

**COLLECTION AND
TREATMENT OF
BIODEGRADABLE
WASTE FROM
HOUSEHOLDS IN
TUSCANY**

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SMART WASTE
Interreg Europe



European Union
European Regional
Development Fund

May 14th 2021, BAMEE National Assembly



Resources Recovery Regional Agency - ARRR is an in house public company of Tuscany Region

Since the early 90's ARRR provides support to Tuscany Region Government & Council in delivering and monitoring public policies for waste management



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INTERREG EUROPE SMART WASTE project

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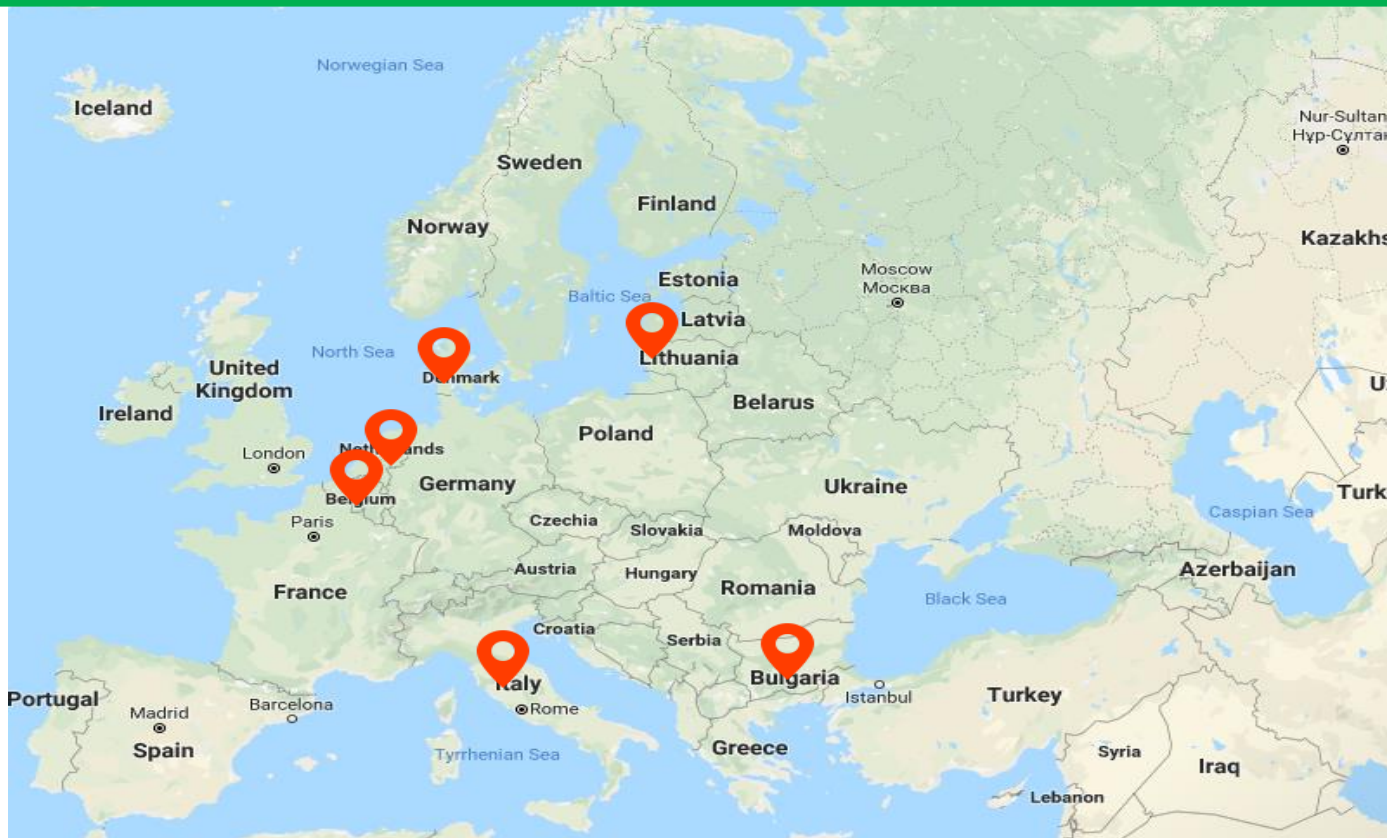
INTERREG EUROPE SMART WASTE project

In 2019 INTERREG EUROPE approved the SMART WASTE project <https://www.interregeurope.eu/smartwaste/>

SMART WASTE main goal is to support project partner's public authorities in delivering specific actions for innovation in waste management

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INTERREG EUROPE SMART WASTE project partners



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INTERREG EUROPE SMART WASTE project

Up to date, thanks to **SMART WASTE** partner's and local stakeholder's contributions, **INTERREG EUROPE** has approved **12** good practices and **1** policy improvement

INTERREG EUROPE SMART WASTE project

By the end of July 2022 each SMART WASTE partner will deliver an Action Plan detailing policy improvement achieved in each partner's territory thanks to SMART WASTE project



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Municipal Biodegradable Waste Management in Tuscany

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Municipal Biodegradable Waste Management: Tuscany 2019

Tuscany general context in brief:

- **3.6 million citizens**
- **273 Municipalities**
- **High number of tourists: 14.5 million tourists in 2019**

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Waste government in Tuscany:

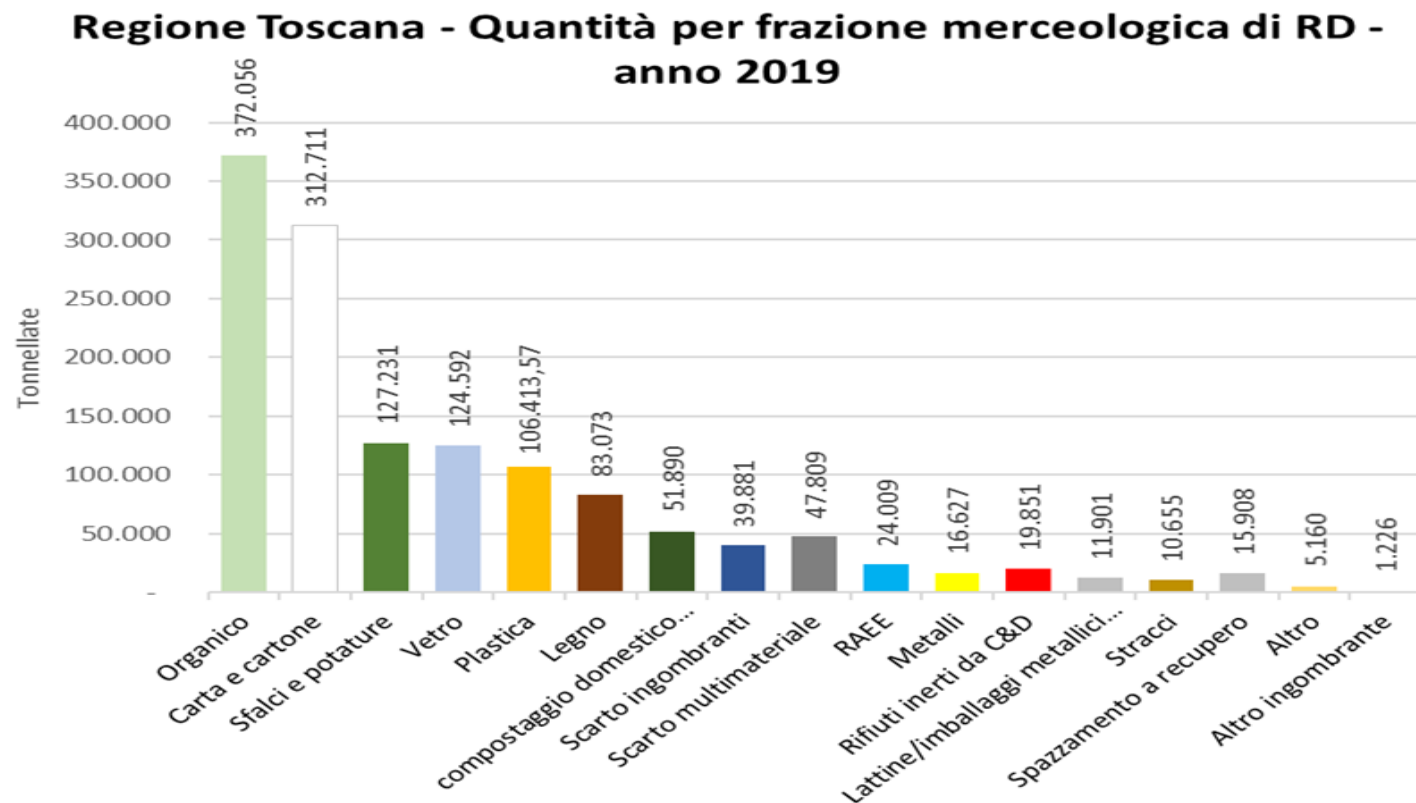
- **Tuscany Regional Council responsible for waste management planning**
- **3 regional authorities (AATO) in charge of local waste management planning & services contracting**
- **Every Mayor is a permanent member of AATO**

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Waste data (ARRR in charge of online data collection)

- **municipal waste generation: 2.28 million tons**
- **separate waste collection rate: 60.22%**
- **76 Municipalities over 75% separate collection rate**
- **105 Municipalities below 50%**

Municipal Biodegradable Waste Management: Tuscany 2019



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Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Waste collection companies & systems:

- 1 public company, 1 public/private company and 1 public holding in charge of waste collection, with subcontractors
- Waste collection through either/or door to door, curbside, public collection centers, on demand services, **most often in combination**

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Food Waste collection systems:

- **226 Municipalities out of 273 have food waste separate collection systems**
- **Abovementioned Municipalities account for 97% of Tuscany population**

DOOR TO DOOR WASTE COLLECTION SYSTEM

Every household receives from the Municipality and/or the company in charge of waste collection a set of small bins and bags for waste collection

Waste is collected at the front door of each household, according to a fixed schedule



Municipal Food Waste door to door collection system

Typical timetable for door to door waste collection from household – Municipality I live in

	Lunedì	Martedì	Mercoledì	Giovedì	Venerdì	Sabato
ORGANICO						 dal 5/6 al 28/8
CARTA						
MULTIMATERIALE LEGGERO						
INDIFFERENZIATO						
Servizio raccolta sacchi gialli						

1st row: food waste, 2nd row: paper and cardboard, 3rd row: packaging, 4th row: mixed municipal waste, 5th row: diapers

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Food Waste collection systems:

- **100 Municipalities have door to door collection systems only (40% of population)**
- **50 Municipalities have curbside collection systems only (8% of population)**
- **76 Municipalities have both systems (49% of population)**

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Green Waste collection systems

Please note: Most Municipalities provide 2 or more of the collection services below

Collection System	N° of Municipalities	Population %
Door to Door	40	20%
Curbside	22	8%
Collection centre	214	93%
On demand	134	64%

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Food & Green Waste home composting:

- **182 Municipalities provided 96,000 home composting tools to citizens (including me)**
- **Home composting of food and green waste grants almost 53,000 tons of recycled waste (estimated)**

Municipal Biodegradable Waste Management: Tuscany 2019

Municipal Waste collection centers:

- **196 operating centers**
- **163 Municipalities have at least 1 operating center**
- **83 Municipalities use centers in other Municipalities nearby**
- **27 Municipalities neither have centers nor can they use centers in other Municipalities nearby**

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Municipal Biodegradable Waste Management: Tuscany 2019

Food and green waste recycling in Tuscany today:

- **15 public and private plants for aerobic composting of food and/or green waste**
- **1 anaerobic digestion plant (private)**
- **Almost 270,000 tons of municipal food (190k) and green waste (80k) treated for recycling**
- **municipal food and green waste exceeding existing recycling capacities sent outside Tuscany**

Municipal Biodegradable Waste Management: Tuscany 2019

Food and green waste recycling in Tuscany tomorrow:

- **Between 2019 and 2020 Tuscany approved 5 projects for anaerobic digestion plants of municipal biodegradable waste**
- **Total waste treatment capacity (all projects) 430,000 tons per year**
- **Each project includes biomethane production**

SMART WASTE project UNICO

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SMART WASTE project UNICO

- In 2020 Tuscany approved project UNICO, following an ERDF OP 2014 – 2020 call for R&D&I
- UNICO partners include SMART WASTE local stakeholders (with LP contribution)

SMART WASTE project UNICO

UNICO aims at optimizing aerobic and anaerobic processes in order to maximize compost and biomethane production, tackling also bioplastic recycling issues

SUMMARY & CONCLUSIONS



TUSCANY WEAKNESSES SUMMARY

- **Biodegradable waste from separate collection exceeds existing recycling plants**
- **Excess Biodegradable waste sent outside Tuscany**
- **Operating composting plants performances are sub-optimal**

TUSCANY POINTS OF STRENGTH SUMMARY

- **Separate collection of food and green waste from households in Tuscany is well established**
- **Collection systems include door to door, curbside and collection centers and on demand services for green waste, often in combination**
- **New anaerobic digestion plants for biomethane production approved lately**



CONCLUSIONS

- food and green waste recycling is absolutely necessary in order to achieve EU recycling goals for municipal waste recycling and for reduction of waste disposal in landfill
- **Both collection systems and recycling plants must be carefully planned according to every territory specific features and needs**
- food and green waste recycling brings several environmental benefits, including compost production, soil enrichment, reduction of biogas & leachate production from landfills

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Thank you!

Questions welcome