Compost and Digestate in the Circular Economy:

Sustainable Carbon Cycles and Healthy Soils

Dr. Stefanie Siebert, ECN

IGCS Summer School Panel Discussion:

‘Contribution of the waste management sector to a low carbon economy, challenges and possible solutions’

www.SaveOrganicsinSoil.org

www.compostnetwork.info

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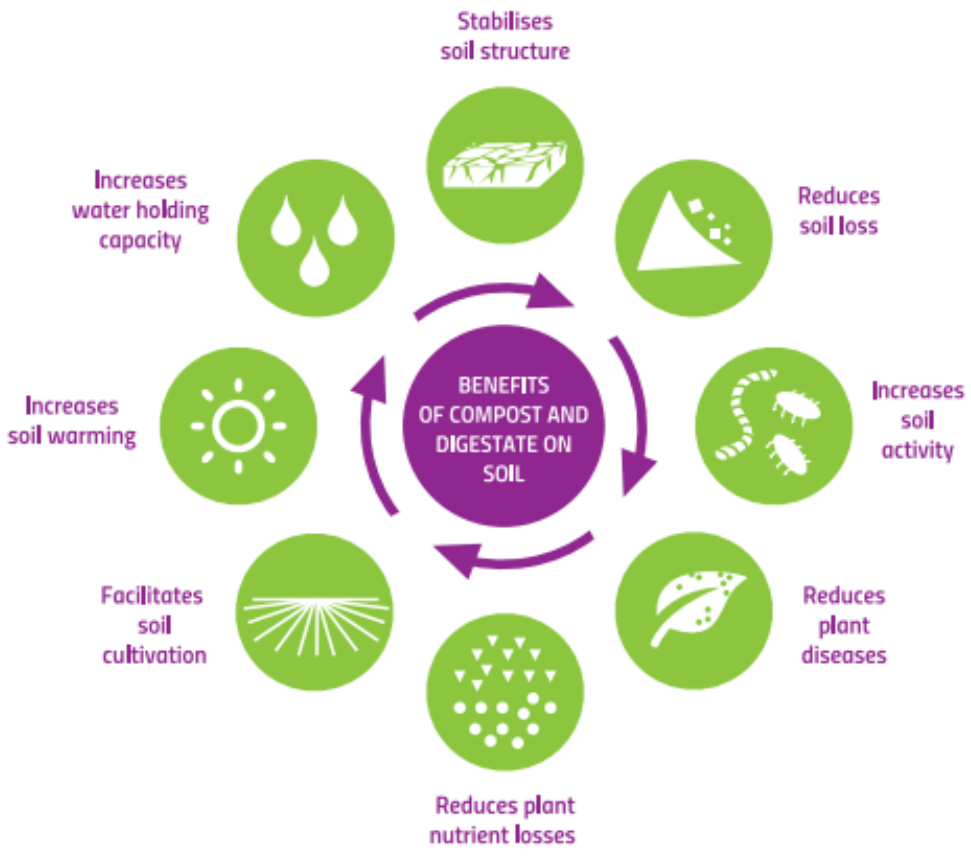
European Compost Network

ECN is the leading European membership organization promoting sustainable recycling practices of organic resources through composting & anaerobic digestion.

66 members from 29 European countries

48 M tpa treatment capacity

4.500 treatment plants (composting & AD)



Bio-Waste & The Bioeconomy

BIO-WASTE

A Cross-Cutting Resource

European Green Deal

Bioeconomy Strategy

Biodiversity Strategy

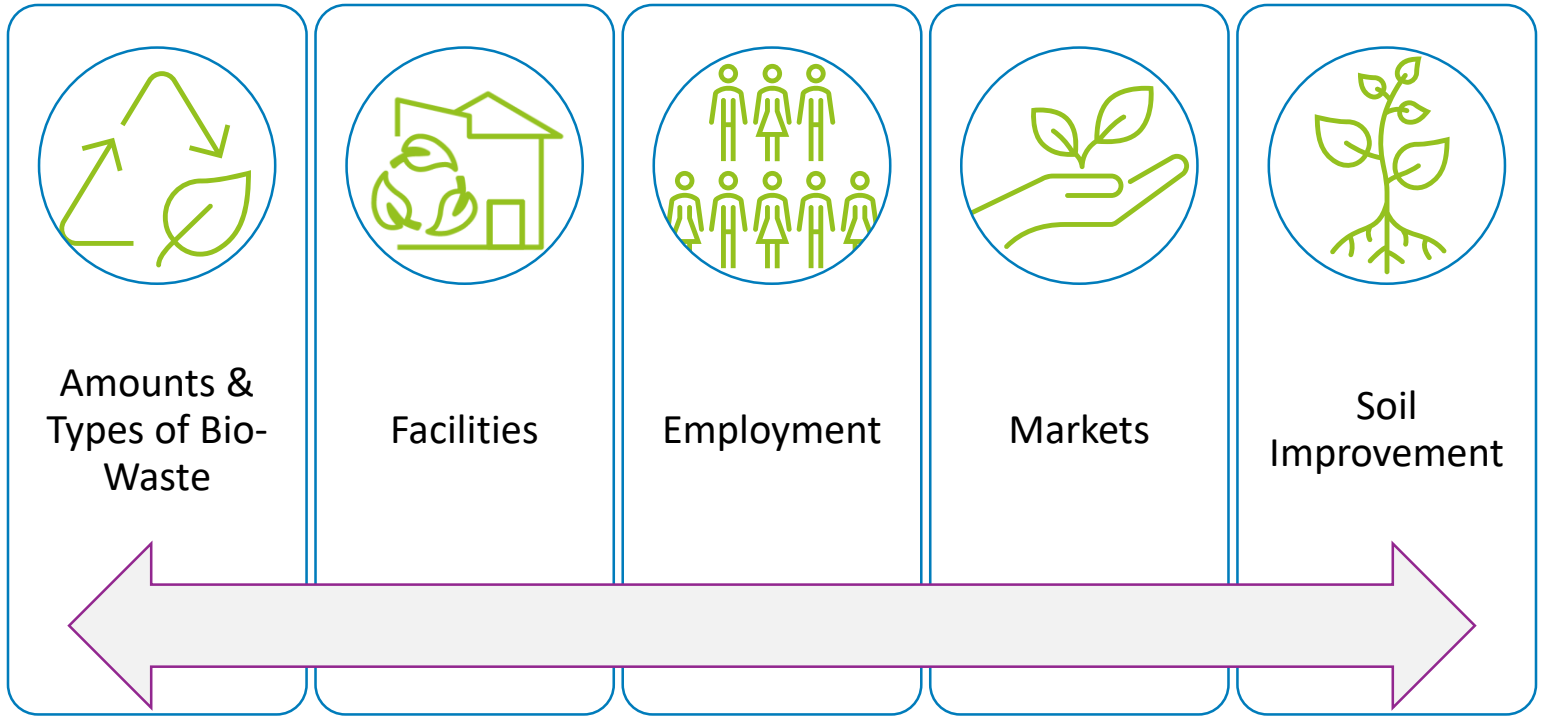
Farm to Fork Strategy

Soil Strategy

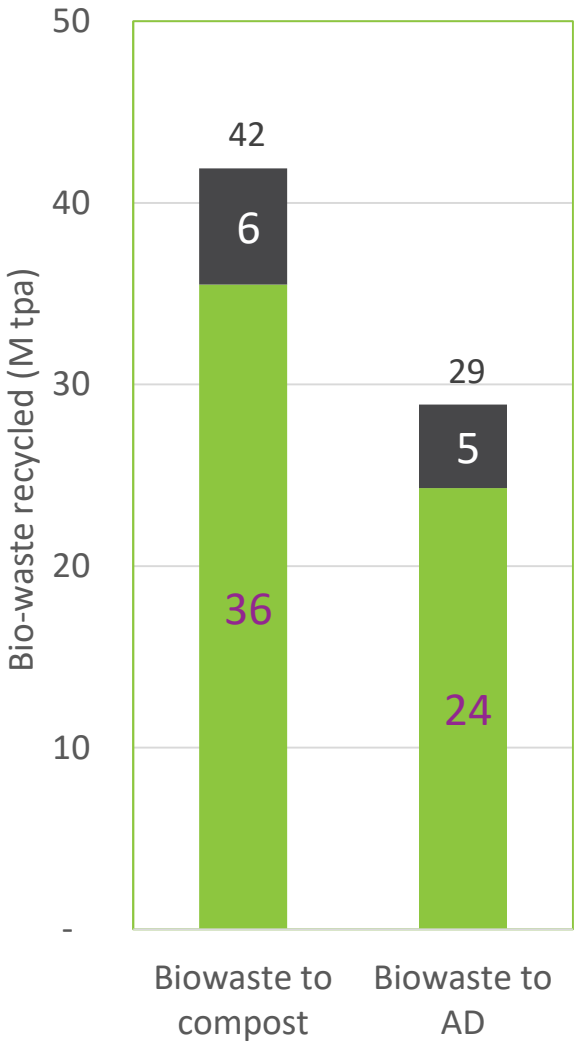
Waste Framework Directive (Bio-Waste Collection and Recycling Targets)

ECN's Data Report 2022

Comprehensive survey in 2021



Compost & Digestate – FOR THE PLANET



(EU27 + CH, NO & UK)

71 M tpa

BIO-WASTE RECYCLED

21 M tpa

COMPOST PRODUCED

Surface area (million ha)	Fraction of Arable Land	Fraction of Mod./ Severely Eroded Land
2.1	2%	16%

1.2 million tonnes CO_2-eq sequestered on agricultural soils every year

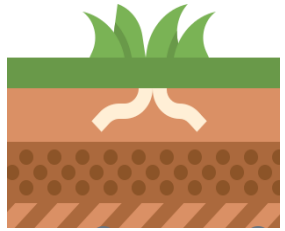
=

19.1 million urban tree seedlings grown for 10 years

Compost Stores Carbon in the Soil

BIO-WASTE

COMPOST



SOIL

- Soils can be improved through regular applications of quality compost
- A fraction of the organic matter in compost is converted into a stable form called 'humus' - this remains in soil for many years.

1 tonne of compost (fresh mass)

sequesters

30 kg soil organic carbon

110 kg CO_2 equivalents

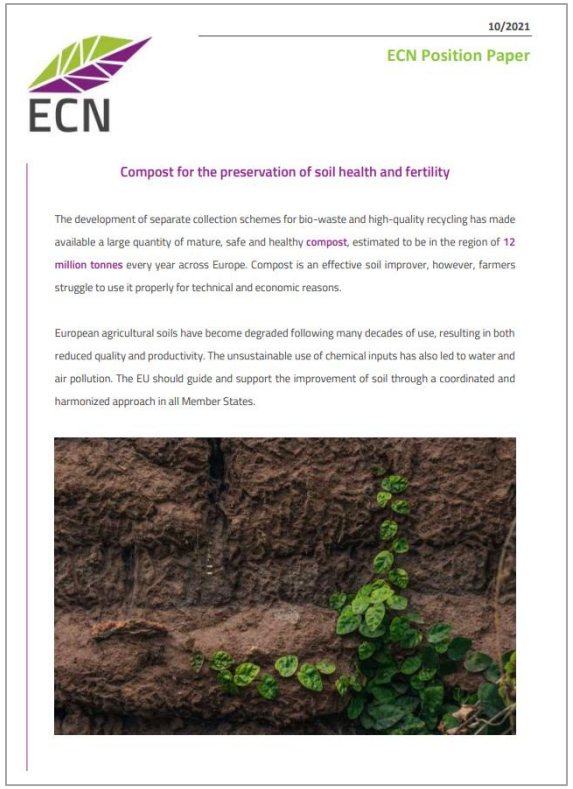
(equivalent to 11% of its mass)

Source: ECN Factsheet 1: Soil Structure & Carbon Storage. www.compostnetwork.info

ECN Position Papers and Guidance

Position Paper

Compost for the prevention of soil health and fertility



10/2021

ECN Position Paper

ECN

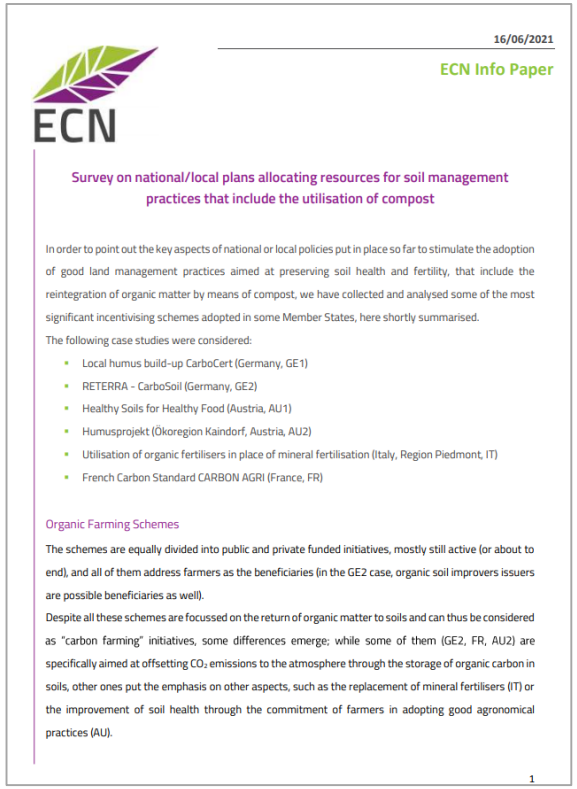
Compost for the preservation of soil health and fertility

The development of separate collection schemes for bio-waste and high-quality recycling has made available a large quantity of mature, safe and healthy **compost**, estimated to be in the region of **12 million tonnes** every year across Europe. Compost is an effective soil improver, however, farmers struggle to use it properly for technical and economic reasons.

European agricultural soils have become degraded following many decades of use, resulting in both reduced quality and productivity. The unsustainable use of chemical inputs has also led to water and air pollution. The EU should guide and support the improvement of soil through a coordinated and harmonized approach in all Member States.

Info Paper

Survey on carbon farming schemes including compost



16/06/2021

ECN Info Paper

ECN

Survey on national/local plans allocating resources for soil management practices that include the utilisation of compost

In order to point out the key aspects of national or local policies put in place so far to stimulate the adoption of good land management practices aimed at preserving soil health and fertility, that include the reintegration of organic matter by means of compost, we have collected and analysed some of the most significant incentivising schemes adopted in some Member States, here shortly summarised.

The following case studies were considered:

- Local humus build-up CarboCert (Germany, GE1)
- RETERRA - CarboSoil (Germany, GE2)
- Healthy Soils for Healthy Food (Austria, AU1)
- Humusprojekt (Ökoregion Kaindorf, Austria, AU2)
- Utilisation of organic fertilisers in place of mineral fertilisation (Italy, Region Piedmont, IT)
- French Carbon Standard CARBON AGRI (France, FR)

Organic Farming Schemes

The schemes are equally divided into public and private funded initiatives, mostly still active (or about to end), and all of them address farmers as the beneficiaries (in the GE2 case, organic soil improvers issuers are possible beneficiaries as well).

Despite all these schemes are focussed on the return of organic matter to soils and can thus be considered as "carbon farming" initiatives, some differences emerge; while some of them (GE2, FR, AU2) are specifically aimed at offsetting CO_2 emissions to the atmosphere through the storage of organic carbon in soils, other ones put the emphasis on other aspects, such as the replacement of mineral fertilisers (IT) or the improvement of soil health through the commitment of farmers in adopting good agronomical practices (AU).

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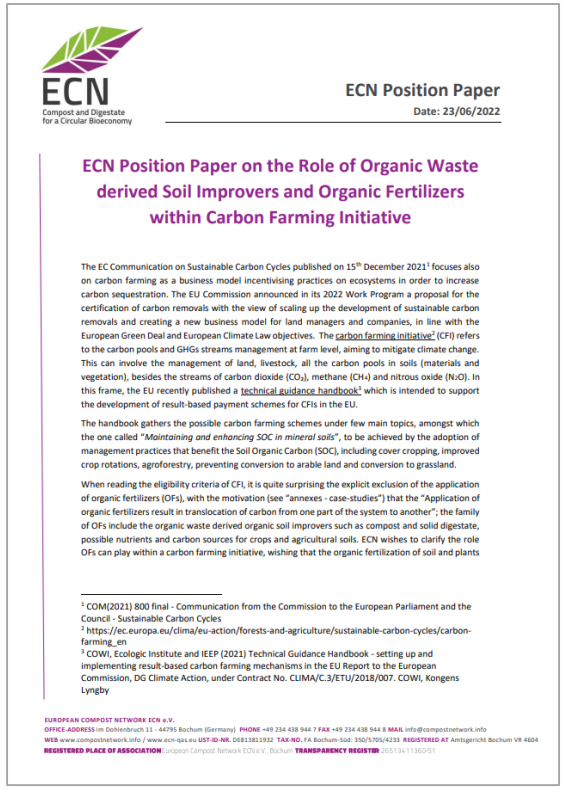
Position Paper

The role of recycled organic waste products within the Carbon farming Initiative



ECN Compost and Digestate for a Circular Bioeconomy

ECN Position Paper

Date: 23/06/2022

ECN Position Paper on the Role of Organic Waste derived Soil Improvers and Organic Fertilizers within Carbon Farming Initiative

The EC Communication on Sustainable Carbon Cycles published on 15th December 2021[1] focuses also on carbon farming as a business model incentivising practices on ecosystems in order to increase carbon sequestration. The EU Commission announced in its 2022 Work Program a proposal for the certification of carbon removals with the view of scaling up the development of sustainable carbon removals and creating a new business model for land managers and companies, in line with the European Green Deal and European Climate Law objectives. The carbon farming initiative[2] (CFI) refers to the carbon pools and GHGs streams management at farm level, aiming to mitigate climate change. This can involve the management of land, livestock, all the carbon pools in soils (materials and vegetation), besides the streams of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). In this frame, the EU recently published a technical guidance handbook[3] which is intended to support the development of result-based payment schemes for CFIs in the EU.

The handbook gathers the possible carbon farming schemes under few main topics, amongst which the one called "*Maintaining and enhancing SOC in mineral soils*", to be achieved by the adoption of management practices that benefit the Soil Organic Carbon (SOC), including cover cropping, improved crop rotations, agroforestry, preventing conversion to arable land and conversion to grassland.

When reading the eligibility criteria of CFI, it is quite surprising the explicit exclusion of the application of organic fertilizers (OFs), with the motivation (see "annexes - case-studies") that the "Application of organic fertilizers result in translocation of carbon from one part of the system to another"; the family of OFs include the organic waste derived organic soil improvers such as compost and solid digestate, possible nutrients and carbon sources for crops and agricultural soils. ECN wishes to clarify the role OFs can play within a carbon farming initiative, wishing that the organic fertilization of soil and plants

[1] COM(2021) 800 final - Communication from the Commission to the European Parliament and the Council - Sustainable Carbon Cycles
[2] https://ec.europa.eu/clima/eu-action/forests-and-agriculture/sustainable-carbon-cycles/carbon-farming_en
[3] COWI, Ecologic Institute and IEEP (2021) Technical Guidance Handbook - setting up and implementing result-based carbon farming mechanisms in the EU Report to the European Commission, DG Climate Action, under Contract No. CLIMA/C.3/ETU/2018/007. COWI, Kongens Lyngby

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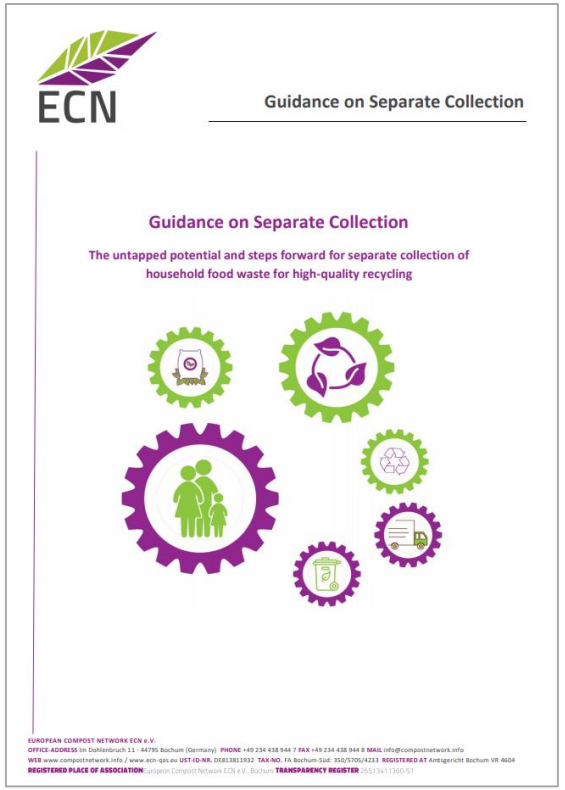
Guidance Document

Guidance on separate collection of bio-waste for high-quality recycling



ECN

Guidance on Separate Collection

Guidance on Separate Collection

The untapped potential and steps forward for separate collection of household food waste for high-quality recycling

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Further information

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