

Note for SETEC/Syctom – 12 December 2017

A2A, one of the biggest Italian Multiutilities, is the Italian leader in Environmental services and it operates in about 160 municipalities in Italy. In the city of Milan, the 52,4% of source separate collection of the total amount of waste collected in 2016, has been reached.

In the table below, the main data of source separate collection in Milan are reported.

Waste Collection in the municipality of Milan – year 2016		
Total amount of municipal solid waste [t]	671.326	100%
Inhabitants	1.351.562	
waste collected per citizen (kg/citizen)	496,7	
Separate collection (t)	352.043	52,44%
Sorted waste collected per citizen (kg/inhab. Per year)	260,5	
Of which:		
organic fraction collected per inhabitant (kg/inhab. per year)	102,7	
Unsorted separate collection (t)	319.283	47,56%
Unsorted waste collected per citizen (kg/inhab. per year)	236,2	

The pie chart below shows the characterization of the unsorted waste collected in Milan in 2016. As it can be seen, although the high level of separate collection, the main percentage of waste is still constituted by the organic fraction.

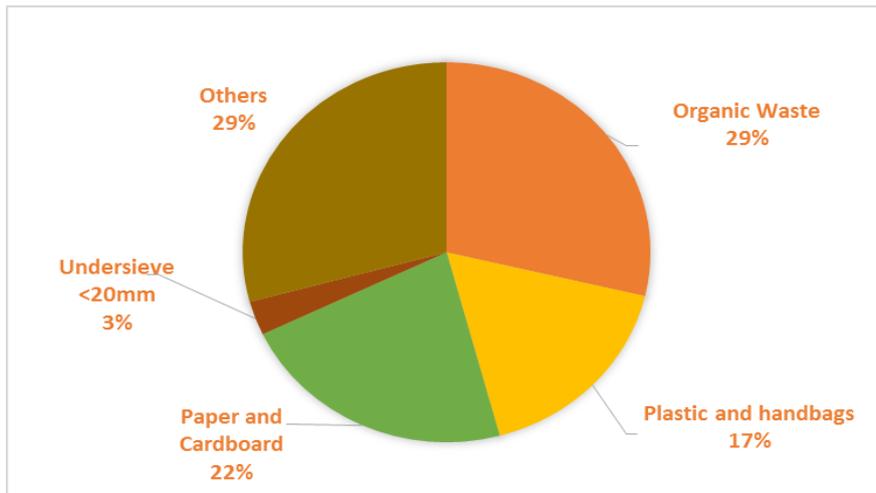


Figure 1 Unsorted waste composition - Data provided by AMSA S.p.A.

Thanks to an integrated and sustainable waste management, in the Municipality of Milan the unsorted and mixed MSW is energetically recovered. In this way the refuse waste is going to acquire value again, it ceases to representing only a cost and becomes a resource.

To optimize the waste management and the transport of wastes collected in municipalities far from the WtE facilities of the A2A Group, A2A has built and still operates for more than 20 years several ITS (Intelligent Transfer Stations) in the neighboring provinces of the city of Milan, where the MSW is pre-treated with the biodrying process to be sent directly to energy recovery, reducing environmental impact and cost of transport.

Here are presented data of three different A2A's ITS: Lacchiarella, Montanaso and Giussago plants.

In all the three areas served by the mentioned plants, unsorted waste collected is treated in order to improve storage and transport activities as well as to improve quality of secondary fuels used in A2A WtE. Biodried material does not produce anymore odorous gases, because biodrying process is a treatment that consents the reduction of moisture content, and the drying of the organic putrescible fractions in the unsorted waste, which has the higher humidity level and which is the part that produces the most troubling impact in the olfactory sense.

In the table below, for the three ITS, the plant capacity and the % of Separate Collection in the provinces served are indicated. It is generally unsorted waste from the municipality's collection (is the case of Lacchiarella and Montanaso), but only in Giussago plant a mix of MSW and commercial and industrial waste is treated.

ITS	Province	% Separate Collection	Input Material	Capacity of the Plant (t/y)
Lacchiarella	Milano	54.8%	MSW	75.000
Montanaso	Lodi	58.9%	MSW	65.000
Giussago	Pavia	38.0%	MSW+ Commercial & Industrial waste	40.000

The percentage of separate collection on the total amount collected in the area served by Lacchiarella and Montanaso plants is slightly higher than the percentage of Milan.

Regarding the characterization of the unsorted waste, below the data about the material treated in all of these plants at the entrance and after the biodrying process are reported.

	Organic fraction IN	Moisture Content IN	% Weight Loss	% Organic Loss (about)	Moisture Content OUT
Lacchiarella	32-33%	32-34%	23-25%	11%	17-18%
Montanaso	31-32%	32-33%	26-28%	14%	16-17%
Giussago	29-30%	30-31%	20-21%	10%	15-16%

The data of the three plants confirm a similar Organic Fraction content reported for Milan in the unsorted waste; this fact is a further proof that the level of the separate collection has no connection with the characterization of the unsorted waste, in particular with the % of Organic residual waste, and the two factors cannot be related.

About the ITS performances, Montanaso plant shows the best performance in terms of weight loss data, where up to 26-28% of weight loss is obtained.

The higher are the organic fraction and the moisture content in the Input MSW, the higher they will be in the biodried material, by the way the data can show only slight differences since the averages of moisture content at the entrance are quite similar, ranging between 30% and 34%.

In conclusion, we present another case study regarding Cavaglià ITS plant, located in Biella district. The plant was designed and built in 2003 by Ecodeco, now part of A2A and it started to operate receiving the waste collected in the province of Biella and in some close towns. During the first years the separate collection was not particularly high and the percentage was about 10%, and it concerned essentially glass and paper.



Nowadays, due to the changes in quantity and in the composition of waste following the start of a wide source separate collection (today of up to 60%), the amount of unsorted waste received by the plant was reduced and the plant started to receive the unsorted waste coming from the districts of Vercelli and Verbania, where the separate collection is still high, around the 62-65% of the total amount treated,

In order to fully exploit the capacity of the plant, other waste is collected from other cities. This fact is one of the real proof of the versatility and robustness of ITS plants.

ITS OF CAVAGLIA' (BI)			YEAR 2016
Province	Input Material	Quantity (t)	% on total input waste
BIELLA	MSW Residual + bulky waste	33.682	30%
VERCELLI	MSW Residual + bulky waste	28.703	25%
VERBANIA CUSIO OSSOLA	MSW Residual + bulky waste	24.125	21%
GENOVA	MSW residual	24.469	21%
Others	MSW residual	3.777	3%
TOTAL		114.757	100,0%
Characteristics of the input waste			
Moisture content (average)	35%		
Organic fraction (average)	33%		
Output Material			
Biodried Material	TOTAL	80.435	70,1%
Characteristics of the output waste			
Moisture content (average)	18-20%		
Weight loss		34.322	29,9%

About the ITS performances, Cavaglià plant shows the best performance in terms of weight loss data, where up to 30% of weight loss is obtained.

Despite the very high percentage of separate collection at the entrance, the 33% of the total waste is organic fraction.

The data strongly confirm what declared until now: the percentage of separate collection does not strongly affect the composition of unsorted waste.