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CORE

THEMATIC ANALYSIS
IN THE FIELD OF BIOWASTE IN
SOUTH TYROL, ITALY

INVENTORY OF EXPORTABLE GOOD PRACTICES
&
INVENTORY OF SITES, FACILITIES, AREAS AND INSTRUMENTS TO BE IMPROVED DURING THE COOPERATION

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This analysis has been prepared by **Waste Management Office of the Environmental and Climate Protection Agency** *on behalf of* **Autonomous Province of Bolzano – Alto Adige – SOUTH TYROL** *region in the framework of the Interreg Europe programme project "Composting in Rural Environments" (CORE). This project receives financial support from the European Union through the Interreg Europe programme. This publication reflects the author's views only and the Interreg Europe programme authorities are not liable for any use that may be made of the information contained therein.*

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1. Introduction

General context

Biowaste comprises biodegradable garden and park waste, food waste from households, offices, restaurants, canteens and retails as well as waste from food processing plants.

Composting (treatment in the presence of oxygen) leads to soil improvers; anaerobic digestion (treatment in absence of oxygen) to biogas[1].

Across the EU, between 118-138 million tons of biowaste are generated annually; of them, only 40% is recycled into quality compost and digestate.

Moreover, up to 50% of municipal solid waste - on average - is organic, so this fraction seems central for the circular economy.

In the case of rural environments with low-density population, the management of the organic fraction is environmentally and economically impactful, since a contaminating and expensive process is required to collect, transport and treat small amounts of organic waste dispersed in distant and sparsely populated villages.

Prevention of biowaste and the normalization of quality composting could contribute to the drastic reduction of this fraction and of the effects derived from its management. The product obtained can be used as soil-improving material and fertilizer in local and regional parks and gardens or in the form of biogas, while further uses could be promoted.

Despite the fact that regional and local policies in force all over Europe observe the transition of the waste management sector towards a circular economy, the treatment of biowaste is often not sufficiently developed, notwithstanding its potential to comply not only with circular economy but also with the mitigation of climate change.

The project rationale

In the frame described, the Interreg Europe project CORE – Composting in Rural Environments - intends to be an accelerator for rural territories to develop *composting* further.

The project brings together regional and local administrations with competences on biowaste management from 8 rural regions from all over Europe, which are accompanied and supported in the project by the European Compost Network (ECN), in the role of advisory partner.

[1] Even if the project literature uses the word "*composting*" by default, CORE project addresses both composting and anaerobic digestion and also prevention and separation in rural areas, as steps conditioning the process. However, for the sake of simplification the word "*composting*" is used in a generic way, representing all of them though in practical terms.

For 4 years, the partners will export and import experiences on biowaste treatment, with the expected result of new projects and improved policies with regard to biowaste in all the partner territories.

The purpose of the Thematic Analyses projected

Interreg Europe is a programme for exchange of experiences and policy improvement. In line with it, the "studies/analyses" authorized for financing have not a research or scientific purpose, as this is not the programme rationale.

The goal of "studies/analyses" in an Interreg Europe context has to be them to contribute to and to facilitate the process of exchange of experiences and policy and territorial improvements.

Accordingly, the Thematic Analyses authorized in CORE must serve for each partner territory to prepare, during semester 1, the 4 years of cooperation to come, defining in advance – in the form of a roadmap – (I) what local experiences will be shared with the partners during the years to come and (II) what local resources could be further developed/ improved thanks to the knowledge gained during the cooperation. This information will be systematized in the form of inventories.

These inventories won´t be immovable, as during the project new exportable experiences and new areas for improvement can emerge; but the purpose is each partner territory making, from the very beginning, an exercise of self-reflection useful to plan their part in the cooperation and the benefits they could obtain out of it, listing a good number of experiences to be shared and a series of local gaps that hopefully could be fulfilled thanks to the experience gained in the project.

The following pages offer a template model to inventory such information.

The Thematic Analyses are conceived to be useful for each partner producing them, as they are setting up the milestones for partner during the cooperation: what will be provided, what is expected to be improved. They should be roadmaps for the different project teams, serving as reference documents throughout the project. Despite their primarily local interest, they will be uploaded in the CORE webpage "Library" section as a proof of the work done and as possible inspiration for others.

It is possible that in order to obtain the information required – inventories of practices and improvement areas - different means are needed, such as meetings with different local actors, interviews, surveys, revision of documents. If needed, they are valid in the way that they contribute to the fulfilment of the inventories requested.

Last, but not least, mentioning that stakeholders can play a central role in this exercise of self-reflection and planning. Involve them!

2. Regional Context
3.

The province of Bolzano - South Tyrol has approximately 534,000 inhabitants and covers an area of 7,400 km², 80% of which is considered mountainous, only 6% is inhabitable.

About 60.000 tons of biowaste are collected on average in South Tyrol per year. This waste comes from different sources and is divided into organic waste (38.868 tons in year 2022) and green waste (22.338 tons in year 2022). Organic waste is waste from kitchens and canteens and is collected in special bins for wet waste. Green waste is waste from parks, gardens and landscaping. Organic waste is recovered at composting and digestion plants. Green waste is recovered in composting plants either directly as green compost or as a structural component in the composting of organic waste. Biogenic waste is mostly recovered at the eight composting plants (of which two plants only for green waste) and the two anaerobic digestion plants in the area. A small part of organic waste is composted by South Tyroleans in their own backyards.

Central in the state of play and evolution of Southtyrolean biowaste policies is the “2000 Waste Management plan”, approved in its first version in 1993 by the Provincial Council of Bolzano (Resolution 6801). The plan defines the guidelines for waste management and for the transition from landfilling only to the recovery and pre-treatment of waste. From that date, waste management became a matter of public interest. With the approval of the plan, the foundations for public funding were laid. With a special law, public facilities can be built and taken into operation. The implementation of the plan was largely financed by the provincial government.

The Waste Management plant covers prevention, reduction, recycling, treatment and disposal, with the managing of the plants in South Tyrol: 86 recycling plants, 4 waste management plants, 8 composting plants, 4 waste transhipment stations, 4 landfills for waste, 1 waste incinerator

Thereafter, according to the EU Directive 2008/98/CE the Plan has been subjected to several updates to adapt to new focuses of interest: in 1999 (Resolution No. 285: management of urban waste, depuration sludge, green waste), in 2005 (Resolution No. 2594, regulation of municipal waste management up to 2030 with information on user basins and the individual necessary plants), in 2016 (Resolution No. 1431, concerns measures to reduce domestic municipal waste and the collection and recovery of organic waste); the last update took place in 2021 (Resolution No. 1139).

The objective of the last update has been better approaching littering reduction through waste dispersal measures and the reduction of food waste; also particular attention has been paid to waste planning in the province of Bolzano, with the aim of synergistic use of facilities in the province - composting plants, biogas fermenter to improve compost quality.

The waste management office of the provincial environment agency is the competent authority that carries out standardization and rule-making activities for waste management in our province by drafting and periodically updating the Waste Management Plan, is responsible for issuing regulations at local level, and drafting technical standards, provides authorizations for waste

management plants, has an advisory function in the construction and management of facilities and has a control function through inspections, sampling and analyses of the compost.

The building of the waste management facilities was financed by municipalities, district communities and the Province of Bolzano with tax money, which is therefore also owned by these actors. The facilities are operated by municipal building yards, the environmental services of the districts, an in-house company of the Province of Bolzano and some private waste management companies.

The actors involved are the different levels of administration in the Province of Bolzano (municipalities, district communities, provincial administration), the public and private operators of collection facilities and waste management plants, and finally each individual citizen.

4. Inventory of Good Practices to be shared during the cooperation[2]

Local Good Practices on Community Composting[3]	
Title:	
Location of the practice:	**Province of Bolzano – SouthTyrol**
Short summary:	There is no public Community Composting in the Province of Bolzano
Responsible organization:	

[2] If needed, more tables can be added; equally, those not needed can be deleted.

[3] Even if the Good Practices under this category where already shared in Thematic Seminar I in Ciudad Real, please insert them in the document so that it can be as much comprehensive as possible.

Local Good Practices on Individual Composting[4]

Title: **Individual Composting**	
Location of the practice:	**Each municipality in the Province of Bolzano - SouthTyrol, district communities.**
Short summary:	In accordance with the first waste management plan of the Province of Bolzano, the provincial environment department conducted a comprehensive programme to promote home composting, with information activities and the allocation of funds for the distribution of small composting bins. In cooperation with Ökoinstitut (an environmental research institute in the area), a brochure in both languages (Italian and German) on home composting was published in 2000 and updated in 2015: Pubblicazioni | Agenzia provinciale per l'ambiente e la tutela del clima | Provincia autonoma di Bolzano - Alto Adige Publikationen | Landesagentur für Umwelt und Klimaschutz | Autonome Provinz Bozen - Südtirol
Responsible organization:	**Environmental Agency of the Province Bolzano**

[4] Even if the Good Practices under this category where already shared in Thematic Seminar I in Ciudad Real, please insert them in the document so that it can be as much comprehensive as possible.

Local Good Practices on Centralized/Industrial Composting and Anaerobic Digestion[5]

Title: **From farm composting to robust composting plants in rural areas**	
Location of the practice:	**Province of Bolzano - SouthTyrol**
Short summary:	At the beginning of the 1990s, the Province of South Tyrol focused on the management of organic waste in rural areas by intensifying individual composting and by using windrow composting plants. As a result, several municipalities in South Tyrol tried to process their organic waste in open windrow composting and to use the resulting compost in agriculture as a soil conditioner. In 1993 this was laid down in the "Waste Management Concept 2000". When the "Waste Management Concept 2000" was updated in 1999, the legal and technical provisions for the expansion of supra-municipal composting plants were incorporated. Some of these facilities were expanded and are now robust, medium-sized facilities for organic and green waste in rural areas. In the 1980s, the province of Bolzano tried to solve the waste problem by building landfills and pre-treatment of municipal waste. Therefore, three central plants for the composting of municipal waste were built. The objective was to save landfill volume and to produce waste compost, which could be used in agriculture. Two of the plants were in function for a few years, but never reached the set targets. The limit values in the residual waste compost produced were so far exceeded that it had to be sent to landfill. There it caused the well-known problems with leachate and landfill gas. For two of the plants, a so-called "green line" had already been started in the early 1990s. One of these "green lines" was later expanded into a composting plant. The composting plant in Bolzano did not survive the testing period and had to be closed. The first lesson was that a public administration should only use mature, robust systems for the treatment of waste. Secondly, a mix of de-centralised and centralised plants is needed for the treatment of organic waste. In rural areas, a mix of home composting, farm windrow composting and regional composting plants should guarantee the treatment of organic waste. This was then laid down and implemented in the 1999 update of the waste management plan. Due to the state obligation to separate organic waste (green and bio-waste), the directive on public bio-waste and bio-waste collection as well as composting was issued. Therefore, for rural areas, composting was promoted in different scales. A distinction was made between home composting, farm windrow composting, and regional composting plants. Information campaigns were launched in all the municipalities to intensify home composting, and compost boxes were distributed. In many cases, however, the population misjudged the effort needed for individual composting. It became clear that home composting is more than just putting organic waste in the top of the composter and taking the finished compost

[5] Even if the Good Practices under this category where already shared in Thematic Seminar I in Ciudad Real, please insert them in the document so that it can be as much comprehensive as possible.

	out of the bottom. Therefore, it became clear very soon that processing of organic waste by citizens was only possible to a limited extent. The beginning of the introduction of a country-wide organic waste collection and the expansion of some existing plants into regional composting plants was the next step towards a functioning management of organic waste. In the last 20 years, some of the farm-operated composting plants have been expanded into regional composting plants. The composting plants can process from 2,000 to 10,000 tons of organic waste, depending on the technology and size. The composting process used is the open windrow composting with and without forced aeration. The compost produced today is of very good quality. In agriculture, the compost produced is *preferably used as a soil conditioner.* All the plant are funded with public money. In fact, no individual benefits economically from waste disposal. Financing takes place through the province with waste tariffs and directly with the disposal costs paid by the municipalities per ton of waste. The knowledge gained from the beginnings of biowaste management led to a consistent continuation of the implementation of the waste management plans. The additional construction of a central anaerobic digestion plant made it possible to extend biowaste collection to urban centres. At the same time, composting plants were deprived of the pressure to accept pure wet waste. The partial overloading of the composting plants could therefore be reduced. Today, composting plants in South Tyrol process 40,000 tonnes of the organic waste here produced and are a good solution for rural areas in terms of energy use, costs, and technical effort. Thanks to this mix of plants, South Tyrol is now able to treat all bio-waste and most of the green waste itself.
Responsible organization:	**Waste Management Office, Composting Plants**

Title: **Anaerobic digestion in Province of Bolzano**	
Location of the practice:	**Lana, South Tyrol**
Short summary:	Before the anaerobic digestion plant was installed, in the province of Bolzano, Italy, many municipalities had small composting facilities. As for the largest municipality, namely the city of Bolzano, the collection of organic waste was not done and went to incineration along with other urban solid waste. Therefore, with the establishment of European directives that obliged the municipality of Bolzano to implement separate collection of organic waste, a treatment plant had to be built (exporting waste to other regions was not an option). Not only Bolzano but also other municipalities could from then on deliver their waste to the anaerobic digestion plant. From a technical point of view, the objective was achieved by implementing a wet anaerobic digestion plant for OFMSW with energy recovery. Anaerobic digestion is a process in which microorganisms break down biodegradable material in the absence of oxygen. The process produces a biogas, which is used directly as fuel, in combined heat and power gas engines. The produced electricity is self-consumed and sold to the grid. The process still generates a quantity of digested sludge that must be sent to a composting plant. Both the province and municipalities benefit directly from this process, as well as the citizens who see a low tariff thanks to its efficiency. In addition, clean energy is produced which further lowers the operating costs of the plant.
Responsible organization:	**Waste Management Office, Eco center s.p.a.**

Local Good Practices on Prevention of Organic Waste

Title: **Promotion of initiatives against food and non-food waste: regulation**	
Location of the practice:	**In the whole Province of Bolzano - SouthTyrol**
Short summary:	Provincial law n. 2 (13.03.2018) on the donation and distribution of foodstuffs for social solidarity and limiting waste. In addition to enhancing solidarity and charity activities inspired by the principles of social responsibility, the law also aims to promote better environmental sustainability by reducing waste at each stage of production, processing, distribution and administration of food and non-food products. To pursue the objectives, the Province promotes - the recovery, donation and distribution of surplus food still for consumption and inedible products, such as unsold drugs but still in their period of validity and used clothing, for the benefit of people in situations of social distress; - the autonomous initiative of individuals, citizens and associations and voluntary activities, in compliance with the principle of subsidiarity; - responsible consumption as a means of reducing food and non-food waste; - actions to reduce waste production and to recover and transport food, including for personal or family use; - information and awareness-raising campaigns for consumers, businesses and institutions aimed at the dissemination of the purposes set out . Detailed rules for the disposal and requirements for the conservation of surplus food are laid down. A Table for the Coordination of Waste Reduction and Surplus Distribution Policies and a Technical Committee are hereby established.
Responsible organization:	**Department responsible for social policies of the province of Bolzano**.

Recovering unsold and non-expired food from supermarkets, canteens, cafeterias, pastry shops, fruit and vegetable shops and redistribute it to the needy (voluntary associations involved in several projects). The Province and the local authorities can grant to the donors contributions for the documented expenses incurred for the recovery and distribution of food surpluses and there is a financial allocation to cover these expenses. Some examples of currently active initiatives are listed below:

Title: **Food waste prevention initiatives: Food Bank Trentino Alto Adige – City Cibo Project**	
Location of the practice:	**Many municipalities of the Province of Bolzano - SouthTyrol**
Short summary:	This food bank collects surplus and donated food, stores it, and distributes it to charitable organizations in South Tyrol. With this initiative, long-lasting food donated by customers is gathered in supermarkets and then distributed directly to those in need.
Responsible organization	**Banco Alimentare Trentino Alto Adige**

Title: **Food waste prevention initiatives: Food parcel distribution – Food tables**	
Location of the practice:	**8 municipalities of the Province of Bolzano - SouthTyrol**
Short summary:	High-quality, wholesome food items are collected and distributed to those in need. Perishable items nearing their expiration date are rescued and given to those in need before they are discarded.
Responsible organization	**Società di San Vincenzo**

Title: **Food waste prevention initiatives: Crumb hunters - helping without wasting**	
Location of the practice:	**Bolzano, Merano, Brunico - SouthTyrol**
Short summary:	The crumb hunters are volunteers from the Volontarius Association, who speed through the cities of Bolzano, Merano, and Brunico on their blue bicycles in the evening, collecting bread, pastries, and other unsold food from bars, pastry shops, bakeries, fruit and vegetable stores, and supermarkets. The collected food is distributed through the FoodNet BZ network to charitable organizations (Caritas, La Strada, etc.) and delivered to people living on the streets and needy families.
Responsible organization	**Volontarius Association**

Title: **Food waste prevention initiatives: Emporio Solidale – Crumb Market**	
Location of the practice:	**Bolzano, Merano, Brunico - SouthTyrol**
Short summary:	This is another initiative by the Volontarius Association. It is a solidarity emporium with a store where people in need can purchase essential food items such as oil, bread, pasta, rice, and other pre-packaged products in boxes. Instead of money, "purchase points" are used, calculated and assigned based on income and the number of family members.
Responsible organization	**Volontarius Association**

Title: **Food waste prevention initiatives: Vinzimarkt**	
Location of the practice:	**Bolzano - SouthTyrol**
Short summary:	VinziMarkt is a grocery store in Bolzano for people in need and is part of the food tables of the Society of St. Vincent of South Tyrol. At VinziMarkt, individuals in need can purchase any food item using points rather than money. The indigence of individuals is determined by the counseling office. The food is provided by the Food Bank, crumb hunters, Volontarius, and 30 other organizations, as well as companies and private individuals.
Responsible organization	**Società di San Vincenzo**

Title: **Food waste prevention initiatives: VinziBus**	
Location of the practice:	**Bolzano - SouthTyrol**
Short summary:	VinziBus distributes food and hot meals to people in need in Bolzano. The hot meal is freshly prepared every day, and food and sweets are provided by private donors, crumb hunters, and Vinzimarkt.
Responsible organization	**Società di San Vincenzo**

Title: **Food waste prevention initiatives: Bottega Santo Stefano**	
Location of the practice:	**Bolzano - SouthTyrol**
Short summary:	At Bottega Santo Stefano, individuals in need can purchase any food item using points rather than money. The products come from stores, the Food Bank, crumb hunters, Aspiag, FoodNet Bz, and City Cibo.
Responsible organization	**Associazione caritativa Santo Stefano**

In the field of food waste prevention also communication campaign and awareness-raising activities are organized by many associations to increase public awareness of food waste and to offer workshops for schools:

Title: **Food waste prevention – Communication campaign: YoungCaritas – Tasty Waste**	
Location of the practice:	**Province of Bolzano - SouthTyrol**
Short summary:	Workshops are organized for middle schools, high schools, vocational schools, and groups of interested individuals throughout the year. Role-playing games and interactive exercises illustrate facts related to food waste. All participants are engaged in discussions and idea exchange, encouraged to reflect on their own relationship with food.
Responsible organization:	**YoungCaritas / Caritas Diocesi di Bolzano – Bressanone**

Title: **Food waste prevention – Communication campaign: Slow Food Alto Adige Südtirol**	
Location of the practice:	**Province of Bolzano - SouthTyrol**
Short summary:	Slow Food is committed globally to a food culture based on appreciation, responsibility, and pleasure. Individuals active in this network are dedicated with conviction and passion to a sustainable food system for the future, one that preserves the variety of flavors and bioculture, strengthens local sourcing, and increases the value attributed to food. The foundation of this concept is the quality of food; therefore, Slow Food's food must be good, clean, and fair. The Slow Food Chefs' Alliance, events, and educational activities in schools are organized to convey the Slow Food philosophy. Presidia support traditional high-quality products, and there's a reinforcement of the supply of local products obtained through traditional methods. The goal is to promote food while indirectly limiting food waste.
Responsible organization:	**Slow Food Alto Adige Südtirol**

Title: **Food waste prevention – Awareness campaign: Initiative “Too good”**	
Location of the practice:	**Bolzano, Bressanone, Brunico, Merano, Silandro - SouthTyrol**
Short summary:	This is an initiative by the hoteliers' association aimed at raising awareness for more conscious consumption. Free take-out containers provided by the Autonomous Province of Bolzano are distributed to interested restaurateurs. This way, people dining out can take any unconsumed food home with them.
Responsible organization:	**Hoteliers- und Gastwirteverband (HGV)**

Title: **Food waste prevention – Communication campaign “Voku Pocu (Popular cuisine)”**

Location of the practice:	**Kaltern - SouthTyrol**
Short summary:	With the food discarded by stores and markets, collected by students, creative and tasty meals are prepared. In this way, VokuPocu collaborates to reduce significant waste, giving social and cultural value to the food during communal preparation and contributing in an environmentally sustainable and socially responsible manner.
Responsible organization:	**Umweltgruppe Kaltern**

Local Good Practices on Regulation for Composting

Title: **Update of the policy instrument (Waste management plan): Decision GP 01.02.1999, n. 285**	
Location of the practice:	**Province of Bolzano – SouthTyrol**
Short summary:	Publication of the first update to the waste management plan (WMP) with practical and technical guidelines on the processing of organic waste, with particular attention to agricultural practices. Description of the process, prescriptions, and technical provisions, along with funding details for decentralized composting.
Responsible organization:	**Waste management office of the Environmental agency.**

Local Good Practices on Training of Master Composters and
Engagement of Citizens and Organizations of the Rural Areas in Composting

Title: **Home composting guide**

Location of the practice:	**Province of Bolzano – SouthTyrol, private gardens**
Short summary:	In South Tyrol there is no more a tradition of training of master composters. In the 90s there was rather focused on small domestic composting and at that time, the role of an environmental consultant had been established, who, among the skills, also supported citizens in setting up home composting. Over time, this role has not been continued due to reasons related to training and funding availability. By need, municipalities can request informative sessions for the population from the Waste Management Office. Moreover, citizens are addressed to the guide on composting practices prepared by the Ökoinstitut on behalf of the Waste Management Office, first published in 2000 and updated in 2015, published in both languages (Italian and German). The guide is available on the Website of the Environment and Climate Protection Agency: https://umwelt.provinz.bz.it/publikationen.asp?publ_action=4&publ_article_id=299203 https://ambiente.provincia.bz.it/pubblicazioni.asp?publ_action=4&publ_article_id=299204
Responsible organization:	**Waste management office of the Environmental agency.**

Local Good Practices on Good Use and Different Uses of Compost and Digestate-based Products

Title: **Use of compost in orchards and agriculture**	
Location of the practice:	**Province of Bolzano – SouthTyrol**
Short summary:	The quality compost produced in the composting plants in the Province of Bolzano is made available to farmers and gardeners at a subsidised price as fertiliser for local crops, thus closing the material loop on site.use of compost in orchards and agriculture. In addition, compost is used as a soil improver in landscaping.
Responsible organization:	**Composting plants.**

Local Good Practices on Smart Composting in Rural Areas

Title: **Odour reducing and speeding up the process**	
Location of the practice:	**South Tyrol, some composting plants**
Short summary:	One of the issues often encountered in the composting process concerns the release of unpleasant odours, mainly associated with the early stages of organic matter degradation and the quality of the matter itself. This problem is accentuated by the physical conformation of the South Tyrolean territory, which is predominantly mountainous and does not offer large open areas in which to locate the plants. To overcome this drawback, some plants have introduced rotting boxes upstream to the process (for the hot rotting phase) to reduce odour, thus also speeding up the initial processing of the material. Another practice in use in some green composting plants is the spraying of bergamot essence on the incoming piles when mixing the material, which adsorbs unpleasant odours, neutralising them and thus reducing odour emissions. Moreover, many South Tyrolean composting plants control odour emissions with the use of effective microorganisms (EM)
Responsible organization:	**Composting plants, anaerobic digestion plant.**

5. Inventory of sites, facilities, areas and instruments to be improved thanks to the cooperation

In South Tyrol, there is a need to assess the extent of food waste; this is certainly an identified area for improvement.

Title: **Food waste prevention – State of the art of Food Waste in South Tyrol: SURVEY**	
Location of the practice:	**Province of Bolzano – SouthTyrol**
Short summary:	Objective of the Coordination Table for Waste Reduction is to obtain a reliable measure of the amount per capita of food waste in South Tyrol. Only by knowing the exact quantities of food waste will it be possible to halve them, as foreseen by European regulations. Due to the lack of an easily applicable methodology for this estimate, a methodological study has been commissioned to the University of Vienna as external support to draft an analysis of the state of the art of biowaste in the province of Bolzano, in the frame of CORE project. The output of this study will be a practical calculation tool that, based on the data collected in the ordinary activities of the waste management office, allows quantifying food waste, differentiating between domestic, distribution, collective catering, and production chain sectors. The study is ongoing.
Responsible organization:	**Waste management office of the Environmental agency.**

Local Resources to be improved thanks to the cooperation	
Name: **Green composting**	
Type of resource	▪ **composting site** ▪ installation ▪ product ▪ **potential composting site** ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: _____
Short description of the need for improvement:	In South Tyrol the collection of wet waste is widespread and well organised, by contrast there is a trend to leave green waste in wooded areas. There is a need to develop projects to establish new green composting plants serving more municipalities.

Responsible organization:	**Waste management office of the Environmental agency, involved municipalities.**

Local Resources to be improved thanks to the cooperation	
Name: **Master composter training**	
Type of resource	▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ **other: training courses**
Short description of the need for improvement:	We feel the need to periodically organise training and/or refresher courses for master composters, as we have seen done in other realities involved in the CORE project
Responsible organization:	**Waste management office of the Environmental agency**

Local Resources to be improved thanks to the cooperation	
Name: **Closure of the anaerobic digestate cycle of the Lana biogas plant**	
Type of resource	▪ composting site ▪ installation ▪ product ▪ **potential composting site** ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: _____
Short description of the need for improvement:	Digestate from anaerobic digestion at the Lana biogas plant is currently concentrated and disposed of as special waste outside the province. It would be very interesting to provide closure for the processing of organic waste in the province, either by sending the digestate to one of the existing composting plants in the area, or by expanding the Lana plant with a part intended for this activity. The CORE project can be an inspiration, in comparison with project partners who have already adopted similar solutions. We will consider whether to request a pilot project to carry out composting trials with this kind of matrix in one of the existing facilities in South Tyrol.

Responsible organization:	**Waste management office of the Environmental agency, involved plants**

Local Resources to be improved thanks to the cooperation	
Name: **"Smart" platforms**	
Type of resource	▪ composting site ▪ installation ▪ product ▪ potential composting site ▪ potential installation ▪ potential product ▪ regulation ▪ programme ▪ plan ▪ other: **Digitalization of the tracking system in composting plants**
Short description of the need for improvement:	We believe it would be useful to implement automated systems for compost management (App for recording temperatures, movements, pile treatments, digital notebooks and logbooks instead of paper…..) as we have seen done in other realities involved in the CORE project
Responsible organization:	**Waste management office of the Environmental agency**

6. Conclusions

The performance of the waste management in South Tyrol is on a moderate to high level. Over the past 25 years, the Province of Bozen/Bolzano has managed to significantly reduce the proportion of organic waste in its residual waste, thereby increasing the fraction of organic waste that is collected separately and sent for recovery in biogas and composting plants. The importance of reducing organic waste in residual waste was emphasised as early as the first local waste management plan. The amount of separately collected organic waste was increased from 35 kg/capita and year (2006) up to 72 kg/capita and year (2022).
In total, the amount of organic waste collected in 2022 is 61,806 tonnes (38,868 tonnes of food waste and 22,338 tonnes of green waste). Of the organic waste collected, green waste and 47% of food waste are composted, while 53% of food waste is treated anaerobically to obtain energy and then composted (the latter stage outside South Tyrol).

The network of actors involved in waste management, organic waste, separate collection, and residual waste, was established by the will of the public administration and with significant public investment since the 1990s. It is widely distributed across the provincial territory.

Currently, there is a good efficiency in recovering various fractions of separate collection (68.9%), and as for the organic fraction, it is entirely directed towards recovery. These results were achievable thanks to what was outlined in the waste management plan of 2000 and

subsequent updates. Nevertheless, as of today, approximately 30% of urban solid waste consists of organic waste. The challenge will be to further reduce the organic fraction in mixed waste.

There are therefore opportunities for improvement, especially regarding the treatment of sludge from anaerobic digestion (currently treated outside the province), the quantification of food waste, and the management of green waste that is sometimes abandoned in wooded areas.

In this regard, the CORE project represents an opportunity for the Province of Bolzano to draw inspiration from comparing with other contexts where these issues have already found possible solutions that could be adopted.