composting systems, even community composting systems, have been developed in France and abroad. Experience feedback from under French conditions (type of inhabited area, charges for waste management, etc.) has certainly proved these to be beneficial, but their scope must be properly considered. For an individual who is highly committed to composting at home, the quantities “avoided” may indeed be large, but it has to be said that, on an overall scale (the total population in a neighbourhood, all sectors taken together), the volumes avoided are quite small in comparison with centralised collection centres or door-to-door collection (separate or mixed).

In addition to this, levels of knowledge about the efficiency of home composting (temperatures, oxygenation, etc.) and therefore its environmental impact (greenhouse gas emissions) and health impact (microbiological risk if used on kitchen gardens) remain low and need to be improved.

To conclude, although there is no question that home or community composting systems will be developed, in future bio-waste management will mostly tend towards effective centralised systems.

As regards point 2 (limiting the contamination of bio-waste for optimised upstream management), we have in mind the various situations present in France.

- **Where there is separate collection of bio-waste**, this is a system which can limit contamination¹,
- **Where there is no separate collection from producers**: bio-wastes are managed initially by mixed collection of the residual part², followed by a stage of industrial sorting, and then composting/anaerobic digestion of the sorted organic part. In this case the solution for limiting contamination lies in setting up effective separate collection of hazardous household waste and electrical and electronic waste. Experience feedback in France has shown that this is a valuable approach. It can also be said that initiatives to develop the use of biodegradable (and 100% compostable) plastics, or the

¹ *In the case of kitchen waste there may still be impurities such as plastics, and in the case of green waste there is the possibility that plant health products may have been used.*

² *This is the part of waste which remains after sorted parts (packaging, magazine papers, glass, etc.) have been removed.*

implementation of REACH, will in future result in a gradual regular decrease in the contamination of household waste, and therefore the risk arising from mixed collection.

✓ **Recycling:**

In the case of biodegradable waste, as re-use does not apply, recycling must be regarded as being the **priority form of management**. In accordance with the definition of recycling (Art. 3, paragraph 17) in Waste Framework Directive 2008/98/EC, **the production of organic soil improver (through composting) or fertiliser (through anaerobic digestion) is a recycling operation**³. FNADE fully supports giving priority to biological treatment (composting alone or anaerobic digestion possibly followed by composting) for the production of fertiliser (growing media, organic soil improvers or organic fertilisers) over other forms of treatment.

Waste Framework Directive 2008/98/EC is essentially concerned with treatment; however more attention should be paid here to methods of collection before the stage of biological treatment per se.

1. **Separate collection at source** is one way of organising things. In this case the waste producer sorts at the production site; at home in the case of individuals, in canteens or restaurants in the case of collective kitchen waste, at factories in the case of food processing industry bio-waste. The material which has been sorted on site is then collected.
2. But there is another way, which has come more to the fore as a result of recent developments in sorting technologies: it can be called **mixed collection and industrial sorting**. This system applies to scattered sources where the effort of sorting is either unrealistic (collective housing), or not very effective (little weight collected), or too costly (dedicated separate collection systems are too costly to implement). In this case bio-waste remains mixed with the residual part, and sorting is carried out industrially and centrally in a plant using successive and complementary processes. This stage of mechanical sorting precedes biological treatment (composting or anaerobic digestion), which only applies to the organic part resulting from mechanical sorting.

The differences between these 2 systems are:

- **Where sorting** takes place: before or after collection, but in both cases biological treatment is only applied to the sorted organic part,
- the **quantities**: where separate collection takes place at source, only kitchen waste is processed (15 to 40 kg/year/inhabitant, to which green waste may be added, depending upon the instructions for collection), whereas with mixed collection the incoming material includes all biodegradable waste in the residual part of household waste, that is approximately 60 to 90 kg/year/ inhabitant (of which approximately two thirds can be used to produce compost or digestate),
- the **composition** of the digested or composted part: impurity and chemical contaminant concentrations tend to be less with sorting at source, but efficient

³ The following stage of spreading being that defined as a re-use activity, see Appendix II to Waste Framework Directive 2008/98/EC.

industrial sorting would provide the same quality as at-source sorting of middling efficiency. It is rather the need for the sorting stage (at households or industrially) than the form of organisation that will govern the quality of the final compost/digestate.

Because technologies develop and improve, and because all options for organisation have to be kept open, FNADE takes the view that **a regulation should not impose any particular technologies or forms of organisation, as long as the aims (recycling, quality of final material) are achieved.**

FNADE is further pleased to see that “Mechanical Biological Treatments“ have been clearly stated to be reserved for those situations where the end product is classified as a non-standard-compliant stabilisate that is solely intended for landfilling (Section 3.1 of the Bio-Waste Green Paper). In this case the processes used are essentially intended to reduce the fermentable nature of the incoming mass of waste and to remove components which can be recovered. Ultimately, stabilisation, referred to as “MBT” in the Bio-Waste Green Paper, is not a form of recycling. This situation should be clearly distinguished from composting and anaerobic digestion, which are designed to produce fertilisers (soil improvers or fertilisers) through recycling, even if there is a prior stage of energy recovery in the case of anaerobic digestion. Composting and anaerobic digestion only apply to the organic fractions, regardless of the manner in which sorting is carried out (by individuals or industrially).

In order to make the difference clearer, FNADE recommends that these 2 systems should have different names according to the destination for the end product, and not the technologies used.

The terms composting (producing a compost intended to be returned to the ground, whether agricultural or not) and anaerobic digestion (producing biogas and a digestate intended for return to the ground, whether agricultural or not) are clear in this respect; conversely, FNADE feels that the term stabilisation (producing a “stabilisate” intended for landfilling) would be preferable to “MBT” (Mechanical Biological Treatment), which only describes the stages applied.

✓ **Recovery:**

Finally, in the case of biodegradable waste, recovery takes place through the recovery of energy, where yields are optimised (in the case of the biodegradable part only) by **anaerobic digestion**.

Energy recovery from the residual part of waste is the essential complement to systems for the recycling of biodegradable waste, so as not to waste the energy present in them.

Use of composts: a great variety of markets, very often local; qualities to be linked to uses ... and a regulatory framework which can be adapted to uses

In its investigation of composting case studies (Chapter 2), the “**End of Waste Criteria**” **final report** from the Joint Research Centre (JRC) of February 2009, provided a good overview of the production of composts in the European Union. It is worth pointing out to the following items:

- **A great variety of outlets according to the situation in individual countries:** for example, France and Spain have agricultural outlets for the most part (71% in the case of France), because in particular of their large areas of agricultural land. In countries like the UK, DE, NL and IT there are much fewer agricultural areas and a more prominent place is taken by landscaping/soil mixing outlets, (growing media, blending/horticulture) and soil improvers for private individuals (wholesalers/hobby gardening). This is a crucial point, because it governs the strategies adopted for producing composts and the nature of the composts which should be favoured.
- **Imports/exports are very small** and only involve 2 countries with limited local agricultural outlets: BE and NL (5 to 7% of their national output). In all, in relation to the 10.5 Mt of composts produced in EU27, exported quantities hardly amount to more than 1% of output (and this essentially for blending/horticulture). The countries where qualitative requirements are very high (DE, AT, etc.) comply with this rule, which provides a good illustration of the extent to which composts adapt to local markets, because of factors relating to transport costs, which are never recovered by any possible sale. Thus a national approach to the rules governing the use of composts would make sense.

Given the great diversity of markets⁴, it would be sensible to have extensive segmentation based on a “**product/usage**” **approach**, that is a rule defining qualitative criteria applying to both the nature of composts and their use.

So that actual diversity of use can be taken into account, FNADE suggests that the regulations applying to the production and use of composts should be developed on the basis of 3 major families of “product/usage” pairs:

1. ***the aim of providing nutrients for plants and soils*** : fertilisers rich in nitrogen and phosphorus, spreading quantities 2 to 5 t/ha/year in agriculture (large crops only); this category includes for example non-composted digestates or sludge composts,
2. ***the aim of improving the physical properties of soils***: soil improvers rich in stable organic matter, spreading quantities 5 to 20 t/ha/year in agriculture; this category includes for example composted bio-waste and composts produced from mixed collective waste,
3. ***the aim of partly replacing soils***: products having a low value as fertiliser, but rich in lignin and having low conductivity, used in large quantities (per hectare) to reconstitute soils (e.g.: landscaping) or as a growing medium (e.g.: replacement of peat when planting flowers in pots). This category includes for example composted green waste.

⁴ The “markets” also include what might be called the “demand” when there are no significant flows of money between producers and users.

In each of these cases, the **requirements for the health and environmental quality of the final materials** (composts or digestates) should be established on the basis of a **scientific risk assessment**, taking into account the quantities spread and potential risk targets (men, ecosystems). Thus no incoming raw materials should be excluded at the outset, there should only be final criteria for composts or digestates according to their envisaged uses; composts based on mixed collected waste should not be prohibited in agriculture provided that they meet the thresholds set for uses, including agricultural uses.

These criteria would apply to **pollutants** (trace metal elements, organic trace compounds), **pathogens** (the types and concentrations of which would have to be adjusted to uses and the associated microbiological risks) and **impurities** (glass, plastics, metals, etc.).

The threshold values adopted for these parameters should be established on the basis of well-founded and undisputable arguments to provide a basis of credibility for the recycling of biodegradable waste and bio-waste. FNADE would like these **threshold values to be established based on actual risk assessments** (and not merely on aligning the most restrictive threshold values in different countries), as the technique for these are now well-established. A critical review of the literature on this now well-developed technique would be required before any legislation on the management of biodegradable waste were to be considered.

FNADE comments and proposals in response to the 8 questions raised in the Bio-Waste Green Paper

***Question 1:** Waste prevention is at the top of the EU's waste treatment hierarchy. From your experience, what could be specific bio-waste prevention action at EU level?*

FNADE certainly fully subscribes to the **general aim of preventing the production of waste**, including bio-waste.

However, on a country scale, **quantitative prevention**, that is restricting the quantities entering collective management systems by means of home composting systems, or community composting systems, offers small returns. Although, in the case of an individual strongly committed to home composting, the quantities “avoided” may be locally important, it must be said that, on the overall scale (the total population in a neighbourhood, all sectors taken together), the tonnages avoided are quite small in comparison with centralised systems at waste collection units or door-to-door collection (separate or mixed).

In addition to this, knowledge about the efficiency of home composting (temperatures, oxygenation, etc.) and therefore its environmental impact (greenhouse gas emissions) and health impact (microbiological risk if used in kitchen gardens), remains limited and needs to be improved.

To conclude, although there is no question that home or community composting systems are beneficial as part of overall management, in future most bio-waste management will take place through efficient centralised systems.

But **prevention should also be qualitative** and seek to ensure that there is no contamination of the biodegradable waste raw material which will be composted/fermented to methane.

With regard to these two quantitative and qualitative aspects, FNADE is of the opinion that:

- 1 **Communication about behaviour** should continue: throwing away consumable food should be avoided;
- 2 Specific steps should be taken with a view to possibly:
 - o **Encouraging the use of biodegradable wholly-compostable collection bags** for waste intended to undergo biological treatment (composting or anaerobic digestion), also when bio-waste is collected as a mixture with other waste;
 - o **Compulsory separate collection of hazardous waste from households**, with quantitative national targets and an appropriate action plan;
 - o **Encouraging the development of separate collection of bio-waste in the case of the largest producers** (canteens, restaurants, food-processing industry, municipal green spaces).

- ④ **R&D on the impacts** of home and community composting practices, and on quantitative performance (tonnages involved), should be developed on a national scale.

***Question 2:** Do you see benefits or disadvantages of further restricting the amount of biodegradable waste that is allowed on landfills beyond the targets already set in the EU Landfill Directive? If yes, should this be done on EU level or left to decide by Member States?*

- ④ It is desirable that **biological treatment should be encouraged** rather than that other treatment systems should be discouraged. **Financial tools** may be useful for this. By way of example we would mention the current approach in France of increasing taxes on landfill and redistributing the proceeds to biological treatment. **Regulatory tools** such as target recycling levels for biodegradable waste (and not only bio-waste, to make use of the widest range of source material possible) should also be encouraged.
- ④ In policies for encouraging the recycling of biodegradable waste **local conditions must predominate**: availability of treatment sites, cost of systems, etc. If there were to be stricter reduction targets than those included in Landfill Directive 99/31/EC, these targets should be set at national level.
- ④ The effect of technology on ways of managing waste other than biodegradable waste should however be carefully assessed. Reducing bio-waste in landfill means reduced provision of water, which encourages the biodegradation of all fermentable wastes. It should be borne in mind that the biogas produced by biodegradation of fermentable waste can be captured and made use of to produce heat or electricity (renewable energy source). The overall and local cost-benefit of limiting the dumping of bio-waste beyond what is required by the Waste Framework Directive should therefore be closely investigated. In any event, each Member State should remain free to establish such restrictions.

***Question 3:** Which options for the treatment of bio-waste diverted from landfills would you prefer to see strengthened and what would you see as their main benefits? Do you think that the choice of the treatment of bio-waste diverted from landfills should benefit from a wider and more consistent use of life-cycle assessment studies?*

- ④ **Priority should be given to recycling with the production of fertilisers intended for return to the soil** (whether agricultural or not), through biological treatments (composting and anaerobic digestion). Composting is a treatment which is suitable for almost all situations, at a moderate cost; anaerobic digestion is more suitable for moist biodegradable waste (kitchen and restaurant waste) and makes it possible to produce renewable energy in different forms (electricity, heat or fuel depending on local possibilities for recovery).
- ④ **The environmental benefit of biological treatment is unanimously regarded as being positive**, but varies according to situations, as demonstrated by several Life Cycle Analyses (LCA). In all cases the Greenhouse Gas (GHG) balance sheet remains positive because either energy is produced (anaerobic digestion) or

emissions are avoided (replacement of fertilisers, etc.). In addition to this, the production of organic fertilisers from a renewable source offers savings in natural resources (essentially phosphorus, potassium and calcium derived from mining). Finally, the advantages of adding organic matter to soil are well known and are encouraged by the Soils Directive projects.

- 4 Bearing in mind the diversity of local situations (demand for composts, heat or electricity, etc.), **approaches of the LCA type represent a tool which must be used** to establish which solutions are best. But although the general approach is now accepted, **many factors need to be specified so that conclusions can be made more relevant**: better consideration of the positive aspects of returning organic matter to soil (positive effects on water retention, etc.), better identification of emission factors, etc. The work begun by the JRC on these aspects needs to be strengthened, and above all be communicated more widely, and more tools need to be provided for decision-makers.

Question 4: Do you think that energy recovery from bio-waste can make a valuable contribution to sustainable resource and waste management in the EU and meeting the EU's renewable energy targets in a sustainable way and, if so, under which conditions?

- 4 Collation of several sources of information has shown that **municipal biodegradable waste contributes 2.6% to the production of renewable energy** (2/3 of renewable energy comes from biomass and waste, of which 12% can be attributed to waste, municipal waste accounting for 30% of bio-waste). This contribution is the result of the treatment methods currently adopted for energy purposes: bio-waste incineration⁵, processing of biogas produced from landfills, biogas produced by anaerobic digestion⁶.
- 4 Thus **recovery of energy from bio-waste is already a fact**: it makes a contribution to the sustainable management of resources in the EU and to meeting renewable energy targets. By principle, methods of treatment which make it possible to benefit from the energy content of bio-waste should therefore not be viewed adversely, and flows of bio-waste should not be viewed absolutely in terms of “diversion” or “exhaustion”, in the context of either landfilling or incineration.
- 4 **Development of anaerobic digestion** of biodegradable waste, and in particular biodegradable waste marked by its moisture content which makes it suitable for anaerobic digestion, may be one route for development. However in order to have an overall strategic overview, it will be necessary to have accurate and realistic data about what might encourage anaerobic digestion of biodegradable waste (additional

⁵ It should be noted that about half the renewable energy from incineration plants comes from the biodegradable part of household waste. **Bio-waste incineration made it possible to produce 37 TWh in the EU in 2006, prospects for 2020 are assessed at 63 TWh**, derived from biodegradable waste. Source: CEWEP, Confederation of European Waste-to-Energy Plants.

⁶ **The use of biogas from landfills made it possible to produce 750 GWh of electricity in France in 2005, and 7 TWh of electricity in 5 Member States (DE, ES, FR, NL and UK). Prospects for 2020 have been assessed at 19 TWh of electricity in these 5 countries** (equivalent to the consumption of a city such as Brussels), **and 45 mt of CO₂ equivalent emissions have been avoided** through the collection of methane (equivalent to the emissions of a city such as Madrid). Source: Investigation by Sustainable Landfill Foundation, “Waste Landfilling in Europe: Energy Recovery and Greenhouse Gas Mitigation”, Solagro, January 2008.

energy produced by anaerobic digestion and less energy produced by other forms of management).

By way of information, anaerobic digestion of household waste is currently increasing in France, and the number of plants should grow from 6 in 2008 to 20 in 2012, producing 0.15 TWh_e (against 0.05 TWh_e through anaerobic digestion of sludge from sewage sludge treatment plants) and 0.25 TWh_{th}, (against 0.35 TWh_{th} from the anaerobic digestion of sludge from sewage sludge treatment plants). Thus in 2012 the biogas produced from these 20 household waste anaerobic digestion facilities will be equivalent to the production of 53 ktoe of primary energy (close to the 18 Gtoe output of renewable energy in France in 2007).

Question 5: Do you see a need for promoting bio-waste recycling (i.e. compost production or use on land of composted material) and, if so, how? How can synergies be achieved between bio-waste recycling and energy recovery? Please provide the necessary evidence.

- ④ **On the value of developing recycling of biodegradable waste** (including bio-waste): see discussions above.
- ④ As has been achieved in the case of the Renewable Energy Sources Directive, it would be desirable to introduce **an obligation for each Member State to set a target for the use of fertilisers from renewable sources**. As an indication, 85% of the fertilisers used in agriculture in France are of fossil origin (mined resources in the case of phosphorus, for example, or derived from the use of natural gas for nitrogen synthesis). In order not to disturb existing industrial systems this obligation could for example take the form of a system for the exchange of green certificates acquired by fertiliser manufacturers and mineral soil improvers and issued by organisations (local authorities, industries) recycling their biodegradable waste.
- ④ **Tax incentives** could be granted to operations recycling biodegradable waste and making use of composts/digestates.
- ④ **Clauses in government contracts encouraging the use of fertilisers from renewable sources** (based on biodegradable waste) could be introduced.
- ④ **Promotion of quality assurance systems for stages in biological treatment** (composting and anaerobic digestion) exists in various forms in Europe and has proved to be effective. This approach should be encouraged, and should not be restricted to particular technological alternatives (e.g.: separate collection).
- ④ **Energy recovery from the residual part of waste** is an essential complement to systems for the recycling of biodegradable waste, so as not to waste the energy they contain.

Question 6: In order to strengthen the use of compost/digestate:

6.1 Should quality standards be set for compost as a product only or also for compost of lower quality still covered by the waste regime (e.g. for applications not linked to food production)?

Given the diversity of markets, which is itself linked to the diversity of demand and uses, a **two-level regulatory framework** needs to be established: a “**product**” level using the criteria in the end of waste statute, and a level relating to use in a “**waste**” context. But under no circumstances should any exclusion be applied to incoming raw materials, in either a “product” statute or a “waste” statute, the only valid requirements being those relating to the composition of the final compost/digestate.

→ **See the argument developed as part of the discussion in the general position statement.**

6.2 Should rules for the use of compost/digestate (e.g. limits on pollutant concentration in compost/digestate and land on which compost/digestate is applied) be set ?

Given the diversity of uses, and in particular the quantities spread, and the diversity of products (particularly as regards contaminant concentrations), **rules** need to be established **for both composts and uses**:

- **Composts**: permissible concentrations of contaminants, pollutants and pathogens. These limiting concentrations should differ according to uses: a low concentration product used in large quantities (landscaping) would have the same impact as a more concentrated product used in smaller quantities (e.g.: in agriculture);
- **Uses**: maximum quantities, and possibly frequencies of re-application (e.g.: number of spreading operations in a 10-year period), could be fixed according to uses:
 1. **the aim of providing nutrients for plants and soils**: fertilisers rich in nitrogen and phosphorus, spreading quantities of 2 to 5 t/ha/year in agriculture (large crops only); this category includes for example non-composted digestates or sludge composts;
 2. **the aim of improving the physical properties of soils**: soil improvers rich in stable organic matter, spreading quantities from 5 to 20 t/ha/year in agriculture; this category includes for example composted bio-waste and composts from mixed waste;
 3. **the aim of partly replacing soils**: products having a low value as fertiliser, but rich in lignin and having low conductivity, used in large quantities (per hectare) to reconstitute soils (e.g.: landscaping) or as a growing medium (e.g.: as a replacement for peat when planting flowers in pots). This category includes for example composted green waste.

6.3 Which pollutants and concentrations should these standards be based on?

In each of these cases the **health and environmental qualities of the final materials** (composts or digestates) need to be established on the basis of a **scientific risk assessment**, taking into account the quantities spread and potential risk targets (men, ecosystems). In addition to this no incoming raw materials should be excluded at the outset, there should only be final criteria for the composts or digestates according to their envisaged uses; composts based on waste collected as mixture should not be prohibited in agriculture provided that they meet thresholds set for uses, including agricultural uses.

These requirements would apply to **pollutants** (trace metal elements, trace organic compounds), **pathogens** (the types and concentrations of which would have to be appropriate to uses and associated microbiological risks) and **impurities** (glass, plastic, metal, etc.).

The threshold values set for these parameters would have to be established on the basis of well-founded and sound arguments to provide a basis of credibility for recycling biodegradable waste and bio-waste. FNADE would like **these threshold values to be established on the basis of proper risk assessments** (and not on merely aligning the most restrictive threshold values in different countries), as the techniques for these are now well-established. A critical review of the literature on this now developed technique would be needed before any legislation on the management of biodegradable waste were to be considered.

6.4 What are the arguments for/against the use of compost (digestate) from mixed waste?

Waste Framework Directive 2008/98/EC relates essentially to treatment; more consideration should be given here to the methods of collection which precede the stage of biological treatment per se.

1. **Separate collection at source** is one way of organising things. In this case the waste producer sorts at the production site: at home in the case of individuals, in canteens or restaurants in the case of collective kitchen waste, at factories in the case of food-processing industry bio-waste. The material which has been sorted on site is then collected.
2. But there is another way which has come to the fore as a result of recent developments in sorting technologies: it can be called **mixed collection and industrial sorting**. This system applies to scattered sources where the effort of sorting is either unrealistic (collective housing), or not very effective (little weight collected), or too costly (dedicated separate collection systems too costly to implement). In this case bio-waste remains mixed with the residual part, and sorting is carried out industrially and centrally in a plant using successive and complementary processes. This stage of mechanical sorting precedes biological treatment (composting or anaerobic digestion), which only applies to the organic part resulting from mechanical sorting.

The differences between these 2 systems are:

- **Where sorting** takes place: before or after collection, but in both cases biological treatment is only applied to the sorted organic part;

- The **quantities**: where separate collection takes place at source, only kitchen waste is processed (15 to 40 kg/year/inhabitant, to which green waste may be added, depending upon the instructions for collection), whereas with mixed collection the incoming material includes all biodegradable waste in the residual part of household waste, that is approximately 60 to 90 kg/year/ inhabitant (of which approximately two thirds can be used to produce compost or digestate);
- the **composition** of the digested or composted part: impurity and chemical contaminant concentrations tend to be less with sorting at source, but efficient industrial sorting would provide the same quality as at-source sorting of middling efficiency. It is rather the need for sorting (at households or industrially) than the form of organisation that will govern the quality of the final compost/digestate.

Because technologies develop and improve, and because all options for organisation have to be kept open, FNADE takes the view that **a regulation should not impose any particular technologies or forms of organisation, as long as the aims (recycling, quality of final material) are achieved.**

Question 7: Is there any evidence of gaps in the existing regulatory framework concerning the operational standards for plants which do not fall under the IPPC scope and if so, how should this be addressed?

- 1 All waste processing facilities should be **strictly monitored and regulated**. The draft review of the IPPC Directive envisages including biological treatment for facilities dealing with more than 50 t/d. FNADE considers this threshold to be too flexible and that it will enable many facilities to escape authorisation procedures and a close examination of impacts on the environment; by way of example the great majority of composting facilities in France are below this threshold.
- 2 In order to remedy this without having to amend the threshold in the IPPC Directive which is currently under revision a **specific regulation on the management of biodegradable waste** could require all facilities, regardless of size, to comply with a **quality assurance system** approved by Member States and designed on the basis of **minimum European standards**.

Question 8: What are the advantages and disadvantages of the abovementioned bio-waste management techniques? Do you see regulatory obstacle preventing the further developments and introduction of these techniques?

- 1 Notwithstanding the techniques put forward in the Bio-Waste Green Paper, FNADE puts emphasis on **ability to make technological innovations**, which should be left to operators so that they can develop their systems and optimise them as regards economics (costs), quantities (tonnages of bio-waste recycled) and quality (final product purity). This is equally applicable to collection, sorting, composting/digestion and use of composts/digestates.
- 2 FNADE would therefore like to emphasise the fact that future regulation (Bio-Waste Directive and the final requirements of the wastes statute) should not impose **obligatory means** (e.g.: separate collection, in-vessel composting). Only

obligatory results should be required (gaseous emissions during treatment, limiting pollutant concentrations in composts, etc.). However, these thresholds need to be established **in the light of actual risks** and not on a disguised desire to prohibit a particular technology or form of organisation.