



Comune di  
**Milano**

# **SEPARATE WASTE COLLECTION AND CIRCULAR ECONOMY**

THE INTEGRATED WASTE CYCLE IN MILAN  
AND  
THE SUCCESSFUL STORY OF EXPO MILANO 2015

**TOKYO FORUM FOR CLEAN CITY & CLEAR SKY**

May 22 -23 , 2018

# CITY OF MILAN - WASTE COLLECTION

## Key numbers



**1.35 million**  
inhabitants

**7,200**  
Inh./km2

**800,000**  
Commuters/day

**11 millions**  
Tourists in 2016  
(second city behind Rome)



**673,360**  
T of Municipal  
Waste per year



**53.8%**  
Separate  
collection in  
2017



**55,000**  
waste collection  
points (door to  
door)



**1,400**  
vehicles for  
waste collection  
and street  
sweeping



**36,200**  
Bins in  
streets and  
parks



**5**  
civic amenity  
sites and **2**  
mobile Eco  
centers



**120**  
bring banks  
for paper  
and glass



**13**  
T-recycle  
e-bikes

# THE INTEGRATED WASTE CYCLE IN MILAN

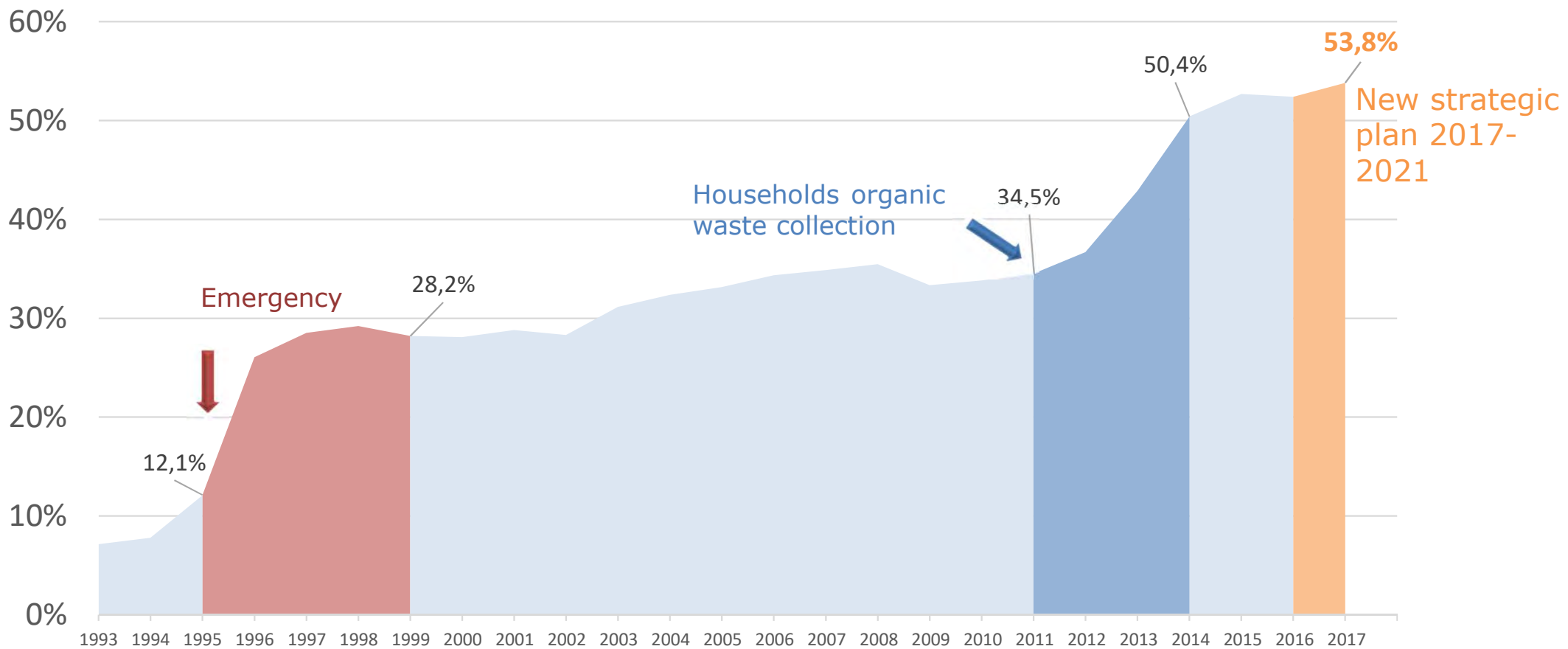
Circular economy of waste



# SEPARATE WASTE COLLECTION RESULTS



## Separate collection trend in Milan



# WASTE SERVICES IN MILAN



**Door-to-door** separate waste collection of 5 fractions + cardboard



**T-recycle:** e-bike for keeping the city clean



Free **bulky waste** collection at home on booking

**CAM - Mobile Ecocenter** for collection of small electronic devices, and other hazardous waste



**Dedicated collections** in high traffic areas (WEEE's, vegetable oil, medicines, batteries)



# ORGANIC WASTE COLLECTION

Best practice across Europe



- **Households organic waste collection** was introduced in 2012 with the door to door system using brown bins, special ventilated kitchen bins and compostable bags
- Milan system is considered a **best practice** across all major European cities

100 kg

## Quantity per capita

100 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

142,000 t

## Overall quantity

About 142,000 t/year of food waste are now being collected separately and sent to AD for organic recycling saving 9,500 t of CO<sub>2</sub>/year\*\*

5%

## Average quality

Brown bin show good quality with Non Compostable Material (NCM%) at 5% on average

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

# WASTE TREATMENT AND RECOVERY

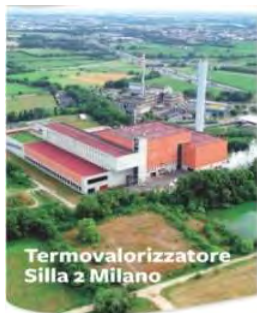
## A2A AMBIENTE RECOVERY AND TREATMENT PLANTS



**Glass sorting plant Asti**  
Capacity: 180 kt/y



**Street sweepings recovery plant Milano**  
Capacity: 30 kt/a



**Silla 2 Waste to Energy plant**  
Capacity: 540 kt/y  
Electric power: 59 Mwe  
District heating



**Paper and plastic/metals recovery plants: Novate (MI), Cernusco (MI), Liscate (MI), Buccinasco (MI)**  
Total capacity: 330 kt/y

**In development:**  
**Organic waste treatment**  
Anaerobic digestion and composting plants

**NO LANDFILL**  
**Since 1997**

# NEW CHALLENGE WASTE STRATEGIC PLAN 2017-2021

The **Municipality of Milan** has targeted, among others, an **ambitious goals** in order to make the city of Milan the most virtuous of the European metropolises for the sustainable environment:

**Increase of the circularity of waste collected with new/improved services to reach 65% separate of separated waste collection by 2021**

To achieve this objective the Strategic Plan will be gradually implemented in the city:

23.000  
e-commerce  
deliveries a day

1

**Cardboard collection** for **households** and commingled paper and cardboard collection to divert cardboard still present in the residual waste

2

**Reduce residual waste frequency** to **once a week** to invite people to more recycle

3

**Organic waste** separate collection in **open street markets** to increase recovery



**8% reduction** of residual waste production in the first 3 months of the new plan and considerable more separate collection of cardboard, plastic and metals



# NEW CHALLENGE: A MONITORING SYSTEM OF THE SERVICE LEVEL

The Service Contract between the Municipality of Milan and AMSA – A2A Group, signed in April 2017, is monitored throughout:

1

**Data sharing (Green Gate)**

2

**Integrated Audit System:** a) check on how data are collected, recorded and processed by AMSA;  
b) elementary data checks on the final performance of the service;  
c) random field audits;  
d) joint audits on qualitative performance of the services

**Objectives:** certify the results achieved by the Service Provider in relation to the standards required by contract

3

**Review of the contractual SLAs** (Service Level Agreements) of over 40 assigned services

**Objectives:** Define new reference values for each type of service, without modifying the previous contractual structure and the indicators contained therein, starting from the analysis of the performance values achieved by the Service Provider in the previous three years.

**Since the start of the implementation of the Service Monitoring continuous improvements have been noted in terms of performance levels**

# MEGA EVENTS: A COMMON CHALLENGE FOR HOSTING CITIES



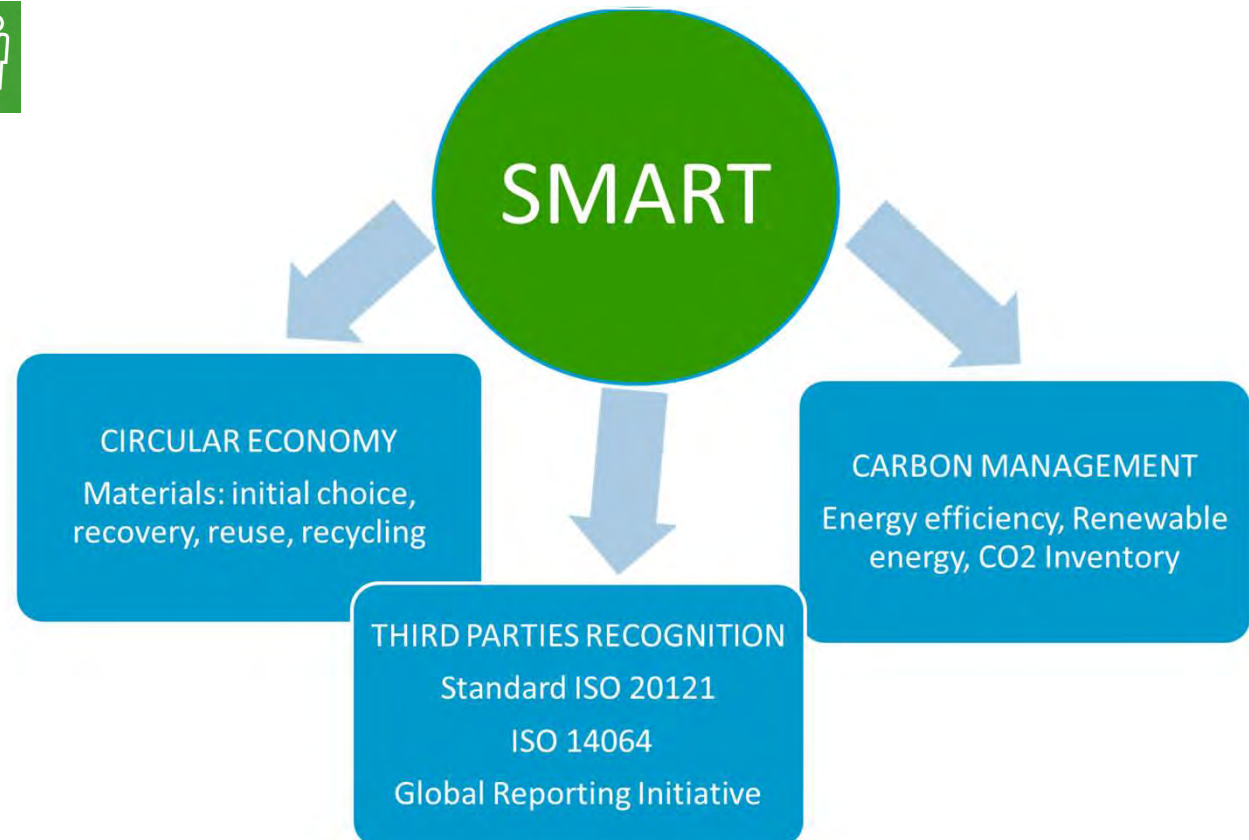
The **Case Study of Expo Milano 2015**: successful **waste management** within a sustainable strategies - Focus on People engagement



**21 million**  
VISITORS

**147**  
PARTICIPANT  
COUNTRIES  
**67**  
OTHER  
ORGANIZATIONS

**187**  
DAYS



### OPERATIONS & LOGISTICS

- Flexibility of the service
- Dedicated and motivated human resources



### INFORMATION AND COMMUNICATION

- Internal staff for cleaning
- Participants: Countries, International Organizations and NGOs
- Volunteers
- Visitors

# WASTE MANAGEMENT: BINS FOR MUNICIPAL WASTE



**Design**   **Functionality/Safety**   **Security**

**Information to visitors**



# WASTE MANAGEMENT: INFORMATION FOR VISITORS

## Carta

Paper | Papier

Fogli di carta, volentieri, cartoline	Paper sheets, flyers, postcards	Foglietti da pasta, tinte, cartoncini pesanti
Libri, giornali e riviste	Books, newspapers and magazines	Lenze, foglietti di moduli
Contenitori per bevande (ad es. tetrapak)	Beverage containers (e.g. tetrapak)	Etichette di medicinali
Fazzoletti in carta	Paper napkins	Carte di plastica
Vischiette e scottole per alimenti in cartone	Food cartons/bowls	Cartoni di pizza puliti senza residui di cibo
Cartoni della pizza puliti senza residui di cibo	Clean pizza boxes without food traces	

Bicchieri e piatti di sola carta puliti e senza etichette

Clean paper cups and plates, labeled

Cartoni puliti e senza residui di cibo

Clean, empty pizza boxes without food traces

## Organico

Organic | Bio

Scarti di cibo	Food waste	Deiezioni animali
Tovaglioli di carta anche sporchi	Clean and dirty paper napkins	Serviette et mouchoirs en papier même sales
Fazzoletti di carta anche sporchi	Clean and dirty paper tissues	Papiers frottés
Filtri del tè	Tea filter bags	

Bicchieri, piatti e posate compostabili (EN13432)

Compostable glasses, plates and cutlery, certified EN13432 or equivalent

Stoviglie, coperte riciclabili (EN58933)

Recyclable cutlery, EN58933 or equivalent

## Vetro

Glass | Verre

Bottiglie	Bottles	Bouteilles
Vasetti per alimenti in vetro	Food glass jars	Boîtes alimentaires en verre

## Plastica e metalli

Plastic and metal | Plastique et métal

Bottiglie in plastica	Plastic bottles	Bouteilles en plastique
Lattine	Cans	Canettes en métal
Bicchieri in metallo	Cups	Couverts de boisson
Tappi in plastica o metallo	Plastic or metal caps	Bouchons et couvercles en métal ou plastique
Vasetti per alimenti in plastica	Food plastic jars	Cloques alimentaires en plastique
Sacchetti in plastica	Plastic bags	Sacs en plastique
Sacchetti per merendine e snacks	Plastic packaging for snacks and chips	Boîtes alimentaires en plastique
Plastic wrap		
Polliciole per alimenti	Food plastic bowls	Emballages pour snacks ou chips
Vaschette per alimenti in plastica	Assorted metal and plastic	Assiettes en métal et en plastique

Bicchieri e piatti di sola plastica puliti e senza etichette

Clean plastic cups and plates, labeled

Cartoni puliti e senza residui di cibo

Clean, empty pizza boxes without food traces

## Indifferenziato

Not Recycled | Pas Recyclables

Mantelle da pioggia	Rain Coats	Impermeabile
Penne e matite	Pens and pencils	Stylor et crayons
Cartoni della pizza con residui di cibo	Dirty pizza boxes with food traces	Cartoni a pizza avec des résidus alimentaires
Fazzoletti e assorbenti	Diapers and sanitary pads	Couches et serviettes hygiéniques
Stoviglie in plastica	Plastic toys	Jouets en plastique
Escrementi animali	Animal excrementa	Excréments d'animaux
Altri rifiuti non riciclabili	Other non-recyclable waste	Autres déchets non recyclables

**CLAIM**  
Each separate waste is a Resource

## Organico

Organic | Bio

**Aiutaci a fare bene la raccolta differenziata dei rifiuti!**  
These materials mono-use are **biodegradable and compostable**, in compliance with the standard UNI EN ISO 13432:2002 **devono essere messi con la raccolta dei rifiuti organici.**

**Help us do the separate collection!**  
These disposable products are **biodegradable and compostable**, in compliance with the UNI EN 13432:2002 standard rules **they can be disposed together with the organic separate collection.**

<input type="checkbox"/> Piatti	Plates	<input type="checkbox"/> Bicchieri	Beakers
<input type="checkbox"/> Tazze	Cups	<input type="checkbox"/> Copercchi per bicchiere	Beakers' lids
<input type="checkbox"/> Posate	Cutlery	<input type="checkbox"/> Coppette e palette gelato	Ice cream cups and spoons
<input type="checkbox"/> Coppette finger food	Finger food cups	<input type="checkbox"/> Carta da banco	Food wrapping paper
<input type="checkbox"/> Confezioni cibo d'asporto	Take away food boxes	<input type="checkbox"/> Shopper e sacchi	Shopping bags and garbage

# GPP AND WASTE MANAGEMENT: INFORMATION FOR PARTICIPANTS

Milano



Comune  
di Milano



*Every Participant Country must dedicate the time and demonstrate the commitment to achieve them*

## CONTROLS AND CORRECTIVE ACTIONS

### REPORTED NON COMPLIANCES

TOTAL REPORTED NON COMPLIANCES	871
«ONE TO ONE» MEETINGS FOR CORRECTIVE ACTIONS	446

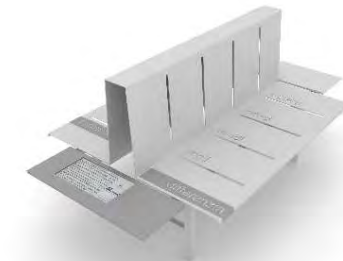
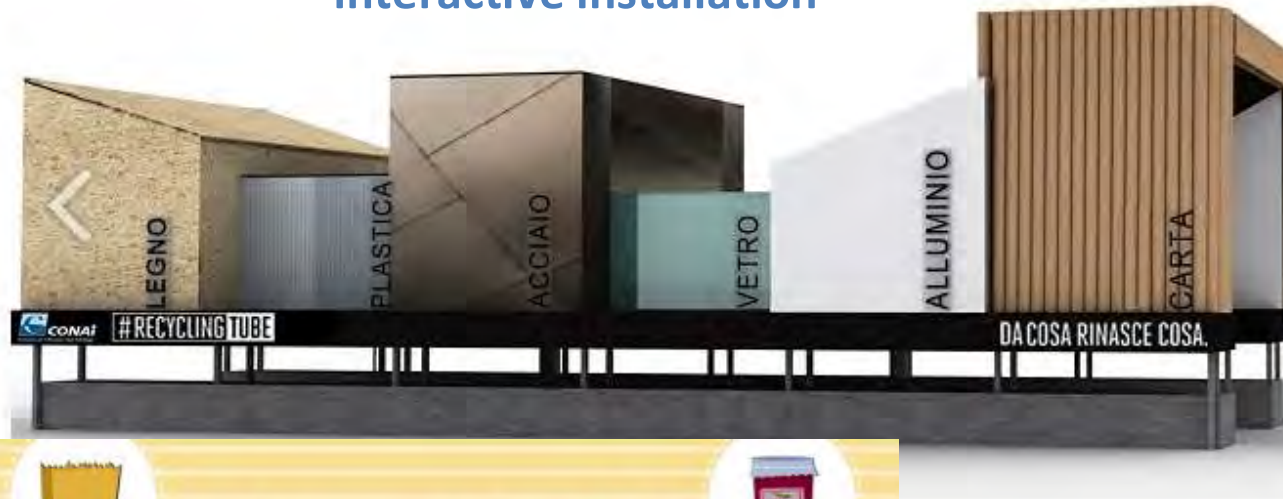
50% for uncorrect separation – 50% for logistics

### N. TRAINING SESSIONS

PARTICIPANTS	n.89
VOLUNTEERS	n.12 (3700 pax)
OTHERS	20

# COMMUNICATION ON RESULTS

## RECYCLING TUBE interactive installation



## 30 BENCHES

With recycled materials



## CHILDREN PARK

One video for children





# INFORMATION ON RESULTS

## 44 TOTEM COMMUNICATION DEVICES

7 Videos, one for each packaging material + organic + undifferentiated



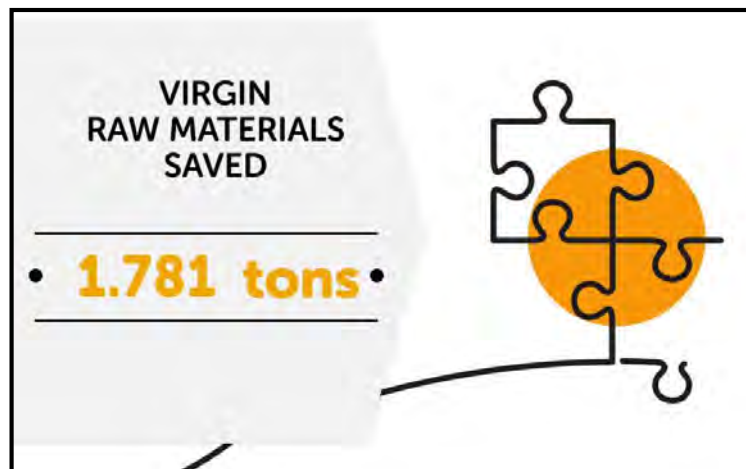
## One video to thank staff and personnel



# INFORMATION ON RESULTS

## 44 TOTEM COMMUNICATION DEVICES

1 Videos with the results and on environmental performances of separate collection and recycling, updated every 15 days



# EDUTAINMENT



## STREET THEATRE INDUSTRIA SCENICA and LEGAMBIENTE



# ENGAGEMENT



# ENGAGEMENT



# ENGAGEMENT

SOCIAL NETWORK

HASHTAG: #EXPODIFFERENZIATI

Tweet popolari

Tutti i Tweet



jahzeel @jahz\_2012

#Expo2015 #ExpodifferenziaTi



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THANK YOU FOR YOUR ATTENTION



GLORIA ZAVATTA – CEO AMAT srl  
gloria.zavatta@amat-mi.it



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