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Bio-Nutrients and Organic Carbon Recycling are essential components of a Circular Economy

Currently about only one third of the 90 million tonnes of bio-waste generated across the EU every year is recycled through composting and anaerobic digestion, resulting in losses of around 1 million tonnes of nitrogen and 20 million tonnes of organic carbon, which could usefully be applied to soil. An additional 10 TWh of energy could also be extracted as biogas from this waste through anaerobic digestion. The Ellen MacArthur Foundation / McKinsey[1] has estimated that the circular economy in the food sector could bring household cost savings of 1.7 – 2.9 billion €/year for the EU.

The bio-nutrient and organic carbon circular economy is a core aspect of this, with benefits for the EU balance of payments, synergies with bio-energies and bio-materials and with environmental challenges (eutrophication, climate change). It offers considerable potential for sustainable job creation in rural areas and for improving farmers' incomes, and opportunities for innovation and know-how export.

We, the undersigned underline that:

- **A European Circular Economy Action Plan is crucial** for the sustainable future of the European Union, for its industry and employment.

- **An integrated European policy framework is essential to** facilitate sustainable bio-nutrient and organic carbon cycling.

- **The bio-nutrient circular economy can specifically**:
  - contribute to improve farmers' incomes and to distributed jobs in rural regions,
  - support nutrient self-sufficiency and food security in Europe,
  - contribute to the mitigation of climate change via alternative energy production inter alia by biogas production, which contributes to the transition towards a low-carbon economy,
  - support anaerobic digestion and/or composting as important steps to recycle bio-nutrients from biodegradable residues in a sustainable way which follows the cascading principle,
  - create a functioning market for organic fertilisers and soil improvers to avoid nutrient losses and pollution,
  - offer synergies with biomaterials, biofuels, biorefineries, and biogas production, which is an important intermediate step in the refining of bio-nutrients,
  - provide organic recycled nutrients (e.g. composts, digestates) that can improve soil fertility and drought resistance by restoring soil carbon.

[1] Growth Within, 2015

- Necessary actions **to remove obstacles and to implement innovation are**:
  - A revision of EU Fertilisers Regulation, in order to recognise recycled nutrient products in the single market, is instrumental for commercial development,
  - The creation and implementation of quality standards for secondary raw materials to enable and enhance the use of bio-nutrients are of utmost importance,
  - Funding of full-scale demonstration/piloting and value-chain actions across Europe through Horizon 2020 and the EU Investment Fund,
  - Implementation through Public Procurement policies,
  - Support for risk assessment of recycled nutrient products.

- Beyond local specificities, the bio-nutrient circular economy as a whole faces **challenges which have to be addressed:**
  - the conflicts posed by the low cost of mineral fertilisers (compared to labour costs in recycling) and the pressures on farmers' income (difficulty to pass on real costs to supermarkets or agri-food industry) must be addressed,
  - ambitious policies, beyond simply removing administrative obstacles, are needed; e.g. waste disposal constraints for nutrients, recycling targets implemented through e.g. EMAS, IED (BAT), CAP and Rural Development Funding incentives or requirements, farm nutrient balances, tools such as credit systems or recycling "feed-in" tariffs (build on positive and negative experiences of energy and biofuels sectors),
  - a new economic thinking is needed which takes into account externality costs on resources and job creation, including a fiscal tax shift from employment to resource consumption

- **Innovative technical solutions are already available** and the EU is a world frontrunner both in bio-nutrient recycling processes and social and value-chain approaches, with significant export potential.

- The bio-nutrient circular economy offers **high environmental, economic and employment potential** if the EU Commission continues to support with ambitious specific policy actions within an integrated European nutrient and organic carbon policy framework.

Thus, we strongly support the European Commission's work towards the implementation of a Circular Economy.

Background information:

Phosphorus (P) and nitrogen (N) are essential to all life, including humans. Nutrients are finite and irreplaceable, and cannot be substituted by any other substances. The world´s population growth and changing dietary habits have been estimated to demand a 70% increase in food production by 2050. Nutrient availability forms a key component of human food production and security. However, EU is largely dependent on nutrient imports and has only very small own resources. This constitutes a threat to EU´s food security.

Currently, nitrogen fertilizers are produced through an energy intensive process using natural gas with detrimental impacts on climate change. It has been estimated that 5% of the world´s annual natural gas production is consumed in nitrogen fertiliser production, and as much as 1 - 2% of the world´s total energy consumption is devoted to the process.

Significant amounts of phosphorus and nitrogen are lost via leaching and run off to surface waters and ground waters. The leaks from human activities have led to ecological deterioration, including

eutrophication with harmful algal blooms and marine dead zones. Phosphorus is the most important factor in failure to achieve EU Water Framework Directive quality objectives in freshwater in much of Europe.

Nitrogen is lost also to the atmosphere via gaseous emissions (N_2, N_2O, NO, NH_3) causing global warming and negative effects on human health and ecosystems via air quality deterioration.

The social costs of the adverse impacts of nitrogen losses in the European environment have been estimated to at least 70 billion euros per year[2]. The costs include costs associated with air pollution effects on human health, loss to water on aquatic ecosystems and effects of nitrates in drinking water on human health. The sum equals 0.7% of the gross domestic product in the EU.

In addition to nutrient losses, Europe's soils are losing organic matter. As organic matter is fundamental for enabling soils to adsorb and hold nutrients in a plant available form, as well as improving soil structure, reducing erosion and improving water retention (drought resilience), its sustainable management goes hand-in-hand with effective nutrient management.

The signatories:

Baltic Sea Action Group

European Biogas Association

European Compost Network

European Sustainable Phosphorus Platform

[2] FAO, 2008; How to Feed the World in 2050