

Introduction and Data Source

The concept of waste not covered by the vital process of ecosystems - in which what is discarded by an organism, regulates the life of another organism - is inextricably linked to the activities managed by humans, based on a model where, after taking matter and energy from the environment to produce consumer goods, a production of waste follows. Being discharged into the environment itself, waste is, therefore, produced in the process of transformation of the resources of the social and economic system.

Each year in the United States about two billion tons of waste are generated, including particularly dangerous, an amount that is steadily increasing.

The storage of this waste is not a sustainable solution and their destruction is not satisfactory because of emissions, residues highly concentrated and pollutants. The best solution, therefore, is to avoid waste and to recycle the various components of the products. The challenge of our society consists, first of all, in reducing the generation of waste, but also in achieving efficient collection systems and plants for the recovery, reducing the environmental impact of waste treatment.

Responsible consumption is the basis on which all strategies are based, at European and national, aiming at the reduction of waste generation, consumption of energy and water (etc.).

In fact, the sixth Environmental Action Programme 2000-2010¹ of the European Union as regards the waste sector, aims to ensure “better resource efficiency and better management of resources and waste due to the change in models production and consumption patterns thus dissociating the commitment of resources and generation of waste from the rate of economic growth and trying to ensure that the consumption of renewable and non-renewable resources does not exceed the carrying capacity of the environment”.

In particular, the specific objective of the program on waste management is to decouple waste generation from economic growth and achieve a significant reduction in waste products, aiming to improve prevention initiatives, resource efficiency and switch to more sustainable consumption models.

In addition, for wastes that are still generated is needed to:

- reduce the risk;
- re-enter in the cycle most of the waste;
- minimize the amount of waste going to disposal and ensure safe disposal;
- treat the waste as close as possible to the place of production.

Directive n.2008/98/CE of 19 November 2008 focuses on waste prevention, which dealt with the issue in two articles: Art. 4, which shows the hierarchy of waste management, outlining the importance of prevention, reduction (first level) reuse (second level), even before recycling, and article 9, which asks the Commission, after consultation with the stakeholders, some studies and reports that support prevention activities and the implementation of programs for the prevention of waste, in particular:

- an interim report on the evolution of waste by the end of 2011;
- the definition of a policy of eco-design of products to reduce both the generation of waste and the presence of hazardous substances in waste, with the list of technologies focusing on reusable and recyclable, also by the end of 2011;
- setting targets for waste prevention, by the end of 2014;
- the formulation of an action plan for further support measures at European level, aimed, in particular, to change current consumption patterns, by the end of 2011.

¹ Decision N. 1600/2002/CE of the European Parliament and Council 22 July 2002

It is interesting to note that the Directive does not provide for quantitative targets for reduction, but encourage Member States to define them by 2014. This Directive repeals Directives 75/439/EEC², 91/689/EEC³ and 2006/12/EC⁴.

Our country, in order to comply with European legislation, adopted the changes introduced by Directive 2008/98/EC with the Legislative Decree n. 205, 3 December 2010. The Decree, which substantially modifies the "fourth part" of the Legislative Decree 152/06 on waste, entered into force on the 27th December 2010. This measure consists of 39 articles and 5 annexes, editing several steps of the previous waste legislation, but not the art. 189, which provides for "the establishment of a system for checking the traceability of waste, for the transmission and collection of information on production, possession, transport and disposal of waste and the creation in electronic form of identification of waste, records of loading and unloading and MUD, to be established by special decree of the Minister for the Environment.". This decree, issued in implementation of the Environmental Code is the M.D. 17 December 2009⁵ (and integrations), which sets out the rules relating to the operation of the "control system of traceability of waste" better known by the acronym "SISTRI". The SISTRI obliges those involved in the process of hazardous waste at the national level and in the management of municipal waste in the Campania Region, to broadcast via Internet to a central computer system all the information related to the operation and to track the transport of goods end of life, by adopting a satellite tracking system. The system manages in an innovative and efficient a varied and complex process, with guarantees of greater transparency, understanding and prevention of illegality. In addition, the SISTRI, managed by the Carabinieri for the Protection of the Environment, simplifies procedures and requirements by reducing the costs incurred by enterprises and switching from a paper-based system, which focuses on three documents which are the form of waste identification, registry load and unloading, unique model of environmental statement (MUD), to advanced technological solutions able to control more precisely the handling of hazardous waste throughout the supply chain. The beginning of the actual operation of the SISTRI has been postponed to June 1, 2011: in fact, the new D.M. 22nd December 2010⁶ has sanctioned the move to May 31st, 2011 the obligation under DM 17th December, 2009 to continue to use paper forms and records (ex Legislative Decree 152/2006), thus extending the period of transition from the old (and paper) to the new regime (and dematerialized) electronic tracking system of waste management. The D.M. 22nd December 2010 has also established moving the deadline (expiring 31 December 2010) for the annual declaration on waste products (MUD) that producers, disposers and recovery of waste must be sent to the Ministry of the Environment in relation to waste managed "ante SISTRI", referring that deadline to the 30 April, 2011 for information on the year 2010 and 31 December 2011 for information relating to 2011.

The SISTRI is the subject of the recent additions to the Legislative Decree no. 205/2010, as regards its inclusion in the Environment Code (Legislative Decree 152/2006) and in relation to the rules on penalties applicable to infringements of the rules relating to the new system tracking telematic waste.

In particular, the innovative aspects of the Legislative Decree no. 205/2010, compared with the Environment Code (TUA) are:

1. Exclusions (Art. 185 of the D.Lgs.152/2006; art.13 of Legislative Decree 205/2010)

² Council Directive 75/439/EEC of 16 June 1975 on the disposal of waste oils

³ Council Directive 91/689/EEC of 12 December 1991 on hazardous waste

⁴ Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste (Framework Directive waste).

⁵ D.M. December 17, 2009 "Establishment of the control system of traceability of waste, in accordance with Article 189 of the Legislative Decree no. 152 of 2006 and article 14-bis of Legislative Decree no. 78 of 2009, with amendments, by Law no. 102 of 2009 "

⁶ D.M. December 22, 2010 "Amendments to the Decree of 17 December 2009 concerning the establishment of the system control traceability of waste "(Gu of December 28, 2010)

Among the exclusions from the scope of the Decree are inserted “mowing and pruning” used in agriculture, forestry or for the production of energy from such biomass through processes or methods which do not harm the environment or endanger human health.

2. Temporary storage of waste (article 183 of the D.Lgs.152/2006; art.10 of Legislative Decree 205/2010)

Changes the procedures for administering the temporary storage of waste, such as the pooling of waste at the place of production

Definition of product (Article 184 bis of the D.Lgs.152/2006, art. 12 of Legislative Decree 205/2010)

The new definition⁷ reformulates in expansive sense than the previous one, expanding the sphere of waste that may be excluded from the legislation on waste (wood, iron ... etc..). The most significant change is the elimination of the requirement of the economic value of the product market. In any case, the Ministry of the Environment will identify with specific decrees, specific types of substances or objects to be regarded as by-products (eg, earth and rock excavation)

3. MUD (Articles 188, 189, 190 and 193, D.Lgs.152/2006, art. 16 of Legislative Decree 205/2010)

Article 16 limits the obligation to present the MUD only to municipalities.

Following the issuance of Ministerial Decree of 22.12.2010 to extend the SISTRI, the expected completion of the declaration to the Land Registry (MUD) for 2010, originally set to expire on 31/12/2010, has been postponed to April 30, 2011. The statement will be re before 31/12/2011 for the period not covered by 1/1-31/5/2011 SISTRI.

4. Transport of waste (Article 190 of the D.Lgs.152/2006, Art. 16 of Legislative Decree 205/2010)

All companies engaged in the carriage of its non-hazardous waste, as well as being listed in the National Environmental Management Register for the transportation of their waste in accordance with art. 212 paragraph 8 and to accompany the transport of waste with the form, will have to set a record for loading / unloading of waste jotting down waste transported: these companies before the amendment of Art. 190 were not subject to the drafting of this register. The loading and unloading register must be:

- kept in the manner of VAT registers;
- numbered and signed by the Chambers of Commerce;
- kept for five years after the last entry.

About this new task, following the issuance of the decree of reference of SISTRI, the applicability commence on 31 May 2011.

5. Register of Environmental Managers (Article 212 of the D.Lgs.152/2006, Art. 25 of Legislative Decree 205/2010)

Companies listed in the National Environmental Management Register for the transportation of their waste before April 14, 2008, will have to update their enrolment communicating to the National Environmental Managers Register by the 24th of December 2011, the plates of the means by which it is carried out the transport of waste and the EWC codes of waste transported. Its forms is not yet available.

Another change concerns the duration of the enrolment which must be renewed every 10 years from the date of issue, whereas previously did not include any deadline. In any case, members are subject to communicate any changes made after registration.

The new Article 194 also provides the suspension from the Regional Sections of the Environmental Managers Register, within two months from the date of entry into force of the Decree (23.02.11) of the means registered with the Environmental Managers Register, that companies have not registered also to the SISTRI (obviously for means for which there is obligation to join the SISTRI. After three months of suspension without this obligation has been met, the vehicle can be immediately

⁷ To classify a substance as a by-product rather than waste is necessary the existence of the following conditions: the origin by a process of production of which it is part, but its purpose is not production of that substance or object; direct use without any further processing other than normal practice industrial, legal use without any negative impact on the environment and health.

deleted from the Register of Environmental Managers Register. This provision does not apply to companies that have signed the Environmental Managers Register to transport their own waste.

6. SISTRI sanctions (Article 260 of the D.Lgs.152/2006, Art. 36 of Legislative Decree 205/2010)

The Legislative Decree 205/2010 introduces the sanctions related to SISTRI in addition to the previous environmental ones. As a result of the pressure put on by the Ministry of employers' associations was obtained a gradual application of sanctions, in particular with regard to the delay/failing to register with the parties responsible in the first year of operation of the electronic traceability. For 2011, the parties required to register with the previous system that omit the registration or the payment on time, without prejudice to the obligation to comply with such a system to register with the payment of the contribution shall be punished, for each month or fraction of a month of delay.

By Decree of 22 December 2010 (Changes and additions to the Decree of 17 December 2009 concerning the establishment of the control system of traceability of waste) published in the Official Gazette n. 302 of 28.12.2010, the Minister of the Environment has extended to May 31, 2011 (now February 9, 2012) the deadline for the start of full SISTRI for all stakeholders as well as for the application of sanctions.

It was also expected to defer to 30/4/2011 of the annual declaration by the parties subject to the presentation of the unique model of environmental statement (MUD) for information about the operation of 2010 before the activity of Sistris, on the basis of the data entered in the register of loading and unloading.

With Law 24 February 2012, n. 14 "Conversion into law, with amendments, of Decree-Law of 29 December 2011, n. 216, concerning extension of deadlines set by the laws. Deferment of terms related to the exercise of legislative powers" (published in the Official Gazette no. 48 27/02/2012 - Suppl. Ordinary 36) the application of Sistris has been postponed to June 30, 2012 for all.

The only exception is the producer of hazardous waste with less than 10 employees, for which the law 106 of 12 July 2011 already provides that the date of entry into force, however after 1 June 2012, is provided with a further Decree.

There are other recent measures taken by the national legislation and regarding specific topics:

With regard to the regional legislation, Legislative Decree no. 3 April 2006, n. 152, as amended, "Environmental Rules" and, in particular art. 199 states that the regions must have to ensure the plans already approved within two years from the date of entry into force of Part IV of the same law.

With Deliberation of the Regional Council no. 112 of 10 July 2002 was approved on the basis of information contained in art. 22 of Legislative Decree 22/97 at the time in force, the Regional Plan of Waste Management for Lazio region.

During the period of compulsory administration, ended with DGR 18 April 2008⁸, this plan has been integrated with a variety of interventions, including the Plan of emergency in the disposal of municipal solid waste and similar for the entire territory of Lazio region, adopted by Decree No. commissioner. 65 of 15 July 2003. Despite these measures, the European Court of Justice in its judgment of 14 June 2007, Case C-82/06 condemned Italy for insufficient programming on waste from the Region of Lazio, as, in particular, the plan does not allow to "identify suitable sites or installations for waste disposal, in particular with regard to hazardous waste". With prot. n. 139504/D3/3C/13 on 06 August 2010, the region has established a return path from the infringement, communicating to the European Commission the appropriate time schedule of actions to be taken in the preparation of the Regional Plan of Waste Management of Lazio, which provides for the approval of the Regional Council by 30 April 2011. The outline of the plan, also including the Environmental Report and Non-technical summary, pursuant to Legislative Decree no. 152/2006, adopted by the regional government, focuses primarily to defuse the effects of the

⁸ DGR 239 18.04.2008, "Prime guidance to regional offices, ARPA Lazio, the Administrations Provinces and municipalities on how to conduct the proceedings for the issuance of permits to waste management facilities in accordance with Legislative Decree no. 152/06 and LR 27/98".

judgment of the Court of Justice, suspending the risk of paying a costly penalty and also allowing to update it, following the changes in the regulatory framework with defined by D. Decree 3 April 2006, n. 152.

The outline of the plan, based on the comments, objections and suggestions submitted during the consultation, may be subject to review (Article 15, paragraph 2 of Legislative Decree no. N. 152/2006). It is divided into two sections: household waste and special waste, and in both cases, the planning horizon falls in the time period 2011-2017. Based on the current situation and the constraints of the law, it reports the estimates of the growth in waste, proposing initiatives to reduce production, and response scenarios to close the cycle virtuously. The scheme of Plan identifies a single optimal area (ATO) for the management of municipal waste, which coincides with the whole region and containing five sub-Ato (Latina, Frosinone, Rome, Viterbo and Rieti, almost coinciding with the provincial territories) within which to organize services of municipal waste collection and similar and ensure the viability of plants for selection of municipal waste. The aim is to simplify the system of collection and disposal, making it more efficient and economical, making the waste remain in their own area and using a residual landfill, where will be converged only treated waste. Currently, a production of about 3 million and 500 thousand tons of waste a year, 2.7 million tons end up in landfills; the new plan aims to bring the region to landfill only 1 million tons, or about one third of the current amount, trying as well as at increasing the separate collection, through the implementation of programs of prevention, recovery and reuse of waste.

As mentioned above, in addition to the final approval of the Regional Plan of Waste Management of Lazio by 30 April 2011, by 31 March 2011, the region will have to give, with regional law, the functions already performed by the ATO as a result of their suppression.

If the region is competent, under Article 196 of the TUA, for the preparation, adoption and updating of regional waste management plans, pursuant to art. 197, the Province is responsible for the identification of areas suitable or not for the location of waste disposal. The Legislative Decree no. n. 205 of 2010 did not change significantly the powers of the province, which continues to exert tasks of verification and control: by controlling periodic entities and businesses that produce hazardous waste, companies that collect and transport waste on a professional basis, establishments and firms disposing or recovering waste, ensuring, in particular, the control of the activities subject to the simplified procedures (art. 214, 215, and 216 of Legislative Decree 152/2006) and the collection and transport of hazardous waste. In 2008 (Resolution No. 58 of 10.1.08) was adopted "Plan for Municipal Waste Management in the Province of Viterbo", which provides that in the Province of Viterbo area, will be disposed the waste of the same Province and of Province of Rieti with a plant system consisting of a system of selection and stabilization, a landfill and 6 platforms of separate collection (SC).

The Provincial Plan of Viterbo incorporates the guidelines proposed by the region by providing the following information:

1. reintroduction of returnable glass and the imposition of a tax deposit for containers made from other materials;
2. promotion of retail outlets of bulk liquid assets "on tap" (food, detergents, recovery unsold, use recycled reusable plastic boxes);
3. replacement of disposable packaging and application solutions alternatives to promote their reduction;
4. incentive to home composting;
5. optimization of the collection system.

The aim is to discourage the provision in the undifferentiated waste, promoting the SC door to door, is to turn a sort of verification of timely delivery of waste and to facilitate the subsequent transition to the reward system of the rate. This system of waste management also includes the development of support structures necessary for its optimal success as ecological islands, recycling centers, plants for the recovery of waste and, last but not least, an extensive awareness campaign for citizens and the involvement of large distribution.

The initiatives of the Province of Viterbo, with the financial contribution of the Lazio Region, are heading in this direction.

By Resolution of the Regional n.291/2009, the Region has planned financial resources for the enhancement of separate waste collection for the years 2009 to 2011: the resources made available to the Provincial Administration amounted to € 8.387.706,64 divided as follows:

Tab. 8.1: Regional financial resources Ripartizione for the Province of Viterbo. Years 2009-2011

Year 2009	Year 2010	Year 2011	total
2.777.389,33	2.805.158,66	2.805.158,66	8.387.706,64

Furthermore, also in 2009, the Province of Viterbo has determined, through executive action, the granting of aid for increasing recycling in the municipalities of Province. In this regard were issued two calls, with the following objectives:

1. contributions for the virtuous municipality who have reached major proportions collection;
2. contributions for the expansion and the launch of the collection door to door.







Therefore, with regional funding, the Province of Viterbo, in the years 2009/2010, has funded 62 municipal projects aimed at collecting door to door, and 16 municipal projects aimed adjustment of ecological islands.

Data source

Data on the production and management of waste and the collection have been provided by the Department of Environment Province of Viterbo. For the development and the drafting of this chapter the following publications have been used:

- Plan Municipal solid waste management in the province of Viterbo - document prepared by Society Area Group and approved by the Provincial Council
- Environmental Data Yearbook 2011 - 2012 – Ispra
- Urban Waste Report 2011 - 2012 – Ispra
- Outline of the Regional Plan of Waste Management Lazio also including the Report Environmental and Non-technical summary, approved by Decision of the Regional.

Tab on the main indicators

INDICATORS	STATUS	TREND IN TIME
<i>The infrastructure for collection and disposal of waste</i>		
<i>Generation of solid urban waste</i>		
<i>Separate collection</i>		

8.1 – The infrastructure for the collection and disposal of urban waste

With regard to regional waste management, Lazio region ended only recently to the compulsory administration. In fact, precisely in order to identify urgent measures to be taken to overcome the emergency situation in the region, has been approved the Plan of Work of Emergency in the

disposal of municipal solid waste sector for the entire territory Lazio Region, adopted by Decree No. commissioner. 65 of 15 July 2003.

After the phase of compulsory administration was necessary to initiate a process of normalization that would allow the administrative transition to the ordinary and the identification of practices to be transferred to the Lazio Region, municipalities and provinces. For this reason, with DGR 239/2008, was approved the document “Prime guidance to regional offices, ARPA Lazio, to the Provincial Administrations and municipalities on how to conduct the proceedings for the issuance of permits waste management plants to Legislative Decree no. 152/06 and LR 27/98”, which gives the tasks to Region and municipalities, and assigns to the provinces, in addition to giving consent for agricultural use of sludge, the granting of the construction and operation of the waste management facilities below:

1. plants for the recovery of non-hazardous waste under regional (operations R10, R11, R12, R13, R14 - Appendix C to Part 4 of the Legislative Decree 152/2006);
2. treatment facilities and non-hazardous waste with the exception of those with capacity > 50 tonnes / day engaged in waste disposal operations through D8 and / or D9 as contained in Legislative Decree no. 59/05;
3. waste transfer stations.

Definition of the indicator

The indicator takes into account the infrastructure for the collection and disposal of waste.

Evidence found

Article. 182 bis of Legislative Decree 152/06 requires the use of an integrated and adequate network of facilities for the disposal of waste and recovery of mixed municipal waste, taking into account best available techniques and total cost benefits.

The decree stipulates that the region is divided into ATO and Sub - ATOs (SubATO) under which define the characteristics and potential of waste treatment and disposal of waste.

The objectives are:

1. achieve self-sufficiency in the disposal of non-hazardous municipal waste and waste resulting from their treatment in the ATO;
2. allow waste disposal and recovery of mixed municipal waste in one of the nearest appropriate installations to the place of production or collection;
3. use the methods and technologies in order to ensure a high level of environmental protection and public health.

To define the need for treatment/disposal, it is needed to check the existing plants, evaluating the real potential and planned extensions (authorized) and in progress as well as the time required for the entry into operation.

The plants assumed for the years after 2010 for which they were created scenarios are those necessary to the treatment and disposal of municipal waste not recovered from the collection. These are:

1. mechanical biological treatment plants
2. incinerators and gasifiers
3. landfills

Below is the specification of Viterbo Sub ATO treatment plants / recovery / disposal of waste existing and approved.

The SubATO of Viterbo, coinciding with provincial boundaries, is served by the installation of mechanical biological treatment in the town of Viterbo, in the area of Casale Bussi.

In the SubATO there are also eight plants producing compost four of which are dedicated solely to the treatment of the green materials.

The plant layout available to the 60 municipalities of ATO 1 (corresponding with the Province of Viterbo) for the management of general and separate municipal and special waste, currently consists of:

- 1 plant of selection and volume reduction of municipal solid waste, and stabilization of the organic fraction, located at “Casale Bussi” in the town of Viterbo: the waste is originated in the province and a number of municipalities in the province of Rieti;
- 1 landfill for non-hazardous waste called “Le Fornaci” situated in the locality Monterazzano in the town of Viterbo in the system is entrusted with the urban waste-derived products from the Casale Bussi.
- 6 plants operating in support of separate collection (RD), which are used not only for the enhancement of municipal waste, but also for that of special waste.

It remains, therefore, unchanged from 2008, the situation of the plants in the Province of Viterbo plant, despite the issues raised by the Solid Waste Management Plan (especially related to the depletion of the available volumes of the landfill) and the solutions proposed by same (for more details, please refer to web page:

http://www.provincia.vt.it/Ambiente/Documenti/piano_gestione_rifiuti)

Tab.8.1.1: Foreseen problems and aims in the Provincial Plan of Waste and of Urban Waste of the Province of Viterbo

Problems verified	Lack of availability of energy recovery CDR close to the TMB. For this reason, the “ecoballe” out of the installation are defined in the Plan as a non-reusable dry materials and not a real CDR which was disposed of at the landfill at “Le Fornaci”.
Aims	Interventions provided: <ul style="list-style-type: none"> • 3 composting plants, each of capacity 10.000 t/y, to be implemented in three years time; • Identification of new volumes of the landfill where dry scraps give the selection of the undifferentiated and exploitation of waste collection.
Comparison with the current situation	From the current analysis the problems found in the Provincial Plan are still present especially with regard to the disposal in landfills of the section.

Font: Scheme of the Regional Plan of waste management in Lazio

The mechanical biological treatment plants in the region Lazio are reported in the following table.

Tab.8.1.2: Existing plants of mechanical biological treatment. Year 2010

Province	Location	Municipality	Authorized capacity (t/y)
FR	S .P. Ortella	Colfelice	327.000
LT	Sacida	Aprilia	116.000
RM	Rocca Cencia	Roma	234.000
RM	Malagrotta 1	Roma	187.000
RM	Malagrotta 2	Roma	280.000
RM	Cecchina	Albano Laziale	183.000
RM	Salaria	Roma	234.000
VT	Casale Bussi	Viterbo	215.000
Total			1.776.000

Font: Scheme of the Regional Plan of waste management in Lazio

The table 8.1.3. allows a comparison on a provincial basis, indicating the distribution of plants for municipal waste landfills and the quantities disposed from 2008 to 2010.

Tab.8.1.3: Landfills for non-hazardous waste which disposed RU per province, years 2008 - 2010

	Plants No. 2008	Disposed quantity (t/y) 2008	Plants No. 2009	Disposed quantity (t/y) 2009	Plants No. 2010	Disposed quantity (t/y) 2010
<i>Viterbo</i>	1	197.039	1	192.506	1	194.575
<i>Roma</i>	1	2.133.707	6	2.041.159	6	1.896.962
<i>Latina</i>	2	322.446	2	319.429	2	321.380
<i>Frosinone</i>	1	215.318	1	129.356	1	122.767
<i>Lazio</i>	10	2.868.510	10	2.682.450	10	2.535.684

Font: Report Urban Waste 2012 – ISPRA

The following table shows the technical details of the landfill “Le Fornaci”, as in the Regional Plan of Waste Management of Lazio, which shows the main features.

Tab. 8.1.4: Location, characteristics and material flows of the landfill “Le Fornaci” - Viterbo

Specifications Landfill Le Fornaci - Viterbo (VT)	
Description	Non-hazardous waste landfill
Location	Loc. “Le Fornaci”
Municipality	Viterbo (VT)
Property	Ecologia Viterbo srl
Manager	Ecologia Viterbo srl
Authorization	Decree AIA n. 28 of 15 marzo 07-Determination of the Region of Lazio n. A3919 of 5 nov. 2008 permit n. 199797 del 12/10/2009
Reference VIA	Positive opinion of environmental compatibility made with note Prot. 157477 of 10 September 2008 issued from the Environmental Impact Assessment the Region of Lazio
Date of plant activation	Year 2000
Adapation to the D. Lgs. 36/2003	Decree n. 67 del 02/12/2005
General specifications	
Authorized operations	D1, D15
Authorized CER	Non-hazardous waste
Residual volume on 30/06/2010 (mc)	700.000
Total area (mq)	271.510 mq
Covered area (mq)	345 mq
Open area (mq)	268.165 mq
Parameters for the process monitoring	
running monitoring parameters	Meteorological parameters, piezometric level
Storage capacity (mc)	220
Energetic recovery biogas	
Kind of process	Biogas suction and combustion
Tecnology adopted	Generating sets
Step 3 – Production of electric energy	
Gross production (at the generator clamps)	10.266.244 KWh
Net production	10.060.919 KWh
Self-consumed energy	499.448 KWh
Energy to the network	9.561.471 KWh
Incentives (cip6, green certificates)	Green certificates
Materials flows – year 2008	
Quantity of leachate produced t/y (year 2008)	7.528
Quantity of biogas produced mc/y (year 2008)	8.561.307
Final destination waste produced	Treatment plants
Day/year nominal functioning	310

Day/year actual functioning	310
Other information	
Pollutant treatment systems	Afterburner (plant of energy recovery from biogas), water treatment (Water purification of the area)
Registration/certification	EMAS

Font: Scheme of the Regional Plan of Waste Management in Lazio

In order to improve the whole cycle of waste management, both at national and provincial level, fundamental is the biological treatment and, in particular, the composting of the organic fraction of municipal waste; hence the importance of ensuring, in all the areas, a significant increase of separate collection of organic waste for their removal from the landfill and a start to a circuit of valorization. The Italian strategy for reducing the landfilling of biodegradable waste, identifies the following as biodegradable materials produced in the urban circuit: organic materials, green, paper, wood and textiles;

this form of management contributes to the reduction of landfilling of biodegradable waste shares.

The Province of Viterbo, to plug the deficit for the composting of organic materials and the enhancement of waste collection, provided within the Pre - ATO Plan (approved by DGP 264 of 26/10/2009) different interventions:

- upgrading of existing facilities for recycling;
- the realization of an integrated platform, for the processing of flows of separate collection in order to produce a good quality of compost and recover electrical energy and recyclable materials;
- the creation of 21 new recycling centers in municipalities that are currently lacking and the adjustment of about 13 existing recycling centers.

The Pre - Plan ATO aims to illustrate, in view of work in progress, the essential characteristics of the plying of urban hygiene services in the province. It contains an analysis of reconnaissance in which shows the flow of waste produced and the plant equipment in the Province, providing estimates of interception of waste collection, based on the envisaged plants.

Below are details of the composting plants in the province.

Tab. 8.1.5: Composting plants (tons) - 2010

Municipality	Authorized quantity	Treated waste	20.01.08	20.01.02	-	-
			organic	Green	Mud	Other (I)
<i>Tuscania</i>	60.000	46.868	935	16.847	26.939	2.146
<i>Nepi</i>	6.000	4.406	-	3.715	-	691
<i>Soriano nel cimino</i>	3.000	772	-	514	-	259
<i>Tarquinia</i>	1.000	3.650	-	1.372	-	2.278

Fonte: report urban waste ISPRA 2012

Notes:

(I) Waste paper, cardboard, wood, waste from industrial sectors (agro food, textile, paper, wood).

8.2 The generation of urban waste

The generation of municipal waste has become, over the years, ever increasing proportions in relation to the improvement of economic conditions, increased consumption, industrial development, the increase of population and urban areas. The guidelines and measures to reduce pressures on the environment, from the generation of waste, are particularly highlighted in the Strategy on the prevention and recycling of waste⁹, which identifies in the improvement of legislation, in the preventing the production and in the promotion of a effective recycling, the key elements of the action.

The Legislative Decree 205/2010, in line with the European guidelines explicitly refers to “integrated waste management”, providing as the best option desirable, the reduction of generation through various initiatives, such as:

- a) the promotion of economic, eco-balances, environmental certification systems, use of best available techniques, analysis of the life cycle of the products, information campaigns and consumer awareness, the use of quality systems, as well as the development of an eco-label for the correct evaluation of the impact of a specific product on the environment throughout its entire life cycle;
- b) the provision of clauses notices or letters of invitation that enhance the capacity and technical expertise in the prevention of waste;
- c) the promotion of agreements and plyearsng agreements or memoranda of understanding, even experimental, aimed at the prevention and reduction of the quantity and hazardousness of waste.

The recent legislation also does not change the classification of waste effected by source, urban waste and special waste, or according to their hazardous properties, hazardous and non-hazardous waste. In addition, the Legislative Decree 205/2010 have not changed the types of waste as part of the urban (Article 184 of the TUA).

The article 10, paragraph 5 of Law 23 March 2001, 93 “Provisions in the environmental field” predicted that the Province establish a Waste Observatory, in order to create a network model of the National Waste (ONR) to support its functions of monitoring, plyearsng and control. Provincial Observatory on Waste can be described as structures with functions articulated, related primarily to the need to contribute to: the definition of testing strategies (flows of waste reduction policies, etc.), Monitoring and plyearsng support (implementation plans provincial waste management), the connection between the various actors involved in different ways in waste management (collaboration network and comparison), the promotion of eco-compatible behavior and communication activities for municipalities, schools and business stakeholders.

In 2009 was established the Provincial Observatory on Waste of the Province of Viterbo, open to the public for information and implementation status of recycling in our province.

Definition of the indicator

This indicator measures the total amount of general municipal waste (RUind), expressed in metric tons. The trend seen within the province covers the period 2006-2010 and the values of RUind relating to this period, refer to the calculation method governed by DGR 310/2009. The indicator also considers the per capita annual generation of municipal waste in kg per capita (kg / cap).

Evidence found

The generation of waste is one of the main pressures which the human being exercises on its territory. For “total municipal solid waste” it means the sum of the general waste and all product materials collected separately (included are therefore bulky), except for inert waste that shall not be counted together with domestic waste as special waste according to the law.

⁹ COM/2005/0666 of 21 December 2005, entitled "Delivering on the sustainable use of resources - a strategy issue on the prevention and recycling of waste.

The main issue on the analysis of data on municipal waste management concerns the correct computation of the waste sent to the treatment plants, before their final recovery or disposal. When subjected to mechanical biological treatment (MBT) codes of the European waste list are identified and classified mostly as special waste. In 2010, nearly 9 million tons of municipal waste has undergone biological treatment used as a pre-treatment prior to disposal or incineration.

Landfilling is still the most common form of management, affecting 46% of municipal waste (54%). The 19% of the waste undergoes recovery operations of matter, 16% is incinerated with energy recovery, 12% is initiated processes for the biological treatment of aerobic or anaerobic (10% composted, 2% in anaerobic digestion), 1% is sent to production facilities, such as cement, to be used to produce energy, and the same portion, after the pre-treatment, is used for the covering of landfill sites.

From the table below you can see the trend of the last three years in respect of waste produced and disposed of in landfills. Values are absolute numbers and as you can see there is a decrease in the production of municipal waste in 2009 than the previous year but in 2010 there is a further increase in waste production even higher for the reference year 2008.

Tab. 8.2.1: Total Production urban waste– values in tons *1000

	2008		2009		2010	
	Production	Disposed in landfill	Production	Disposed in landfill	Production	Disposed in landfill
Lazio	3.344	2.869 – 86%	3.333	2.682 – 80%	3.431	2.536 – 74%
Italia	32.472	16.069	32.110	15.538.	32.479	15.015

Fonte: Report Urban Waste 2012 – ISPRA-

Releasing the generation of municipal waste by the “population” factor, the result is given per capita, which is calculated by dividing the total production of waste provincial, expressed in kilograms, with the resident population, in the same year.

In 2010, Italy had an output of 247 kg per inhabitant and a significant decrease compared to previous years, a greater reduction occurs at the regional level (-1.7%), but this does not change substantially a much higher data compared to the national average (594 kg / y). At the provincial level the highest volume of waste is found in the province Capitoline (633 kg of waste per capita in 2010), followed by Latina (571), Rieti (501), Viterbo (497), and Frosinone (439): the value of production per capita is calculated based on the number of residents in each province, and does not take into account, therefore, the so-called “floating population” (linked, for example, the flow of tourism).

By comparison at the national level, the provinces of Rome and Latina show fairly high per capita production values , ranking respectively the 21-th and 28-th place with respect to the regional capital of Italian provinces for production per capita per year. Instead the provinces of Viterbo, Rieti, Frosinone show per capita values production below the national average and lower than most of the provinces capital of the region (standing respectively 61-th, 81-th and 101-th).

Tab. 8.2.2: Production por-capita of urban waste. Values in kg/inhabitant per year

	2004	2005	2006	2007	2008	2009	2010
Frosinone	413	417	432	432	428	431	439,70
Latina	564	570	618	613	599	578	571,43
Rieti	468	494	474	518	486	472	501
Roma	640	663	642	634	625	618	633
Viterbo	477	504	548	515	505	487	497
Lazio	597	617	611	604	594	587	606,08

Fonte: Report on State of Provinces 2011 Upi Lazio

The recent DGR 310/2009 established a unique method for the calculation of the percentage of recycling, defining what types of waste can be separate collected (see par. 8.3) and therefore be sent for recycling and which not. In particular, the Urban General Collection - in short RUIND - is equal to the sum of kilograms of municipal waste generally collected (no separation) and is a waste of:

a) sweeping:

- roads and public areas;
- roads and private areas only if subject to public use;
- beaches of sea and lake shores and waterways;

b) cleaning of areas cemetery;

c) mixed municipal general waste, not otherwise specified;

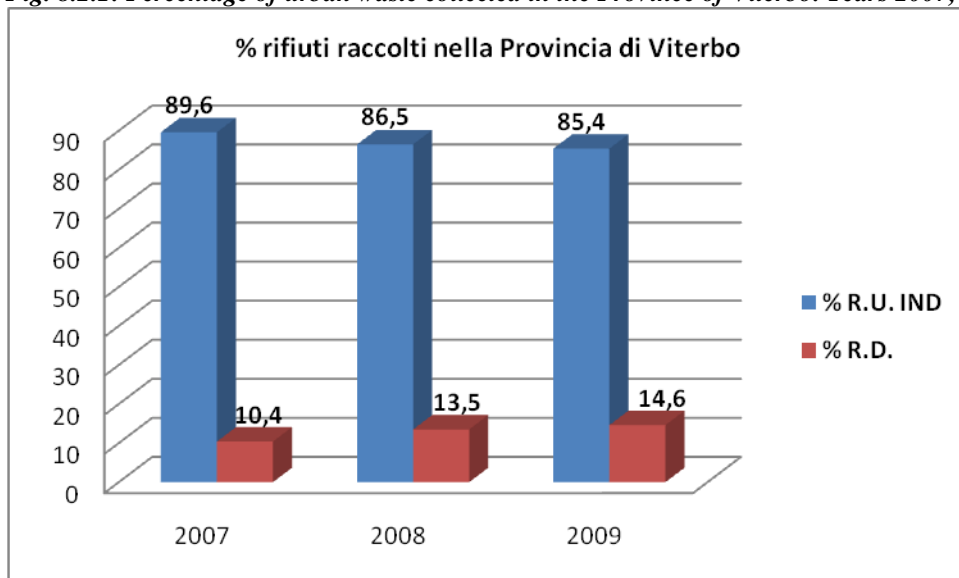
d) bulky waste for disposal (waste code 200307).

The waste of recycling waste and stockpiles, as non-recoverable, are added to the data of general urban collection.

Referring to this method, the percentage of municipal waste by type are reported: municipal waste (RUIND) and waste sent for recovery (RD). Even data for 2007, published in the previous year, were remodulated to take account of this new method of calculation and to allow comparison with the years 2008-2009.

The following graph shows how the Urban General Waste have had a slight decrease in recent years in favor of an increase of SC. The bulky for disposal are counted as R.Uind and accounted for 6.8% in 2007, 4.6% in 2008 and 4.5% in 2009 of total waste collected (RU).

Fig. 8.2.1: Percentage of urban waste collected in the Province of Viterbo. Years 2007, 2008, 2009



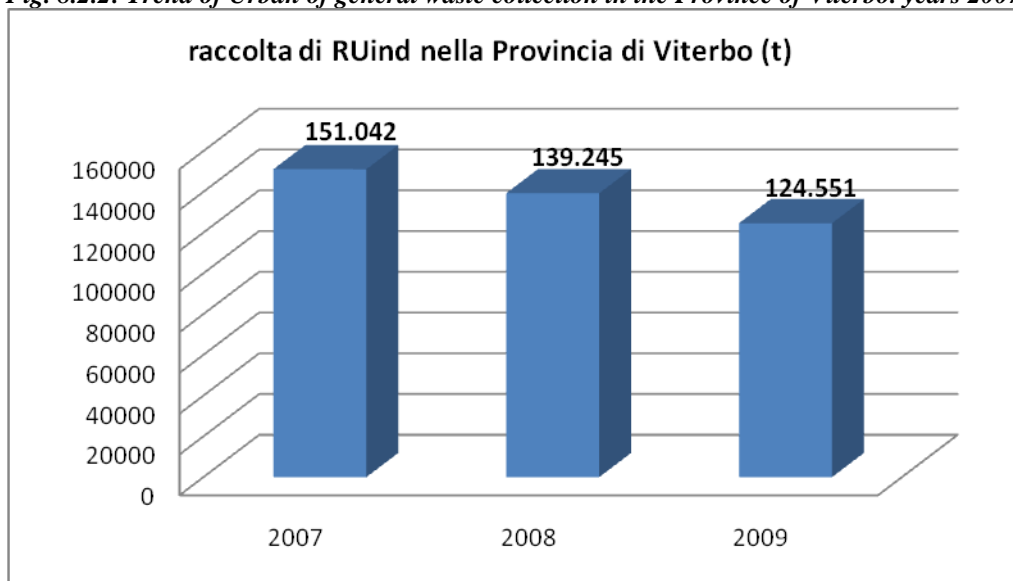
Font: formulation Environment Department

By focusing only on urban general waste¹⁰, in the Province of Viterbo there was a decrease of 10.6% in their production between 2008 and 2009: in absolute terms, in 2007 there were 151.042 tonnes of waste collected in 2008 139.245 and 124.551 last year. This decrease certainly stems from the lack of data for 9 municipalities of the Province (Bomarzo, Carbognano, Civitella d'Agliano,

¹⁰ According to the DGR 310/2009 the Urban General waste is the sum of the following codes CER: 200301 (urban general waste), 200 303 (street-cleaning residues), 200,399 (urban waste not otherwise specified) and 200,307 (voluminous waste, sent for disposal), inclusive.

Farnese, Grafton, Ronciglione, Tessennano, Villa San Giove years in Tuscia, Vitorchiano) at the date of this publication, they did not provided data yet.

Fig. 8.2.2: Trend of Urban of general waste collection in the Province of Viterbo. years 2007-2009



Font: Elaboration Department of Environment

Analyzing the situation in the province, it is pointed out how, in the town of Viterbo is registered the biggest production of general municipal waste, for which there is a slow but steady decrease: in 2009 Viterbo has produced 29.743.006 kg of RUind (-0.3 % over the previous year). Important production are registered in more densely populated centers, while the towns of Bassano in Teverina, Bassano Romano and Corchiano contribute to a substantial reduction of general solid waste at the provincial level, recording a higher percentage change -20% compared to the previous year. Not in all the virtuous reality, ie, those that meet the limits set by law on RD (par.8.3), an increase in the percentage of separate collection was offset by a decrease of solid waste.

Tab. 8.2.3: Production of RUind in the municipalities of the Province of Viterbo in kg. Years 2007-2009

MUNICIPALITIES	2007	2008	2009	var.%09-08
ACQUAPENDENTE	1.115.160	1.004.940	1.109.292	10,4
ARLENA DI CASTRO	314.110	327.110	327.110	0,0

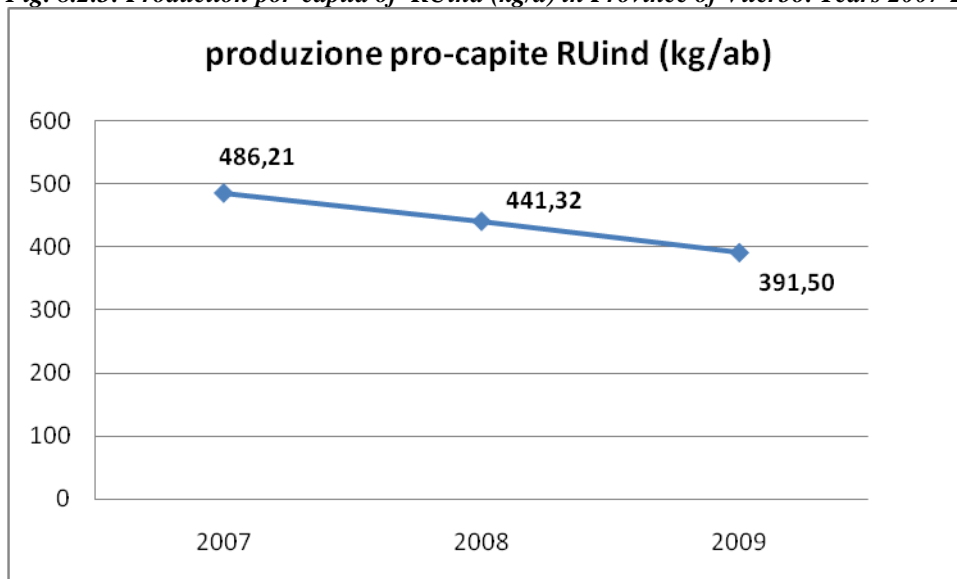
BAGNOREGIO	1.731.180	1.655.620	1.627.120	-1,7
BARBARANO ROMANO	297.570	247.470	217.300	-12,2
BASSANO IN TEVERINA	448.000	433.010	342.362	-20,9
BASSANO ROMANO	2.290.740	2.270.660	1.481.648	-34,7
BLERA	1402.760	1.296.120	1.354.120	4,5
BOLSENA	2876,690	2.410.610	2.160.860	-10,4
BOMARZO	673,840	699.360	N.P.	N.P.
CALCATA	394,720	393.100	323.140	-17,8
CANEPINA	1342,360	948.410	1.126.800	18,8
CANINO	2420,100	2.473.080	2.176.320	-12,0
CAPODIMONTE	1122,040	1.108.800	1.131.760	2,1
CAPRANICA	2741,400	2.625.260	2.841.400	8,2
CAPRAROLA	5129,920	2.741.440	2.549.460	-7,0
CARBOGNANO	767,940	787.810	N.P.	N.P.
CASTEL SANTELIA	276,480	256.740	215.340	-16,1
CASTIGLIONE IN T.	1005,560	1.042.180	997.060	-4,3
CELLENO	643,840	645.010	668.830	3,7
CELLERE	563,800	458.160	459.940	0,4
CIVITA CASTELLANA	8135,340	7.725.580	8.035.600	4,0
CIVITELLA D'AGLIANO	1058,420	1.046.840	N.P.	N.P.
CORCHIANO	1554,780	1.654.000	1.073.020	-35,1
FABRICA DI ROMA	3691,700	3.385.360	3.477.620	2,7
FALERIA	955,300	1.000.060	900.040	-10,0
FARNESE	584,540	646.190	N.P.	N.P.
GALLESE	1128,880	1.149.200	1.147.640	-0,1
GRADOLI	683,940	568.200	583.210	2,6
GRAFFIGNANO	1058,020	1.061.770	N.P.	N.P.
GROTTE DI CASTRO	1189,970	1.118.300	1.122.590	0,4
ISCHIA DI CASTRO	883,220	831.120	841.880	1,3
LATERA	407,780	405.460	404.600	-0,2
LUBRIANO	441,690	405.260	398.940	-1,6
MARTA	1820,030	1.760.640	1.737.310	-1,3
MONTALTO DI CASTRO	6912,660	6.457.700	6.142.860	-4,9
MONTE ROMANO	950,180	936.140	930.860	-0,6
MONTEFIASCONE	6078,140	5.772.100	6.135.910	6,3
MONTEROSI	517,280	468.220	696.300	48,7
NEPI	2007,080	1.322.360	1.150.400	-13,0
ONANO	440,040	425.100	422.390	-0,6
ORIOLO ROMANO	1753,800	288.520	279.560	-3,1
ORTE	4385,520	4.175.660	4.030.980	-3,5
PIANSANO	824,740	726.840	778.370	7,1
PROCENO	268,800	277.960	257.560	-7,3
RONCIGLIONE	4481,770	4.549.700	N.P.	N.P.
SAN LORENZO NUOVO	956,640	971.060	799.880	-17,6
SORIANO NEL CIMINO	3372,640	3.132.720	3.344.910	6,8

SUTRI	3028,360	2.746.100	2.817.320	2,6
TARQUINIA	10271,600	9.972.160	10.038.700	0,7
TESSENNANO	143,350	142.730	N.P.	N.P.
TUSCANIA	3877,720	4.138.600	3.767.980	-9,0
VALENTANO	1634,020	1.662.120	1.644.140	-1,1
VALLERANO	1088,820	996.680	1.105.840	11,0
VASANELLO	1931,440	1.884.680	1.934.080	2,6
VEJANO	939,070	997.860	942.040	-5,6
VETRALLA	6565,160	6.026.034	6.409.360	6,4
VIGNANELLO	2332,080	2.289.520	2.205.500	-3,7
VILLA S. GIOVYEARS IN T.	391,700	436.600	N.P.	N.P.
VITERBO	31029,402	29.847.320	29.743.006	-0,3
VITORCHIANO	3707,732	2.017.940	N.P.	N.P.
TOTALE PROVINCIALE	151.041.564	139.245.294	124.551.141	-10,6%

Font: Formulation Department of Environment

The dynamic of values of production of general waste per capita confirms the decrease in absolute terms, since the value per capita average for the Province of Viterbo shifted from 486 kg / inhabitant in 2007 to 391 kg / inhabitant in 2009.

Fig. 8.2.3: Production per-capita of RUind (kg/a) in Province of Viterbo. Years 2007-2009



Font: formulation Environment Department

The following tab shows 2010 data highlighted in Report on waste by ISPRA 2012

Tab. 8.2.4: Urban waste per Province(t)

	Population	Production tot	General waste %	Separate collection %	Voluminous and disposal %
Frosinone	498.167	219.051,57	204.449,06 93,33%	13.346,02 6,09%	1.256,49 0,57%
Latina	555.692	317.948,33	258.772,07 81,39%	55.920,55 17,59%	3.255,71 1,02%
Rieti	160.467	80.416,76	71.787,28 89,27%	5.742,26 7,14%	2.887,21 3,59

Roma	4.194.068	2.653.849,97	2.165.767,11 81,61%	467.351,50 17,61%	20.776,36 0,78
Viterbo	320.294	159.319,06	128.969,96 80,95%	22.465,50 14,10	7.883,60 4,95%
Lazio	5.728.688	3.430.630,68	2.830.078,70 82,49%	564.882,26 16,47%	36.069,72 1,05%

Font: Waste report 2012

Tab 8.2.5: Urban waste per-capita per province (Kg per inhab. Per year) 2010

	Population	Tot Production	General waste	Separate collection	Voluminous and disposal
Frosinone	498.167	439,70	410,40	26,78	2,52
Latina	555.692	571,43	465,68	99,90	5,86
Rieti	160.467	501,14	447,36	35,78	17,99
Roma	4.194.068	632,76	516,39	111,39	4,95
Viterbo	320.294	497,38	402,66	70,10	24,61
Lazio	5.728.688	606,08	493,96	98,60	13,53

Font: Waste report ISPRA 2012

Tab. 8.2.6: Separate collection of different product fractions 2010

	SC	Organic	Green	Glass	Plastic	Wood	Papel
Frosinone	13.346,02 6,09	961,80 7,21	562,82 4,22	3.895,51 29,19	856,99 6,42	16,80 0,13	5.468,70 40,98
Latina	55.920,55 17,9	15.847,89 28,34	9.439,17 16,88	8.992,00 16,08	2.884,44 5,16	2.258,49 4,04	12.529,18 22,41
Rieti	5.742,26 7,14	238,18 4,15	711,69 12,39	1.008,24 17,56	494,52 8,61	353,00 6,15	2.019,92 35,18
Roma	467.351,5 0 17,61	44.617,60 9,55	46.679,15 9,99	62.253,47 13,32	14.861,80 3,18	14.281,40 3,06	225.376,8 1 48,22
Viterbo	22.465,50 14,10	1.504,33 6,7	2.777,86 12,37	4.799,78 21,37	2.424,60 10,79	1.348,13 6	7.078,73 31,55
LAZIO	564.882,2 6 16,47	63.169,80 11,18	60.170,69 10,65	80.949,00 14,33	21.522,36 3,81	18.257,82 3,23	252482,33 44,7

	Metals	Textile	WAAE	Other voluminous to recovery	Selective collection	Other
Frosinone	197,98 1,48	118,84 0,89	797,70 5,98	286,93 2,15	101,91 0,76	80,04 0,6

<i>Latina</i>	1.111,08 1,99	124,05 0,22	1.907,32 3,41		140,45 0,25	686,48 1,23
<i>Rieti</i>	272,78 4,75	8,40 0,15	555,85 9,68	12,48 0,22	28,19 0,49	39,02 0,68
<i>Roma</i>	9.006,82 1,93	5.025,81 1,08	13.886,58 2,97	1.972,93 0,42	959,93 0,21	28.429,19 6,08
<i>Viterbo</i>	1.223,57 5,45	40,90 0,18	1.052,88 4,69		158,34 0,7	47,38 0,21
LAZIO	11.812,24 2,09	5.318,00 0,94	18.200,31 3,22	2.272,34 0,4	1.388,82 0,25	29.282,11 5,18

Fonte: waste report ISPRA 2012

Note: In the absence of detailed information on the distribution of fractions glass, plastic, metal and wood from waste packaging and other types of refusal, the fractions were counted in "Other wastes"..

In the following the percentage that municipalities have declared for the year 2010 is reported. Data of separate collection of paper, glass, plastic, metal and wood, and among these, the percentage who reported the disaggregated data for collection of packaging.

Paper: 95.8% of municipalities, 68.8% of which data are available for the separate collection of packaging.

Glass: 96.0% of municipalities, 76.0% of which data are available for the separate collection of packaging.

Plastic: 95.0% of the municipalities, 88, 9% of which data are available for the separate collection of packaging.

Metal: 85.5% of the communes, 85, 1% of which is available as separate collection of packaging.

Wood: 62.1% of the municipalities, 40.9% of which data are available for the separate collection of packaging.

8.3- Separate collection (RD):

The separate collection aims to start the recovery of the waste fractions, which after appropriate treatments, can be reused in other processes.

The Law 296/2006 has established the following goals of recycling, defined in art. 1, paragraph 1108:

- At least 40% by December 31, 2007
- At least 50% by December 31, 2009
- At least 60% by December 31, 2011

Particularly important is paragraph 1109 of Article 1109. 1 of L. 296/2006, for which "for the years subsequent to 2011, the minimum percentage of collection to ensure for the purposes of paragraph 1108 is established by decree of the Ministry of Environment and Protection of Land and Sea, heard the Permanent Conference for relations between the State, the regions and the autonomous provinces of Trento and Bolzano, in view of a gradual reduction in the amount of waste sent to landfill and the objective of making concrete achievable goal "zero waste" .

Without prejudice to the objective of 60% to be achieved by 31/12/2011, then, in subsequent years the minimum to ensure, for the purposes set out in paragraph 1108, it remains to be defined by a future Ministerial decree.

The Law 296/2006 set intermediate targets than those established by art. 205, D. Decree 152/2006, as amended, then reaffirmed by Legislative Decree 205/2010, which prescribed that every optimal regional environment must be ensured a separate collection of municipal waste equal to the following minimum percentages of waste products:

- At least 35% by December 31, 2006
- At least 45% by December 31, 2008
- At least 65% by December 31, 2012

In addition, Article. 205:

- Establishes an additional 20% to the charge of the waste in landfills for municipalities that do not reach the percentage of recycling provided (paragraph 3);
- Refers to a special Decree of the Minister of the Environment and Land Protection, establishing the criteria and methodology for calculating the percentage of recycling achieved in each year,

provided that until the adoption of the new Decree, the previous enforcement provisions will be applied (Article 3, paragraphs 24 to 40, Law 28 December 1995, n. 549).

Since the Ministry of the Environment has not yet adopted the decree, to prevent the defaulting municipalities of Lazio the application of the 20% tax in 2009, the Lazio Region has identified a methodology for calculating the percentage of recycling through the DGR 310 of 08/05/2009. The method is intended for all municipal governments so to update their regulations on recycling. The provinces, however, participate in the pursuit of the objective, through the adoption of initiatives aimed at supporting the municipalities in carrying out the obligations under the resolution regional and collaborate with the region in the data verification municipal waste collection. The Province of Viterbo has submitted such a standardized approach to municipalities since 2009 for annual uniform and comparable data on separate collection implemented during the year.

Definition of the indicator and the calculation method

The indicator assesses the percentage of waste collected separately, compared to total production of municipal waste in relation to the objectives of the legislation. The indicator considers, moreover, the separate collection per capita annual production of municipal waste, expressed in kg per inhabitant (kg / ab).

Evidence found

Analysis of the data at a wide geographic areas level, however, shows a non uniform situation: in fact, while the North, with a collection rate of 45.5%, well overcome the target for 2008, the Central and South , with percentages 22.9% and to 14th, 7%, are still very far from that goal.

Before examining the data collection at the regional level, it is necessary to point out that, as stated in par. 8.2, the Lazio Region has identified a standardized method of certification of the percentage of separate collection of municipal waste, approved by DGR No. 310 of 08.05.2009 and later updated by resolution no. 375 of 07/08/2010. Under this method, the percentage of efficiency of waste collected separately is obtained from the ratio between RD and the sum between R.D. and general municipal waste (RUind), where the latter encompass a bulky waste for disposal and waste and stockpiles (SV), ie the amount of mono-and multi-material non-recoverable screening, expressed in Kg¹¹. The R.D. is obtained as the sum of kilograms of municipal waste collected separately since the beginning, grouped into several product homogeneous fractions and which are sent for recycling/recovery and corresponds to the following types of waste:

- a) multi-material collection intended for reuse, recycling, recovery of material (after separation of waste and stockpiles of waste sorting);
- b) single material collection (after separation of waste and stockpiles of waste sorting). In the case of paper and paperboard, the total fee also includes other types of cellulosic waste collected all together;
- c) organic waste from households and business waste;
- d) green waste arising from the maintenance of public parks and private green and destined for recovery;
- e) waste from separate collection of homogeneous dangerous product for separate management (eg batteries, lead batteries, accumulators, expired drugs, toner containers labeled T / FC);
- f) bulky waste (only those actually sent for recycling)
- g) Waste Electrical and Electronic Equipment (WEEE) issued at the municipal ecological islands, both to citizens and distributors in accordance with the provisions of Legislative Decree 151/2005;
- h) clothing and used clothing (eg, clothing, blankets, shoes, etc..) collected from the public service;
- i) vegetable oils from domestic flows and public establishments, collected with appropriate containers;

¹¹ **R.D. (%) = $R.D. / (R.D. + RUIND) * 100$** , where between RUind are also considered bulky (ERC 200 307) and scraps and non-reusable fractions of the waste collection (SV), as non-recoverable.

j) inert waste, classified with the EWC codes 170107 and 170904, derived from maintenance and renovation of private dwellings, collected at drop-off municipal contribute to the determination of the percentage RD summing the total raised in a different way reclaimed, and the total waste produced, for an amount not greater than the amount obtained by multiplying 5 kg / inhabitant / year for the number of permanent residents of the City in the year under review.

After this necessary introduction, let see the regional analysis of data, which shows that, in 2010, the collection in Lazio is around 564,826 tonnes, representing a percentage of total waste produced by 16.5% or an outcome still far from national average, despite regulatory intervention carried out by the Regional Administration. The data for the various provinces emphasize the great variability existing in the region: it goes by a percentage of recycling of 7.1% recorded in the province of Rieti to 17.6% of the province of Rome, while Viterbo highlights a percentage of waste to recovery of 14.1%.

Tab. 8.3.1. Raccolta differenziata. Dati per provincia. Year 2010

Province	Population	Separate collection tons	Total Production RU tons	Percentage RD	Per capita RD kg/inh. year	Per capita RD kg/inh. year
<i>Frosinone</i>	498.167	13.346	219.052	6,1	26,8	439,7
<i>Latina</i>	555.692	55.921	317.948	17,6	100,6	572,2
<i>Rieti</i>	160.467	5.742	80.417	7,1	35,8	501,1
<i>Roma</i>	4.194.068	467.351	2.653.895	17,6	111,4	632,8
<i>Viterbo</i>	320.294	22.466	159.319	14,1	70,1	497,4
<i>Lazio</i>	5.728.688	564.826	3.430.631.	16,5	98,6	598,9

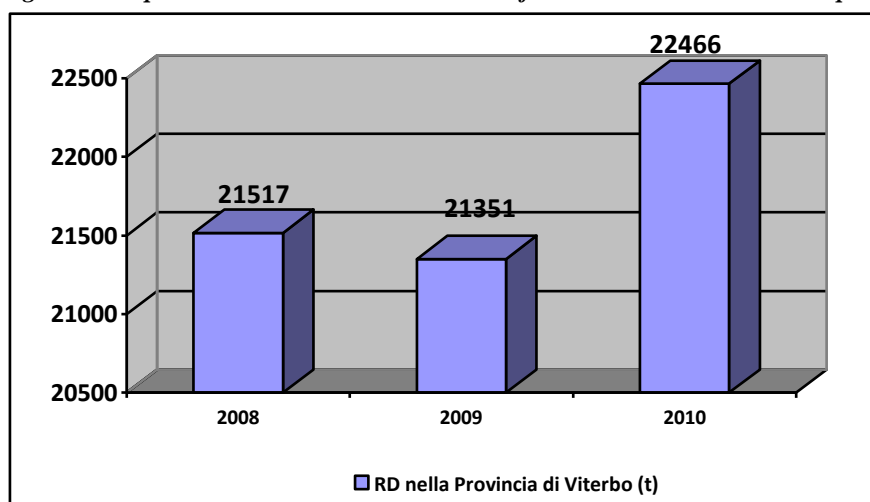
Font: Elaboration Lazio Region Det. 376 of 07.08.2010 and reconnaissance managers

Tab. 8.3.2 Percentage RD e variation percentage 2009/2010

Province	2006	2007	2008	2009	2010	Variation 2009/2010 RD %
Lazio	11,1	12,1	12,9	15,1	16,5	1,4

Fonte: Waste report ISPRA 2012

Fig. 8.3.1: Separate collection in the Province of Viterbo. Absolute values expressed in tons, years 2008-2010



Fonte: Waste report ISPRA 2012

The absolute values graphically presented are translated in a rate of separate collection of 10.9% in 2007, 13.5% in 2008, 14.4% in 2009, 14.1% in 2010. This data, however, is affected by the lack of

data for 9 municipalities of the Province (Bomarzo, Carbognano, Civitella d' Agliano, Farnese, Grafton, Ronciglione, Tessennano, Villa San Giovyears in Tuscia, Vitorchiano) at the date of this publication do not have provided them yet.

The table below (Table 8.3.2) shows the data on the percentage of recycling detailed for each municipality in the province but until 2009. With respect of the limits set by law, it is evident that in 2009 the municipalities of Acquapendente, Castel Sant 'Elia, Monterosi, Nepi and Oriolo Romano, those municipalities where the collection door to door started a few years ago, have passed 50% of the RD. Finally, three municipalities (Bassano in Teverina, Montalto di Castro and Bolsena, the last one registers an encouraging +16.5% compared to 2008) showed a capacity to intercept recyclable product fractions greater than 20%.

Tab. 8.3.2.: Framework of Municipalities in the Province of Viterbo on RD. Values %. Years 2007-2008-2009

Municipalities	Separete collection %			
	2007	2008	2009	Var%09-08
ACQUAPENDENTE	55,2	61,7%	61,5%	-0,2%
ARLENA DI CASTRO	6,2	4,6%	4,9%	0,3%
BAGNOREGIO	2,3	4,8%	6,6%	1,8%
BARBARANO ROMANO	19,7	39,0%	41,7%	2,7%
BASSANO IN TEVERINA	11,9	15,8%	21,5%	5,7%
BASSANO ROMANO	5,8	4,7%	5,7%	1,0%
BLERA	10,7	14,7%	16,9%	2,2%
BOLSENA	6,4	9,6%	26,1%	16,5%
BOMARZO	12,0	14,3%	N.P.	N.P.
CALCATA	0,0 ¹²	2,3%	8,8%	6,5%
CANEPINA	8,2	17,5%	9,9%	-7,5%
CANINO	2,1	6,8%	11,3%	4,5%
CAPODIMONTE	5,1	6,4%	6,9%	0,6%
CAPRANICA	11,7	8,2%	11,2%	3,0%
CAPRAROLA	1,5	2,8%	2,9%	0,1%
CARBOGNANO	1,8	5,1%	N.P.	N.P.
CASTEL SANT'ELIA	40,4	52,8%	57,3%	4,5%
CASTIGLIONE IN T.	7,3	4,9%	8,2%	3,3%
CELLENO	4,1	5,6%	5,6%	-0,1%
CELLERE	4,7	8,8%	9,6%	0,8%
CIVITA CASTELLANA	4,5	4,8%	6,3%	1,5%
CIVITELLA D'AGLIANO	6,2	3,4%	N.P.	N.P.
CORCHIANO	2,9	4,0%	18,0%	14,0%
FABRICA DI ROMA	1,3	9,7%	8,8%	-0,9%
FALERIA	4,3	4,1%	3,9%	-0,2%
FARNESE	17,9	16,3%	N.P.	N.P.
GALLESE	6,5	5,5%	3,2%	-2,3%
GRADOLI	2,8	7,4%	8,0%	0,5%

¹² The contractor for the collection of waste Municipality of Calcata provided overall figures with those of Municipality of Faleria: therefore, the percentage of 2007 refers to both municipalities.

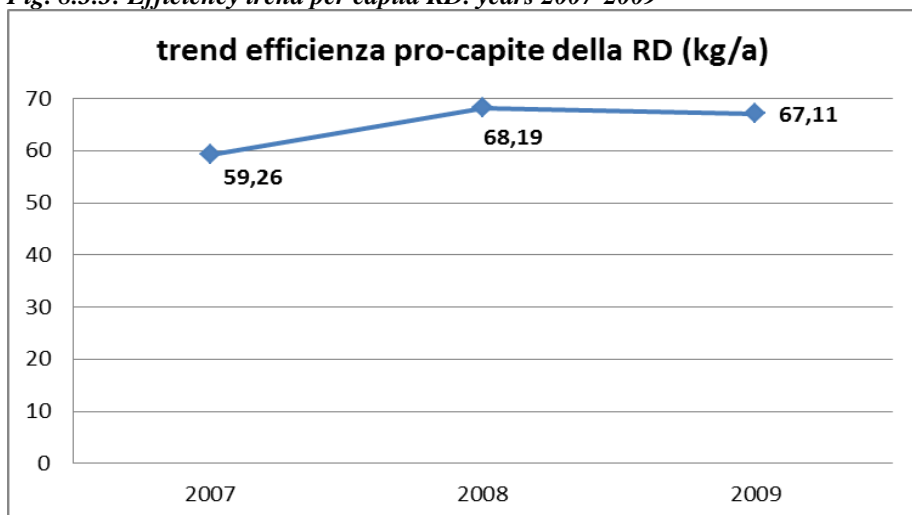
GRAFFIGNANO	0,0	0,0%	N.P.	N.P.
GROTTE DI CASTRO	14,4	14,4%	18,7%	4,3%
ISCHIA DI CASTRO	5,9	7,2%	8,8%	1,7%
LATERA	3,8	14,7%	12,7%	-2,1%
LUBRIANO	4,9	9,4%	11,7%	2,3%
MARTA	1,6	7,1%	7,1%	0,0%
MONTALTO DI CASTRO	15,4	21,7%	26,3%	4,6%
MONTE ROMANO	2,5	2,1%	2,8%	0,6%
MONTEFIASCONE	12,6	13,9%	14,5%	0,6%
MONTEROSI	54,4	59,7%	53,8%	-5,9%
NEPI	38,6	54,6%	61,1%	6,5%
ONANO	4,7	4,4%	4,4%	0,1%
ORIOLO ROMANO	6,5	62,3%	73,8%	11,5%
ORTE	4,4	5,5%	3,0%	-2,5%
PIANSANO	12,4	13,1%	17,1%	4,0%
PROCENO	6,3	6,6%	11,1%	4,4%
RONCIGLIONE	9,0	6,3%	N.P.	N.P.
SAN LORENZO NUOVO	10,8	11,4%	9,7%	-1,8%
SORIANO NEL CIMINO	5,9	13,6%	12,5%	-1,1%
SUTRI	2,6	4,6%	5,3%	0,7%
TARQUINIA	8,4	9,1%	12,6%	3,5%
TESENNANO	3,8	5,5%	N.P.	N.P.
TUSCANIA	24,6	10,7%	10,4%	-0,3%
VALENTANO	3,5	5,6%	4,8%	-0,8%
VALLERANO	3,3	11,2%	15,6%	4,4%
VASANELLO	5,1	4,0%	4,5%	0,4%
VEJANO	7,1	7,9%	10,9%	2,9%
VETRALLA	12,7	12,3%	13,0%	0,7%
VIGNANELLO	2,4	4,7%	5,0%	0,3%
VILLA S. GIOVANNI IN T.	11,1	7,4%	N.P.	N.P.
VITERBO	14,6	17,2%	11,0%	-6,2%
VITORCHIANO	3,5	8,0%	N.P.	N.P.
TOTALE PROVINCIALE	10,9	13,5%	14,4%	+0,9%

Font: elaboration department of Environment

The efficiency of recycling per capita is the ratio of municipal waste sent for recycling (in kg) and the resident population: this indicator aims to assess the amount of waste that each resident is able to differentiate into the appropriate bins in a period of one year.

In the province of Viterbo the value of recycling per capita increased from 2007 to present, this is a symptom of a greater sensitivity from citizens to environmental issues. In 2007, in fact, each individual collected waste separately on average in a year about 59 Kg of materials, in 2008 this figure rose to 68 kg with an increase of 15%. In the last year separate waste collection per capita annual production was 67 kg / inhabitant, a little lower than the previous year.

Fig. 8.3.3: Efficiency trend per capita RD. years 2007-2009



Font: Eleboration department of Environment