

# Country report on biowaste collection and recycling in Italy



Compiled by: CIC Italian Composting and Biogas Association

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## Who we are

CIC's was founded in 1992 and it's mission is to enhance recycling and prevention of waste, share knowledge and know-how between CIC's associates, enhance compost quality and the market, perform technical training for the composting sector, assist government entities in improving biowaste recovery.

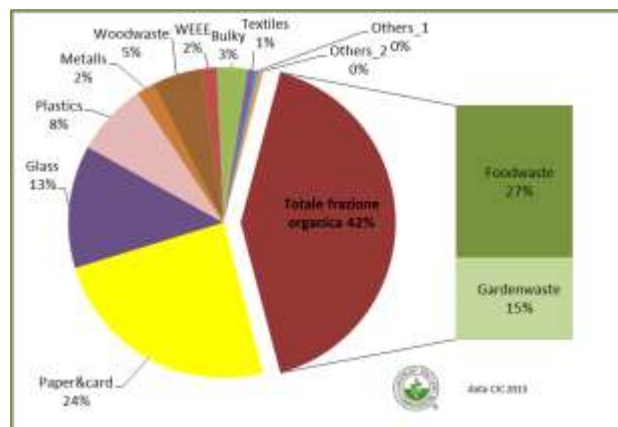
CIC is an association of public and private companies, local authorities and others involved in the production of compost, as well as organizations which do not make compost but have an interest in the composting process like producers of machinery and equipment, producers of fertilizers, research bodies etc.

## Separate collection of biowaste in Italy

From the mid nineties CIC has been involved in developing and enforcing adequate recycling capacities for biowaste following the Italian general Waste Act (Dlgs 22/1997) of 1997, which sharply changed the legal framework and vision for MSW management; separate collection of biowaste became a strategic element to reach the recycling targets set out in the National Law.

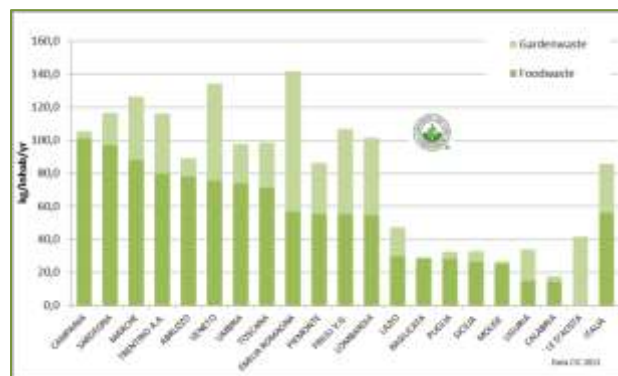
Official data for year 2013 show 5.2 million tons/year of biowaste to be separately collected and recycled in Composting or Anaerobic Digestion (AD) plants (see figure 1).

Figure 1: Separate collection of MSW in Italy with specific contribution of food-waste and garden-waste– year 2013



In Northern and Central Italy potential capture rates for food-waste are in a range of 50-70kg/inhab/yr, while in southern Regions potential capture rates rise to 85-110kg/ inhab/yr and above, due to larger amounts of food-waste inside MSW. The amount of garden-waste tends to decline from northern to southern areas due to climatic conditions and are influenced also by rainfall and summer temperatures.

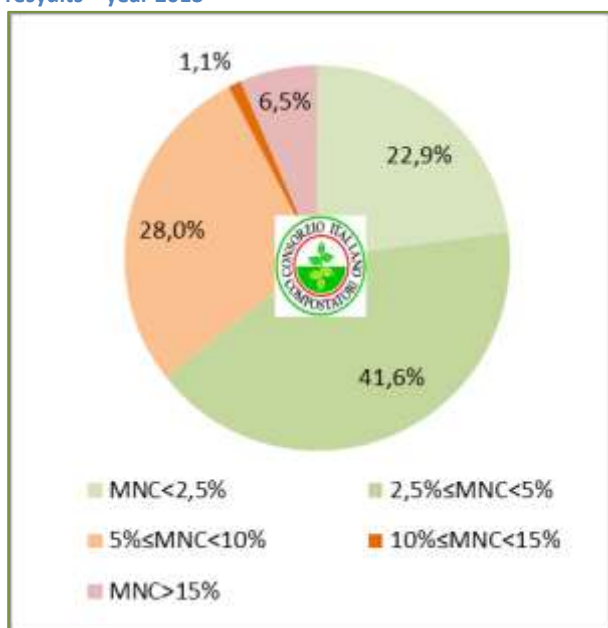
Figure 2: Separate collection of food- and garden-waste in Italian Regions in kg/inhab/yr – year 2013



### The quality of food-waste

CIC is continuously monitoring since 2004 the quality of source-separated biowaste and performed about 2500 waste- characterization analyses in the years up to 2014. In year 2013 the average non-compostable quota of biowaste delivered to Italian Composting plants is 4,8% in weight, with best-practice cases showing less than 2,0% impurities. The non-compostable-quota (NCQ) consists of different plastic items (i.e. bags, cups, etc) and other non-compostable materials (i.e. glass, stones, metals, etc).

Figure 3: Non Compostable Quota (MNC) of foodwaste (as % on f.m.) resulting from waste composition analysis performed by CIC on samples of food-waste; distribution of analytical results – year 2013



According to CIC’s surveys in 2013 the percentage of traditional plastic bags used to deliver source-separated biowaste is about 50% and ECM shoppers account for 15%; the vast majority of compostable shoppers is made of bioplastics, certified according to EN13432 standard. Hence, CIC is strongly working with National and Regional waste-management authorities, to assure that compostable and certified bioplastics are used for separate collection of biowaste.

### Composting and AD plants

In 1993 there existed some 10 composting plants accepting biowaste, but the number grew with the spread of biowaste collection and in year 2013 about

240 plants are operating and 150 plants have an annual capacity exceeding 10.000 tons. Hence the composting sector currently recycles 42% of all MSW, thus being Italy’s largest recycling industry with an annual estimated turnover of at least 390 million euro. The overall authorized capacity of plants (nearly 6,5 million tons) far exceeds the amount currently treated, hence guarantying that the growth of collection systems will find treatment capacity.

Within recent years, anaerobic digestion (AD) of biowaste has been steadily increasing. This form of treatment is chosen in almost all new opening composting facilities. In 2013 there are 43 AD plants for an annual turnover exceeding 1 million tons. The general approach in Italy is to couple AD with composting, and compost obtained from source separated feedstock has the status of EoW (i.e. it is a product).

Figure 4: Biowaste treated (in 1000t/yr) and number of Composting Plants operating in Italy

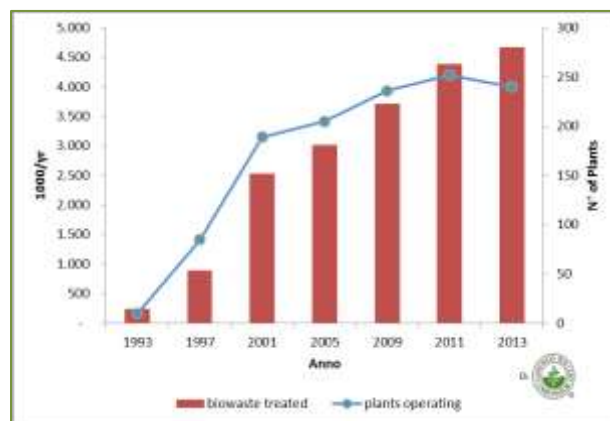
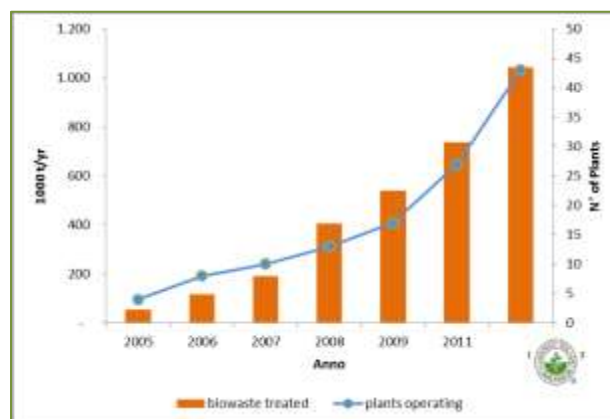


Figure 5: Biowaste treated (in 1000t/yr) and number of Anaerobic-Digestion Plants operating in Italy



## Compost production

In 2013 the composting sector produced over 1,5 million tons of compost starting from separate collected feedstocks. Compost has the status of a product in Italy and about 70% of it was used as a fertilizer on crops while 30% was processed to manufacture garden and landscape products.

From year 2014 onward there are three compost types in Italy: compost from garden and park waste (GWC), compost including food waste (BWC) and compost produced including also sludge as a feedstock (SWC).

## CIC's QAS for compost

CIC started in 2003 the Italian certification scheme for quality-compost, so to enhance the quality of compost production and make customers aware about the advantages of compost use. By 2013 CIC's quality assurance scheme involves 32 plants and about 30% of the compost sold in the Italian market has gained CIC's label for quality compost.



Certified plants are licensed to use CIC's quality label on compost-bags, and are inspected regularly for independent sampling of compost. Nowadays CIC has a unique database exceeding compost 2000 samples.

Figure 6: Average values for analysis on compost complying with CIC's QAS scheme - 2013

Parameter	compost from biowaste	compost from green waste
	(N= 191)	(N=37)
Density (t/m <sup>3</sup> )	0,45-0,6	0,35-0,45
pH	8,1	8,2
Conductivity (dS/m)	2,8	1,3
Humidity (% stq)	29,4	36,0
N total (% N d.m.)	2,2	1,7
N organic (% N tot)	93,5	98,3
O.M. (% d.m.)	48,3	48,7
Phosforus (% P <sub>2</sub> O <sub>5</sub> d.m.)	1,8	0,6
Potassium (% K <sub>2</sub> O d.m.)	1,6	1,3
Organic Carbon (% C d.m.)	24,4	25,0
Humic acids % d.m.	9,4	9,5
C/N	11,2	15,5

## CIC's label for biodegradable materials

CIC started in 2006 a programme of analyses on biodegradable materials and - specifically- on compostable products. The programme ensures the material's ability to turn into compost during the industrial composting process. The programme applies the European regulation EN:13432 on compostable packaging, where applicable. CIC's testing procedure has the unique characteristic to test compostability directly in industrial, full scale composting plants, hence applying real operating conditions to the materials tested.



The trademark "CIC Compostabile" logo is issued after audits and tests performed by CIC in cooperation with Certiquality, a market leader in certification standards. As a result, about 50 products successfully comply with Compostabile-CIC certification and more than 30 companies are licensed to use the trademark logo "compostabile-CIC" to label the items.

Figure 7: Location of composting facilities in Italy- 2013



## Outlook

Separate collection of biowaste, particularly focusing on foodwaste is a standard approach in many waste management districts of Italy. The amounts of food- and garden waste collected in 2013 confirm the long-term trend of biowaste increasing by 5% each year mainly due to the larger number of municipalities adopting separate collection of organics.

Many composting plants are increasing treatment capacities by realising an AD treatment step and combining both AD and aerobic treatment of biowaste.

By year 2020 Biowaste recycled in Italy will increase approximately by 50% compared to actual data, due to the fulfilment of National target for recycling and the extension of collection-schemes for food-waste in Southern Regions.