

Successful implementation of separate collection of bio-waste in Urban areas

Brussels, 24 June 2015
European Economic and Social Committee

Marco Ricci-Jürgensen
CIC – Italian Composting and Biogas Association- Rome-Italy
Chair of the ISWA-WG on biological treatment of Waste

www.compost.it



Successful implementation

- Large and constant participation
- high capture rates
- Good quality (i.e. low contamination with plastics)
- Economical sustainability





Source separation of foodwaste is difficult....



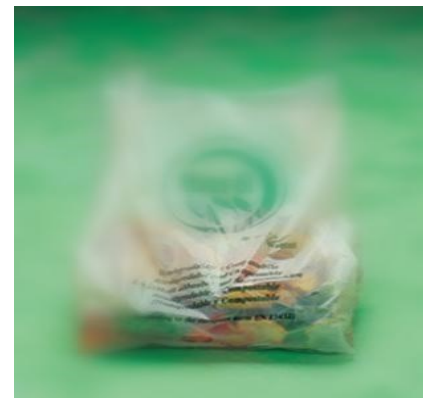
- High moisture
- Leachate
- putrescible
- High density

Likely to be uncomfortable

?



The need for kitchen-caddies?





Kitchen waste only

Yes ✓	No ✗
• Fruit	• Plastic bags
• Tea bags	• Glass
• Bread & pasta	• Paper
• Raw vegetables	• Cooked meat & fish
• Egg shells	• Tins & cans
• Cooked meat & fish	• Bones

Now available!

Compostable liners for your Blue Bin

Hackney

recycle for London



International Solid Waste Association

a2a

Il sacchetto, quale ci metto?

I sacchetti non sono tutti uguali. Per raccogliere l'umido si devono utilizzare solo sacchetti compostabili, certificati:

Possono essere utilizzati anche i sacchetti compostabili della spesa.

Utilizzando i sacchetti compostabili la qualità della raccolta è migliore e si evitano sanzioni.

Per informazioni:

www.amsa.it
servizioclienti@amsa.it

800-332298

Amsa
Gruppo A2A



It's difficult to make compost from plastics....

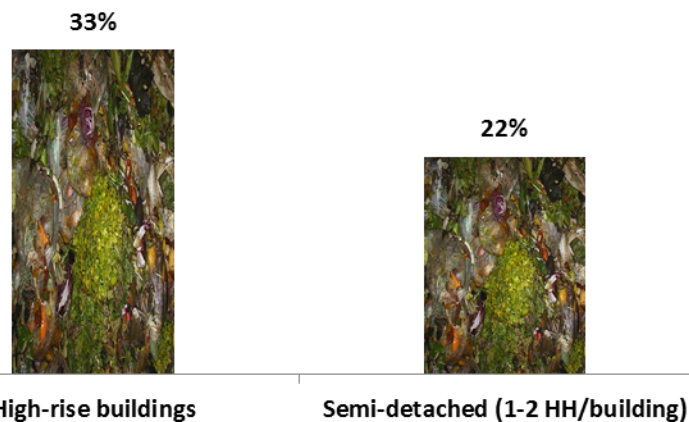




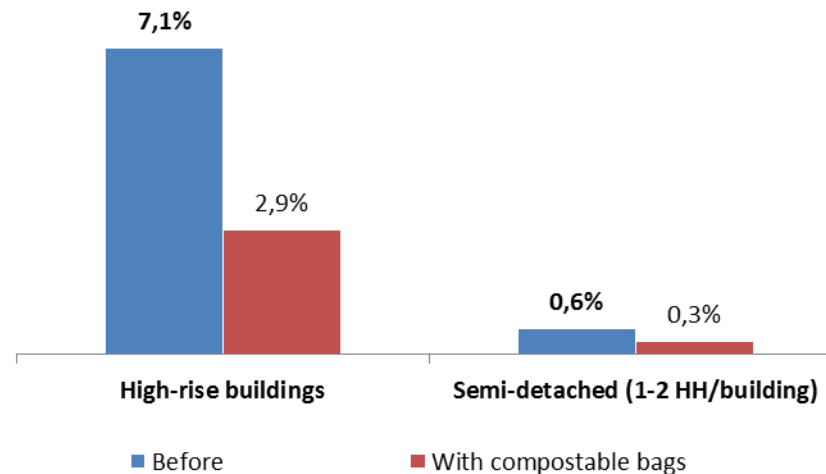
Comfort and participation (Kassel\D)

- Participation and quantities rise significantly in urban areas if households are provided with right tools

Food waste capture rate increase



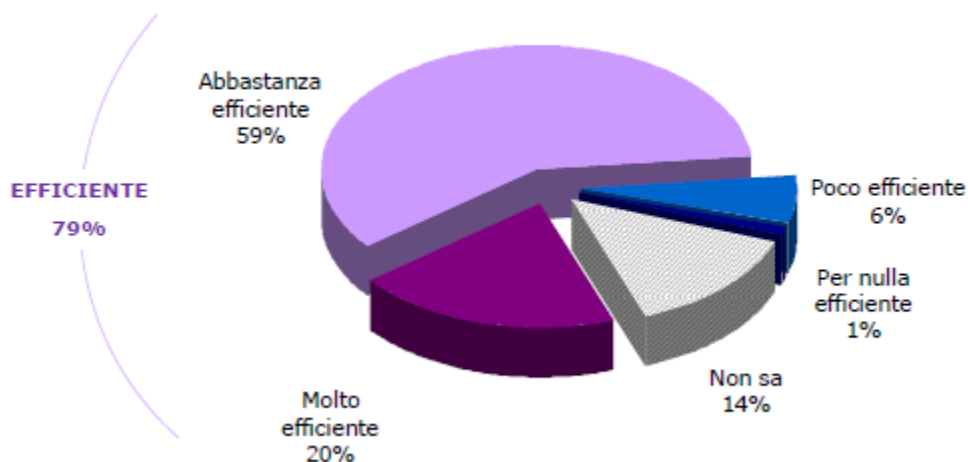
Contamination of bio-waste (D)



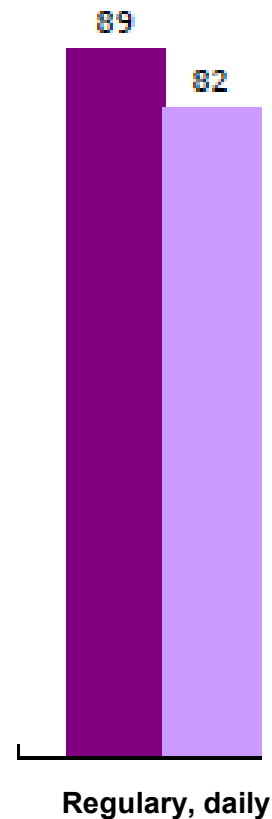


Customer satisfaction and participation (Milan\Italy)

Evaluation of the collection service for food waste



Practising separate collection of foodwaste





Successful implementation

- Large and constant participation
- **high capture rates**
- Good quality (i.e. low contamination with plastics)
- Economical sustainability





Separate collection of biowaste: comingled collection



- **Mixed collection scheme for (limited amounts) food waste & garden waste**
 - Excluding cooked food (i.e. meat, fish, etc.)
 - Large amounts of garden waste
 - Collection 1 times/week
- **Collection schemes for households separated from those for (small) commercial activities (Ho.Re.Ca)**
- **Competing with** residual waste collection



Integrated MSW management:

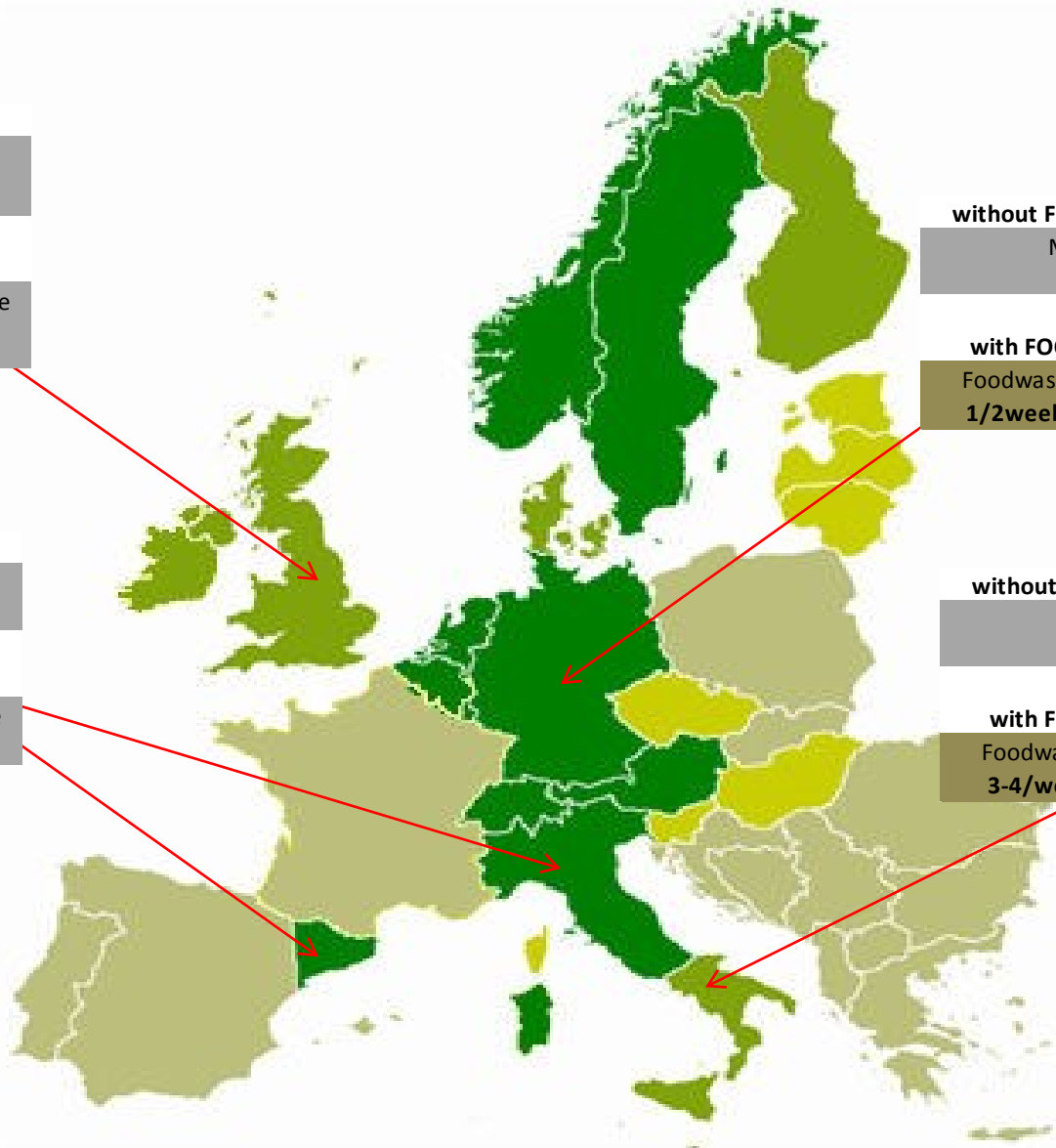
without FOODWASTE collection
MSW (mixed)
1/week

with FOODWASTE collection	
Foodwaste	Residualwaste
1/week	1/2weeks

without FOODWASTE collection
MSW (mixed)
3/week

with FOODWASTE collection	
Foodwaste	Residualwaste
2/week	1/week

- Established
- In implementation
- In beginning phase
- No activities at present



without FOODWASTE collection
MSW (mixed)
1/week

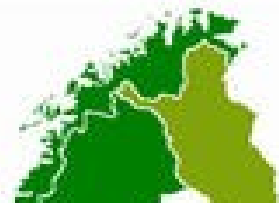
with FOODWASTE collection	
Foodwaste	Residualwaste
1/2weeks	1/2weeks

without FOODWASTE collection
MSW (mixed)
6/week

with FOODWASTE collection	
Foodwaste	Residualwaste
3-4/week	1/week



Integrated MSW management:



without FOODWASTE collection
MSW (mixed)
1/week

with FOODWASTE collection
Foodwaste **1/week** Residualwaste **1/2weeks**

without FOODWASTE collection
MSW (mixed)
1/week

without FOODWASTE collection
MSW (mixed)
3/week

with FOODWASTE collection
Foodwaste **2/week** Residualwaste **1/week**

with FOODWASTE collection
Foodwaste **1/2weeks** Residualwaste **1/2weeks**

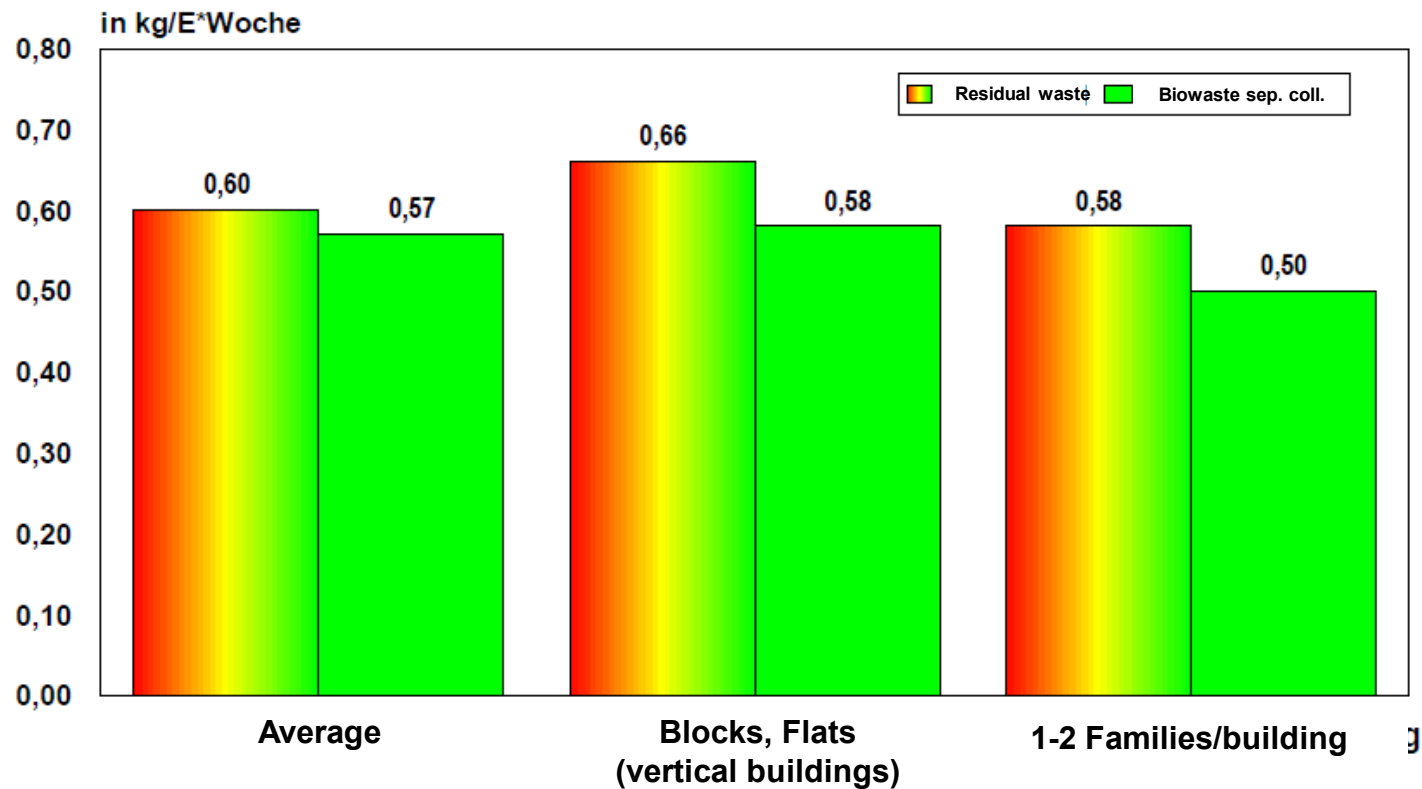
- Established
- In implementation
- In beginning phase
- No activities at present





Where does the bio-waste goes?

- Germany (Kassel)

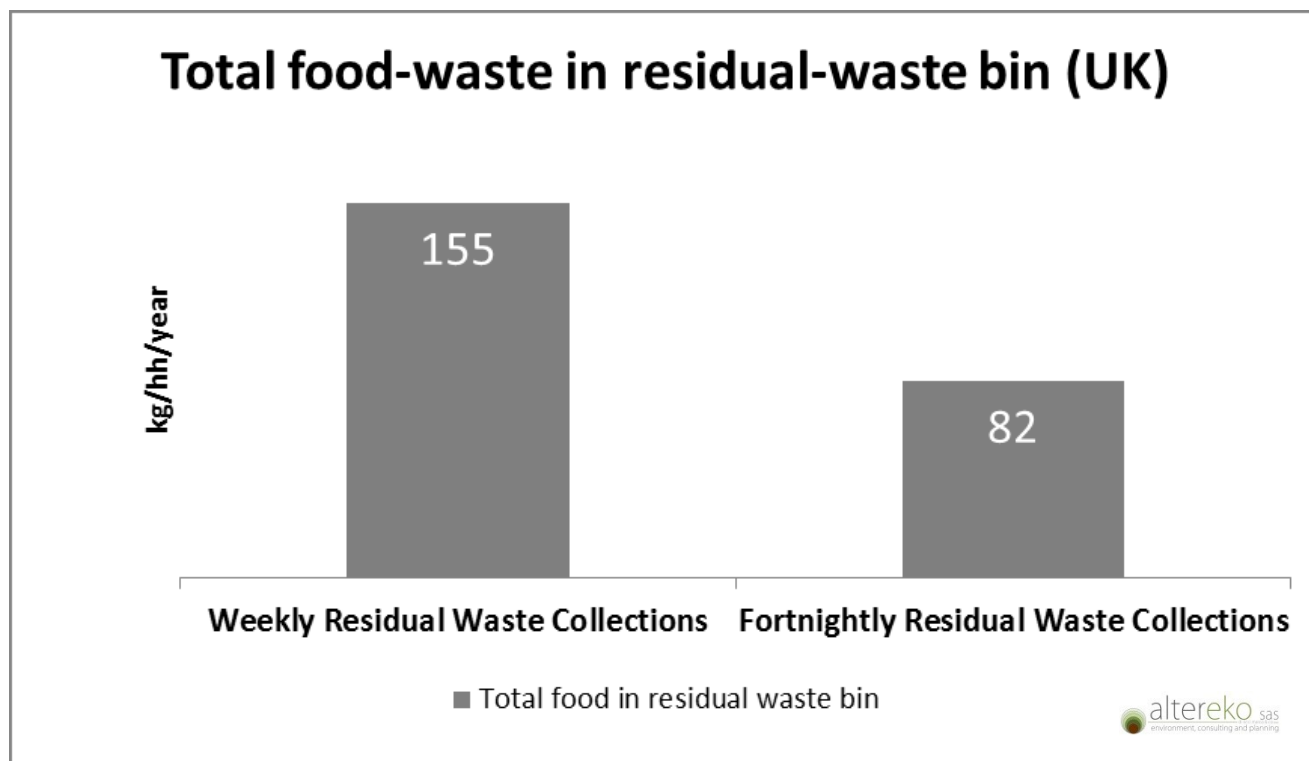


Source: Optimierung der Erfassung von Küchen- und Nahrungsabfällen durch den Einsatz kompostierbarer Biobeutel – Praxisversuch Stadt Vellmar, Landkreis Kassel; Auth: Klaus Gröll, Michael Kern, Jörg Siepenkothen, Thomas Turk; 2015



Where does the bio-waste goes?

- UK



Source: Performance analysis of mixed food and garden waste collection schemes; WRAP; 2010



Separate collection of biowaste: intensive source separation



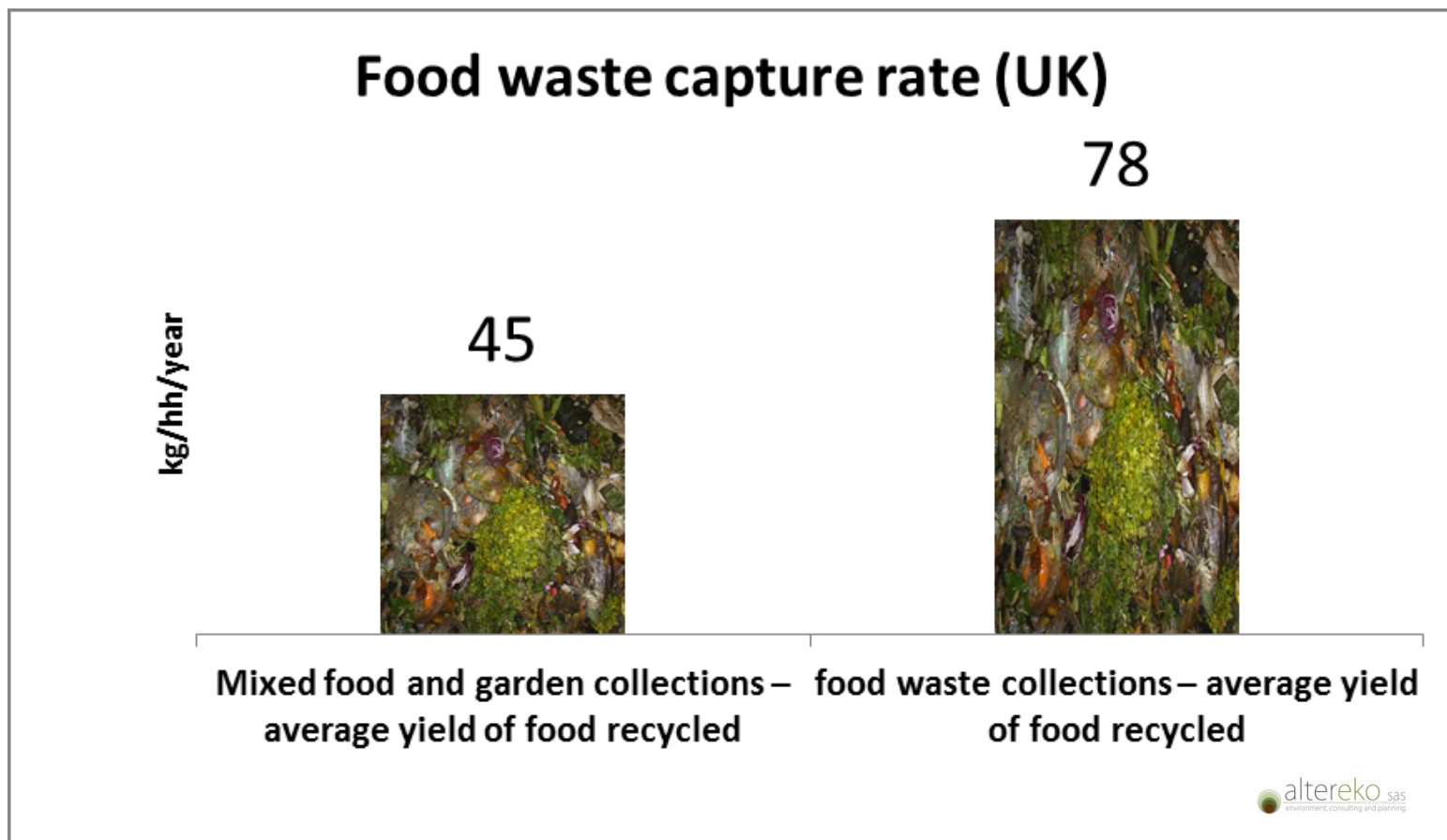
- **Specific collection scheme for food waste**
 - Including cooked food (i.e. meat, fish, etc.)
 - Collection 2-4 times/week



- **Specific collection scheme for green waste**
 - Bring-sites at Community Centers
 - Curbside collection with low-frequency 0,5-1 times/week
- **Collection schemes for food waste are used both by households and (small) commercial activities (Ho.Re.Ca)**



Food-only vs commingled food&garden waste collection

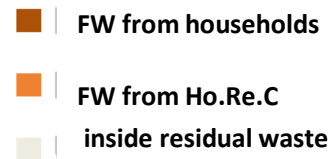
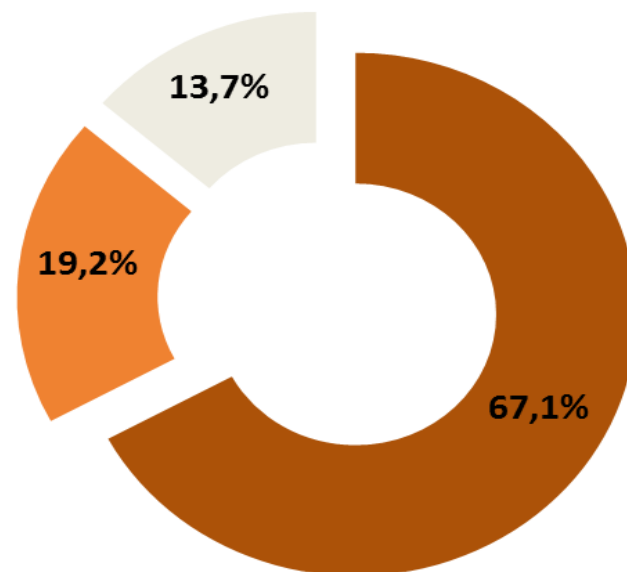


altereko sas
environment consulting and planning



Diversion of food waste from residual waste

- Combining waste-composition analysis of residual waste and foodwaste
- 86% of food waste in separate collection
- 14% inside residual waste





Lesson to be learned for FW collection

- Intensive source separation schemes focus on food waste only, with higher capture rates
- Biowaste schemes collect large amounts of garden waste with lower capture rates for FW
- Quality check possible with curbside collection only
- Savings can be done by revising collection frequencies for residual waste (with low organic content!)

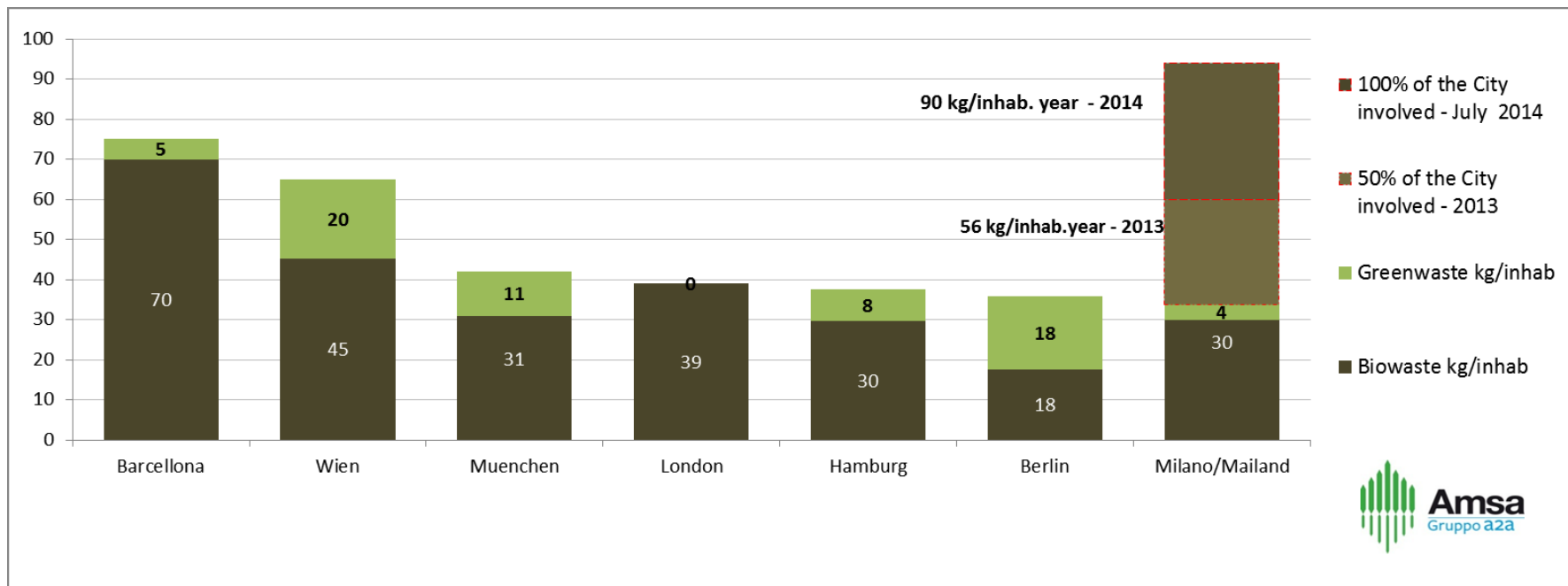




IMPLEMENTATION OF BIO-WASTE COLLECTION IN CITIES (IN EUROPE)



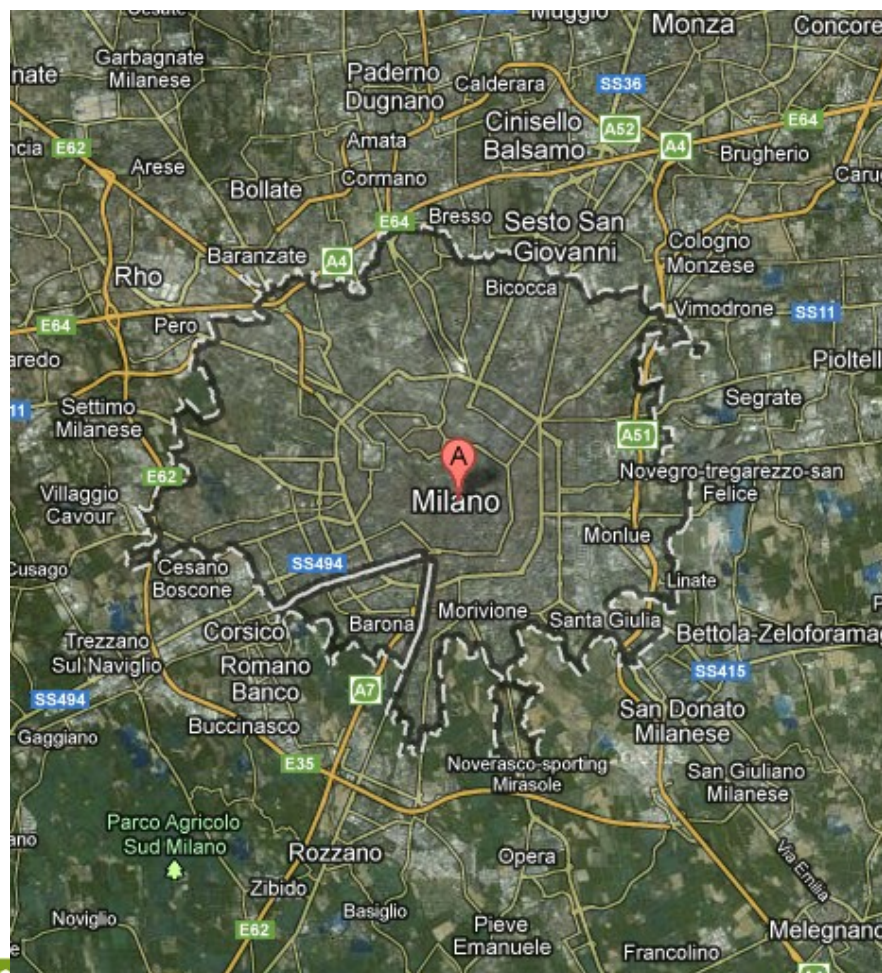
Cities in Europe with bio-waste collection



- Milan : data include forecast or year 2014
- Milan: Biowaste is 100% food waste
- München, Berlin, Hamburg and Vienna: Biowaste contains significant amounts of green waste
- Barcelona: bring-schemes (large road containers)



Milan Metropolitan Area



Population 1.5 M inhab

Density 5-7000 inhab/km²

Italy's most vital Economical center

Transient population

Year 2012: food waste collection at Ho.Re.Ca sector only → 23kg/inhab/yr

Recycling rate 34,5%

AMSA is a Public-owned company responsible for MSW management in Milan



2, Distribution of biobins and starter-kit



AMSa - Raccolta della Frazione Umida - Mozilla Firefox

File Modifica Visualizza Cronologia Segnalibri Strumenti Aiuto

"MSS? Mo Mama!, Le contraddizioni... Posta in arrivo (113) - ricci.personal@... Google AMSA - Raccolta della Frazione Umida

www.amsa.it/gruppo/cms/amsa/progetti_speciali/index.html

File audio per non vedenti

Lavora con noi Bandi e Fornitori

Chi Siamo Progetti Speciali Comunicazione Servizi Trova e Risolvi

Sei in: | Raccolta della Frazione Umida

Raccolta della Frazione Umida

Lunedì 16 settembre inizia la consegna dei contenitori per la raccolta differenziata dell'umido presso le utenze domestiche nella zona nord est di Milano, corrispondente alle zone 2 e 9 e completamento della zona 3.

Con questa estensione la raccolta dell'umido, **che partirà lunedì 9 dicembre**, raggiungerà circa il 75% del territorio cittadino.

Clicca sull'immagine per verificare se il tuo stabile è nella zona interessata

Servizio Clienti +

http://www.amsa.it/gruppo/cms/amsa/multilingua/uk/separate_waste/milano.html





Municipality of Milan





Successful implementation

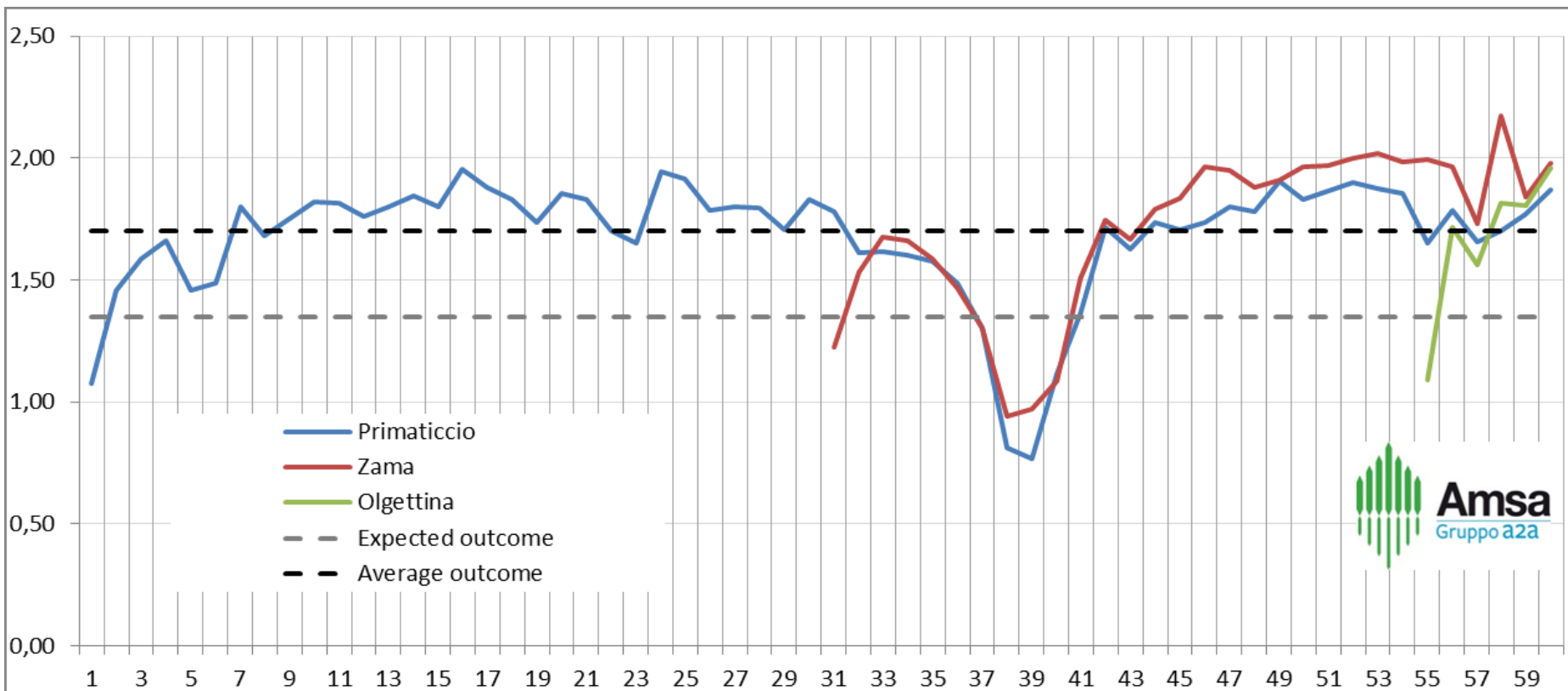
- Large and constant participation
- **high capture rates**
- Good quality (i.e. low contamination with plastics)
- Economical sustainability





Weekly collection rate of foodwaste (kg/inhab/week)

- **Separate collection of foodwaste** : from Ho.Re.Ca only → 23kg/inhab/yr
- **Separate collection of foodwaste** : including families → 91kg/inhab/yr





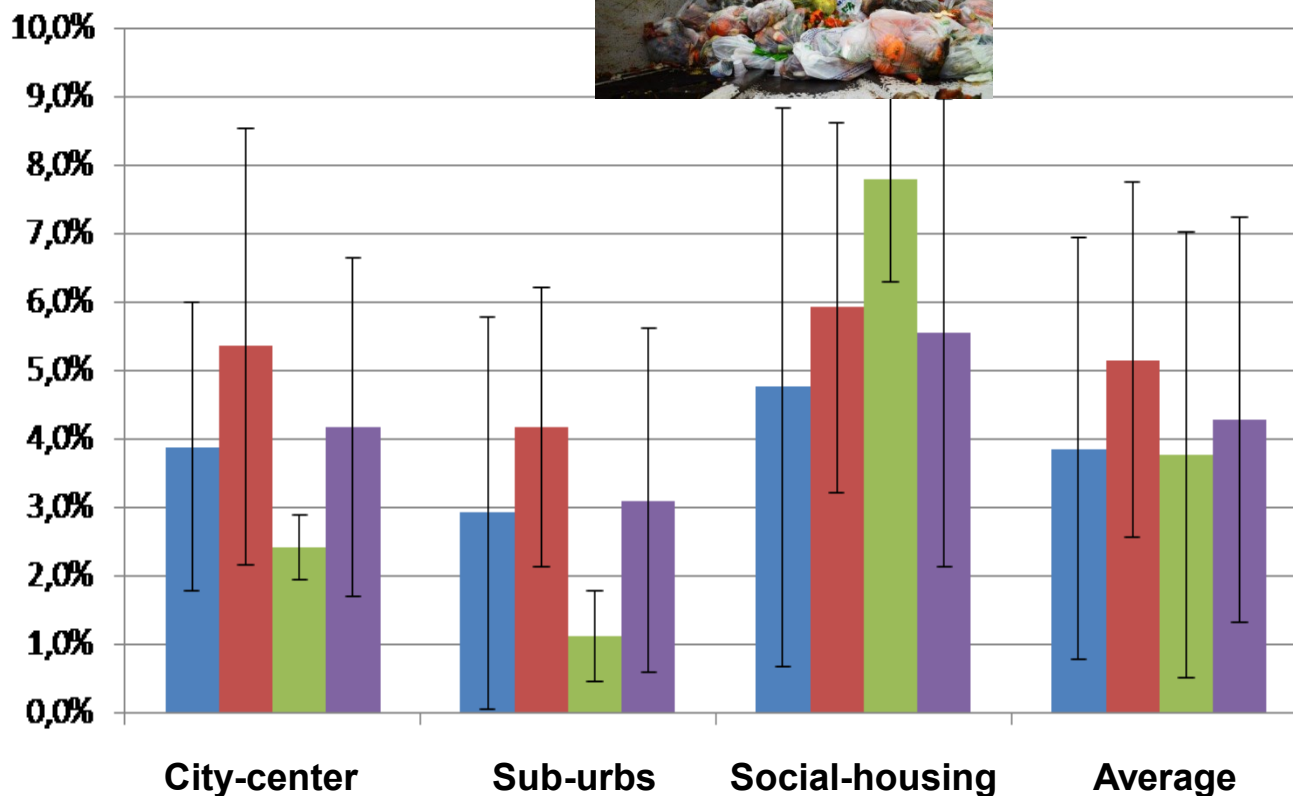
Successful implementation

- Large and constant participation
- high capture rates
- **Good quality** (i.e. low contamination with plastics)
- Economical sustainability





Quality of food waste (non-compostable content)



Average

4,27% ± 2,95%

- 2 months
- 8 months
- 14 months
- Average

Analysis performed by CIC

Source: AMSA 2014,



Montello Biogas & Composting plant (Italy)



- **285.000 t/yr of food + green waste**
- **Biogas & Compost production**
- **Compost with quality certification**
- **11MW electrical power generation**



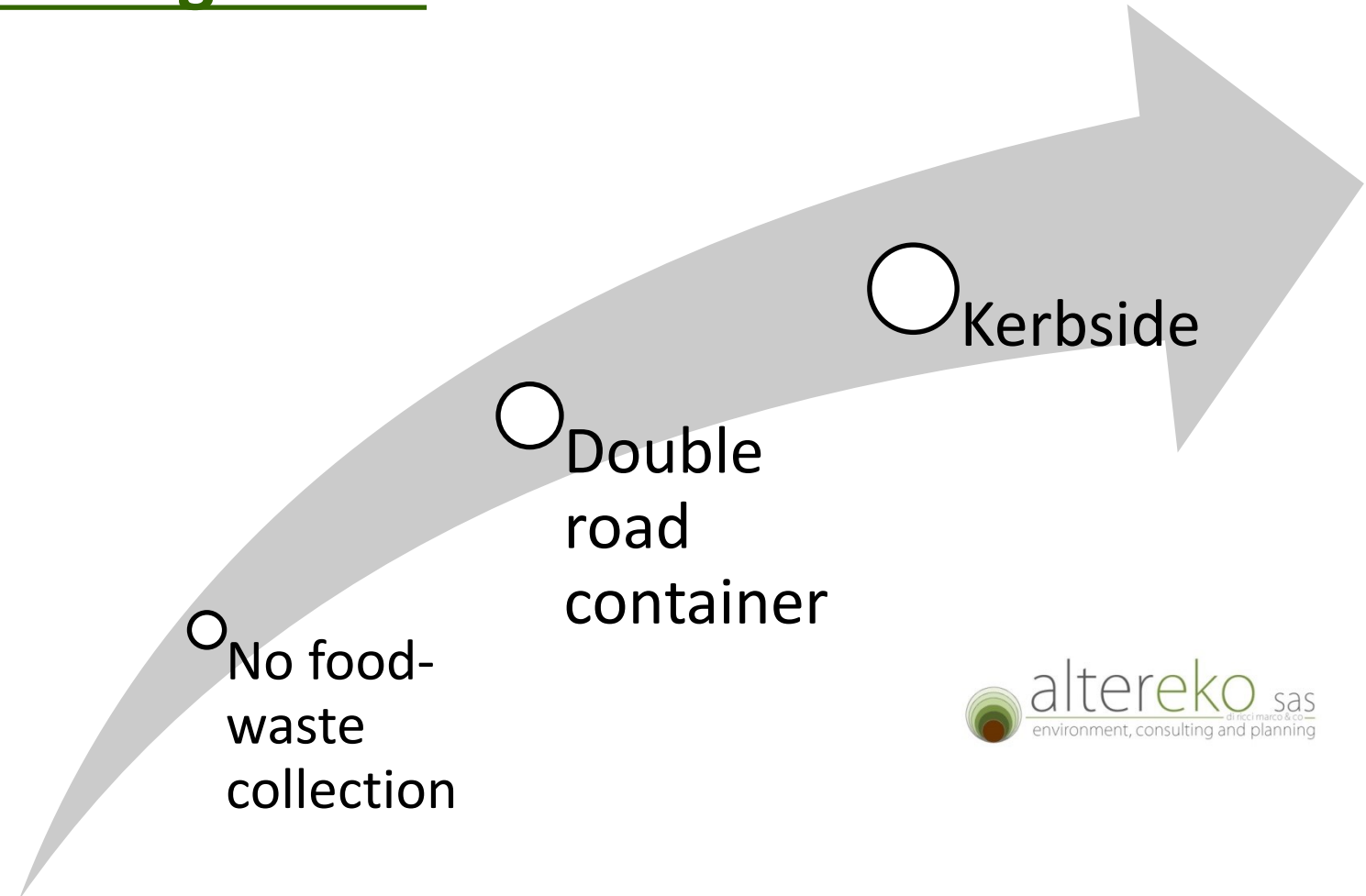
Successful implementation

- Large and constant participation
- high capture rates
- Good quality (i.e. low contamination with plastics)
- **Economical sustainability**





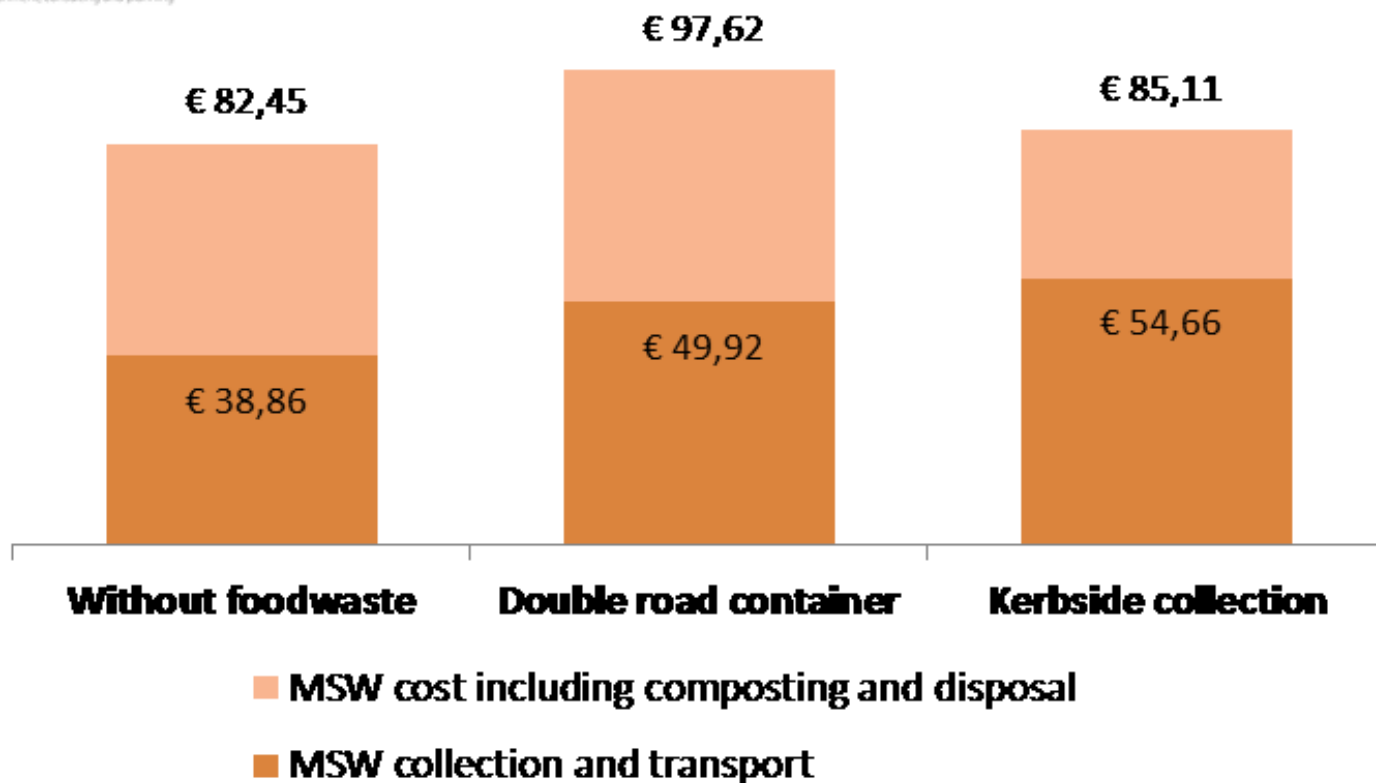
MSW management cost are stable for increasing complexity of MSW management





MSW management cost are stable for increasing complexity of MSW management

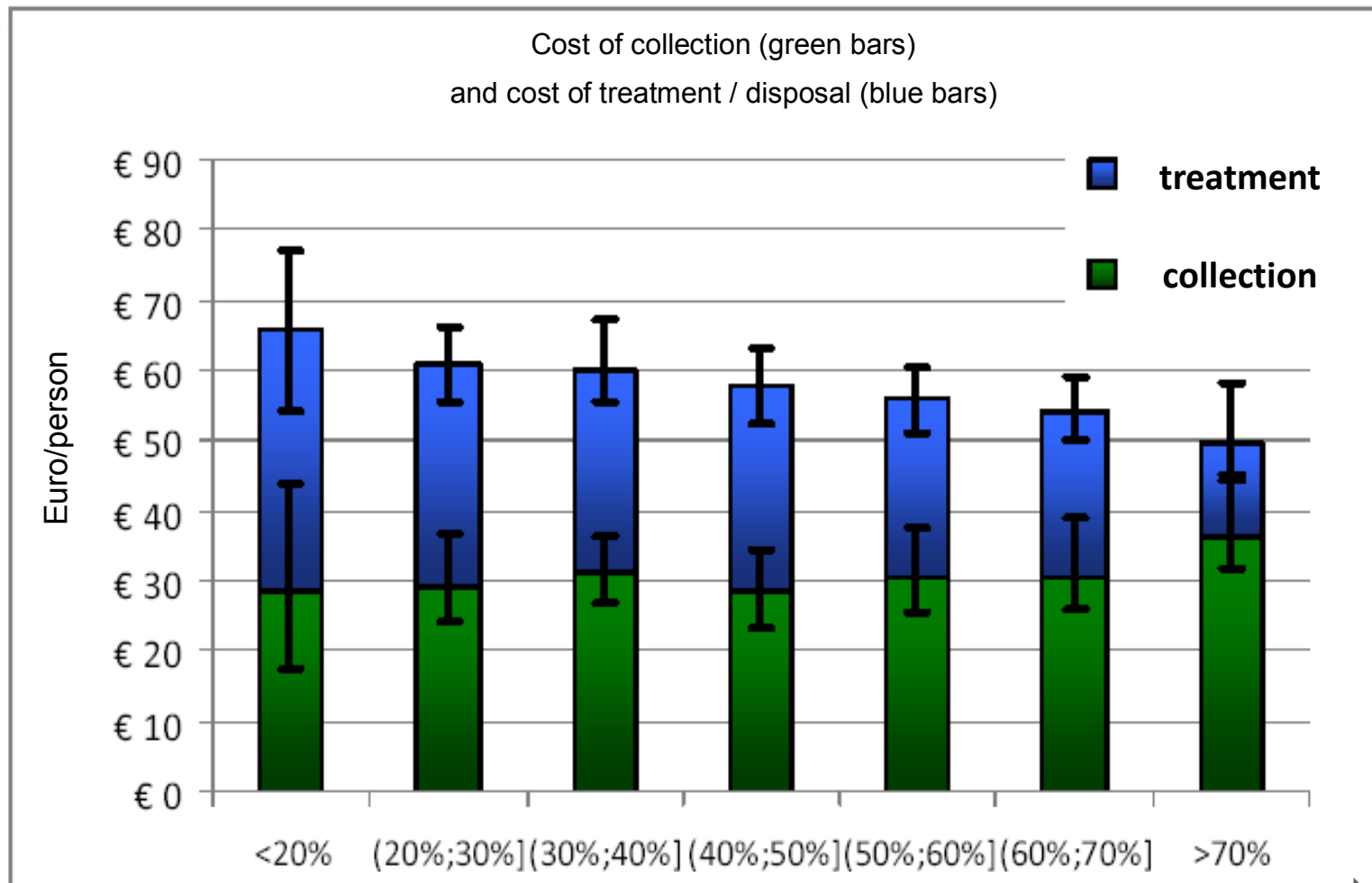
MSW management cost for different collection schemes (€/inhab)





MSW management cost are stable for increasing sep. collection rates of MSW

MSW management cost



Separate collection of MSW



7-9€/h

21-26€/h





Use labour intensive schemes: Manual emptying = fast





Conclusions

- Separate collection of food waste in Cities is possible; it reaches outstanding results (Milan: 93 kg/inhab/yr)
- Use of vented kitchen-caddy & compostable bio-bags (EN13342 certified) allows for large acceptance and participation
- Low contamination of feedstock is the key-element for producing quality compost and digestate allowing for recycling at AD/C plant
- Total MSW management cost are found to be non-increasing compared to “low-recycling” municipalities, especially in the medium term considering the increase of disposal costs



Thank you

Marco Ricci - Juergensen
ricci@compost.it

Italian Composting and Biogas Association
Chair of the ISWA WG on BTW

presentation downloadable → <https://db.tt/i5bgVo0G>