



Separate Waste Collection in the context of a Circular Economy in Europe

The Municipality of Rimini

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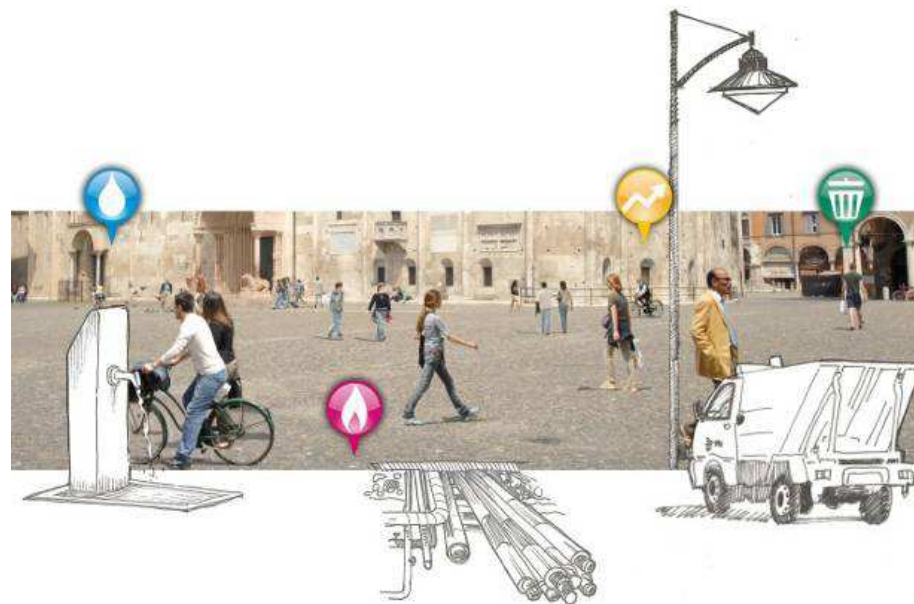
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CHAPTER 1

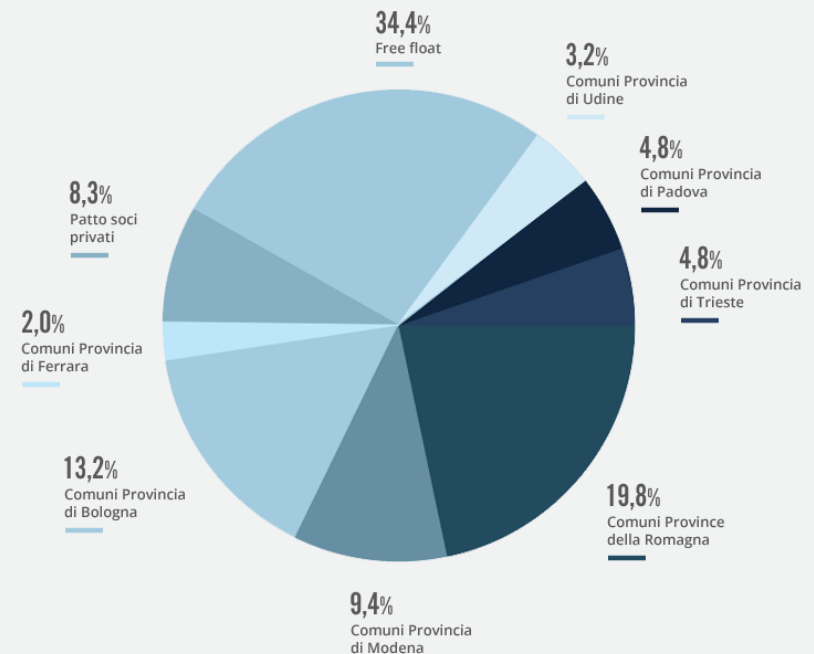
THE HERA GROUP AND THE ENVIRONMENTAL SECTOR

The Hera Group: who we are (1/2)

- The Hera Group is one of the largest multi-utility companies in Italy. It operates in 358 municipalities in the provinces of Bologna, Ferrara, Forlì-Cesena, Gorizia, Modena, Padua, Pesaro-Urbino, Pordenone, Ravenna, Rimini, Trieste, Udine, in the province of Florence (3 municipalities) and in the province of Venice (1 municipality).
- Hera operates energy services (gas and electricity), water services (water system, sewer and treatment) and environmental services (waste collection and disposal), for a total of over 4 million inhabitants.



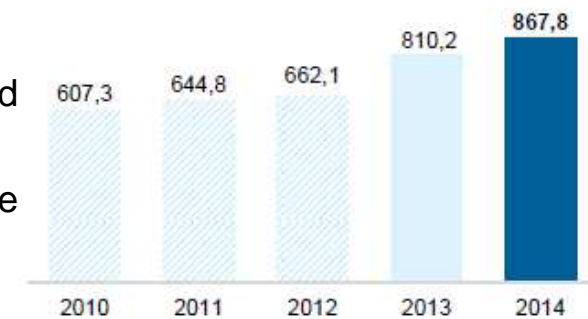
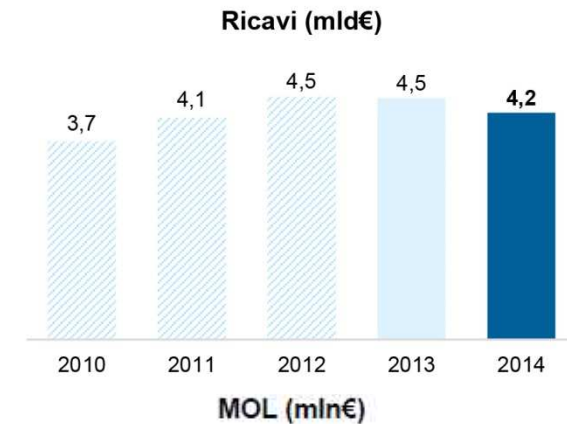
Azionariato al 31 marzo 2015



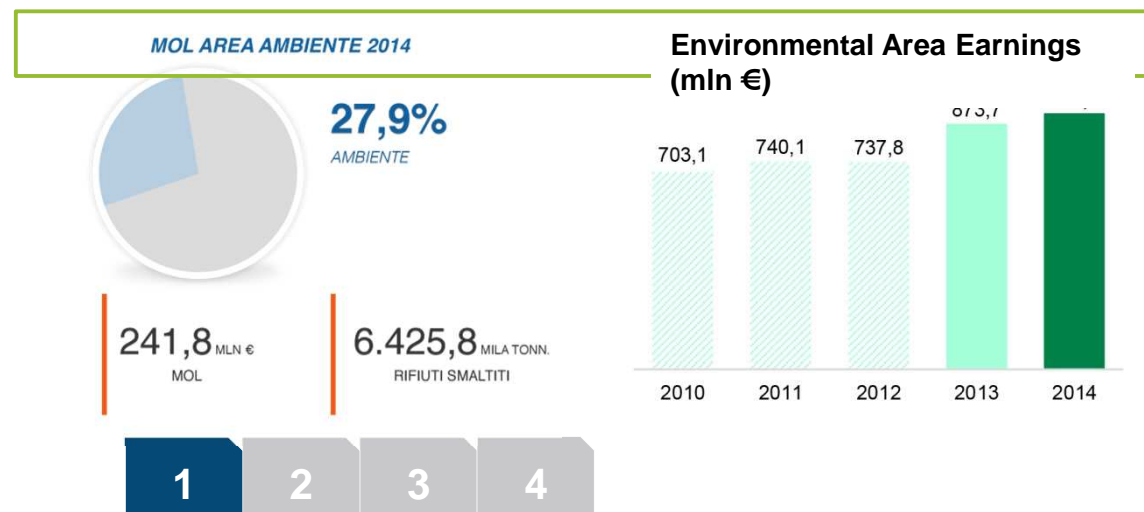
The Hera Group: who we are (2/2)

Hera is a reliable, solid and competitive company. Its main strong points are:

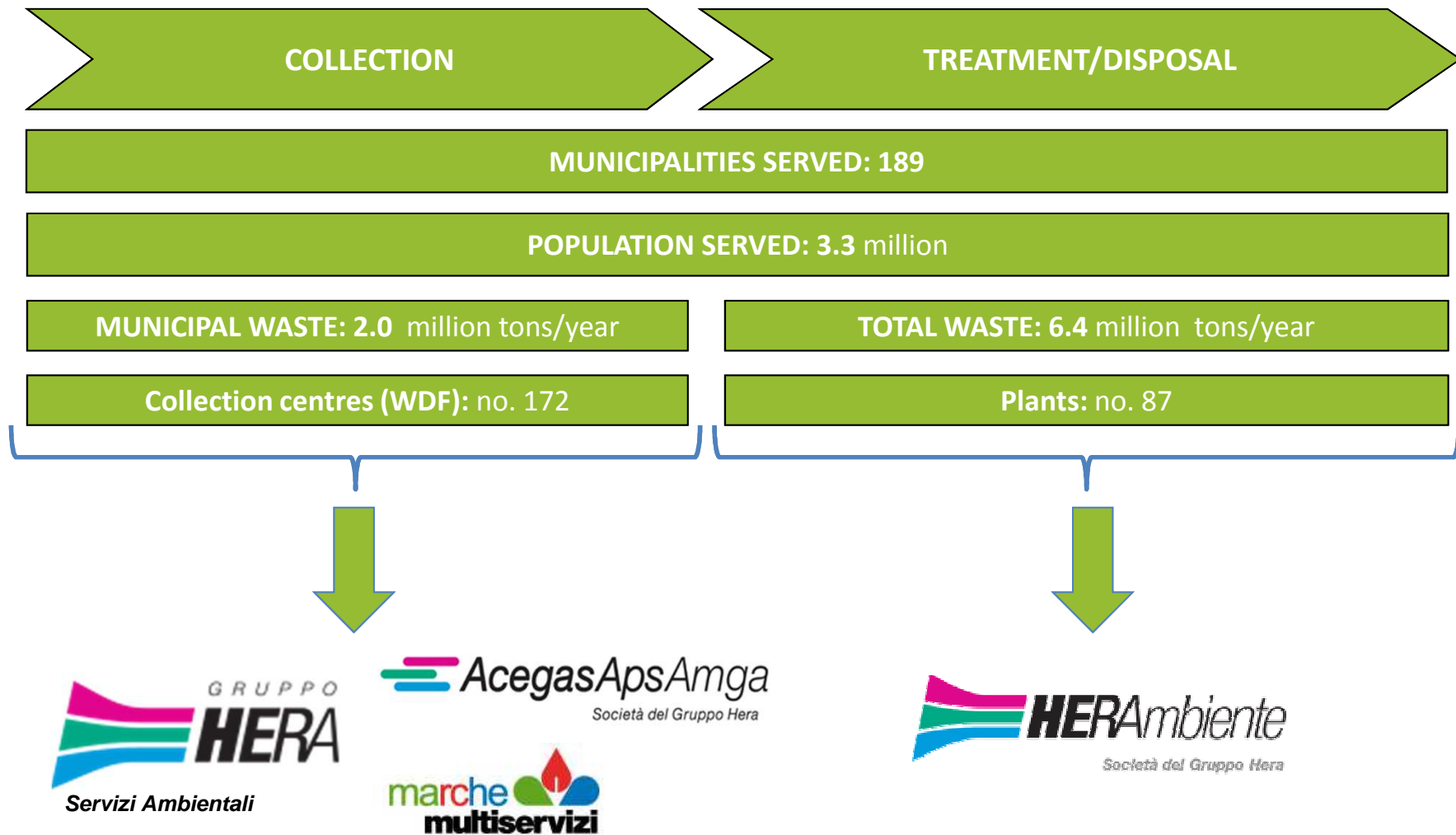
- ✓ Balance between services operated on the free market (e.g. sale of gas and disposal of special waste) and regulated services (e.g. distribution of gas, integrated water service, municipal waste collection and disposal);
- ✓ Deep roots in the area where it operates and great attention to sustainability;
- ✓ Broad-based ownership.
- Good economic performance, growth due to both the tried and tested multi-business model and the extension of its business to other areas.
- In 2014, the Group invested about 326 million euros, with an increase of over 24 million with respect to the previous year.
- Environmental area accounts for about 28% of the GOM.



Totale investimenti Netti (mln€)

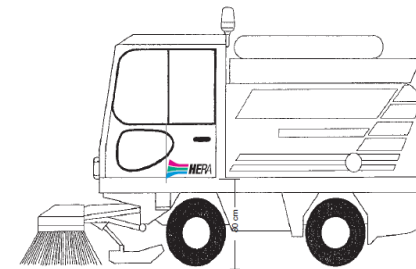
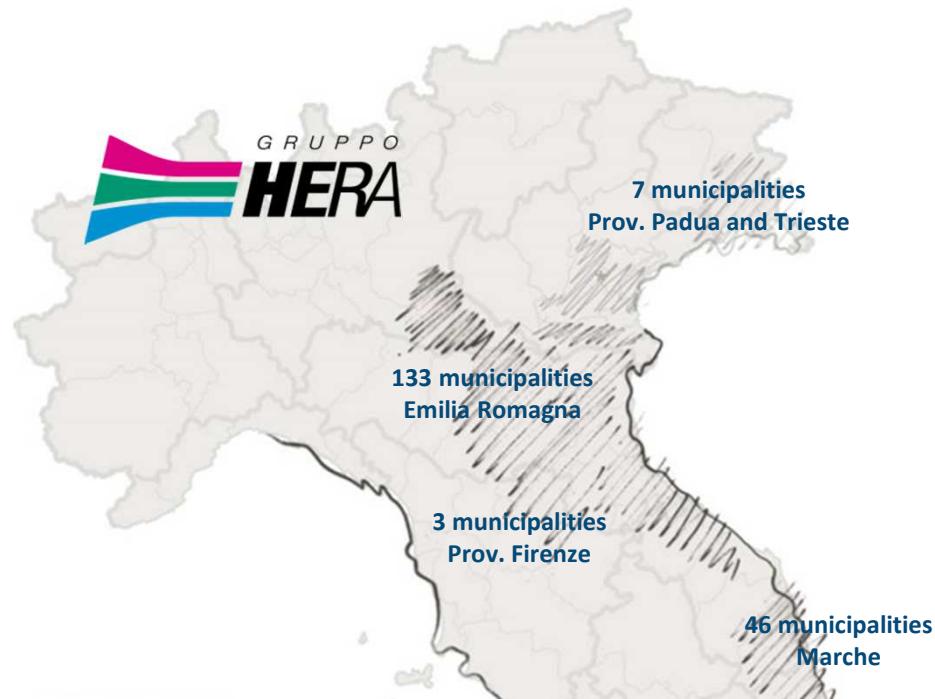


Integrated waste management in the Hera Group



The waste management services in the Hera Group

- The Group is the Italian leader in waste management. It covers the entire waste cycle (collection, recovery, treatment and disposal) in 189 municipalities and has a catchment area of about 3.3 million inhabitants.
- The main municipal waste management services provided by the Hera Group consist of waste collection (separate and non-separate) and street cleaning (street sweeping, collection of dumped waste, city integrity operations, etc.).
- The services provided were studied in relation to the specific and complementary features (e.g. beach cleaning or portico cleaning services) of the area.

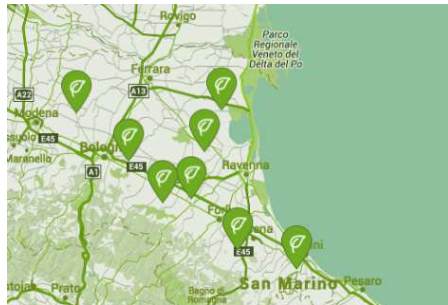


The waste treatment plants in the Hera Group

- Through the subsidiary Herambiente, the Group manages 87 treatment plants for the recovery and disposal of municipal and special waste. This is reflected in an integrated closed model (the only one of its kind in Italy), which enables the company to respond effectively to European and Italian waste management requirements.
- In line with European waste management legislation, the Hera Group has designed its activities on the basis of priority: prevention, reuse, recycling, energy recovery and, only for untreatable materials, disposal.

HERAMBIENTE'S MAIN PLANTS

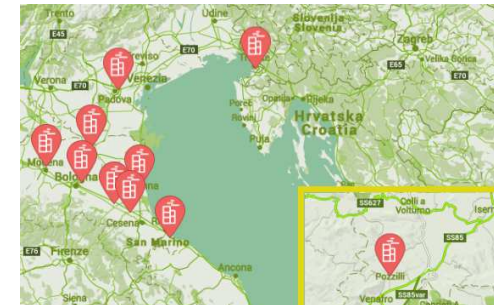
COMPOSTING



INDUSTRIAL WASTE



WASTE-TO-ENERGY



STORAGE, TREATMENT & RECOVERY



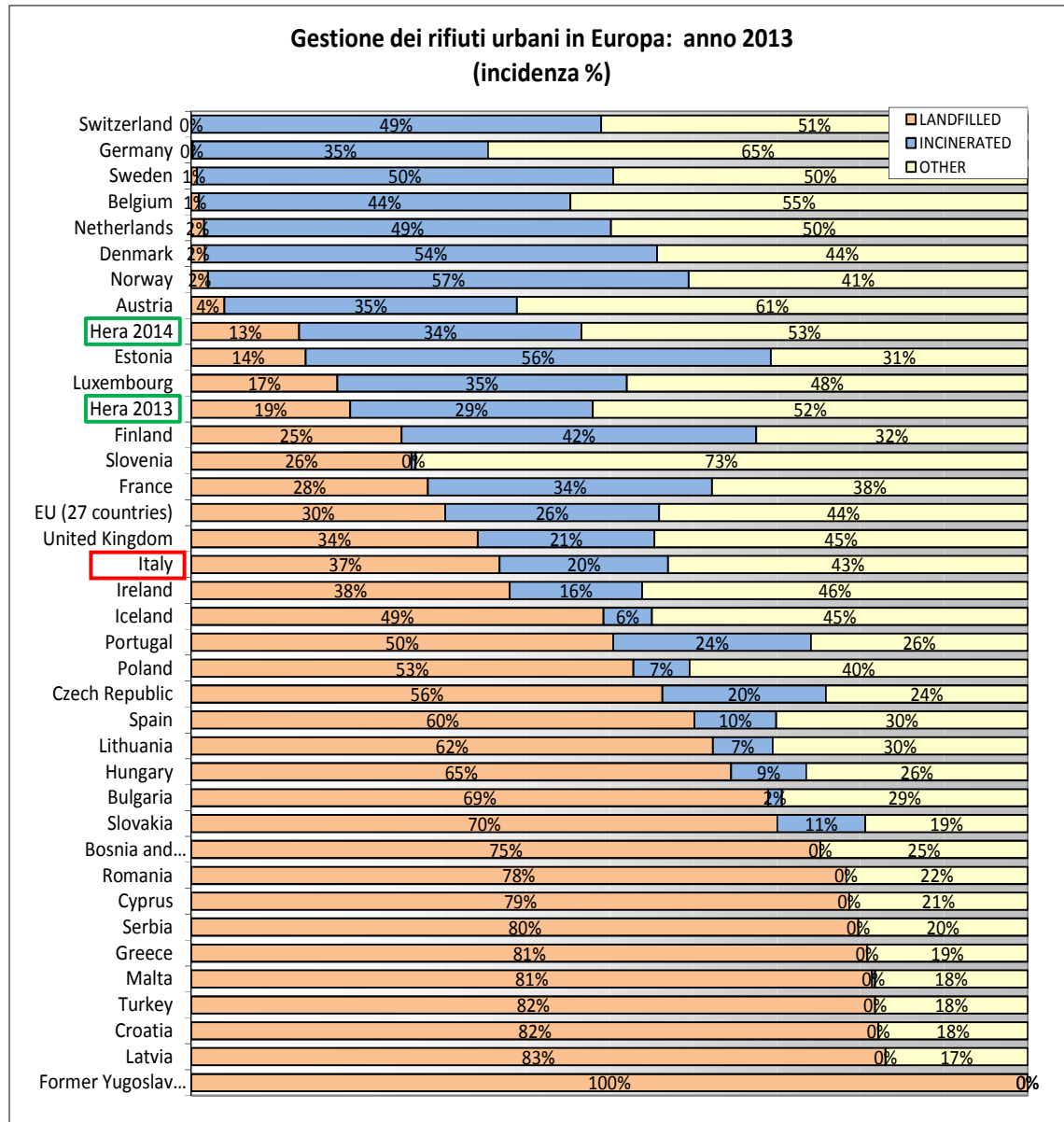
LANDFILL



SELECTION & RECOVERY



Municipal waste management in Europe: positioning of the Hera Group



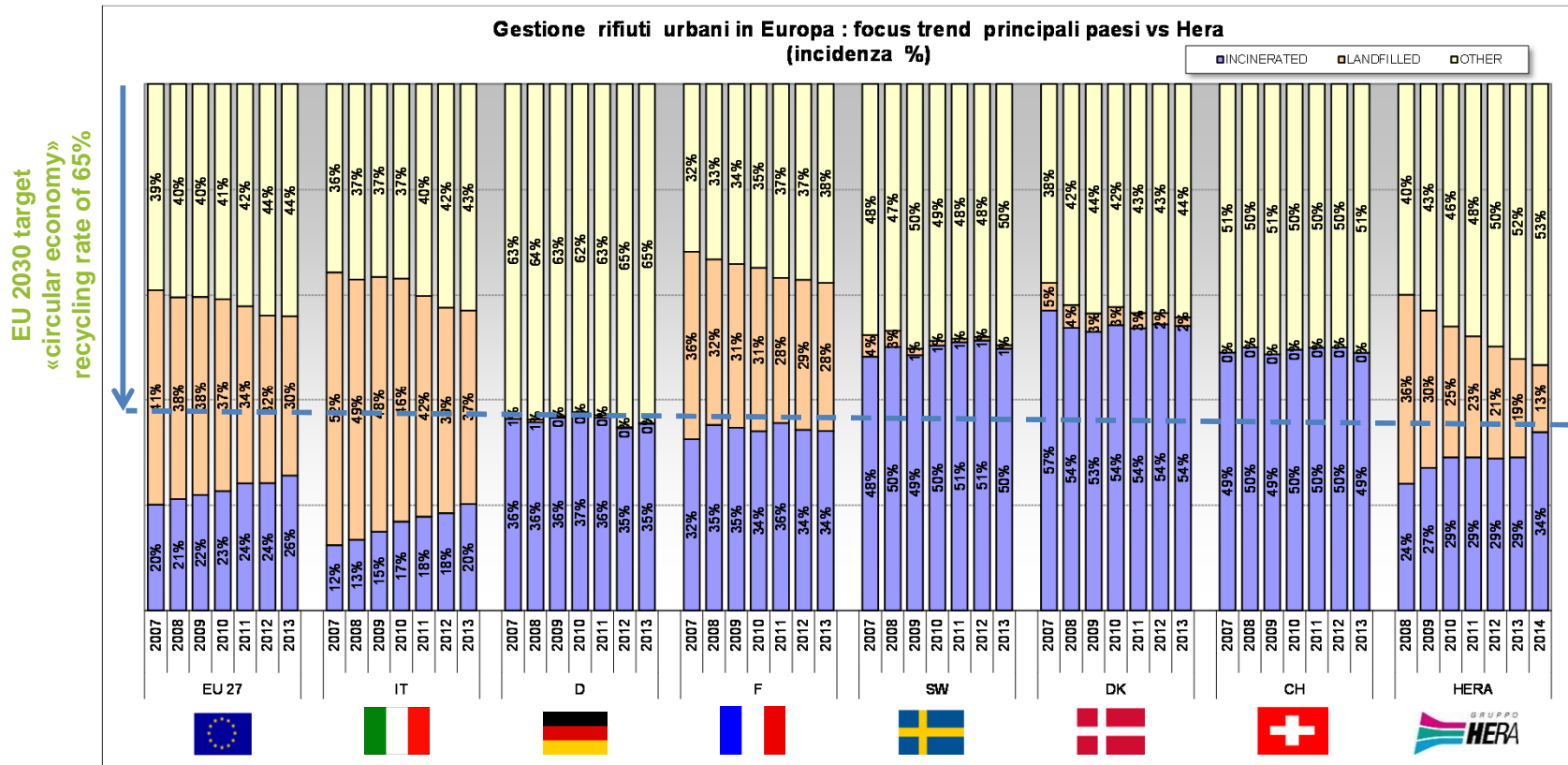
The chart shows the methods of treatment (*) of municipal waste expressed as a percentage.

The data items are sorted according to the % of use of landfill sites:

- At the top are the countries with «zero landfill» (0-4%).
- Immediately below, **with a percentage of landfill use of 13%, stands Hera (2014 data).**
- Then come the countries with a landfill use of over 20%.
- The EU 27-country figure shows an average landfill use of 30%.
- **The Italian average is even higher, reaching 37%.**

(*) LANDFILLED: taken to landfill site
INCINERATED: incineration/waste to energy
OTHER: composting, recycling

Municipal waste management in Europe: trends



The chart presents a focus on waste management methods and shows the trend over the past 7 years for Hera and some European countries:

- In general, there is downward trend in landfill use with an increase in the waste recovered and a slight increase in the conversion of waste to heat.
- Countries that have eliminated the use of landfills altogether: D – SW – DK - CH, present a percentage of waste to heat conversion of between 35% and 50% and a stable incineration/recovery ratio;
- Virtuous Hera trend in line with EU strategies: marked decrease in landfill use and increase in both recovery and incineration; recycling trend approaching the EU 2030 target



CHAPTER 2

THE INTEGRATED WASTE MANAGEMENT SYSTEM AND THE CASE OF RIMINI

The municipal waste management system

- Hera has developed a municipal waste collection system divided into several models.



Local collection model

Designed for family use and small non-domestic users, performed using the methods best suited to the setting served: roadside or door-to-door collection.

Roadside waste containers



Door-to-door collection



Waste collection centre model

Facilities that complete the public service offer for separate delivery of all types of municipal waste.



Target user model

Door-to-door waste collection system for non-domestic users that produce special waste similar to municipal waste.



- The system is also integrated by the door-to-door collection of bulky waste and WEEE (free on call and appointment), construction debris and garden waste collection, hazardous waste collection at specific businesses (e.g. batteries and drugs, toner at schools and offices).

The cap project in the Rimini area



Example of a waste container with lid, opened using an electronic card



NON-SEPARATE

PAPER

LIGHT
PACKAGING
Plastic, Steel &
Aluminium

GLASS

ORGANIC
WASTE

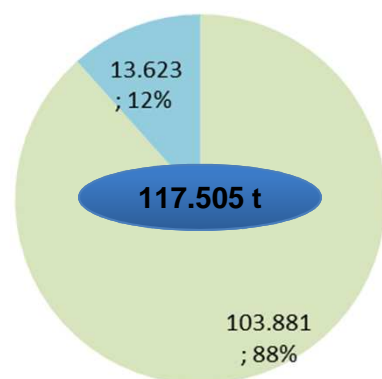
- October 2009 saw the beginning of the lid installation project on the non-separate waste containers in the “residential areas” of the entire province of Rimini. This project was completed in June 2011.
- About 3,000 lids installed, 107,000 users served. The lid only allows a limited volume of waste to be inserted. The user has an electronic card or key to unlock it. The data of every delivery, that is, the name of the user, the date and time, are recorded. Not only does the system limit the amount of non-separate waste in favour of the separate waste, it also applies the relevant charge.
- All types of containers (glass, paper, plastic, organic waste, non-separate waste) are grouped at basic collection points called I.E.B.s (Isole Ecologiche di Base) to favour correct delivery by the user.
- The model was subsequently adopted or is being planned in other municipalities served by the Hera Group.



CHAPTER 3

MUNICIPAL WASTE COLLECTION AND DISPOSAL IN RIMINI

The Municipality of Rimini: demographic setting



Resident population: **147,578** inhab. (at 31/12/2014, ISTAT)

Surface area: 134.52 km²

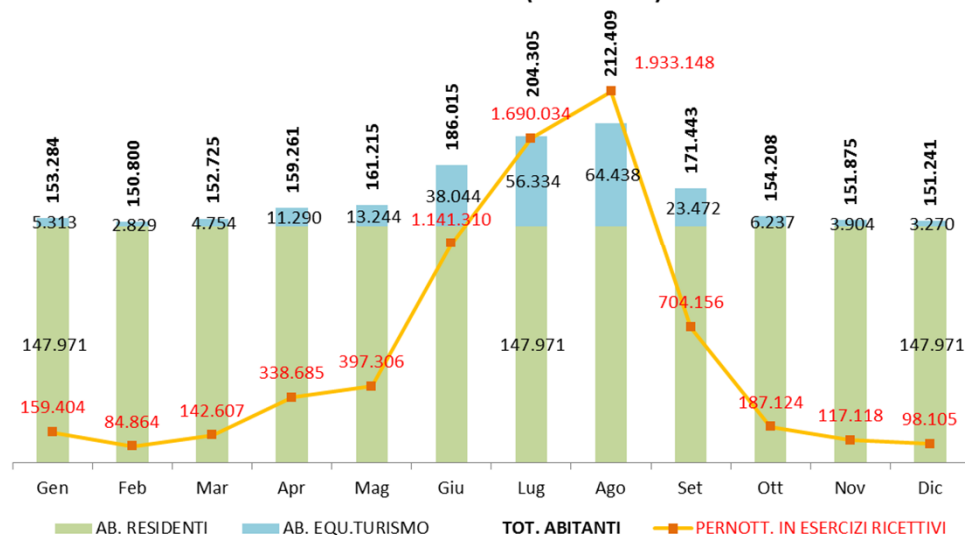
Population density: 1,097 inhab./km²

Highly tourist-oriented municipality, in 2014:

- **1,598,158** arrivals (no. tourists arriving at accommodation facilities),
- **6,993,861** overnight stays (no. nights spent in accommodation facilities).
- **The trend of tourist arrivals and overnight stays is markedly seasonal with peaks in the months of July and August**
- **Impact of tourism on the production of SMW (average 12% per year)**

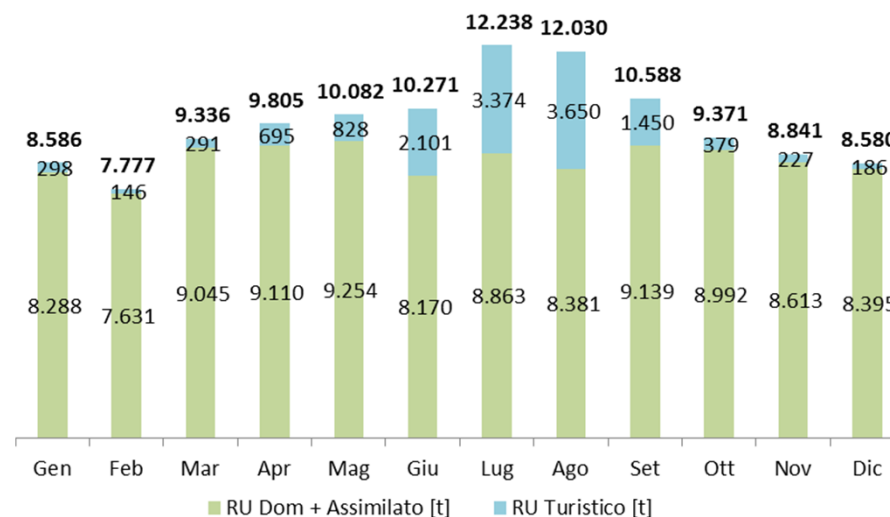
■ RU Dom + Assimilato [t] ■ RU Turistico [t]

Stima andamento mensile popolazione equivalente turistica
(Anno 2014)



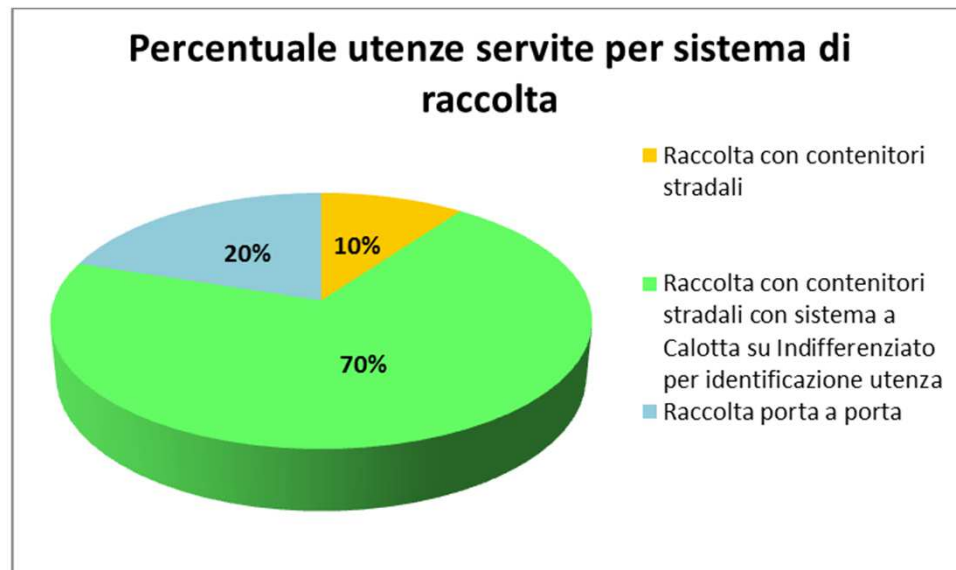
Source: processing of data from STATISTICS DEPT - Province of Rimini

Stima andamenti mensili quote di produzione RU
(Totale effettivo - Anno 2014)



Source: processing of Hera data

The waste collection systems and frequencies in the Municipality of Rimini



Source: 2014 Hera SpA data

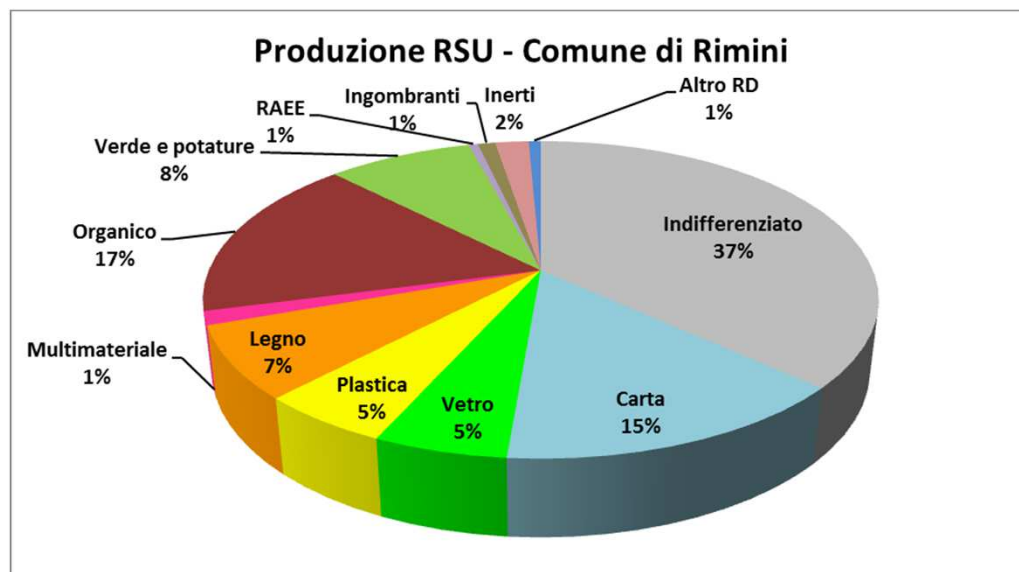
- Roadside waste collection containers with lids in residential areas.
- Door-to-door waste collection system in the coastal area and for target users.
- Roadside waste collection containers (without lid) in countryside/sparsely populated areas.
- 3 waste collection centres.



Average frequencies	PAPER	PLASTIC	GLASS	NON-SEPARATE	ORGANIC WASTE
Areas with roadside containers with lids					
Main type of container	3,200 litres	3,200 litres	360 litres	3,200 litres	360 litres
Weekly frequency	1/7+extra	1/7+extra	1/15	1/15+ extra	3/7
Door-to-door collection (domestic users)					
Type of container	35-360 litres	35-360 litres	35-360 litres	35-360 litres	25-360 litres
Summer frequency	1/7	1/7	1/7	1/7	3/7
Winter frequency	1/7	1/7	1/15	1/7	2/7

- Container with lid system (with the same catchment area) entails a reduction in the frequency of non-separate waste collection and an increase in the frequency of separate waste collection.
- Seasonal variability of the waste collection frequencies, particularly in the tourist coastal area (DtD collection).

The fractions of waste collected and the treatment plants

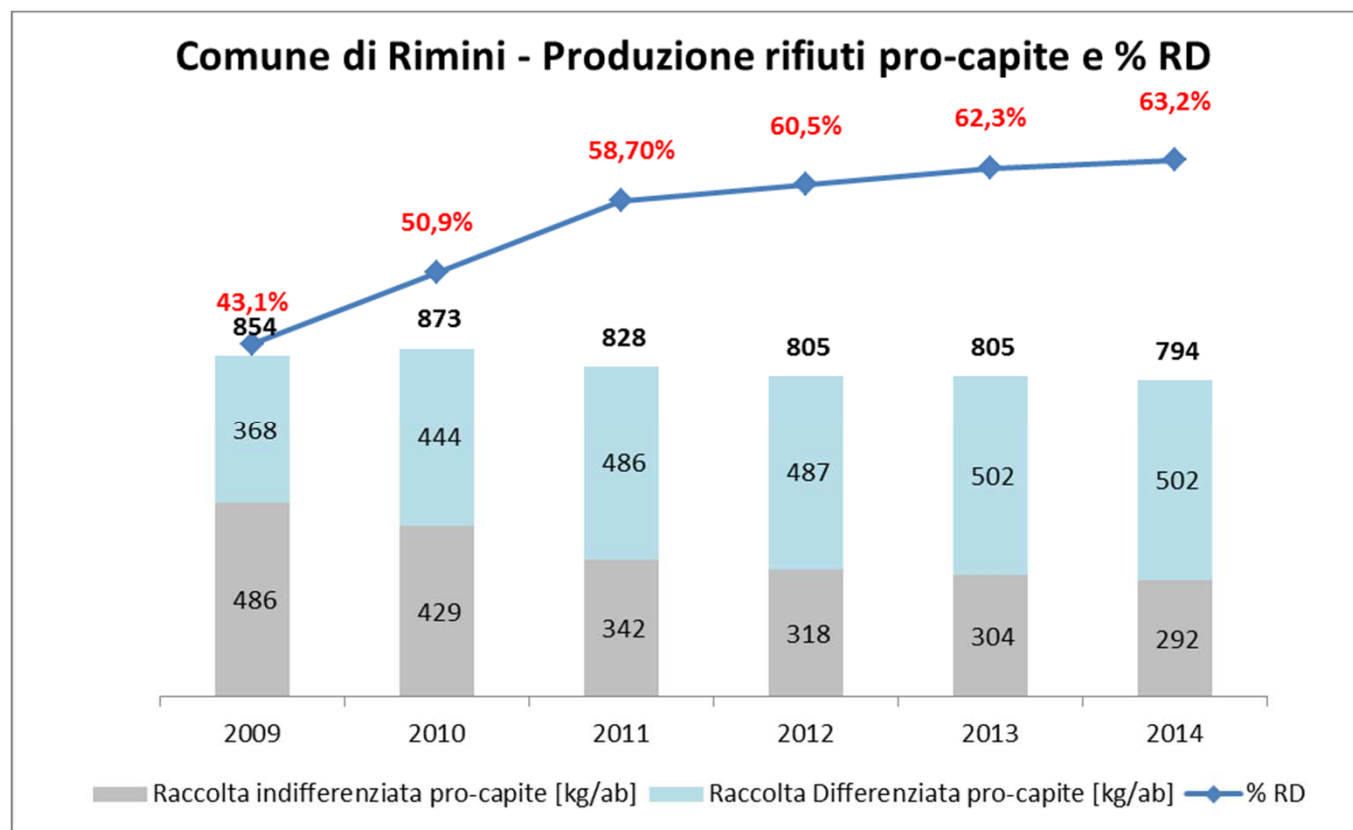


Note: source of data ORSO/Arpa Emilia Romagna, data for year 2014

- DW over 63% (Arpa ER 2014 data).
- Main DW types are Paper (15% of tot. SMW) and Organic waste (17%).
- Other significant DW types are Garden waste (8%), Wood (7%), Plastic (5%) and Glass (5%).
- Treatment plants largely situated in the Rimini district (Akron Coriano DW sorting plant and Coriano INDW waste-to-energy plant).

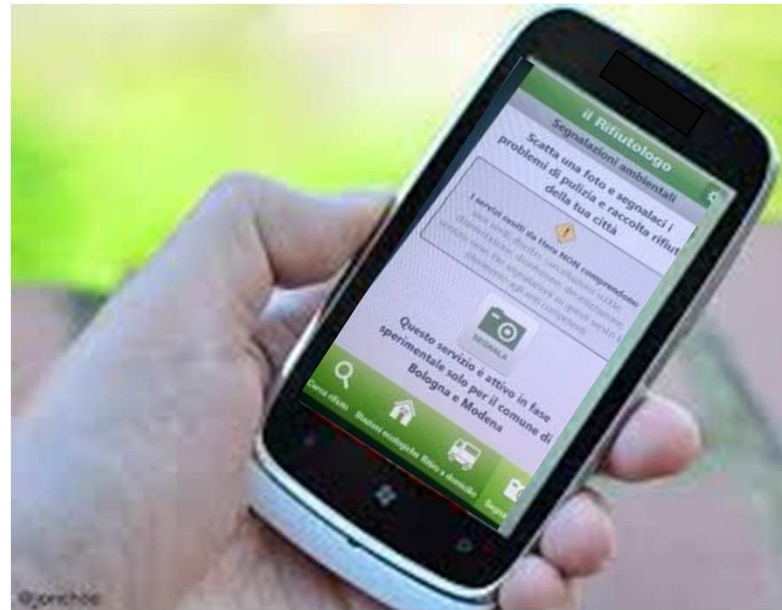
WASTE	QUANTITY (ton)	TREATMENT PLANT (main)
Non-separate	43,185 (1)	Coriano waste-to-energy plant
Paper	17,132	Akron Coriano sorting plant
Glass	6,357	Akron Coriano sorting plant
Plastic	6,335	Akron Coriano sorting plant
Wood	8,701	Akron Coriano sorting plant
Multimaterial	1,635	Akron Coriano sorting plant
Organic	19,558	Rimini composting plant
Garden waste	9,753	Rimini composting plant
WEEE	616	Miscellaneous plants
Bulky	1,175	Akron Coriano sorting plant
Inert	2,253	CON.A.I.R. in Coriano (RN)
Other DW	804	Miscellaneous plants
TOTAL	117,505 (2)	

Results obtained in the Municipality of Rimini



Source: ORSO/Arpa Emilia Romagna 2014 data

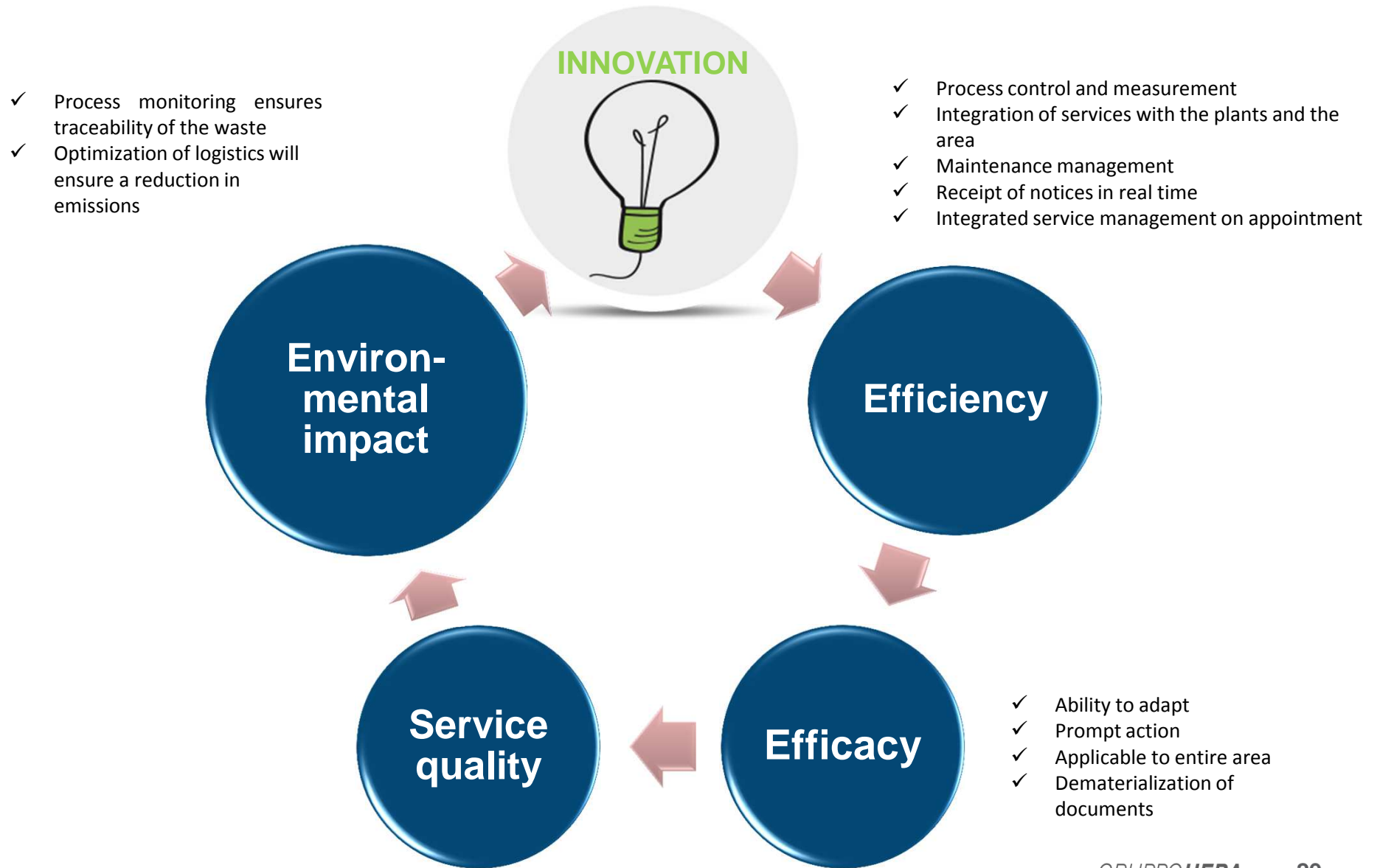
- Despite the fact that it only covers roadside waste collection in the residential areas (important areas such as the tourist coastal area, industrial areas and rural areas are excluded), the lid container system exceeded **63% of DW**. **Values of over 70% were reached in some of the municipalities in the province of Rimini.**



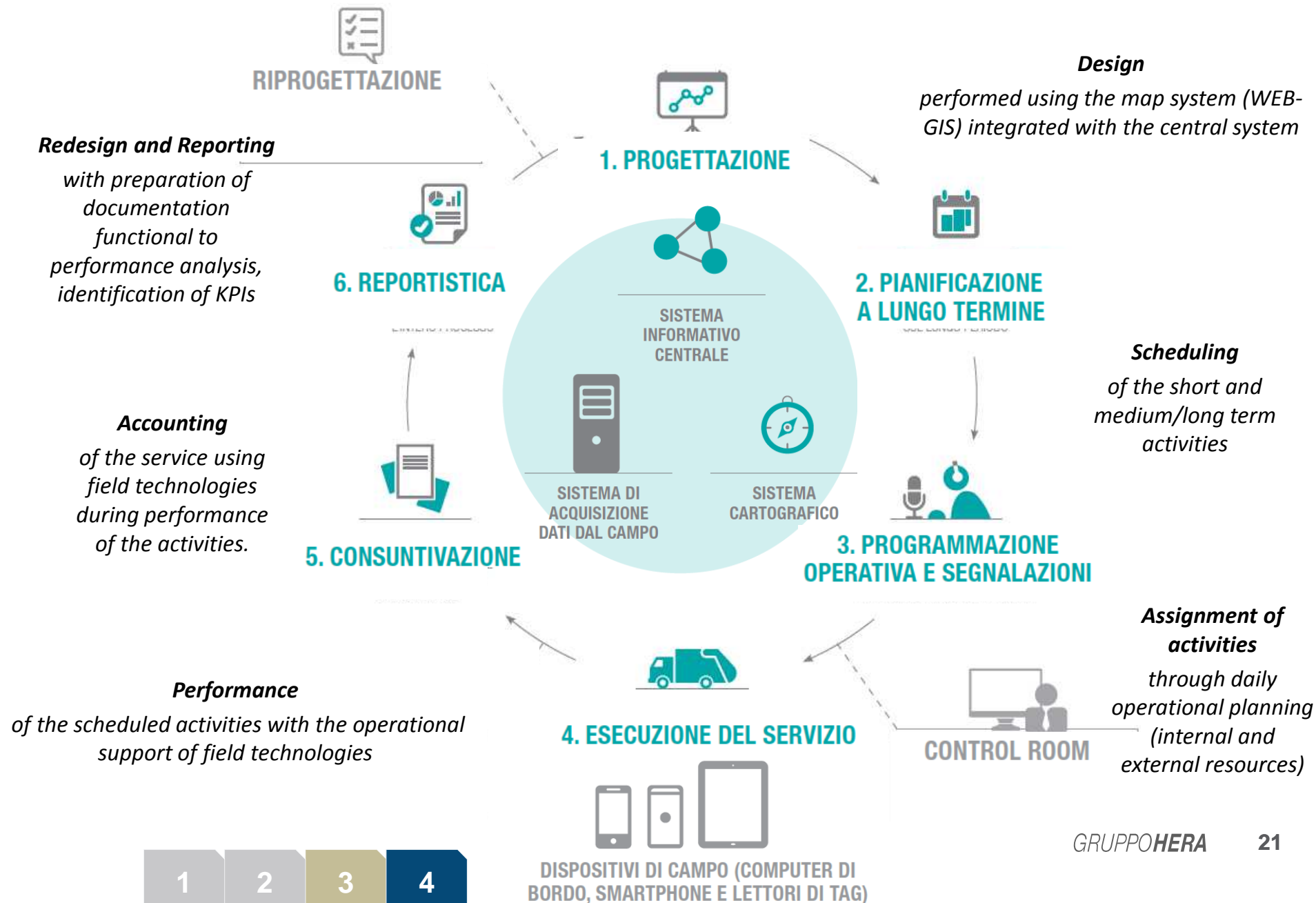
CHAPTER 4

INNOVATION AND COMMUNICATION

HERGOAMBIENTE – *Innovate today to save tomorrow*

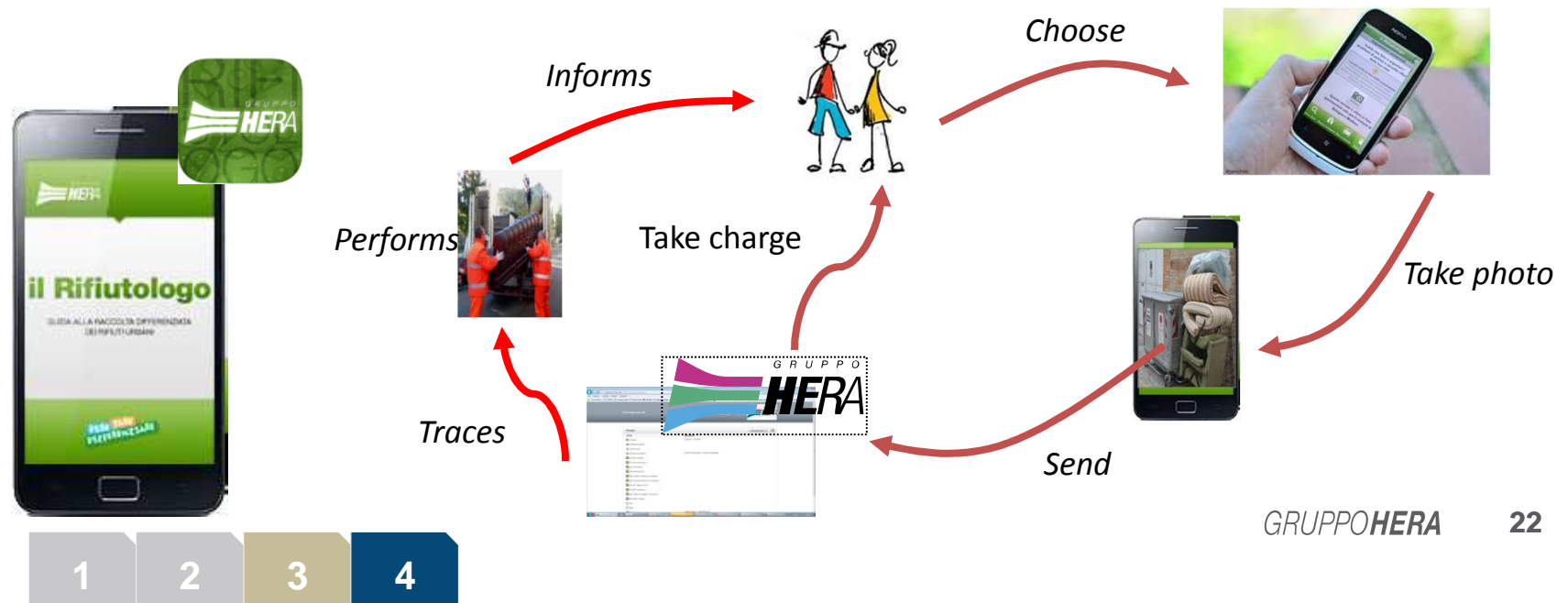


HERGOAMBIENTE – A circular service design process



The “Il Rifiutologo” App

- This free app was started as an experiment in 2011 to encourage separate waste collection and more than 54,000 copies have been downloaded.
- The user can select a type of waste to find out how it should be delivered and where the nearest collection centre is situated.
- The “georeferenced environmental reports” function can be used to send a message or photograph to inform Hera of a problem with the services provided by the company (function currently active in all municipalities with over 30,000 inhabitants served by Hera).
- Using the “barcode scanning” function, “Il Rifiutologo” recognizes the products when their bar codes are scanning with the smartphone or tablet camera; the app indicates how to dispose of it and, for multi-material products, specifies how the materials should be separated. If a code is not recognized, or if a type of waste is missing, the user can report it using “Il Rifiutologo” to have it added to the system.

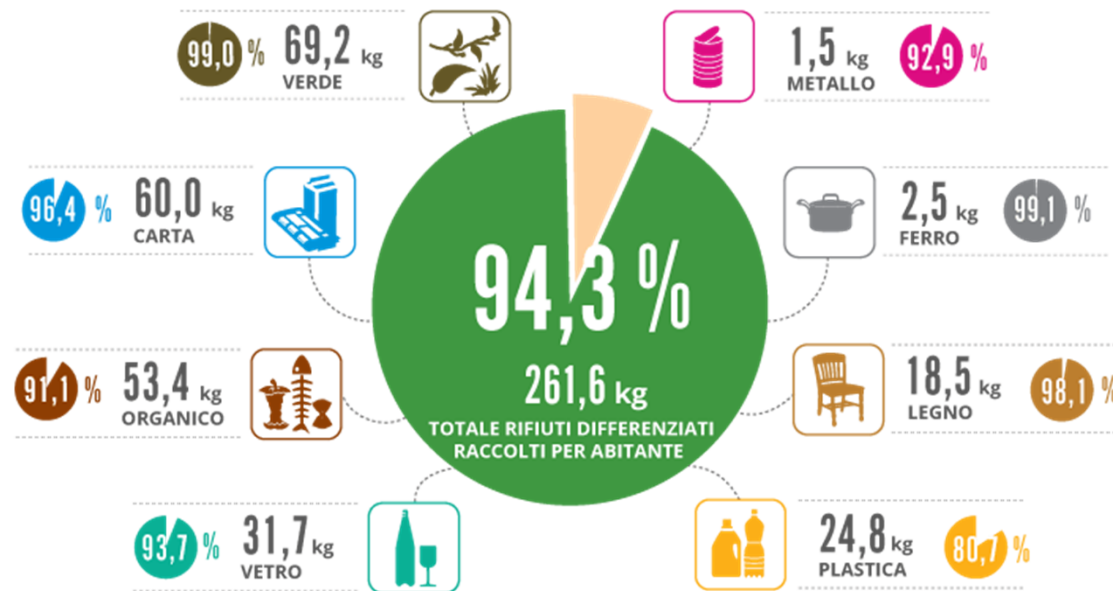


“Change the outcome” project

- “Change the outcome” is the project that the Group started in March 2014 for the recovery of bulky objects for reuse.
- Its partners in the project are Last Minute Market (spin-off of the University of Bologna) and 15 non-profit organizations in the area of Emilia-Romagna served to which, following the indications given by Hera, the public can donate bulky objects still in good condition that they wish to do away with.
- The project responds to the objectives of the latest environmental legislation that gives priority to waste prevention and reuse.
- In 2014 about 458 tonnes of bulky items were collected and 3,200 collections were performed by the NPOs, 2,700 directly from the donor's home.



The “Tracking waste” report



- Hera publishes the annual “Tracking waste” report that **certifies the actual recovery** of separate waste, publicizing the process activated by the public’s efforts with the company’s contribution.
- The 2014 edition presents the data provided by **73 companies** that were the initial destination of the separate waste and indicated the amount of it that was recovered and where it was sent. These companies store, sort or process the materials collected and then send them to the recovery plants. For organic and garden waste, these companies recover the material themselves.
- The **percentage actually recovered in 2014 was 94.3%** (DW managed by Hera, AcegasApsAmga and Marche Multiservizi)

The “Separate glass” project

- **EXPLORATORY USER SURVEY:** sociological analysis with the aim of determining the inclination of companies and families to recycle waste
- **VIDEOPILLS:** video on good glass collection practices and broadcasting over the internet
- **STUDY AND PRODUCTION OF CAMPAIGN** based on the results of the exploratory survey
- **FLYER WITH THE BILL**
- **COVERING OF WASTE COLLECTION VEHICLES**
- **FACE-TO-FACE COMMUNICATION:** local projects for increasing awareness of the importance of separate glass collection



Thank you for your attention



Direzione Servizi Ambientali, Coordinamento Tecnico ed Innovazione

[Environmental services, technical coordination and innovation department]

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