# ZERO WASTE EUROPE LIVE!

4 DECEMBER 2018

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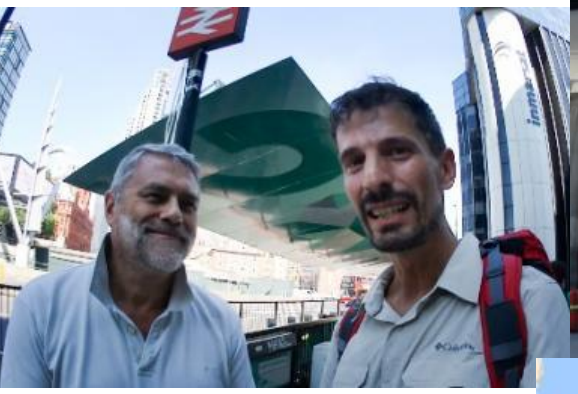
## COLLECTION OF BIO-WASTE IN DENSELY POPULATED AREAS

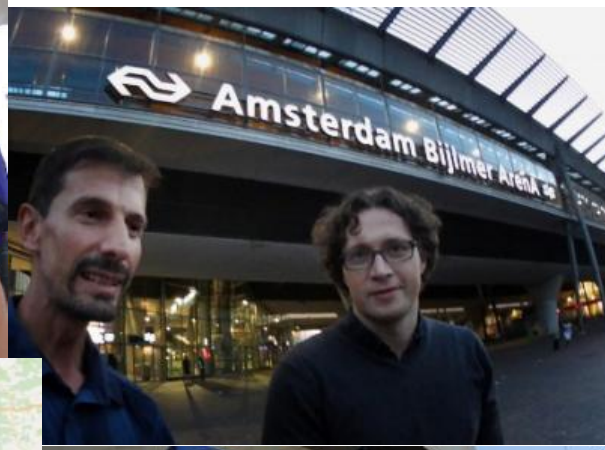
# About myself

- Consultancy on integrated waste management
- Italian Composting Association
- Coordinator of the italian pilot of Seveso
- European Compost Network, ISWA

# Biowaste collection across Europe: #InterrailRecycling

http://bit.ly/interrailrecycling






# Biowaste in the new EU WFD: key clauses

31st Dec

**2023**

- Separate collection **obligation**

1. Member States shall ensure that, by 31 December 2023 and subject to Article 10(2) and (3), bio-waste is either separated and recycled at source, or is collected separately and is not mixed with other types of waste.

**2024**

- Consider setting **targets** on biowaste

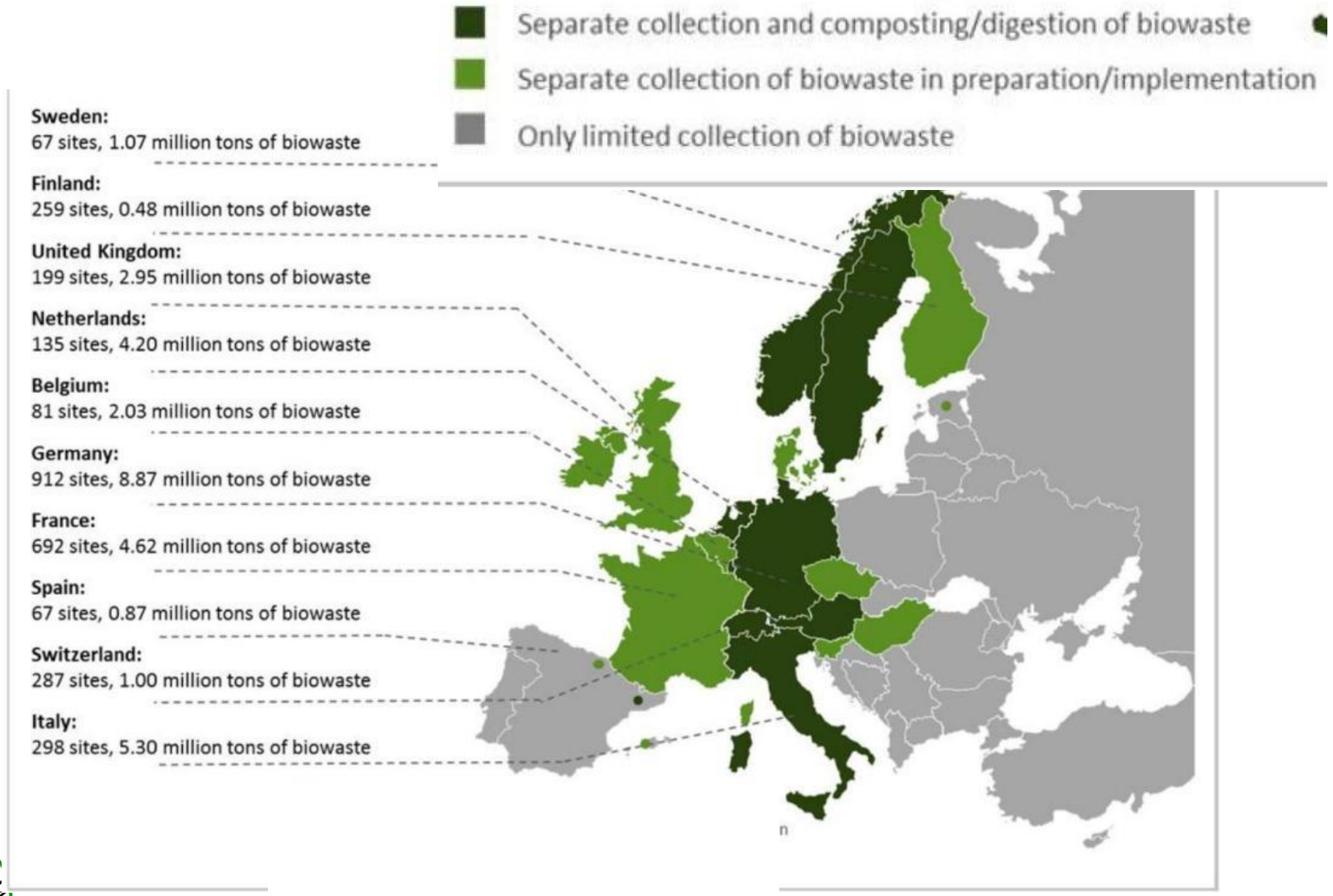
'6. By 31 December 2024, the Commission shall consider the setting of preparing for re-use and recycling targets for construction and demolition waste and its material-specific fractions, textile waste, commercial waste, non-hazardous industrial waste and other waste streams, as well as preparing for re-use targets for municipal waste and recycling targets for municipal bio-waste. To that end,

**2026**

- **MBT** not considered recycling

As from 1 January 2027, Member States may count municipal bio-waste entering aerobic or anaerobic treatment as recycled only if, in accordance with Article 22, it has been separately collected or separated at source.

# Separate Collection of Biowaste in Europe






Source: European Compost Network, 2017

# Municipal biowaste

| Source separated **food waste** | Source separated **biowaste** (commingled food + garden waste) | **Garden waste** |
|---|---|---|
| •Residential<br>•Commercial<br>•Large generators (markets…) | | |

1. Member States shall ensure that, by 31 December 2023 and subject to Article 10(2) and (3), bio-waste is either separated and recycled at source, or is collected separately and is not mixed with other types of waste.

# Key numbers: food waste generation

*Table 1: Estimates of food waste in EU-28 in 2012 from this quantification study; includes food and inedible parts associated with food.*

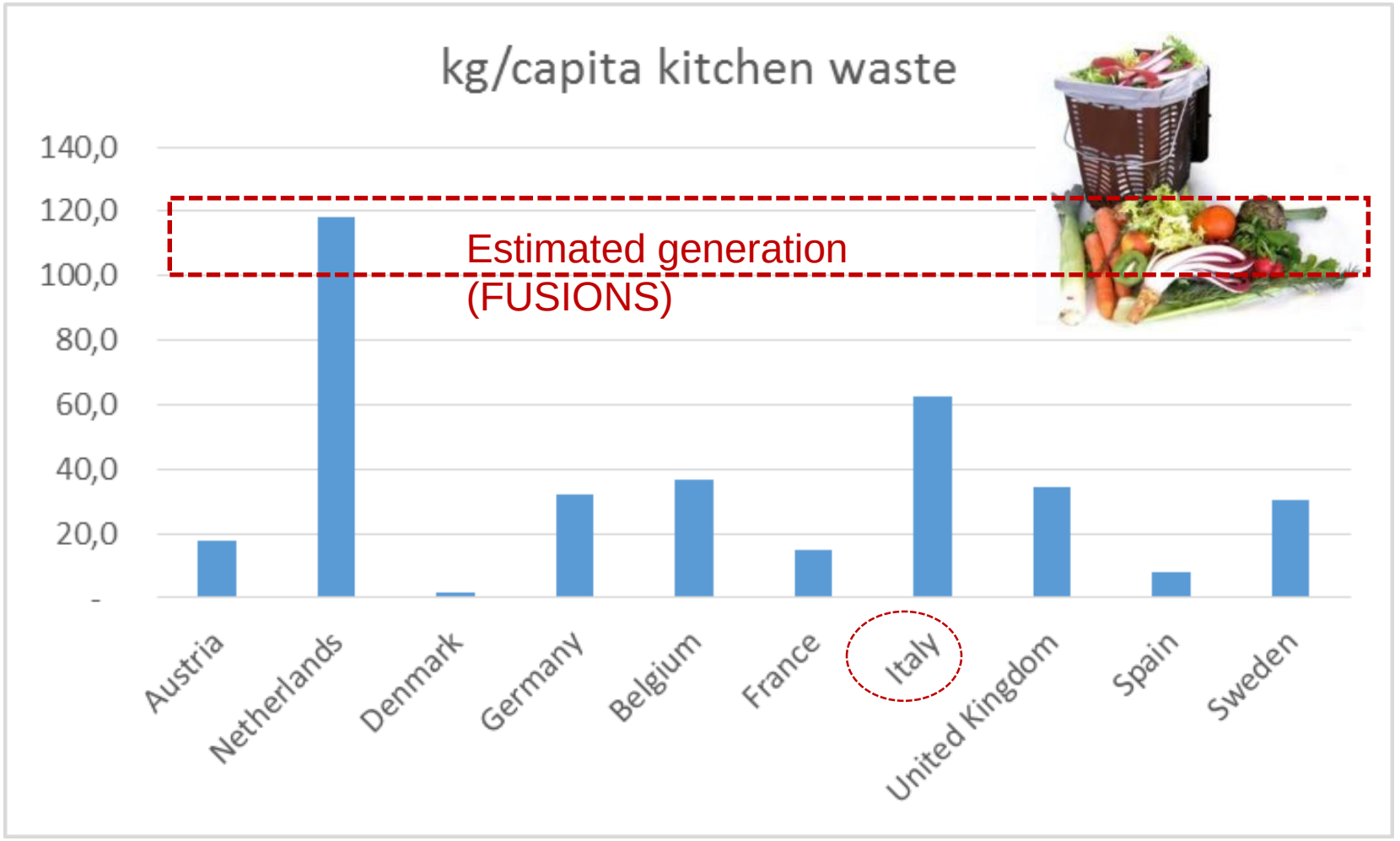
| Sector | Food waste (million tonnes) with 95% CI* | Food waste (kg per person) with 95% CI* |
|---|---|---|
| Primary production | 9.1 ± 1.5 | 18 ± 3 |
| Processing | 16.9± 12.7 | 33 ± 25 |
| Wholesale and retail | 4.6 ± 1.2 | 9 ± 2 |
| Food service | 10.5 ± 1.5 | 21 ± 3 |
| Households | 46.5 ±4.4 | 92 ± 9 |
| **Total food waste** | **87.6 ± 13.7** | **173 ± 27** |

**Confidence interval*

- **Municipal** food waste generation =**113** ± 12 kg/capita/year

Source: EU FUSIONS, 2016

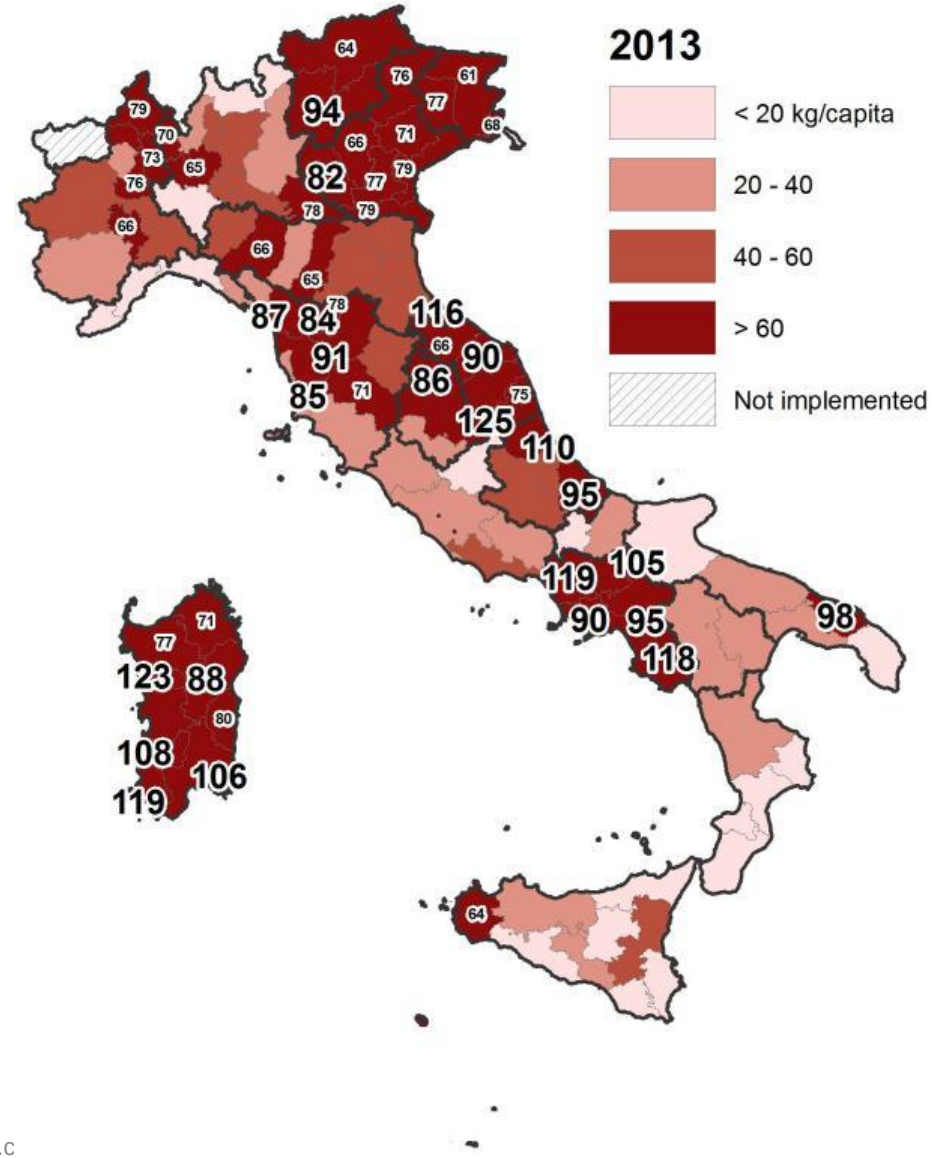
# Separate collection: per capita capture rate




**Data processing CIC, 2016**

# Look at local data (e.g. Italy, provinces 2013)

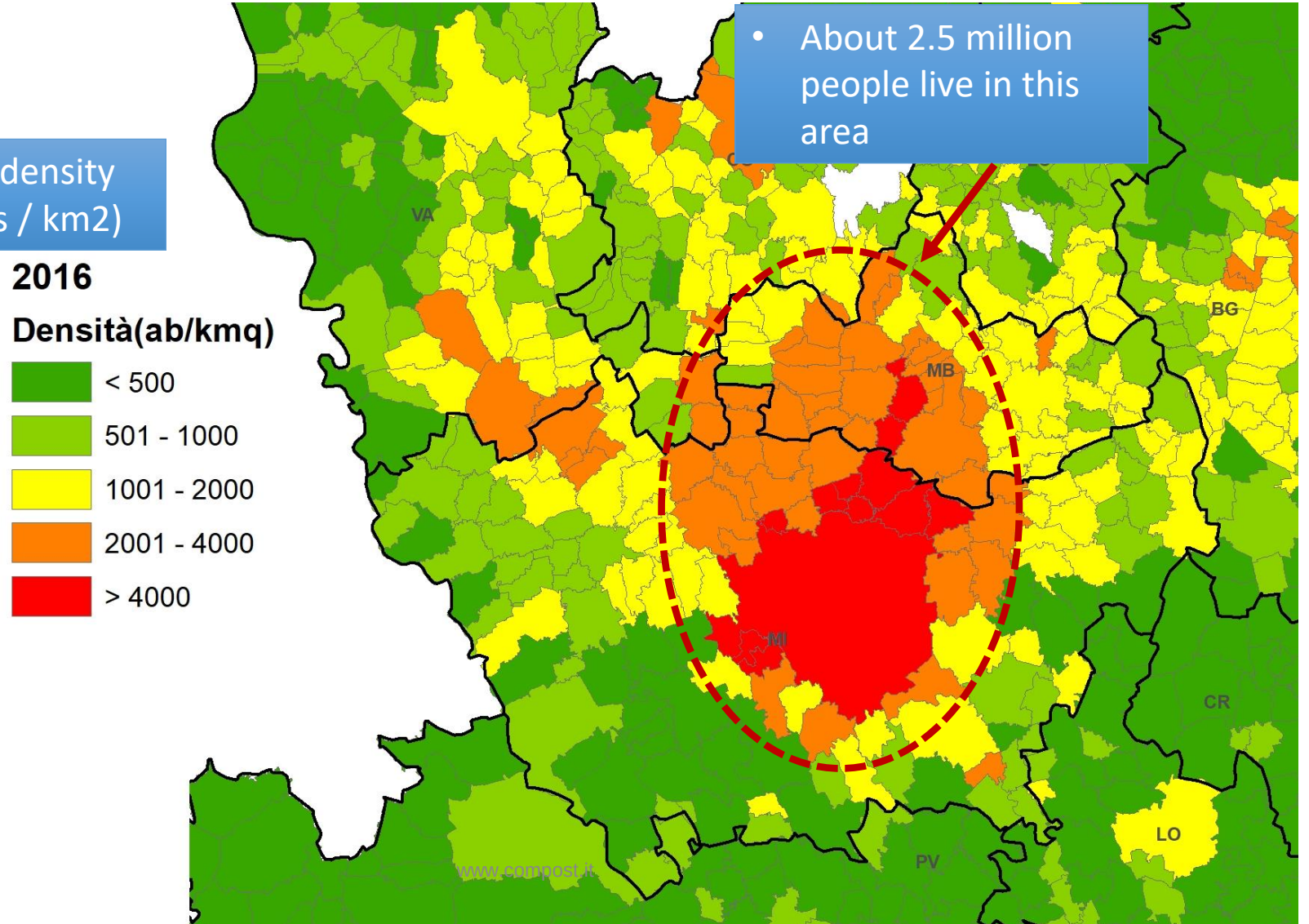
- Best performers: **Micro scale data** (Municipalities, Provinces) show high capture rates (90-110 kg/capita of just food waste)
- Close to the theoretical maximum = **90/100% participation** rate



# Lombardy, Italy: densely populated areas

- Population density (inhabitants / km2)

- About 2.5 million people live in this area




Mi

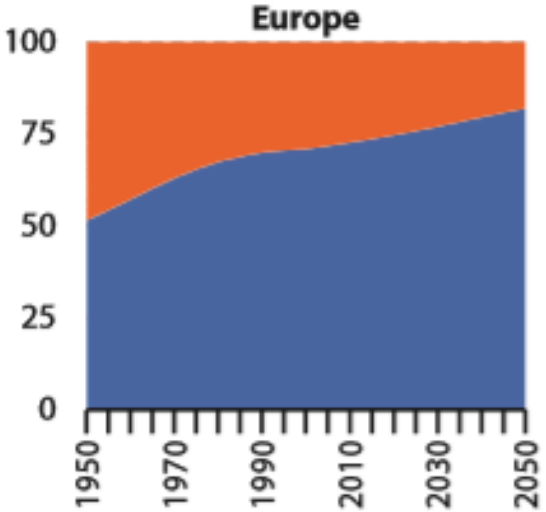
# Lombardy, Italy: high capture of food waste

- Milan metropolitan area: **70**
- City of Milan: **103**

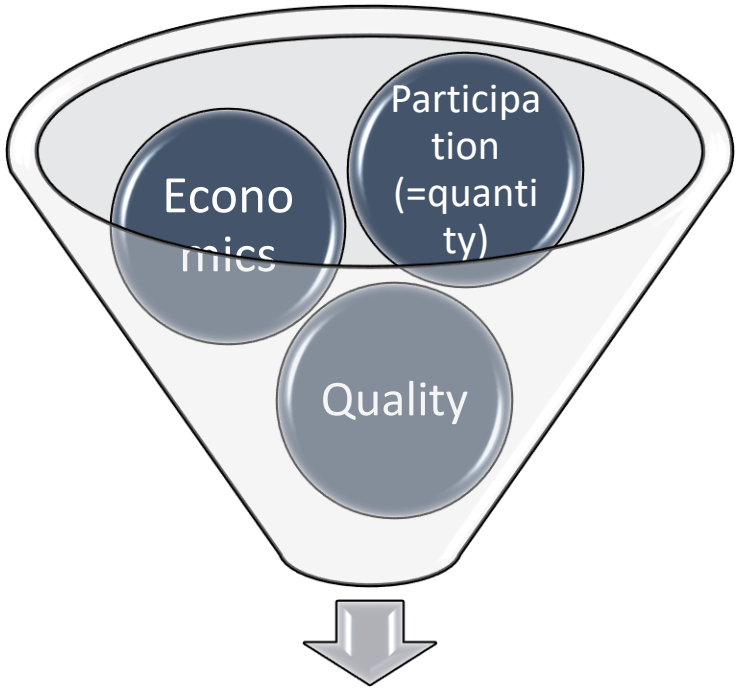



Mi

- Increasing share of urban population
- More difficult to implement successful biowaste separate collection programmes in large cities

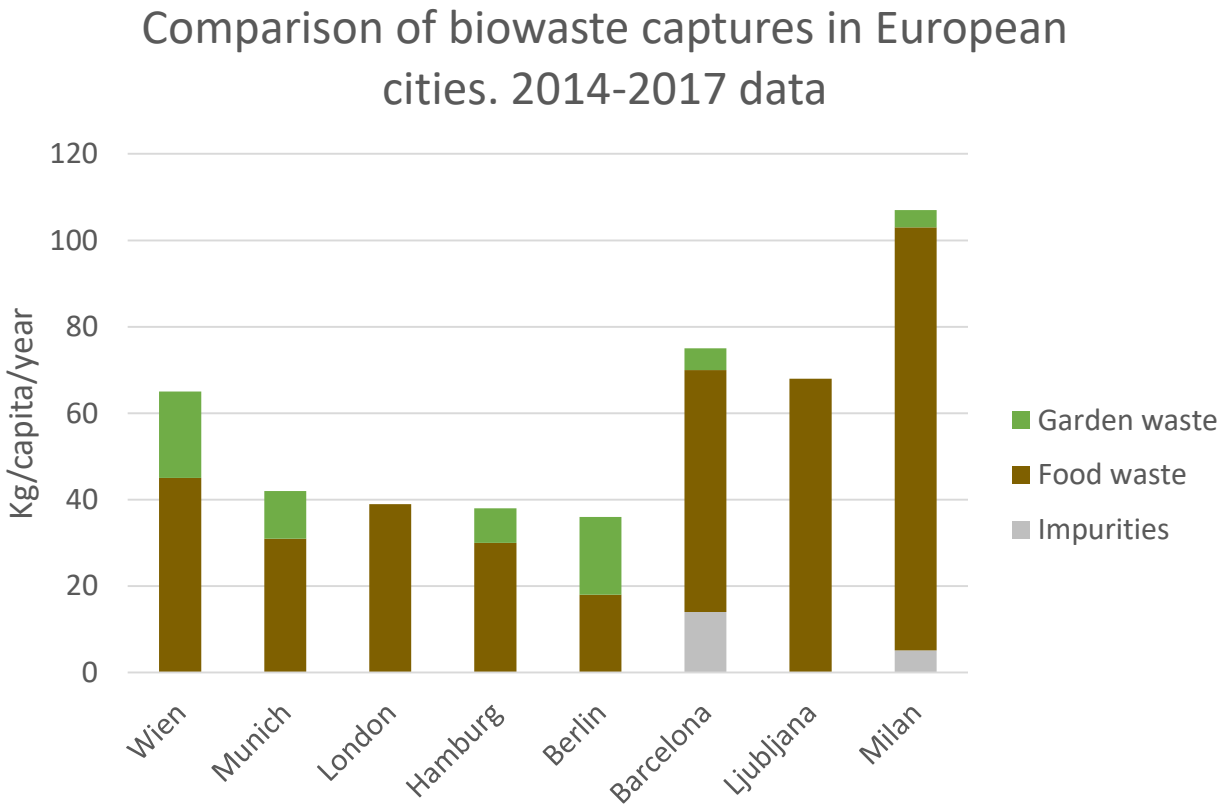



**Share of urban vs. rural population, forecasts (EUROSTAT, 2017)**




**Successful implementation**

# Comparison of results in large European cities




Source AMSA Milan, 2015, integrated by CIC

- Milan: Biowaste is 100% food waste. 5% impurities
- London: only some boroughs
- Munich, Berlin, Hamburg and Vienna: Biowaste contains significant amounts of green waste
- Barcelona: bring-schemes (large road containers), 20% impurities

# Implementation in large cities

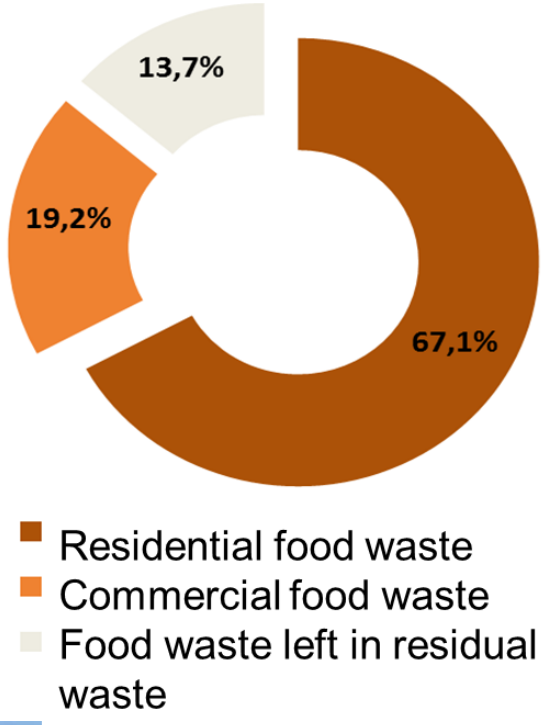
# Survey

- 6 large cities recently implementing/improving source separation of food waste with a **kerbside** approach
- Source: direct contact with Municipalities, public data, processing by CIC

# 103 kg FW

## Milan

- Residential food waste collection implemented in 2012-2014.
- Results (2017): **103 kg/capita**, ≈30 commercial, 70 residential (source: AMSA 2018).
- Very good quality: 5% impurities
- 2->1/week residual, 2/week FW




Info: Link

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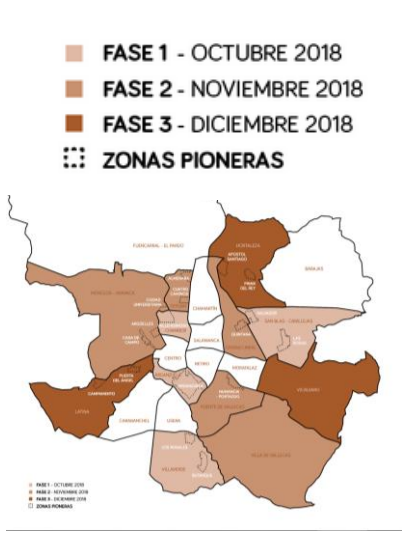
# 71 kg FW

# Madrid

- First months (nov'17-mar'18) : **≈ 71 kg/capita/year** average. Nov'18: increasing (**1.3 M people** covered)
  - 86% residential, 14% commercial
  - 60 kg/ca residential
  - 10 kg/ca commercial
- Tested both door to door and road containers area
- Residual waste frequency not changed (4/week residual, 4/week FW)
- Compostable bags not delivered / not available
- No surrounding municipalities with food waste collection
- Quality:
  - ≈ 23% impurities (Cifuentes, nov '18)
  - Some negative feedbacks about citizens perception



***What do you throw in the brown bin?***
***Source: Hazte eco, link***

**¿?**

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# 41 kg FW

## Barcelona (Sarrià)


- Capture: ≈ **41 kg/capita/year** average, since the first week.
- 1/week residual, 4/week FW
- Border effect (old road containers)
- **Very high quality**
  - Before: 14% impurities
  - New scheme: **2%** (6 months average)
- Separate collection increase
  - Before: 19%, after: 60%
- New waste collection contract (2018): extension of door to door, starting from commercial
- Web page with weekly monitoring of results: LINK




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# 26 kg FW

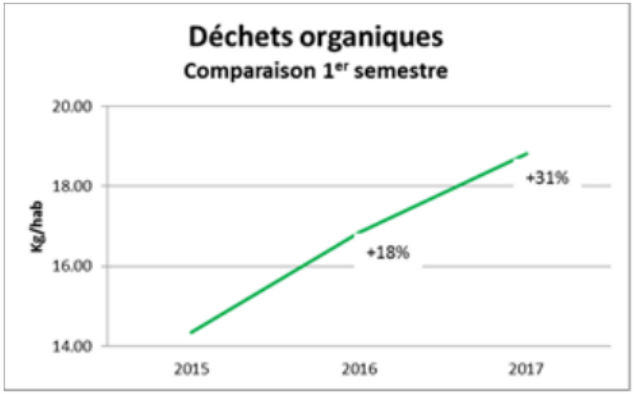
# Copenhagen

- **First large scale implementation** in Denmark
  - Started Sep ’17. 1200 tonnes collected in Jan 2018
- 1/week residual, 1-0,5/week FW
- Stated as «voluntary» (can unsubscribe)
- **26 kg/capita** (on residents who received the caddy)
  - 38 kg/capita (on “active” residents, estimation from the Municipality
  - 15% households in «**difficult buildings**» did not receive the caddy
- 8% impurities
- Roll of 100 compostable bags delivered for free on demand at mailbox
- Volume-based PAYT in place

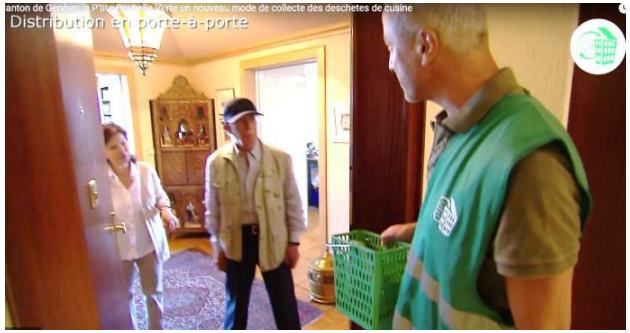
Source: Jonas Åbo Mortensen, Susanne Lindeneg, KØBENHAVNS KOMMUNE

# 25 kg FW

# Geneva




- Biowaste (incl. FW) collection already in place
- Test area (381,000 people) experiencing an intensive campaign (2015-2016) with
  - Door to door delivery of kitchen caddy and comp. Bags
  - Strong sensitization campaign
- **Increase +31% municipal biowaste, from 30 to 38.5 kg/ca (just residential),** due to the kitchen caddy campaign
- ≈ 25 kg/ca residential FW





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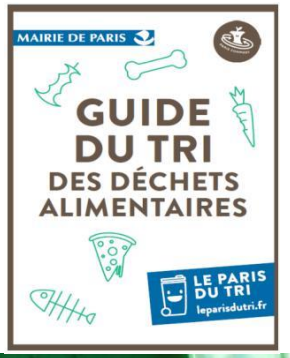
Source: République et canton de Genève LINK

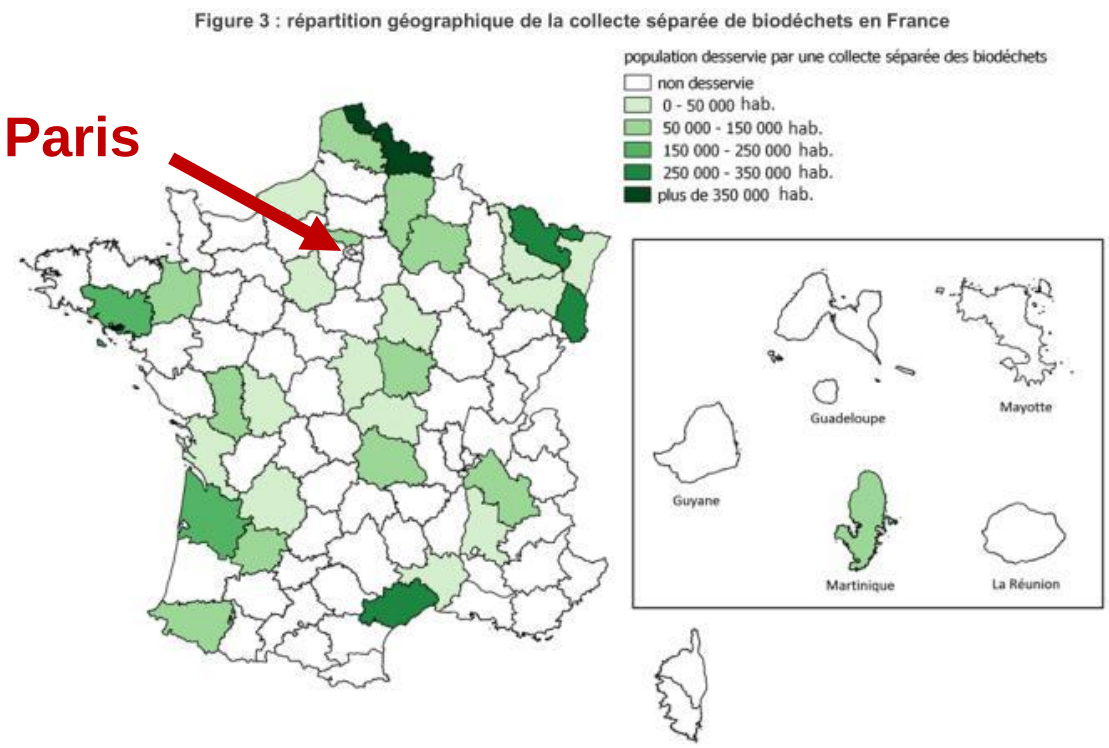
# 6 kg FW

# Paris

- End 2017 - Pilot 2nd and 12nd district:
  - 23,000 people/kmq
  - about 130,000 people
  - Baseline separate collection rate: 18,5% (source: link)
- First results 5 kg/capita/year from just residents, calculated on all population (source: LINK),
- **6,3 kg/capita/year** on population who received the bin
- Quality:
  - Bin check before collection. Alert with adhesive tape if non compostable bags visible inside



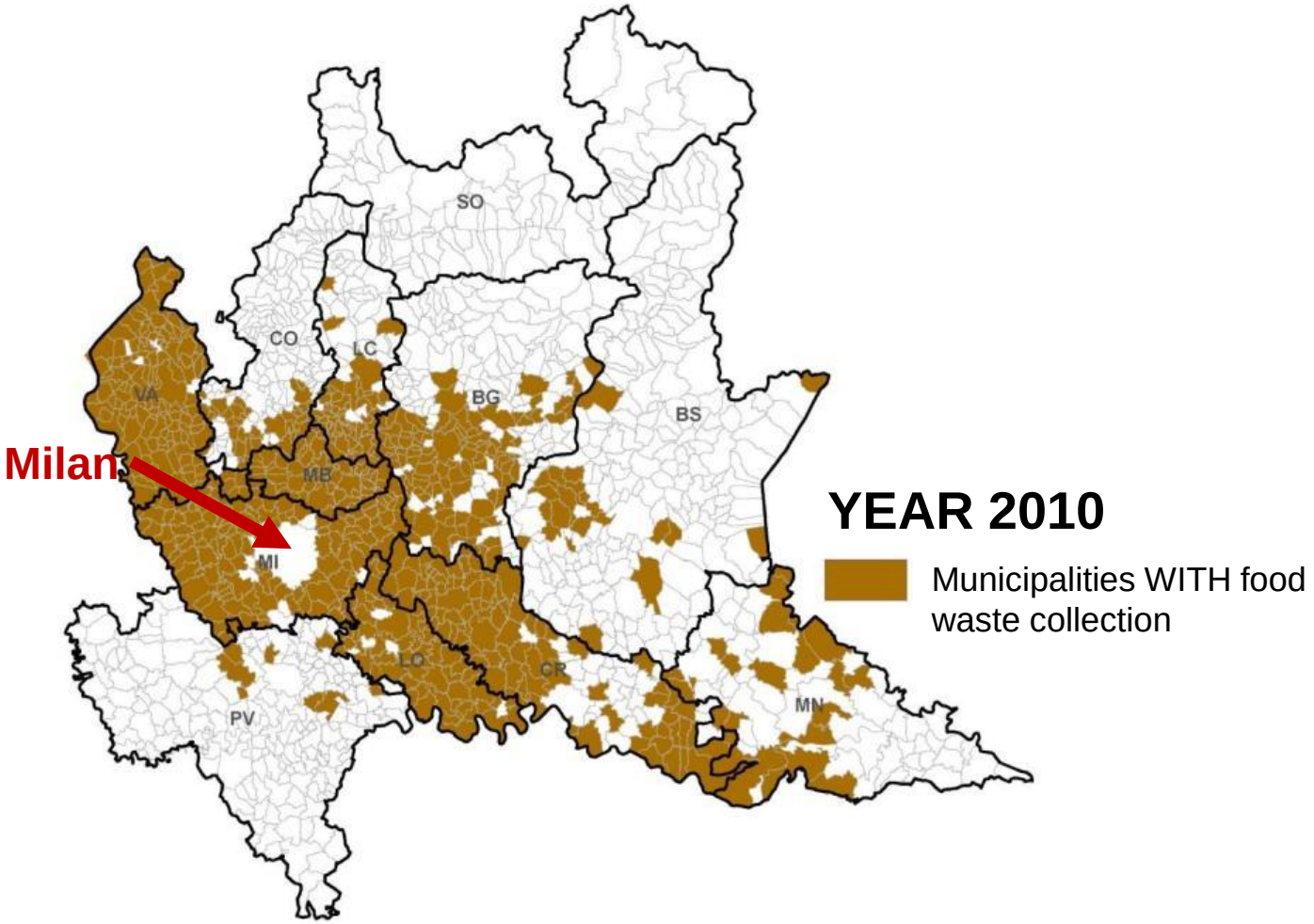
# Analysis: the surrounding effect



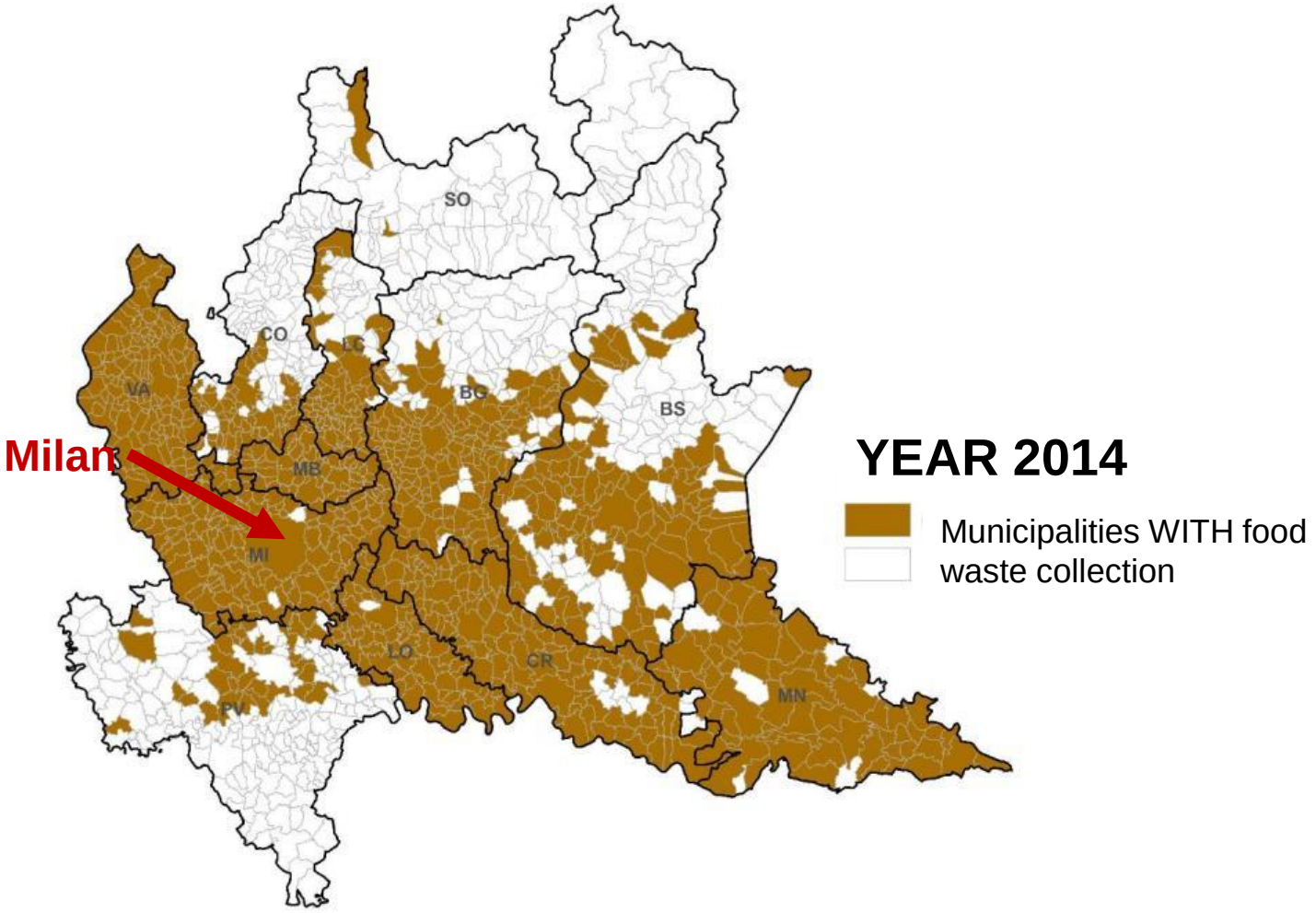

- **Paris** still not surrounded by municipalities with biowaste collection
- **Madrid**: the same

Source ADEME 2018, LINK

# The surrounding effect



# The surrounding effect



# Recent campaigns in large cities - Summary

| | Population (trial area) | Population density | Kg/capita food waste | % impurities | Residual waste freq.(/week) | Food waste freq. (/week) | Promotion of comp. bags | Past experiences in the city | Past experiences in surrounding municipalities |
|---|---|---|---|---|---|---|---|---|---|
| **Madrid** | 255,000 -> 1,300,000 | ≈ 20,000 | **71 tot** **≈ 60** residential | 23 % | 4 (d2d) | 4 (d2d) | - | - | - |
| **Barcelona (Sarrià)** | 9,500 | 41,300 | **41 tot** | 2 % | 1 | 4 | + | + | + |
| **Copenhagen** | 521,000 | 7,100 | **26 tot** | 8% | 1 | 1 (0,5) | + | - | - |
| **Geneva** | 202,000 | 12,670 | **≈ 25** Residential | n.a. (low) | 5 | 2 | + | + | + |
| **Paris** | 130,000 | 23,000 | **6.3** Residential | n.a. (low) | 5 | 2 | + | - | - |
| **Milan** | 1,300,000 | 7,520 | 103 tot **≈ 70** residential | 4 % | 2 (1) | 2 | + | + | + |

# Lessons learnt

- Food waste collection **is possible in large cities** with high population density
- **Pioneer** areas -> lower results (e.g. Paris)
- In areas **surrounded** by experienced municipalities, high and quick results (e.g. Milan)
- **Door to door scheme with kitchen caddy** and compostable bags most favoured option
- High importance of **campaigns** during roll out and to be repeated
- **Space** for brown bins in high rise buildings can always be found

# Thanks to

- Madrid: Victor Sarabia waste collection department, Municipality
- Barcelona: Carlos Vázquez – waste collection department, Municipality
- Paris: Simona Leroux, Novamont France
- Geneva: Matthieu Reis, Waste department
- Copenhagen: Jonas Åbo Mortensen, waste and resources project manager
- Milan: Danilo Vismara, AMSA

# Thanks

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