

HOW TO BEST COLLECT BIO-WASTE IN HIGH-DENSITY AREAS?

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Waste management in Milan

GENERAL DATA

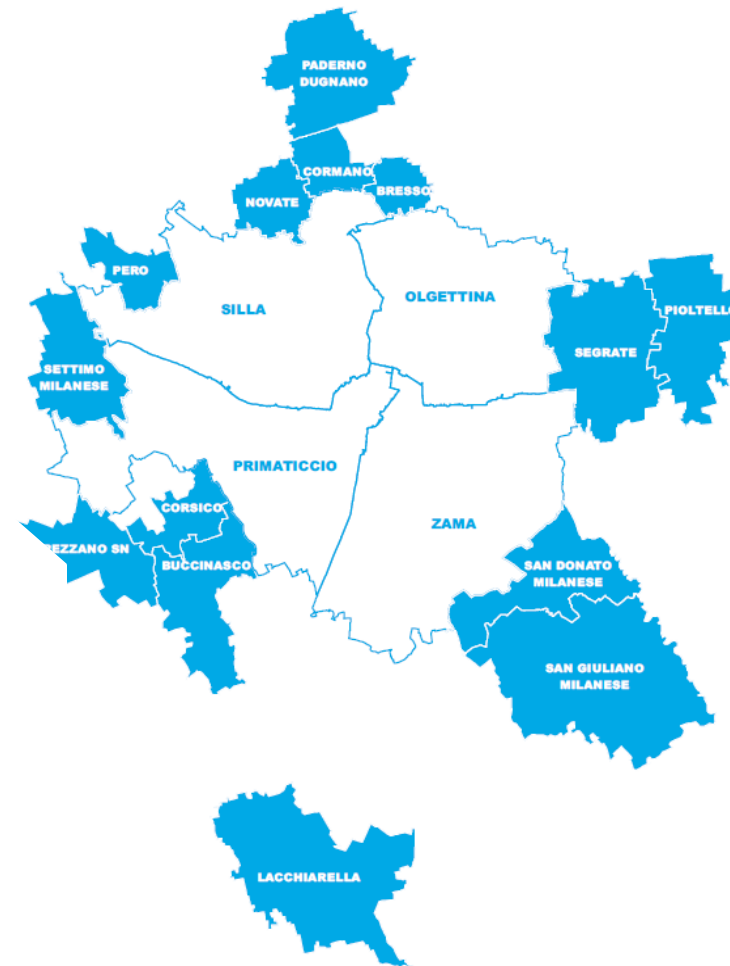
1.4 million
inhabitants



800.000
Commuters/day

7,625
Inh./km²

10,86 millions
Tourists in 2019 (Statista)



632.490
T of Municipal
Waste (2022)



62.0%
Separate
collection in
2022



55.000
waste collection
points (door to
door)



1.400
vehicles for
waste collection
and cleaning
service



23,000
Bins in
streets and
parks

CNG: **33%**

THE INTEGRATED WASTE CYCLE IN MILAN

Circular economy of waste



WASTE SERVICE IN MILAN

Main services

Door-to-door separate waste collection

- **5 fractions: bins** (paper and cardboard, glass and organic) and **bags** (light packaging, residual waste)
- **55,000** collection points
- Waste storage in **every building**

Frequency:

- Pick-ups between 5:30 am and 12:00 am **from Mon to Sat**
- **The city center** (highest traffic area) is served before 8:00 am



ORGANIC: 2/week



GLASS: 1/week



PAPER: 1/week
CARDBOARD: 1/week



PLASTIC & METALS: 1/week



RESIDUAL WASTE: 1/week

CITY OF MILAN: WASTE COLLECTION

**TOTAL MUNICIPAL WASTE
COLLECTION 2022**

632.490 t

SEPARATE WASTE COLLECTION 2022

391.984 t

62,0%



**ORGANICS
136,782 t**



**PAPER AND CARDBOARD
79,082 t**



**GLASS
68,799 t**



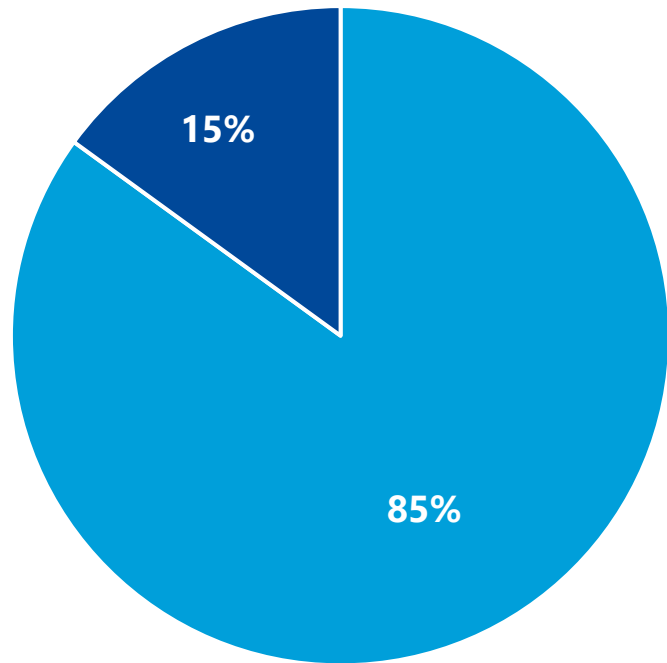
**PLASTIC AND METALS
46,029 t**



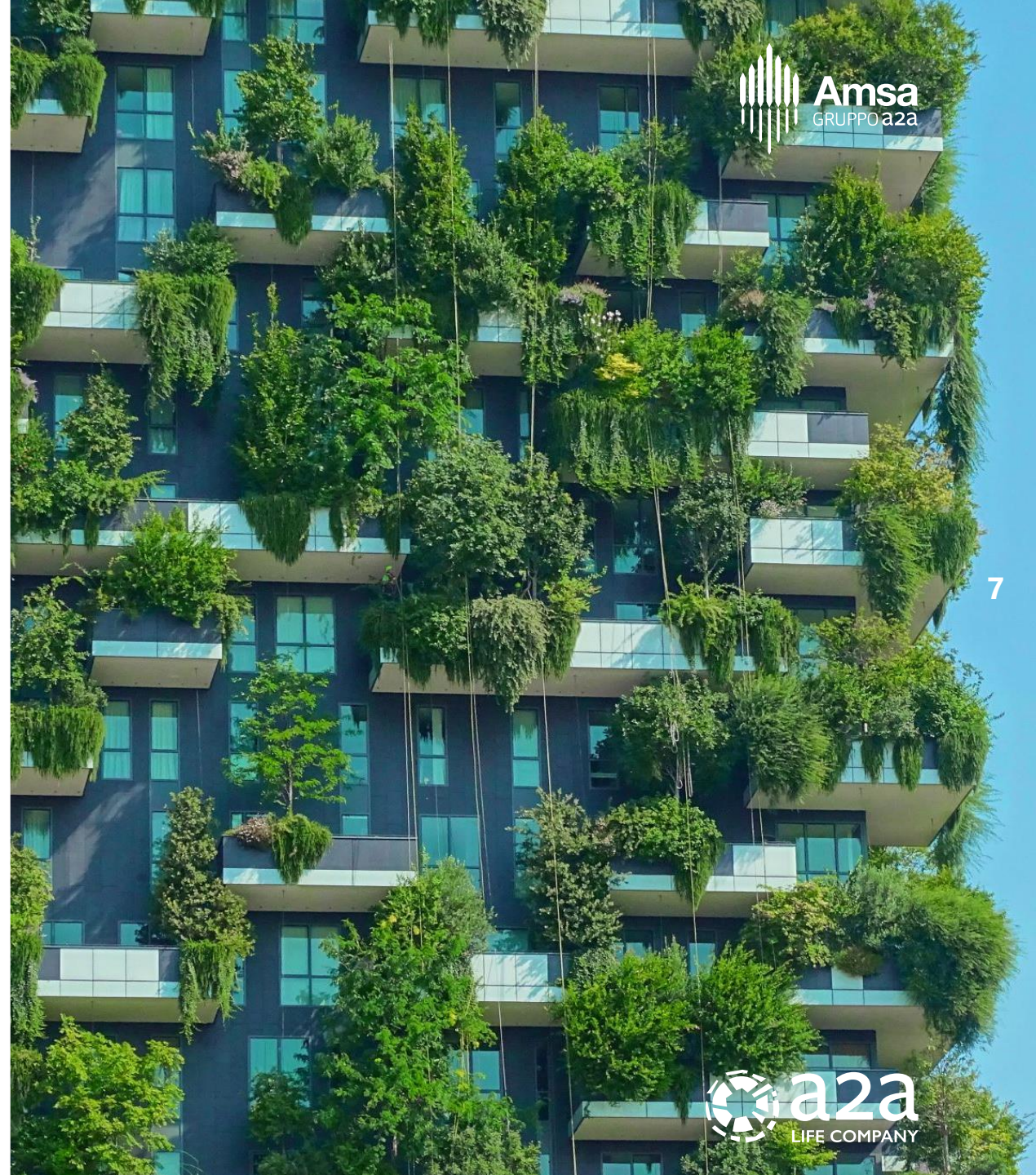
**RESIDUAL WASTE
275,266 t (15% organic waste)**

HIGH-RISE BUILDINGS IN MILAN

Housing units' composition in the city of Milan:



■ High-rise buildings ■ Single homes



«DOOR-TO-DOOR» WASTE COLLECTION AND CHUTES BAN



- The “door-to-door” waste collection has always been a **tradition** for Milan’s waste management.



- **Waste chutes** for high-rises buildings have been **banned** since 1999 in favour of waste rooms.
- Many hygiene issues: smell, insects infiltrations (cockroaches).
- They did not consent waste segregation.

WASTE ROOMS

Requirements

- Designation of a **responsible** for the waste management of the building;
- **Bin-washing** system;
- **Water** collection system;
- **Tiled area** easily accessible for everyone;
- Area: at least **0,18 m²** per inhabitant and/or theoretical user.



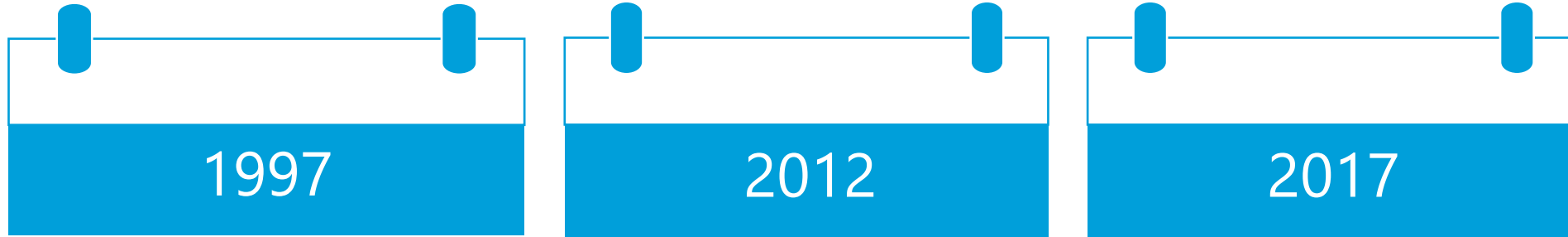
WASTE COLLECTION IN MILAN

Trend



ORGANIC WASTE COLLECTION STRATEGY

Evolution



Commercial activities

All canteens, restaurants, and bars

- 120 l bins door to door system
- Collection everyday Mon-Sun at night

Households

All households throughout the city

- 120 l bins, 10 l kitchen bin and compostable bags
- Collection twice a week
- Transparent bag for residual waste

Open markets

94 weekly markets

- Special compostable bags and holder
- Collection after market

BIOWASTE HOME KIT



Brown Bins

120 lt brown bin for **big buildings** or
35/50 lt bins for **single homes**



Bin of 10 lt.

The kitchen basket has a special **aerated** structure that allows the optimal **oxygenation** of the bag and the contents and reduce the inconveniences due to the formation of **odors and liquids**

Compostable bags

Only **certified compostable bags** are allowed for collecting organics (EN 13432)



ORGANIC WASTE COLLECTION STRATEGY

Results

Food waste management is a key factor in the city's **food policy** for sustainability

98* kg

Quantity per capita

98 kg/inh./year is the quantity per capita of food waste that we collect.

This result is the highest across all major European cities.

30 %

Commercial waste

About **30%** comes from **commercial activities** and schools while the majority is residential

136,782* t

Overall quantity

All food waste is being collected separately and **sent to AD** saving around **9,340 t** of CO₂/year**

95%

Average quality

Brown bin shows good quality with **Compostable Material** (CM%) at **95%** on average

* In 2019 quantity per capita was 110 kg/inh/year and the overall quantity was 155,000 t. 2020 and 2021 data were heavily affected by COVID-19 pandemic restrictions

** Calculated by CIC, the Italian Composting and Biogas Consortium based on the Defra (UK) calculation tool, 2011

EDUCATION AND COMMUNICATION



EDUCATION AND COMMUNICATIONS (1)

- **Households organic waste collection start-up (2012);**
- **Awareness campaign for street markets** = focused on compostable bags;
- **RECUP project** = recovery of unsold food in markets and redistribution to the needy;
- **“Really Eth(n)ic”** = engagement project with 200 ethnic restaurants in Milan (mostly Chinese, Latin American, Middle eastern) aimed to raise awareness about the **European Single Use Products Directive**, the best management practices of food waste and the use of certified compostable single use items.



EDUCATION AND COMMUNICATIONS (2)

- **“Is it compostable?” campaign** = focused on compostable materials (how to recognize them and how to recycle them properly);
- **“Progetto Scuola”** = schoolchildren project centered on waste separation;
- **Guided tours of organic waste treatment plants;**
- **Dedicated projects for companies and institutions** (McDonald’s, Deliveroo, Lombardia’s Regional Council);
- **E-Label Project with Kyoto Club association** = trial of a multi-label certification system - with a focus on food waste - to promote separate collection in the Ho.Re.Ca. (*haute cuisine, hôtellerie, fast foods*) and the correct use of certified compostable food service ware and packaging.

Often Amsa distributes compost during this events.



Servizio gestito da  **Amsa**
GRUPPO a2a



FACCIAMO UN REGALO ALL'AMBIENTE

Contribuisci alla raccolta differenziata e separa correttamente i contenitori vuoti della tua consegna a domicilio.

SEGUI ALCUNI SEMPLICI CONSIGLI
Rimuovi i residui di cibo dai contenitori vuoti e schiacciai per ridurre l'ingombro.

SEPARA I RIFIUTI COSÌ:

 Cartoni della pizza senza residui di cibo	CARTA E CARTONE	 Bottiglie di vetro	VETRO
 Residui di cibo	ORGANICO	 Bacchette di legno	ORGANICO
 Bottiglie e vaschette di plastica	PLASTICA E METALLO	 Posate di plastica	INDIFFERENZIATO
 Lattine e vaschette di alluminio	PLASTICA E METALLO	 Posate compostabili (servizi a cui è associato il marchio a2a)	ORGANICO

Scopri come:  

Quando facciamo la differenziata la vita è più azzurra

PLASTIC: LEGISLATIVE FRAMEWORK

From 2011:

- Non compostable plastic shopping bags ban in Italy.

From 2018:

- Non compostable fresh produce bag ban in Italy;
- Compostable produce bags must be paid for (usually 1 or 2 Eurocents).

From January 2022:

- **Single Use Plastics (S.U.P.) E.U. Directive** is in force in Italy.

FOOD WASTE COLLECTION IN OPEN MARKETS

2018

food waste collection in market stands for all **94 weekly markets** of the city

1.500 t

organic waste recovered in 2022

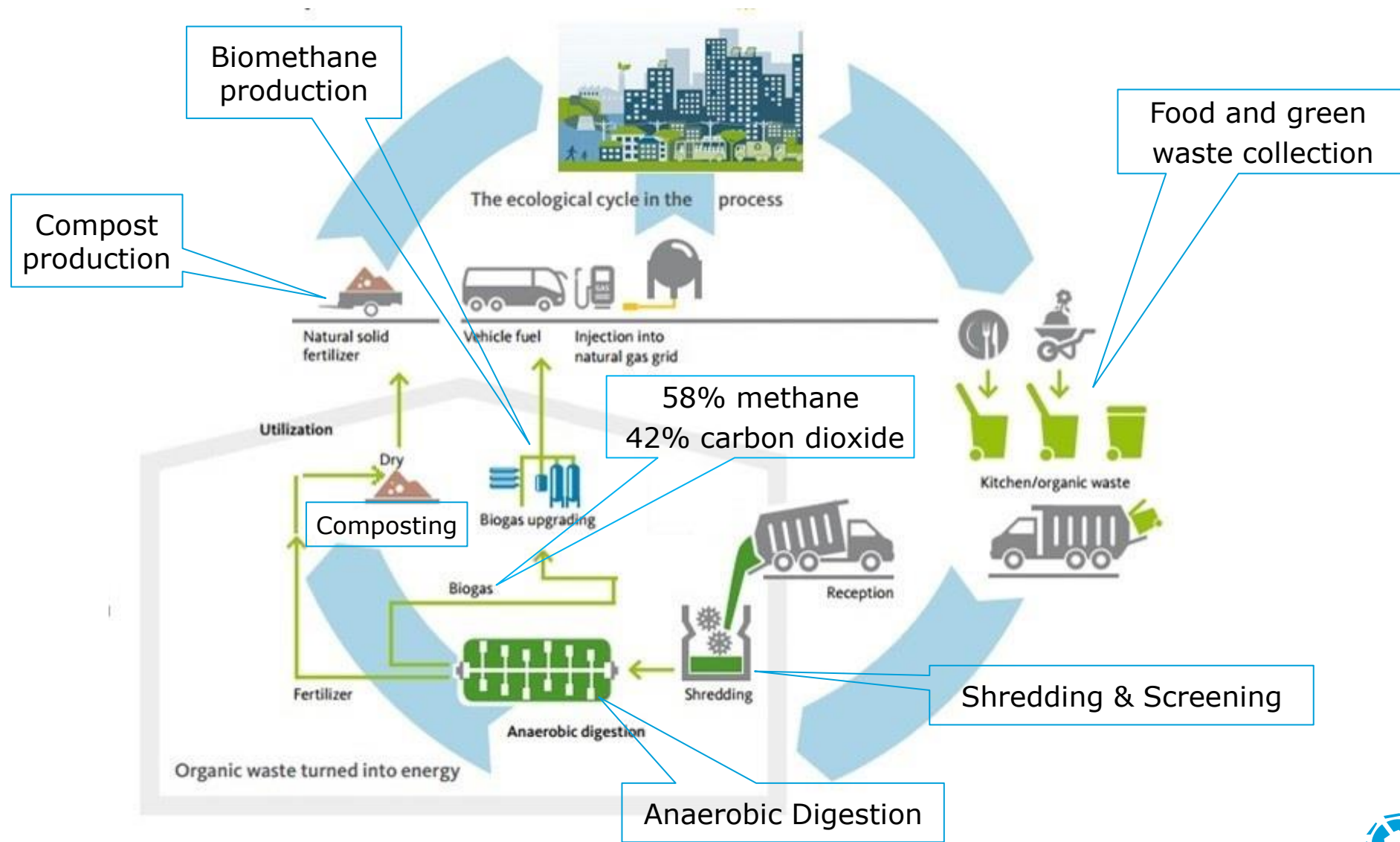


Success Factors: information campaign, distribution and promotion of large compostable bags during the start-up phase and subsequent continuous monitoring



* Calculated by Novamont, OTTIMIZZAZIONE della raccolta della frazione organica mercatale: l'esperienza di Amsa a Milano, 2020

ORGANIC WASTE IN CIRCULAR GREEN ECONOMY

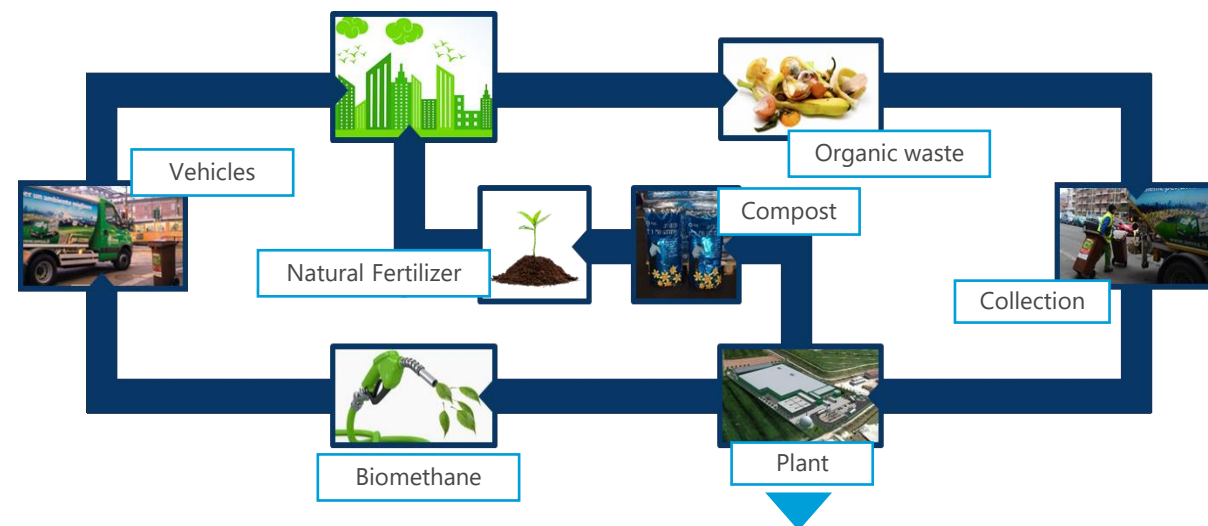


ORGANIC WASTE CYCLE PLANT IN LACCHIARELLA

A2A's new basin plant: biomethane as a green fuel for transports

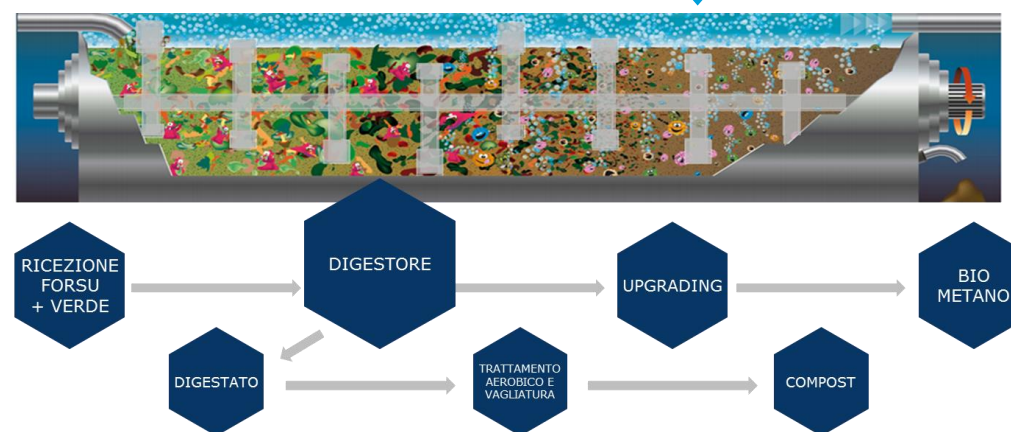
100 kt/y of organic waste will be treated in the plant in Lacchiarella. The best technologies include combined processes of anaerobic digestion and composting for the production of:

- over 8 M m³/y of advanced biomethane in gaseous form into the network or for transportation;
- over 20,000 t/y of compost, a natural fertilizer certified for use in agriculture.



SUSTAINABILITY

- **The advanced biomethane** can be **used in transport**, returning a significant sustainable energy to the city and will be able to fuel the collection vehicles for a virtuous circular economy.
- **The compost** produced through the process allows the soil to be kept at the **levels of organic carbon** typical of **natural soil**.
- **Pretreatment residues** are **aerobically stabilized** along with collected **certified compostable items** and turned into **compost**.



FUTURE PROJECTS

- **Waste quality improvement (non-compliant fractions)**
- **Customized services (large utilities, building, universities, stations, etc.)**
- **Prevention and reduction** of waste production
- **Communication campaigns**
- **Implementation of Payt**



**THANK YOU FOR YOUR
ATTENTION!**