



Zero Waste Europe was created to empower communities to rethink their relationship with resources. In a growing number of regions, local groups of individuals, businesses and city officials are taking significant steps towards eliminating waste in our society.

CASE STUDY #1



August 2013

THE STORY OF CAPANNORI

Located in the North of Italy, Capannori has one of the highest municipal recycling rates in Europe. This zero waste town is an example of strong policy decisions and community participation achieving groundbreaking results. This case study reviews the story of their success to date.

Nowhere is the phrase “Mighty oaks from little acorns grow” truer than in the small town of Capannori, Italy where a small but determined movement to stop the construction of an incinerator led to an Italy-wide grassroots Zero Waste movement.

Battle of the Burners

Capannori, a town of 46,700 inhabitants near Lucca in Tuscany, was set to be just another step in the relentless march of waste incineration in Italy. The Northern European model of burning waste to avoid the environmental and social problems associated with landfill and to produce energy was gaining traction in Italy, a country beset with a dramatic and urgent waste management problem. Local medical organisations and even environmental NGOs put up little resistance, seeing incineration as the least-bad solution to a seemingly impossible dilemma. **Business interests and pressure from Northern Europe contributed to a rush to incineration that seemed unstoppable.**

Those who should have mounted the most strenuous defence against the encroachment of incinerators were lacking. The public debate did not discuss the fact that **incineration encourages waste generation, competes with recycling, aggravates the sustainability challenge, sparks corruption and releases toxic emissions while capturing just a tiny bit of the energy stored in waste.**



- Population: 46,700
- Zero Waste strategy signed in 2007
- 40% waste reduction in 10 years
- Today, 82% of the waste is separately collected

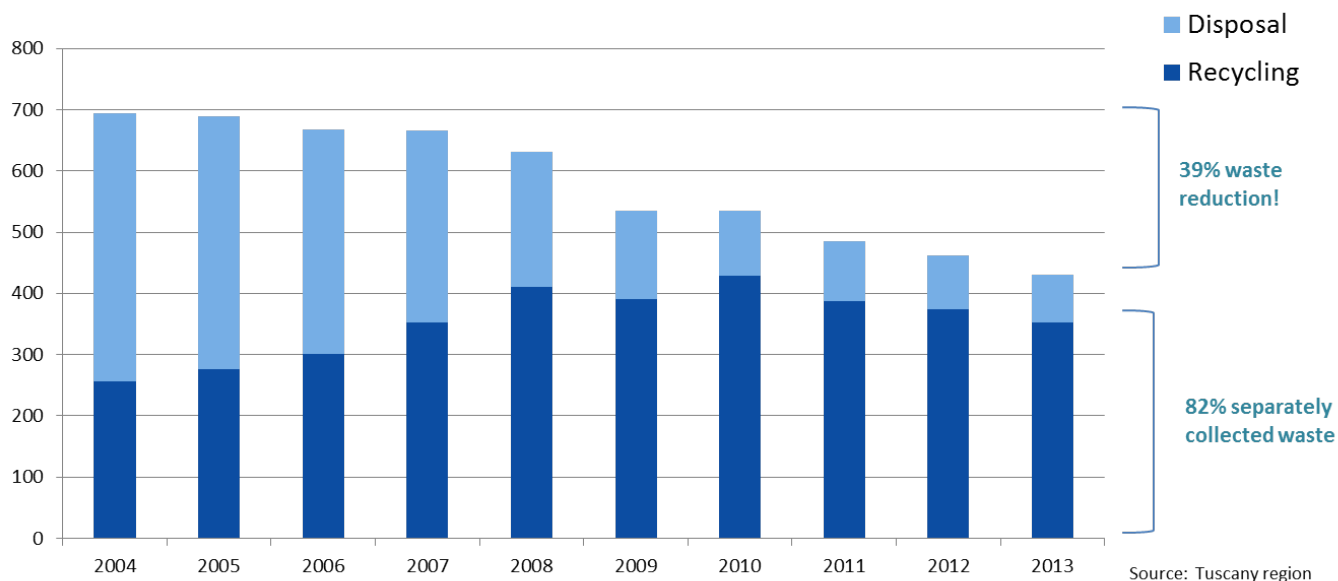
Communities such as Capannori were left to fight the construction of incinerators on their own.

In 1997, primary schoolteacher Rossano Ercolini recognised the potentially damaging effects the planned local incinerator would have on the health of residents and on the surrounding landscape. With the help of Dr Paul Connett, a world expert on incineration and Zero Waste, he set about convincing local residents of the potential danger of erecting an incinerator in their community. The movement was successful in blocking construction and soon spread to three other communities threatened with incineration in the region.

What's the Alternative?

Tasked with implementing an alternative to incineration, **Ercolini decided that the only approach was that of waste reduction.** He took over the running of the local waste collection corporation, ASCIT, to create a door-to-door waste collection pilot scheme. After a year he stepped down from his role and went back to campaigning against incineration around Italy. **Ercolini managed to persuade the town council of Capannori to be the first in Europe to sign up to the Zero Waste strategy in 2007, committing to sending zero waste to landfill by 2020.** Door-to-door collection was introduced in stages across the municipality between 2005 and 2010, starting with small villages, where any mistakes could be identified and corrected early on, then extended to cover the entire municipal area in 2010. **By that time, 82% of municipal waste was separated at source, leaving just 18% of residual waste to go to landfill.**

Evolution of separate collection and waste generation in Capannori 2004-2013 (in Kg/person/year)



In 2012, a number of villages in the municipality became subject to a new 'Pay As You Throw' waste tariff, where the frequency of collection per household is measured using microchips in stickers on residual waste bags, scanned by a reader on the collection vehicle. In those areas the new tariff incentivized better separation and prevention, driving local source separation rates up to 90%.

Transparency and Consultation

Local politicians recognize that the key to their success with the door-to-door collection scheme and other zero waste measures was the **early and active consultation of residents. Meetings were held in public places to gather input and ideas and involve the local**

population in the Zero Waste strategy. Printed information was sent to every address. A few weeks before door-to-door collection was introduced in a given area, volunteers distributed free waste separation kits to all homes, including the various bins and bags required and further printed information. Volunteers were trained to answer residents' questions about the new scheme, all of which meant that participation was smooth, immediate and effective.



A study carried out by La Sapienza University in Rome, comparing door-to-door collection in three communities in Italy (Capannori, Rome, Salerno), found that in Capannori participation (99% of inhabitants sort waste) and satisfaction (94%) were higher than in the other two communities. This correlates to the high percentage of Capannori residents who received literature about the changes (98.6%), attended meetings about changes in collection (46%) and know where to go to ask for information about waste collection (91%).

An Economically Viable Solution

The savings from no longer sending most waste to expensive landfill sites, and earnings from the sales of materials to recycling plants mean the scheme is **economically self-sufficient, even saving the council over €2m in 2009.** These savings are ploughed back into investments in waste reduction infrastructure, and reducing fixed waste tariffs for residents by 20%. It has also funded the recruitment of 50 ASCIT employees, boosting employment in the region.

Composting

One of the most successful elements of the new collection system has been the diversion of the organic waste stream. Not only does ASCIT carry out frequent door-to-door collection of organic waste, which is sent to a composting plant in the province, in 2010 public canteens in Capannori were supplied with Joraform composting machines. In the future these local collective composting machines could be extended to cover groups of residents, which can help to reduce the cost of collecting, transporting and treating organic waste by between 30 and 70%. **Residents have been encouraged to take up home composting, with 2,200 households picking up free composters and receiving training on**

composting techniques. Those households that home compost are given a 10% discount on their waste tariff as an incentive, and spot checks have shown that 96% of households are still using their composters correctly. A biomethanisation plant for the area is currently in the planning and consultation stage.

Designing Waste Out of the System

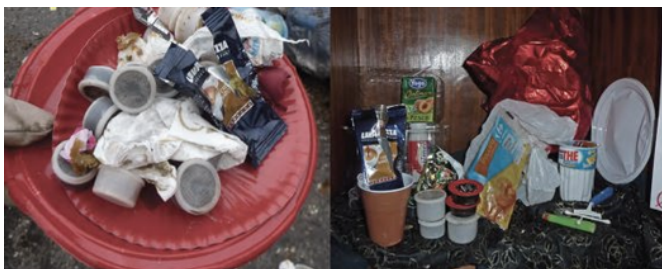
In 2010, Capannori set up the first Zero Waste Research Centre in Europe, where waste experts identify what is still being thrown in the grey residual waste bags

and come up with solutions to get that 18% figure down even further. **Finding that items such as coffee capsules were among the most commonly discarded items, the Research Centre held meetings with coffee manufacturers such as Nespresso and Illy to work on biodegradable or recyclable alternatives.** The high volume of disposable nappies in residual waste led the municipality to **offer subsidized washable nappies to local parents.**

“The council saved over €2m in 2009. These savings are ploughed back into investments in waste reduction infrastructure, and reducing fixed waste tariffs for residents by 20%. It has also funded the recruitment of 50 ASCIT employees...”



“Taking a collaborative rather than combative approach has meant that manufacturers have responded positively, with coffee manufacturers initiating research into alternatives to capsules.”



One Man's Trash Is Another's Treasure

The Opportunities Behind Reuse

Not only has work been done to improve recycling rates – emphasis has also been placed on reuse. The municipality opened its own Reuse Centre in the village of Lammari in 2011, where items such as clothes, footwear, toys, electrical appliances and furniture that are no longer needed but still in good condition can be repaired where necessary and sold to those in need, thereby diverting them from landfill and serving a vital social function. The centre is steadily expanding its activity- in 2012, 93 tonnes of objects were dropped at the centre and in 2013 those figures look set to rise.

According to Rossano Ercolini, "The record figures from the Lammari 'Ecology Island' (drop-off point for bulky waste and reusable items, ed.) show that **our culture is changing, partly due to the municipality's policies. Whereas before people threw everything away, now they realize that recovering things not only benefits the environment, but also those who can buy them at affordable prices**".

The centre also provides training in upcycling skills such as sewing, upholstery and woodwork, so as to spread the values and practice of reuse as far as possible.

"In 2012, 93 tonnes of objects were dropped at the Reuse Centre where they were repaired and sold to those in need"

Waste prevention pioneers

Where Capannori is truly leading the field is in the area of waste prevention – **between 2004 and 2013 the overall volume of waste generated per person dropped by 39% (from 1,92kg to 1,18 kg/person/year)** and it is foreseen that it will continue to go down thanks to the extension of pay-as-you-throw scheme to all the municipality. More impressively, the rate of unseparated –or residual- **waste per capita was reduced from 340 kg per year in 2006 to 146 kg in 2011, a drop of 57%. Compare this to the figures for Denmark, 409 kg unseparated waste per capita per year (2011), and you can appreciate the scale of the achievement.**

This means that **beyond just boosting recycling rates, local policy makers have looked at ways to reduce waste generation at source.**

In the grocery store Effecorta, inhabitants can buy over 250 locally sourced food and drink products in bulk.

The municipality also offers subsidized washable nappies to local parents.



As part of their Zero Waste Strategy, they have identified 11 areas for action. Perhaps the most visible of these is the sale of products loose or on tap – the municipal council provided tax incentives to local small businesses to stock products that could be refilled with customers' own containers, such as liquid detergents. A grocery shop, Effecorta sprang up in Capannori in 2009 selling over 250 locally sourced food and drink products in bulk. Local residents can buy pasta, wine, oil and many other necessities without having to throw away any packaging.

The Short Chain – A Boon for Local Agriculture

Two self-service refill stations for milk were opened, introducing a model of food distribution called 'the short chain' – the stations are supplied directly by a local farmers' cooperative and consumers buy without the intermediary of a packaging plant or retailer, so that they pay lower prices and farmers make more on each litre. **It has been enormously successful, with 200L a day sold through the stations and 91% of customers refilling their own containers, thereby cutting about 90,000 bottles out of the waste system.**

Other initiatives have included a campaign to increase consumption of tap water rather than bottled (Italians are Europe's biggest consumers of bottled mineral water), doing away with disposable cutlery and flatware in public dings including schools, distributing cloth shopping bags to all 17,800 households and 5,000 to businesses and stocking reusable nappies and sanitary products in municipal pharmacies. All of these initiatives are a result of proactive political nudges in the right direction, leading to residents becoming aware of and able to implement virtuous consumption habits.

A Flagship Community

Taking a proactive, holistic approach and involving residents in all stages of policy development are the key elements that have led



"The two self-service refill stations for milk supply around 200L a day, cutting about 90,000 bottles out of the waste system.

The school is also very involved in the program overall

Capannori to top the European waste prevention leagues and, through its position as the Zero Waste Network's Flagship Municipality, inspire other communities to aim higher than just fulfilling recycling targets. Its committed, visionary leaders have seen opportunities rather than problems, and through transparent engagement with the population have made this the achievement of an entire community.

Today 100s of European municipalities follow the example of Capannori.

**Aimee Van Vliet
Zero Waste Best Practices,
August 2013**

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Or contact:

info@zerowasteurope.eu
 Twitter @zerowasteurope



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CASE STUDY #2



September 2014

THE STORY OF ARGENTONA

The Catalan town of Argentona, in the northeast of Barcelona, spearheads the network of Catalan Zero Waste municipalities. When the door-to-door collection system was introduced in 2004, Argentona more than doubled its recycling rates and became a pioneering reference in Catalonia.

By giving the contract for collection services to a local social enterprise, the municipality also boosted local employment and raised the environmental awareness of the community, showing once more that zero waste is not only about waste, but about our relationship with our surroundings and the empowerment of communities.

Changing Waste Collection

Up until 2004, Argentona had followed the most common waste collection system in Spain, consisting of the separate collection of **four waste streams – glass, paper, lightweight packaging such as plastics and cans/tins, and residual, in separate containers placed on streets. Organic waste would not be collected separately, usually resulting in significant contamination in the recyclable and residual waste streams.** Following this system, recycling rates were stable below 20% and most of the waste generated was taken to the incinerator in Mataró, located 5km away.

The opportunity to move away from this system came after the incinerator in Mataró showed signs of saturation. In 2001-2002, with increasing rates of waste generation, those municipalities that were sending waste to the incinerator realised they had a choice to make: either they would have to expand the incinerator, or they could develop a system that would increase recycling rates and make incineration



- Population: 12,000
- The door-to-door collection system is implemented in the old town, which is home to around 8,500 residents (75% of the population), with the rest of the population living in houses in the outskirts.

redundant. Fortunately, the mayors chose the latter and committed to improve the separate collection of waste.

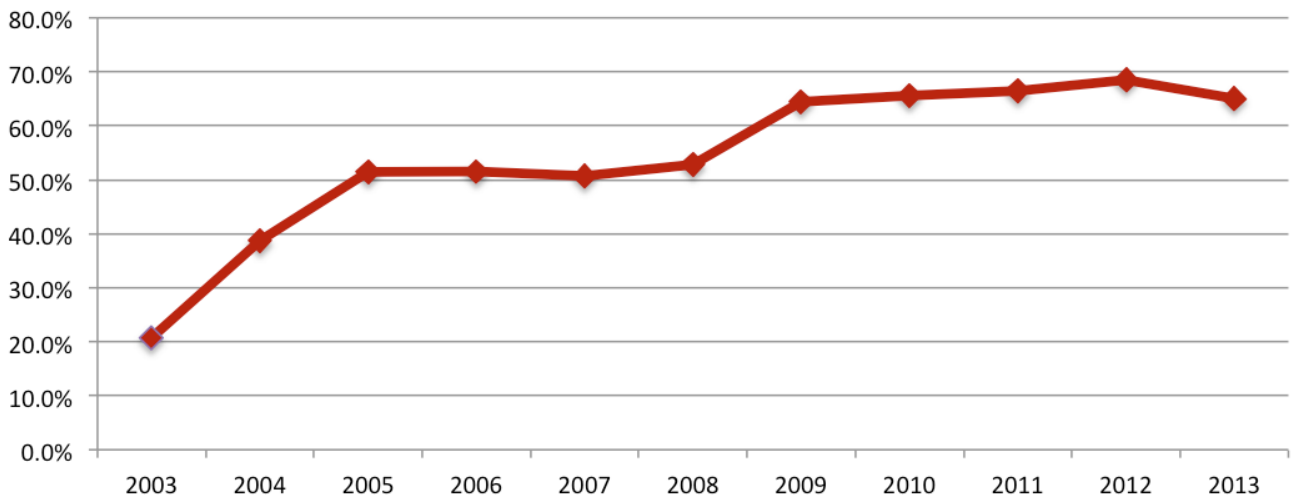
“Our motivation to improve the system was environmental but also social, as we believed that it was very important for people to be aware and engage on issues around waste”

Joan Pujol (Town Council Technical Expert on Waste)

Argentona, being one of the closest towns to the incinerator, was especially sensible to the waste issue, and took the ground-breaking initiative to start looking into alternatives. At the time, three small-sized towns in Catalonia had already started a door-to-door collection system, Tiana, Tona and Riudecanyes. Drawing from the experiences of these pioneering towns, the Argentona Town Council was convinced that door-to-door collection was the way forward.

The plan started getting shaped in 2002, with discussions within the Town Environmental Council and visits to those villages that had already implemented it. When the waste collection contract with FCC (Fomento de Construcciones y Contratas) was coming to an end in 2004, the Town Council was already decided to move forward with the implementation of the door-to-door collection system.

EVOLUTION of SEPARATE COLLECTION RATES in ARGENTONA (%/year)



Based on data from City Council of Argentona

Step by Step: Organic & Residual Waste First

Before kicking-off with the new system, the inhabitants of Argentona were informed about the upcoming changes with an awareness-raising campaign. In the first phase, a small brown bin was

distributed to everyone to separate food waste at home, and step-by-step the system started functioning. Businesses were charged for their food container, according to the size of the organic waste bin they required. Residual waste – what is not recyclable – was also collected door to door whereas other waste streams continued to be collected in containers.

Joan Pujol remembers that, “at the beginning it wasn’t easy, a minority of people refused to change their habits and even protested against the doorstep collection. Fortunately the Town Council decided to stay strong, to focus on making the first phase of implementation a success and let it calm down. And indeed, a few weeks later the system was already running smoothly without complaints”.



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Immediate Increase of Recycling Rates

The positive results were felt from the beginning, and the percentage of separate collection increased spectacularly. The new system reduced impurities in other waste streams, specially in the organic, and in 2005 it made it possible for separate collection rates to peak at 70% in the Argentona areas with doorstep collection, which in turn raised the overall Argentona rates up to 50% of separate collection. At the same time, the quality of the organic material achieved records of

Boosting the Local Economy

of only 2% contamination in 2009! Later on, the overall recycling rates continued to increase until they peaked again in 2012 at 68,5%.

Incentives were also provided for residents to begin composting at home, and in 2007 the municipality provided families with 113 composting bins for gardens and 15 wormery bins for free, along with info sessions and training on composting techniques. The initiative was much-welcomed by their neighbours, with many of them converting into passionate composters.

In the second phase, Argentona rolled out collection of paper and packaging waste at the doorstep, which took place in 2008. Glass collection remained through 'bottle banks' dotted around the municipality. As a result the rates of separate collection continued to climb.

Green Local Jobs!

Another co-benefit of the door-to-door collection system **was the boost in local employment, which tripled the number of jobs and improved social inclusion.** The service is provided by a local social enterprise called Arca Maresme empresa d'Inserció SL, which provides several different services and employs people in risk of social exclusion - at least 30% of its staff.

Before switching to door-to-door collection, the waste collection company (FCC - Fomento de Construcciones y Contratas) employed three people to carry out collection. Given the increased resources

required for collecting 7 days a week over longer shifts, that number increased to 11. Arca Maresme currently employs all of them.

This is one of the main lessons to learn from implementation of collection at the doorstep: **apart from boosting recycling rates, the largest share of collection costs are shifted from costs related to equipment, technologies and disposal, to creating new jobs, which ultimately feeds back into the local economy.**

What Is Collected When?

Waste fractions are collected door-to-door every day of the week, according to the different waste streams, by rear-loading trucks. Residents put out their waste at a specific time – between 8 and 10pm, with collection starting at 10pm.

Collection is organised as follows: **thrice weekly collection of organic waste (food scraps and small garden wastes – grass cuttings, leaves),** twice a week for lightweight packaging such as plastics and cans/tins, once a week for paper and residual waste and a daily collection service for used, disposable nappies (a separate container on the collection truck is used for this). The specific collection for nappies is intended to keep a user-friendly scheme that meets the needs of families using nappies/diapers, while enabling a very low collection frequency for the rest of the residual waste. In this way, **the system manages to cut collection costs, and drives most of the recyclables and compostable waste towards the appropriate plants.**



Sr. Josep Salvador Bosch became a passionate composter after he participated in composting training and received a compost bin. Now he uses all his kitchen and garden waste to make compost and feeds it back into the soil in his allotment. "This has been such a positive experience. It's a bit of work indeed, but it's more important to close the loop with nature and stop using chemical fertilizers, which I don't need anymore. This is definitely the way forward."

Argentona Introduces a Pay-As-You-Throw System in 2009

All of the collected recyclables are taken directly to the various local processing plants, while the residual fraction is taken to a sorting hub in nearby Mataró, where neighbouring municipalities also bring their residual waste to go through a Mechanical-Biological Treatment (MBT). This process pools further some of the unsorted recyclables within the residual waste, including organic material, and incinerates the rest. "Waste incineration is indeed not ideal", recognizes Joan Pujol, from the Argentona Council "but we are sending less and less waste to incineration as our residual fraction is continually minimized. Fortunately we don't have to provide the plant with a specific amount of waste anymore".

The Revolution of Paying According To Waste Generation

After the implementation of separate waste collection at the doorstep, it was important to introduce an incentive to keep improving the recycling rates and reduce waste generation. In 2009, it was time to implement a "Pay as you throw" (PAYT)

system, which would reward or penalise households economically according to how much waste they would produce.

Up until then, Argentona had had a municipality-wide fixed charge, which was levied on all residents within the doorstep collection area. When the PAYT system was introduced in 2009, residents were required to dispose of packaging and residual waste in special, taxed bags. Now the cost of waste management is covered through a combination of a fixed rate tax, which is intended to cover the partial fixed costs of the system, and a variable fee charged in proportion to the waste disposed of.

Reducing Waste & Saving Costs

Since 2009, this system has effectively reduced the overall residual waste by 15%, and it goes up to 60% waste reduction in the doorstep collection area! Packaging waste has also decreased by 15%, but according to Argentona municipality sources, some of this can be attributed to waste leakage into neighbouring municipalities with no PAYT charges.

Waste fractions are collected door-to-door every day of the week, according to the different waste streams.



The scheme is currently still largely self-funded, thanks to the waste service tax and the increased profits generated from the sale of recyclables to Ecoembes and Ecovidrio (intermediary companies in charge of collecting plastic, paper/carton and glass packaging) that offset the increased operating costs of door-to-door collection. Also, Argentona recovers part of the landfill and incineration tax collected by the Catalan government from every municipality, in compensation for treating organic waste appropriately. **In conclusion, the numbers work: the doorstep collection system has proven to be even more economically viable than the container-based collection system, saving the municipality €35,000 a year.**

Latest Reforms in the System

In 2011, the Town Hall introduced some flexibility into the PAYT scheme to combine a fixed and a variable cost. The variable part of the fee is determined now by the number of people in each household, which determines the number of bags that are given for residual and packaging waste.

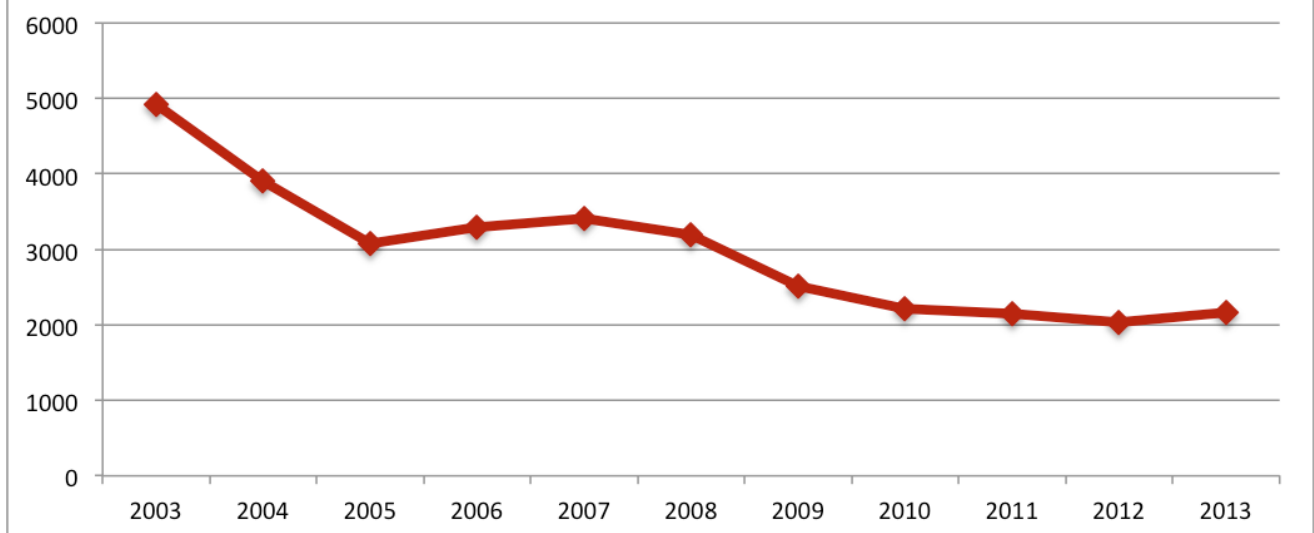
Also, in 2013 the Town Hall abandoned the use statutory yellow bags for packaging waste from households, with the aim of reducing the leakage of waste into neighbouring towns, the so-called 'waste tourism'. Since then, residents can instead use any bag they want, of any type and size. Shops must continue using the statutory bags.

This simple change has had significant consequences. On the plus side, there has been an increase of collected separate waste, which shows that less of it is going to other towns, according to the Council. However, this change is no incentive to reduce packaging waste in the first place, and it is more difficult to monitor the quality of waste generated, since the thickness or color of some plastic bags can hide improper separation. Moreover, commercial spaces can now camouflage their packaging waste as household waste and avoid paying their fair share.

What Happens With Other Types of Waste?

Argentona has also improved in how it deals with other types of waste, such as bulky items, toxic waste or those particularly difficult to recycle, such as individual coffee capsules. For the bulky items, these can be collected at the doorstep every Monday morning or they can be transported to the town's tip (*Deixalleria*), which had to be doubled in size in 2008 as a result of the awareness campaign that promoted its use. Residents can also bring there their toxic waste, dry garden waste (pruned branches etc), construction waste, tires and vegetable and mineral oils. **Around 80% of waste received by the Deixalleria is recycled. Textiles are collected by a network of social enterprises in the region called Roba Amiga, through collection bins positioned in public places. Good quality textiles are sold in Roba Amiga second hand shops, or shipped to developing countries. If they cannot be reused they are recycled as cleaning rags or fibres for industry.**

Evolution of Overall Residual Waste Generation in Argentona kg/year



Based on data from City Council of Argentona

Disposal

For the moment, what is not recycled or composted is sent for disposal to the nearby incinerator in Mataró, but the plan, like in any other town committed to zero waste, is to minimize the amount sent for disposal.

Given the success of separate waste collection in the area and the reduction of waste production due to the economic crisis, the incinerator is now facing a situation of overcapacity, which it compensates for by collecting and burning waste from the neighbouring towns. Indeed, a major problem in the region is the price competition between recycling and disposal.

Currently, the costs of disposal do not reflect the priorities established by the Waste Hierarchy, and a combination of bad infrastructure planning, public funds and grants to disposal sites, and low disposal taxes (€7,40/t in this case, in comparison to a typical cost in Europe of around €100/t or more), means that composting is not yet cost-competitive with disposal options. This is a paradox which does not favour waste reduction and separate collection. The progressive increase in the incineration tax in Catalonia should fix this problem over time, creating a higher gate fee for incineration of waste as to make this option the least desirable possible, in compliance with the Waste Hierarchy.



Guia pràctica
per a la recollida
porta a porta
en municipis
de fins a
5.000 habitants

Future challenges, future targets

Argentona has paved the way for other Catalan municipalities to walk the talk of Zero Waste. Over the last years, more and more municipalities have been adopting the door-to-door collection system and other prevention policies that have proven to be so successful in Argentona.

Following the model, municipalities such as Celrà, Vilabreix or Olot have recently more than doubled their recycling rates in less than a year. For instance, **Celrà increased recycling rates from 21% in 2011 to 89% in 2013.**

In the meantime the network of Catalan Zero Waste municipalities continues to grow strong, comprising more than 55 municipalities, all public universities in Catalonia, 30 companies and more than forty organisations and platforms that are committed to working cooperatively in a common space to develop strategies for Zero Waste.

Written by Aimee Van Vliet

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Or contact:

info@zerowasteurope.eu
Twitter @zerowasteurope



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CASE STUDY #3



August 2014

VRHNIKA SLOVENIAN TRAILBLAZERS

In a country that until 2001 had no national targets for separate collection of waste, the case of the small municipality of Vrhnika in Slovenia shows how a community can make strides towards a Zero Waste objective in a short time.

How did this small area go from landfilling everything to recycling most of its MSW in 20 years?

Without the tradition of recycling boasted by many Western European nations, this area of 18,000 inhabitants has leapfrogged the recycling rates of many better-established programmes around Europe, reaching 76.17% separate collection of municipal solid waste (MSW) and aiming to reach 82% in the next 5 years.

In spite of a national strategy focussing on incineration as a replacement for the country's addiction to landfill, and a separate collection rate of 42%, movements resisting the construction of incinerators have flourished and support for a Zero Waste solution is growing. Ljubljana-based NGO Ecologists Without Borders coordinates efforts around the country and is supporting Vrhnika's transition to a Zero Waste municipality.

How did this small area go from landfilling everything to recycling most of its MSW in 20 years?

Early adopters

In 1994 the town's landfill facilities were reaching their limits. Costs were rising rapidly to reflect this decreased capacity and the local authorities were casting around for, even if new solutions. **Two employees of the public waste management body, KPV (Komunalno Podjetje Vrhnika), set about persuading the town that separate waste collection was the solution,** even if no one in Slovenia was thinking about it and there were not even any national targets for separate collection yet.

Although it was the more expensive option at the time, there is no doubt that over the intervening years the path towards Zero Waste has saved the

municipality money. After 2004, landfill fees in Slovenia rose sharply, up to 130 euros per ton. Since 2006, the cost to Vrhnika of landfilling residuals has more than halved thanks to the increase in separate collection.

So, once the town decided to pursue a separate collection model in 1994, the first step was to set up the necessary logistics and legislative framework for this new type of waste management. Initially, activities focussed on the separate collection of recyclable waste (glass, paper and cardboard, plastic and metal packaging), residual waste, organic waste, hazardous and bulky waste and construction & demolition waste.

Recyclable municipal waste was collected from so-called 'eco-islands' on the streets, where residents could take glass, paper and cardboard and other packaging. Residual and organic waste was collected door-to-door. In 2002 KPV started a campaign called KOKO in which residents were encouraged to bring separately collected recyclables directly to a collection centre, where the waste is weighed and residents are rewarded with points that result in a reduction of their monthly waste collection bill. This pay-as-you-throw scheme was the first of its kind in Slovenia and now brings in around 30 tonnes a year of waste without the need for collection services.

Waste generation rates keep going down

Over the last few years, the quantities of hazardous household waste collected have decreased due partly to residents clearing out their old stocks, and partly to the fact that extended producer responsibility has been introduced to some waste streams, such as batteries and accumulators. From 2000 onwards, residents may also dispose of hazardous waste during twice-yearly collection

- **Population in Municipality of Vrhnika : 18,000**
- **From 201 Kg/ capita of residual waste in 2004, to 80 Kg / capita in 2013.**



designated locations throughout the municipality to receive the separately collected hazardous waste. Overall, the number of people participating in hazardous waste campaigns has increased while the collected weight has decreased.

Residual waste has also been reduced over the years. In the early phases, it used to be collected door-to-door once a week. Accompanied with awareness raising campaigns, KPV decreased the frequency of its residual collection to twice a month in 2011 and once a month from 2013. **From 201kg/capita of residual waste in 2004, concerted action has managed to reduce this amount to 80kg/capita in 2013.**

KPV also offered residents the choice between having their organic waste collected door-to-door, from special bins, or receiving home composting kits. Following public campaigns (including a fetching earthworm mascot!) encouraging separate collection, collection rates were boosted. In 2011, KPV began a campaign to promote home composting, something it is looking to intensify in coming years to reduce overall waste generated.

Bulky waste is collected through two methods - residents may deposit it directly at the KPV collection centre, or ask for KPV to collect it from their home. All bulky waste is disassembled and most materials are sent for recycling.

Working with the community

KPV has based its activities around a coordinated awareness-raising campaign, starting with Vrhnika's youngest citizens – school children. They considered this the starting point for any change in citizen behaviour and attitudes. Schools were provided with bins and discounted waste collection fees for sorting their waste at source. Given the savings this system represents, all schools and nurseries in Vrhnika now operate a source-separation of waste system. KPV has held waste-themed events in schools, such as a waste fashion show, organised tours of the collection centre and held drives to collect specific types of waste in schools.

The company also provides educational lectures aimed at 5

different age groups, from nursery school age to university students. These lectures are attended by 1500 children and young people from around Slovenia a year, which, for a country with a population of just 2 million is an impressive figure. In 2006, KPV co-financed a course for primary schools, which included specific training for teachers and special educational materials. The course took a multi-disciplinary approach to teaching a range of environmental issues, including waste, thereby harnessing the pedagogical skills of teachers to reach children and their parents.

Building on this success, KPV moved to work with businesses. It developed special business contracts for waste management, including consultations on how to achieve savings through separation-at-source. Businesses responded positively - some even asked KPV to help them manage their waste flows and organise on-site separate collection. KPV noted a significant decrease in quantities of paper, cardboard and plastic in the residual waste stream. From there, KPV went on to work with businesses outside the municipality with an ISO standard requiring separate waste collection.



KPV also made efforts to change the public's perception of waste as something dirty, smelly and not useful. It painted trucks white with flower motifs, cleaned bins regularly and created an attractive entrance to the KPV collection centre, with a park featuring lawns and flowerbeds. The nearby landfill site was rehabilitated. In fact, the area was so successfully renovated that when a TV camera crew visited to film a story about the centre, they got lost while looking for a dirty site with rubbish. Instead they found nothing but pleasant parkland and a pond with ducks swimming! The camera crew's perception of waste changed for the better that day.

The waste management company has also worked on more traditional ways of reaching out to the public, with the aim of presenting waste as a resource. The collection trucks themselves are printed with short promotional messages encouraging citizens to sort waste, KPV prints a magazine focusing on waste issues, as well as holding lectures and running thematic campaigns. Information about waste collection is broadcast on the radio, sent through the post with waste collection bills, published in local newspapers and on advertising hoardings. Communication is adapted to specific demographic groups and their particular characteristics.

“Businesses responded positively”

The awareness-raising campaigns in Vrhnika have been successful in encouraging residents to think and talk about waste issues and the results achieved in the municipality. The positive atmosphere this awareness has created has driven the municipality's good results and is having a real multiplier effect beyond the district, as Vrhnika residents share their positive experiences with friends and colleagues from other areas.

Waste Prevention

Vrhnika has begun to implement some waste prevention measures. In 2014 KPV launched a reuse centre called DEPO on its collection centre site, to upcycle waste into desirable goods and recover items that would otherwise be sent to landfill. Objects are repaired, upgraded or taken apart for useful parts to be crafted into something else, then sold to the public at affordable prices. The centre has been a roaring success and is planning to move to the city centre in the near future.

In collaboration with Ecologists Without Borders, a crèche in Vrhnika has begun a pilot project to introduce reusable nappies for its little customers, to avoid sending disposable nappies to landfill.



The Future for Vrhnika

In January 2014, the Ljubljana-based NGO Ecologists Without Borders became members of Zero Waste Europe. In February 2014, the Slovenian separate collection champion –Vrhnika municipality – announced their intention to become the first ZW municipality in Slovenia. By 2021 Vrhnika plans to achieve 300 kg of waste generated per capita, just 70 kg of residual waste per capita and 82% separate collection, matching the 1st European town to declare a Zero Waste goal, Capannori (Italy). Given the rapid progress and strong leadership shown so far, there is no reason to believe they won't achieve it.



Written by Aimee Van Vliet

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KPV - Komunalno Podjetje Vrhnika, Annual Reports, Zero Waste Plan until 2020
<http://www.kpv.si/>

Društvo Ekologi brez meja / Ecologists without Borders Association - www.ebm.si



For more information visit:

www.zerowasteeurope.eu
www.facebook.com/ZeroWasteEurope

Or contact:

info@zerowasteeurope.eu
 Twitter @zerowasteeurope



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CASE STUDY #4



January 2015

THE STORY OF CONTARINA

The public company Contarina serves the districts of Priula and Treviso in Northern Italy, the best performers in waste prevention and recycling in a wide area in Europe.

What is the secret for Contarina to recycle two times the European average and generate five times less residual waste?

Veneto is one of Italy's 20 regions. The region, of just under 5 million inhabitants, beats the rest of the country with its 65% recycling rate. Within the region of Veneto the public company Contarina is responsible for the management of waste in most of the Province of Treviso, including the capital Treviso. Here they serve 554 000 inhabitants in 50 municipalities and has reached levels of source separation of up to 85% and generates only 53kg of residual waste per inhabitant and year. In contrast, the EU average level is a 42% source separation and a 285 kg per inhabitant and year of residual waste generation.

It's not only these impressive rates that make Contarina a zero waste champion, but its commitment to continuously improve its performance and advance towards zero waste. It has its mind set on the goal of recycling 96,7% of its waste by 2022 and reduce the residual fraction to 10 kg per inhabitant and year. A proper commitment indeed!

The ingredients for success

If Contarina has managed to constantly increase its recycling rates year after year is thanks to the decision taken by the Province (the planning unit in Italy) back in 2005 to keep incineration out of the system, which has proven to be a pre-condition for maximizing recovery of value. Without the obligation to send waste for burning but with the pressure from the market to increase recycling Contarina has continued to increase recycling rates when others have plateaued because of put-or-pay contracts to feed incinerators.

The second crucial ingredient has been good political will and cross-party consensus over the last decade. This is a remarkable point because among the 50 municipalities there have been mayors from different political parties ranging from left to right, yet they have managed to reach a consensus on waste management which shows that **Zero Waste is above all about common sense and good management leading to increased operational efficiency and monetary savings.**



- **100% Public Company**
- **Serves 50 municipalities**
- **645 employees**



Thirdly the operational management has been extremely well-performing; a team of professionals has worked to keep advancing in the right direction and never stopped optimising the system even when entering domains where no other district of this size has been before.

Last but definitely not least, any good project needs to count with good support and counseling and Contarina, has counted with the support of experts who are involved in the Zero Waste network, which has helped move things in any crucial moment.

The story behind the public company

Contarina is a public company owned by the Priula Consortium (Consorzio Intercomunale Priula) and the TrevisoTre (TvTre) Consortium which together represent 50 municipalities. Contarina started in 1989 as a half-private half-public enterprise providing services to 5 municipalities in the Priula Consortium and little by little it expanded to provide services of collection, treatment, management and communication for more municipalities. In 2006 TvTre Consortium enters in Contarina enlarging the number of municipalities and acquiring 40% of the shares of Contarina which effectively becomes 100% public.

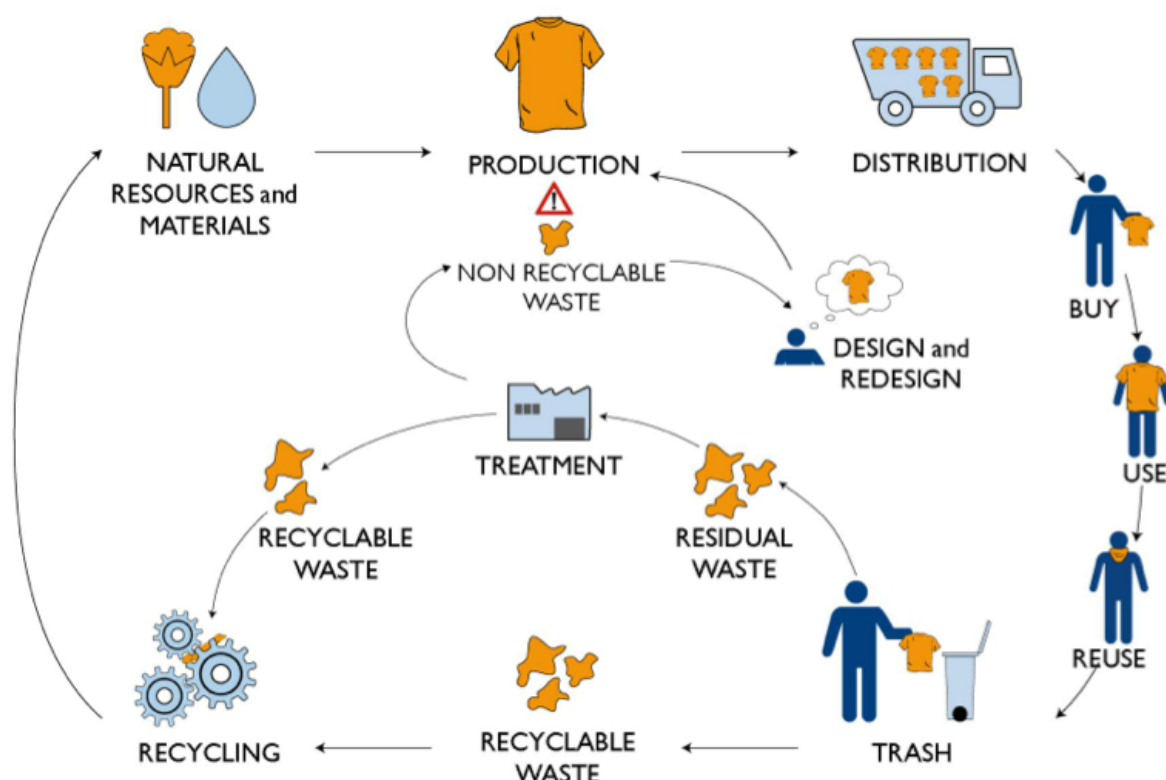
The company's daily objectives are to increase the percentage of separate collection, to reduce the amount of waste produced (in particular the percentage of non-recyclable waste), to raise the quality of the collected recyclable material, and to improve the service offered, optimising the cost-benefit ratio. The company also manages processing plants that handle non-recyclable dry waste and Organic and Green waste. Currently, Contarina is realizing two new plants for the development of recyclable waste and the recycling of absorbent products for personal care.

Municipal services including waste collection and handling but also street sweeping, special and hazardous waste collection and cemetery management, are also handled by Contarina.

The success of Contarina is the result of a combination of several factors:

- Great source separation at source,
- Waste reduction incentives through pay-as-you-throw system,
- Transparency and efficiency,
- Political will and commitment to continuously improving the system.

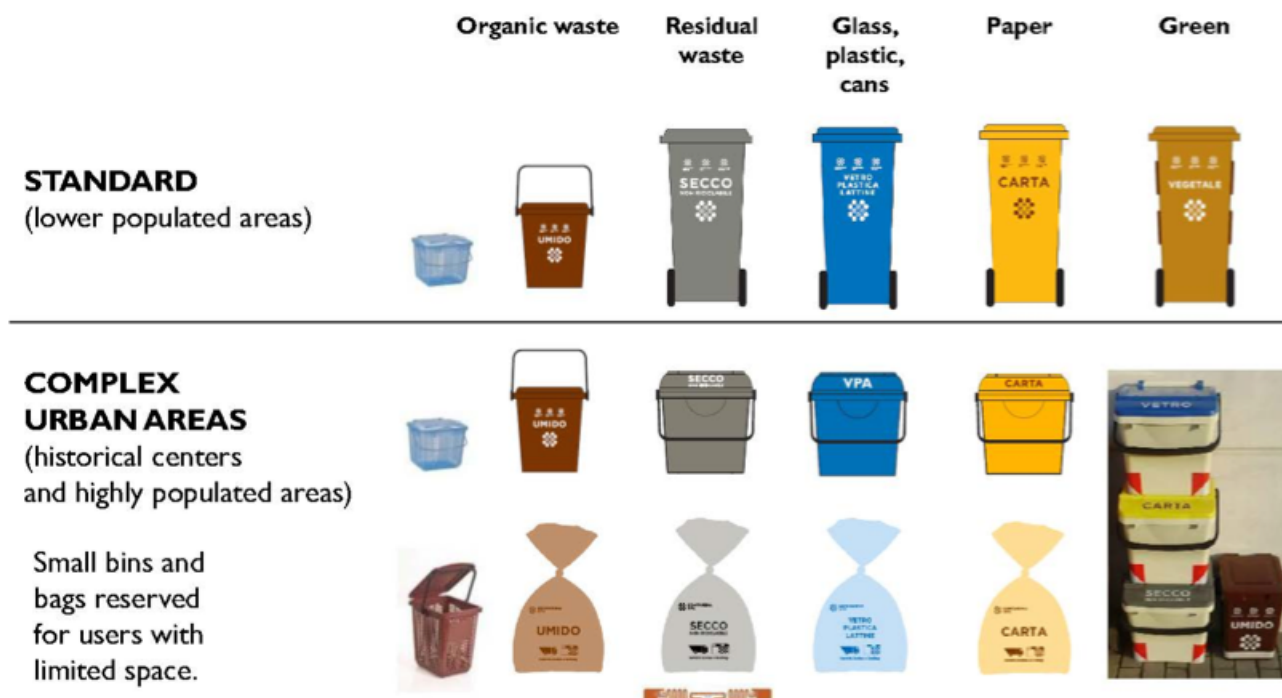
Integrated waste management system



The integrated waste management system starts from the design of objects and packaging, in consideration of the entire life cycle, with the goal to be sustainable in all its phases.

Curbside collection

Types of Bins



Efficient separate collection at source

In order to achieve the exceptional separate collection rates of 85% the system needs to be extremely efficient. This can only be achieved with the use of intensive and adapted curbside collection combined with pay-as-you-throw system.

Municipal solid waste is collected in five or six major waste-streams: non-recyclable dry, organics (food scraps), garden waste, paper and cardboard, glass, plastic and tin. In some Municipalities glass is collected alongside plastic and tins. They are placed in special colour-coded bins that are readily available, free of charge and collected curbside.

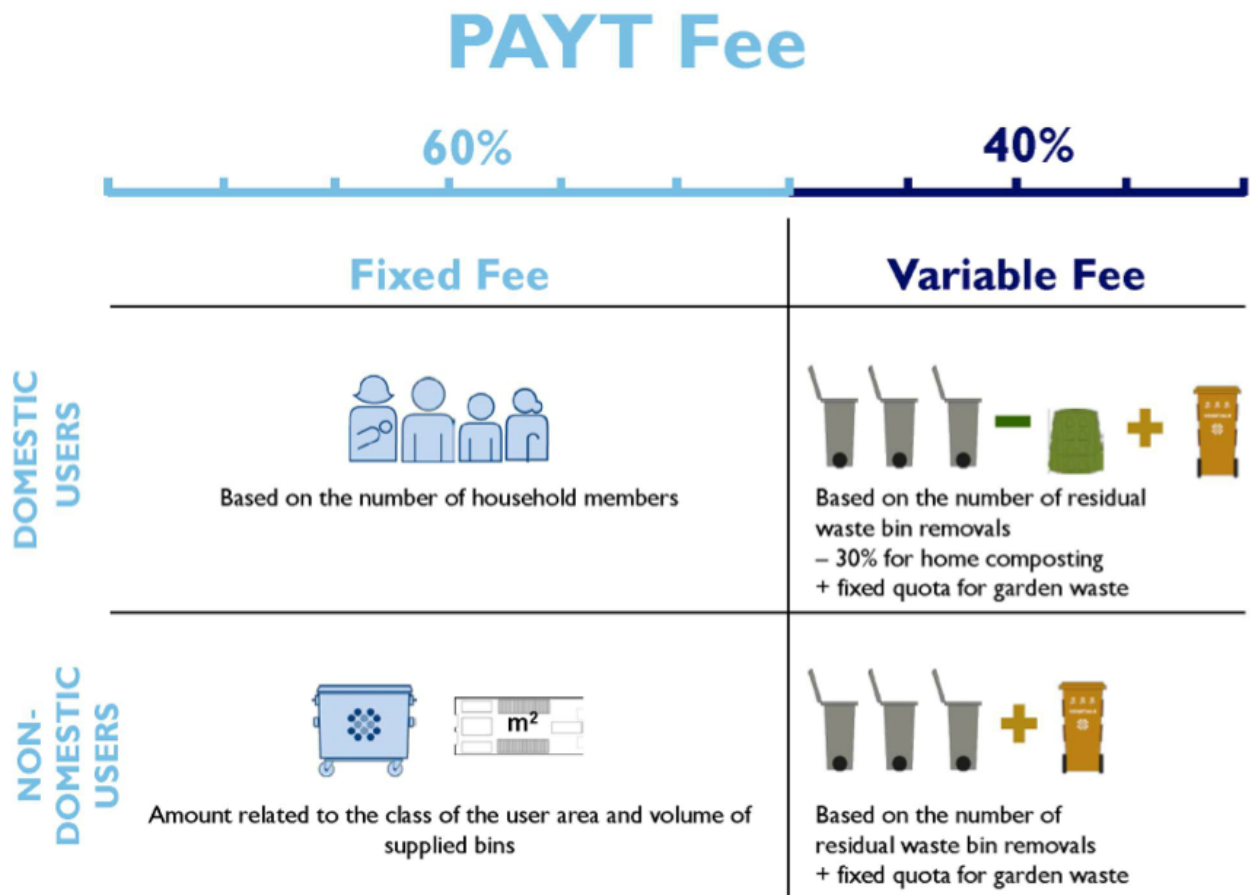
The collection of different waste streams takes place in different days of the week; the fraction collected most often is the most important one, i.e. food-waste, the one collected less often is the residual waste, which is also the less important one in volume.

Paper, green waste and other recyclables are collected between once and three times per week.

Curbside collection is supplemented by the EcoCentri (Eco-Centres): centres equipped with large containers for other types of urban waste: from aggregates to bulk, from electrical and electronic appliances to hazardous waste.

“Pay-as-you-throw”: the less waste you generate the less money you pay

Another fundamental principle of the “Contarina Model” is that the cost of the service to the user (family, company, corporation or other entity) is proportional to the amount of waste produced. This provides an incentive to do the right thing and minimize waste generation as well as promote home composting.



More concretely this boils down to splitting the fee for waste generation into two parts; one fixed and another one variable. The fixed part depends on the number of members living in the household whereas the variable portion is calculated according to two variables. One penalizes the number of times the non-recyclable dry waste bin is emptied. The other one is a bonus for those households doing home-composting which see a reduction of 30% on the variable fee.

Creating jobs and saving costs with zero waste strategy

The UN Environmental Program lists the so-called **“Green Jobs” among those with the greatest growth potential in the near future**. Employees of Contarina have “green jobs” and have contributed to the development of the company which has seen the number of its employees grow, thus confirming the world growth forecasts of the sector also at the local level. In 2014, for the city of Treviso, Contarina’s

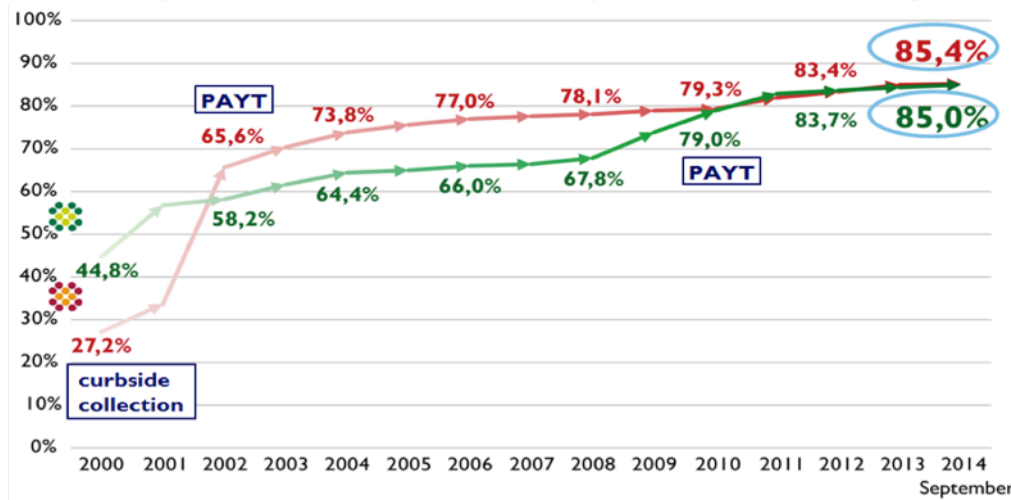
operational costs were contained during which time they also created 26 new job positions.

The company also aims to offer new services to the territory with particular attention on the social implications of its activities. For many of the services provided (e.g. cleaning, managing the EcoCentri, maintaining public parks, etc.), the company partners with social cooperatives who work in employing disadvantaged people.

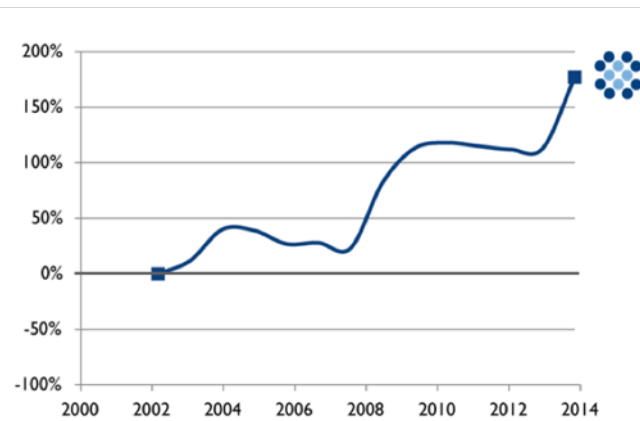
Contarina’s commitment in this field continues through the implementation of social projects that promote the reintegration of the long-term unemployed and those who are ineligible for assistance. This integrated management system generates positive effects that go beyond simple waste collection: the system extends to the environment, the economy and into people’s lives.

The percentage of separate waste collection in 2013 in the municipalities managed by Contarina **reached almost 85%, with peaks in some municipalities around 90%**, and ranks far above the national average (currently around 42%) and the regional one

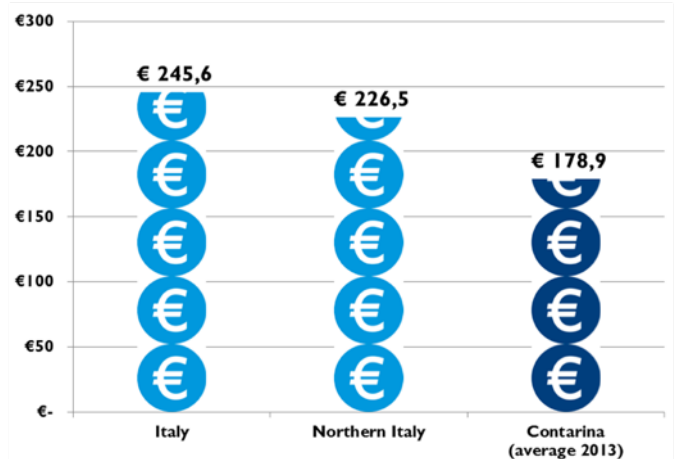
Evolution of separate collection in municipalities managed by Contarina



Creation of 'Green jobs' in Contarina



Comparison of yearly fee per household



for Veneto (Veneto, population 5 million, is currently around 65%, the highest regional average in Italy) .

Even the production of non-recyclable dry waste (kg*inhabitant/year) has reached optimum levels. **On average, each inhabitant of the municipalities managed by Contarina produces 53 kg of waste per year.** More separation, and therefore, less production of non-recyclable dry waste helps contain the costs that are on average about €178 per household and year in Priula.

When comparing with the costs of rest of Italy one can see how good management and recycling

more it also saves money to the taxpayers. Over the last 15 years waste management costs in Contarina have increased only 8% whereas at national level these costs have grown 70%, and the general cost index has grown around 30%.

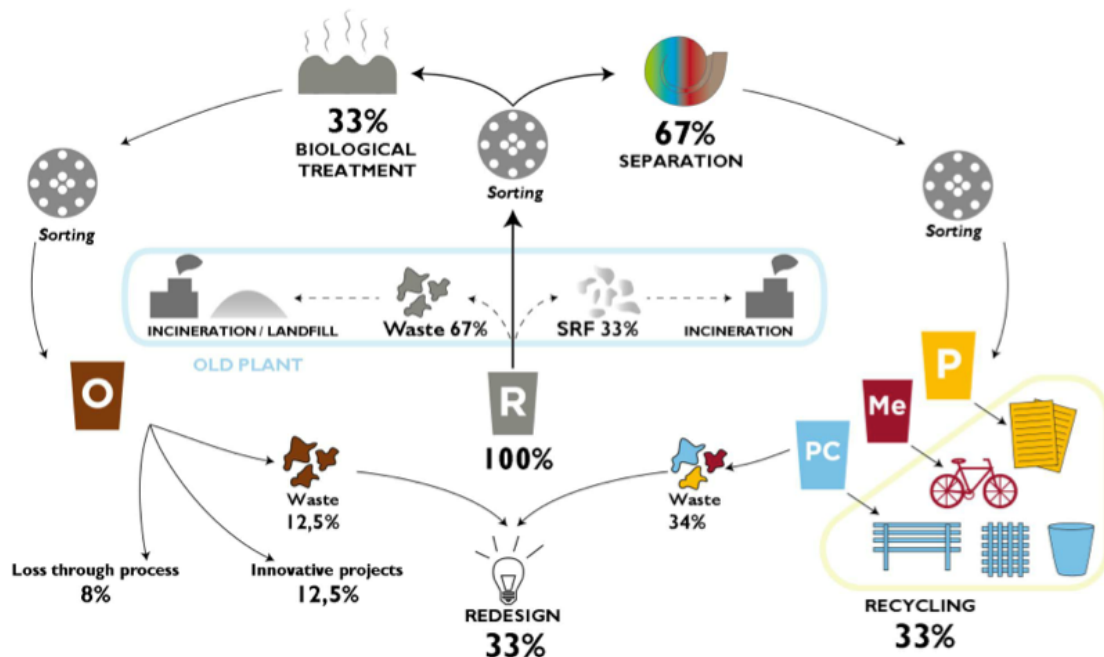
Transparency – a key issue for continuous improvement of the system

It is important that citizens and other stake-holders have a clear picture of how the system works in order to allow the incentives to do

its work in facilitating doing the right thing. For the operator it is also key to manage the data in a smart way in order to see where there is room for improving and optimising the system.

This data system consists of a single database where each user's data can be viewed together with their geographical position, the bins provided, the recorded number of collections and the applicable rates. This unique database also allows users, through the Internet, to view information associated with their consumption and to report any discrepancies.

Residual waste treatment Present and future developments



From burning residuals to Zero Waste

During the last decade Contarina has used a mechanical biological treatment (MBT) plant to treat the residual waste. The outputs of the MBT process were to turn 33% of the residual waste into Refuse Derived Fuel which was subsequently burnt for energy recovery and to send the remaining part of low-calorific waste to landfilling. However with the adoption of zero waste principles it sought a better and higher use for these materials.

In 2015 Contarina is set to start the operation of a Material Recovery and Biological Treatment (MRBT) plant which is remarkably more efficient in recovering further materials also from residual waste for recycling operations.

With the new system to manage residual waste it is possible to reduce the final residues that need to be disposed of to only 46,5% of the total residual waste. Since 85% of the waste is source separated, 15% amounting to 53 kg per inhabitant and year is processed and only 46,5% of this 15% or 53 kg is

disposed of. This results in only 24kg per inhabitant and year of the total waste produced being stabilized and sent to landfill.

Additionally, contrary to incineration or landfill, this system makes waste very visible to allow for researchers and designers to study what cannot be recycled in order to design waste out of the system.

On top of recovering more materials from residual waste this system works with cold treatments and is a lot more cost-efficient and safer from public health perspective than any kind of incineration.

Also the capital investment for the machinery necessary to run this alternative process is many times cheaper than incineration (around 4-5 times cheaper at a same capacity). But the most important angle, is the adaptability of such a way of processing residuals, since it is capable to manage progressively more separately collected materials (organics, paper, plastics, etc.) and less residuals, thereby keeping cross-consistency with strategies to maximize separate collection and waste reduction.

Future Zero Waste objectives

Contarina has achieved outstanding results already but far from being complacent it seeks to go further and further in what personifies the zero waste spirit; never giving up on the efforts to reduce waste.

The mayors of the municipalities within the public company are committed to accelerate the path towards the goal of "Zero Waste". In order to do so they have set up the following objectives by 2022:

- reduce the current total amount of waste generated, aiming for 280 kg per inhabitant and year (average EU in 2012 was 492kg);

- reduce the current amount of residual waste, aiming for 10 kg per inhabitant and year (average EU in 2012 was 285kg);

- reach separate waste collection of 96.7%;

- reduce the current bulk waste by 80%, aiming for 2 kg per inhabitant and year;

- increase participation in household composting by 80% compared to the current percentage (up to 40% of participation);

- continue optimising activities to allow for energy and fossil fuel savings;

- support public or private initiatives to set up separate waste collection centers and raise awareness about waste reduction, reuse and recycling, as well as increasing number of specialised centres which intercept usable objects before they become waste;

- promote "Zero Kilometer" policy for local food to improve consumption of proximity products which generate less food and packaging waste;

- establish the "Zero Waste Observatory" with the aim of constant monitoring the residual fraction in order to be able to redesign it.



Written by
Joan Marc Simon,
Zero Waste Europe,
January 2015



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Sources

Contarina S.p.A. Via Vittorio Veneto, 6, 31027 Lovadina di Spresiano (TV) Italy
<http://www.contarina.it/>



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www.facebook.com/ZeroWasteEurope

Or contact:
info@zerowasteurope.eu
Twitter @zerowasteurope



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CASE STUDY #5



April-May 2015

THE STORY OF LJUBLJANA

FIRST EUROPEAN CAPITAL TO MOVE TOWARDS ZERO WASTE

In the last ten years, Ljubljana has managed to multiply its separate collection of compost, and recycling by tenfold and to reduce the amount of waste sent for disposal by 59% while maintaining waste management costs among the lowest in Europe. How did the Slovenian capital manage to avoid incineration and achieve the highest separate collection rates of all European capitals?

Snaga is the public company that provides waste management in Ljubljana and in nine suburban municipalities (380,287 residents). Thanks to clearly set goals and persistence in implementation of established measures, Snaga today manages to separately collect 61% of the municipal solid waste and generate only 121 kg of residual waste (waste that is neither recycled nor composted) per capita per year. Ljubljana is committed to halving the amount of residuals and increasing separate collection to 78% by 2025.



snaga

Snaga operates
 Square km: 903.8
 Municipalities: 10
 Inhabitants: 380,287
 Waste generation: 98,534 tn/year
 Separate waste collection (2014): 61%
 Residual waste per person/year: 121kg

First steps

The current waste management system in Ljubljana was developed when Slovenia became a member of European Union in 2004. At the time, the national municipal waste management plan included separate collection, regional mechanical biological treatment plants (MBT) plants, and two large-scale incineration plants.

However, the construction of these two incinerators has not yet started. In 2005, plans to build the first one in Kidričevo failed due to the strong opposition of local residents. The second one was announced in 2012 by the city of Ljubljana with the intention to build the burner as a part of the urban heating system. Meanwhile, Snaga was sharply increasing the separate collection rate in the city as Ljubljana committed to zero waste goals which made investment in incineration redundant.

The city began with separate collection of paper, cardboard, glass, other packaging and the remaining mixed waste (residual waste) in road-side containers in 2002. In 2006 Snaga started to change the system and started collecting biodegradable waste (kitchen and garden waste) at the doorstep for all households.

- 100 % publicly held
- Provides the service for 10 municipalities
- 426 employees

Goal #1: Door-to-door collection

In 2012 Snaga removed the roadside containers for paper and packaging and started collecting them door-to-door, with the same system as it started collecting biodegradable waste 6 years before. They first tested the model in 2011 in Brezovica - one of the smaller suburban municipalities. The system was highly effective: within months packaging recycling increased more than three times while residuals fell by 29%. After this successful test, Snaga decided to implement the model in Ljubljana and all suburban municipalities.



Goal #2: Reduced frequency of waste collection

After Ljubljana successfully introduced door-to-door collection in 2013, Snaga lowered the frequency of collection for residual waste while keeping the collection of recyclables and compostables the same. For areas with low-density population (predominantly single-family housing) one collection round every other week was introduced at first, but it was soon changed to one collection round every three weeks. In densely populated areas (mainly multi-apartment buildings) residuals were collected weekly whereas compostables and recyclables were collected several times per week.

This fully meets the key operational principles of intensive kerbside collection, i.e. if recyclables and compostables are collected more often than residuals, citizens who don't want their waste sitting around have an incentive to separate it at home.

Despite intensive communications campaigns carried out by Snaga before and during the introduction of the new scheme, at the beginning users in areas with low separate collection rates

opposed the reduced frequency for residual waste. Containers with residuals were packed full with waste.

But in the face of the pressure from residents and media, Snaga insisted on reduced collection frequency and further strengthened communication about the reasons for the change. As part of their strategy, Snaga organized a field trip for the media to see themselves that containers for residuals were full of recyclables. After taking out the recyclables, the residual waste that

actually belonged in that bin was a lot less than what people thought. As a result of this exercise, local and national media changed their mind and joined Snaga in asking the citizens **to better sort their waste.** Quantities of separately collected fractions continued growing, and by November 2013 the separate collection rate reached 55%.

At the same time, average monthly waste management costs for households had fallen, reaching 7.96 € in 2014. The costs for households in Ljubljana are among the lowest in Slovenia. The average yearly cost across the country is 150 €/hhd.year, compared to less than 100 € in Ljubljana.



Eco island: Blue for paper, yellow for other packaging, green for glass.



Door-to-door collection.

Brown for biowaste & black for residuals.

Goal #3: Communication focused on prevention and reuse

In 2013 Snaga also shifted its communication strategy and redefined its activities, goals and responsibilities. They decided to move their key efforts away from awareness-raising on separate collection, and towards encouraging citizens to reduce the amount of waste they produce, promoting reduction, reuse and responsible consumption. The company launched the campaign 'Get used to reusing' which was later expanded to the national level in cooperation with the Chamber of Commerce. Snaga also focused on food waste, and ways that citizens can be more responsible about the amount of food they buy and throw away. The media, local NGOs, and food service providers joined this work.

Towards the end of 2013, the first reuse center in Ljubljana opened its doors. Surveys show that thanks to these efforts almost 70 % of residents make sure that their products are being reused when they don't need them anymore.

Since user satisfaction is based on quality service and communication, Snaga manages three web pages and uses social media (Facebook, Twitter). One of those web pages (www.mojiodpadki.si) is addressed to their users, allowing them to have information on consumption and to communicate with the company. Users may set up a free SMS reminder of the waste collection schedule, monitor collection costs and update their services.

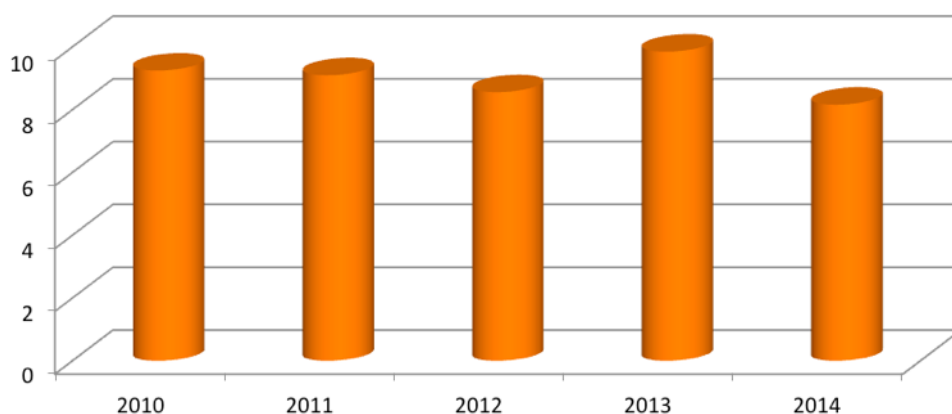


Results

In ten years, the quantity of recovered materials in Ljubljana increased from 16 kg per person in 2004 to 145 kg in 2014. By 2014, the average resident produced just 283 kg of waste, 61 % of which was recycled or composted. This means that the amount of waste being sent to landfill decreased by 59 % in ten years, and total waste generation decreased by 15 %. This reduction is even more remarkable when considering that Ljubljana already generated relatively low amount of waste for European standards, being its generation of 2014 a 41% less than the EU average (481kg per person).

A key ingredient for Ljubljana's successful results was the introduction of door-to-door collection, especially of biodegradable waste, which was the largest contribution to the sharp increase in recycling rates. As separate collection grew, the amount of residuals constantly declined. The scheme was backed up by Snaga's well-managed communications which had the population follow their goals and decisions, despite resistance early on.

Average monthly cost for household in euros



The current collection system includes eight collection centres, where residents and other users may bring waste which is not or cannot be collected at the kerb (door-to-door) and sort it into different categories: hazardous waste, metals, plastic, waste electronic and electric equipment, garden waste, construction waste, car tires, wood and wooden products, bulky waste, clothes and textiles.

Apart from collection centres, residents may also request the collection of bulky waste at their door once a year. Bulky waste is sorted and separated into specific materials, and then mostly recycled. Households may bring hazardous waste, smaller electronic equipment or home appliances twice a year to a specialised mobile unit that circulates the city according to a predefined schedule.

The big challenge: Zero Waste or Incineration

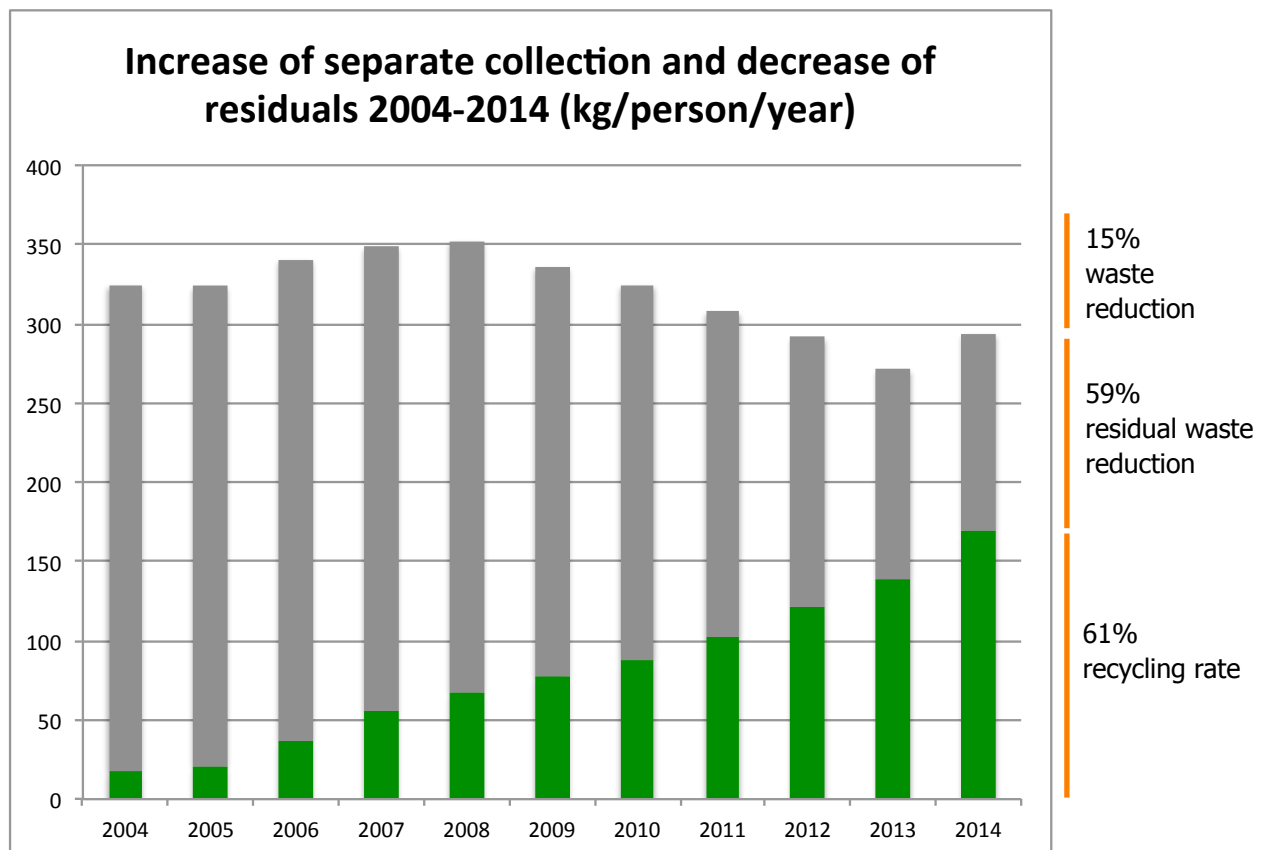
As already specified, in 2012 Ljubljana announced plans to build a municipal solid waste incinerator. By then the city was already recycling 45% of the waste, but the available landfill space was quickly filling up. Despite the growing opposition of local residents, public authorities outlined incineration as the best solution to the problem.

In the meantime, in 2013 separate collection rate rose to over 50 %, and to 60 % by 2014. At this point two dilemmas arose: What are the limits for successful separate collection? And what should Ljubljana do with residual waste if not burn it?

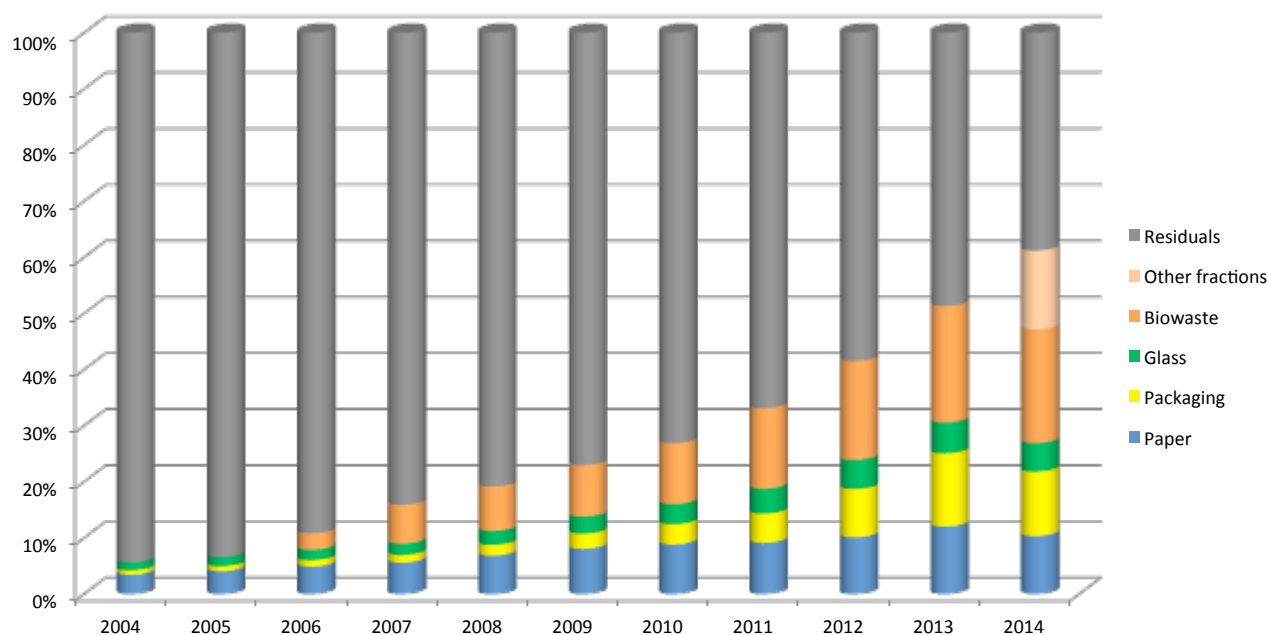
In 2014, Ecologists without Borders became a member of the Zero Waste Europe network, and concurrently they set up two site-visits for Slovenian

waste management companies and operators to see best Zero Waste practices. Their first visit was in December 2013 to Contarina - the European Zero Waste champion in the Veneto region (Italy), which has a population of over 500,000 and **recycles over 85%** of waste, with residual waste minimised to 50 kg/person.year. The Slovenian delegation observed their successful separate collection system, further supported by implementation of pay-as-you-throw, and experts from Zero Waste Europe explained the logistics and measures behind high recycling rates. At the second visit, in April 2014 they learned about the MRBT ([Material Recovery and Biological Treatment plant](#)) that upgrades traditional MBT (Mechanical-Biological Treatment) with the aim to extract additional materials from residuals while complying with obligations on pretreatment of residual waste as stipulated by the Landfill Directive, with no reliance on thermal treatment. In such sites, materials are then sent to recycling, including the light fraction.

Using what they learned from these visits, Snaga and Ljubljana City Council announced the commitment to adopt a Zero Waste approach, and to fully scrap the plans for incineration. In September 2014, the adoption of the Zero Waste strategy by Ljubljana (and 3 other pilot municipalities) was publicly announced at the Low Chamber of the Slovenian Parliament.



Evolution of collection per waste stream in % (2004-2014)



* Other fractions refers to waste collected separately in Ecoparks. No data is available for this concept prior to 2014.

Besides the City Ljubljana, Snaga also provides waste management to nine suburban municipalities, and intends to help them set the Zero Waste goals. In May 2015 municipalities attended first Zero Waste workshop, organized by Ecologists without Borders, where municipalities expressed their intention to prepare and adopt Zero Waste commitments in the next few months.

Ljubljana has been declared the European Green Capital for 2016. It

is worth mentioning that Ljubljana was the only one among the 5 finalists without any incineration plant nor plan to build it, giving it a significant advantage over the other candidates.

Zero Waste goals and future challenges

Ljubljana has committed to:
- increase separate collection to 78% by 2025, and to 80% by 2035.

- reduce yearly total waste generation to 280 kg per inhabitant
- reduce yearly residual waste to 60 kg by 2025 and 50 kg by 2035

As with all Zero Waste champions, the key to success proved to be: political support, good management, and commitment to ever increasing Zero Waste goals. Ljubljana had them all.

Written by
Erika Oblak
for Zero Waste Europe
April-May 2015



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Snaga Javno podjetje d.o.o, Povšetova ulica 6, 1000 Ljubljana, Slovenija;
www.snaga.si



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CASE STUDY #6



June 2015

THE STORY OF GIPUZKOA

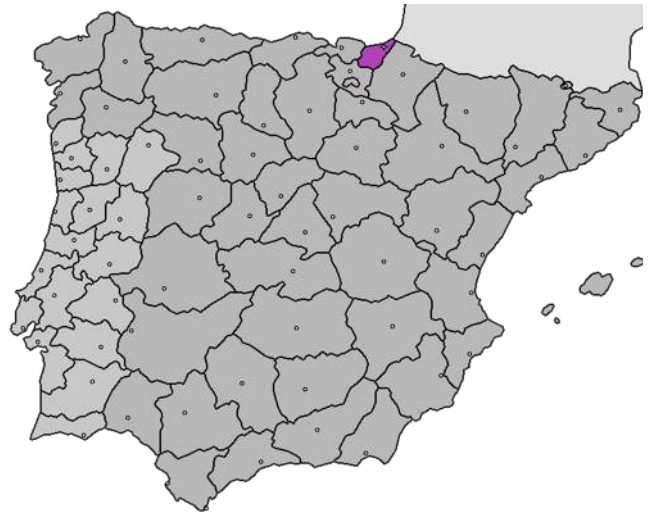
The province of Gipuzkoa located in the Spanish Basque Country has almost **doubled recycling rates in five years and made investing in an incineration plant obsolete.** It is the living proof that a transition towards a circular economy system of resource management is possible and has established itself as a role model for those in Europe struggling to meet the EU 2020 recycling targets.

Gipuzkoa - A European model of transition from incineration to zero waste. How did it all start?

Spain averages a level of separate collection under 30%. Back in 2002, Gipuzkoa was sending 80% of its waste to landfills and following the trend of that time, the authorities considered that in order to increase recycling rates they needed to invest in an incinerator plant.

The Integral Waste Management Scheme for Gipuzkoa was drawn up for the 2002-2016 period and it declared for the first time that Gipuzkoa needed an incineration plant. The aim of that plan was to raise recycling rates to 30% for 2016 and **the fact that organic waste could be separately collected was not even taken into consideration.** Their scheme regarded raising recycling rates above 40% as totally impossible and predicted that the production of waste would continue to grow inexorably.

As soon as the name of town chosen to host the incinerator was announced the civil society got mobilised to oppose the model of waste management and started working on alternatives.



- Square km: 1,909
- Municipalities: 88
- Inhabitants: 732,468
- Waste generation: 315,000 tn
- Separate waste collection (2014): 51 %
- Residual waste per person/year: 232 kg



2009: First municipalities start to walk the ZW path

Usurbil is a town of 6000 inhabitants located across the road from where the incinerator was meant to be built. In 2009 it dared to implement a system of door-to-door separate collection with a special focus on the separate collection of organic waste. Until then nobody in Gipuzkoa had previous experience or neighbouring towns to imitate. **They only had the citizen mobilisation and the political will to build a better alternative.** With the support of zero waste experts from Catalonia, Usurbil planned an innovative system of kerbside collection that quadrupled the recycling rates the first month after implementation.

Following this successful experience two towns adopted the zero waste strategy in 2010, one of them was the town of Hernani with 20,000 inhabitants. Just like in Usurbil, the driving force for change was the mobilisation of the citizens together with the elected politicians. In towns where the door-to-door system has been implemented, a participatory process has preceded the rollout of the system. Over 20 meetings were held in each town in which the citizens decided on the collection times and frequencies for the different waste fractions.



For example, in Hernani organic waste is collected three times a week, light containers twice, paper and cardboard once, and once every two weeks residual waste is collected. **As a result the separate collection for recycling rose from 28% to 82% within a matter of months,** and similar rates were maintained over the years that followed.

More waste recycled might mean more expenses for collection, but it also means more income from selling the recyclables and less costs for waste disposal – **disposal costs are now 17% of the budget when they were 74% before the change.** As a result, in 2012 the small town of Usurbil created one new job for every 1000 inhabitants and saved €149,535, around €25 per person/year.



2011: The party supporting the incinerator loses the elections

In the meantime the regional government was moving ahead with the idea to build the incinerator despite the growing evidence of a viable alternative and despite the fact that the incinerator's planned capacity was already above the waste generated in Gipuzkoa. The public opposition and the stubbornness of the Gipuzkoa government to force the construction of an oversized and expensive incinerator played a role in them losing the elections in favour of a party which was committed to taking Gipuzkoa down the zero waste path.

In 2012, the new government presented an alternative infrastructure plan inspired in the Circular Economy roadmap presented by the European Commission. **The plan aimed at complying with the EU recycling targets of 50% for 2020, phasing out the disposal of recyclable waste and stopping landfilling of untreated waste.**

The new plan focused on rolling out intensive separate collection with special attention to the treatment of organic waste for which especially dedicated composting plants were foreseen. The new plan made incineration redundant and reduced three-fold the investment necessary for the new infrastructure. **Moreover, with a lot less investment it managed to create 10 times more jobs in the treatment of waste and reduce emissions associated to transport by simply applying the proximity principle to the management of the organic waste.**

Home-composting and community composting were encouraged and the number of villages which are managing the organic waste in-situ has grown since, reducing the costs of collection and treatment.

Specific projects were developed with the social players to build awareness about waste reduction and reuse. In addition, a number of interesting social experiments have been started up in this area to tackle the current economic crisis.

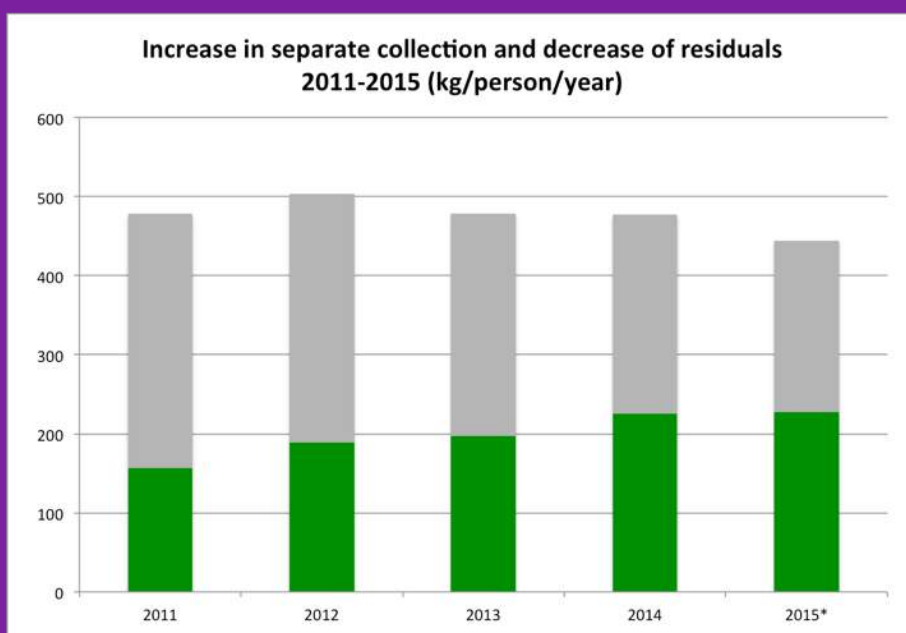
To prevent food waste, in 2013 the government collaborated with the Food Bank of Gipuzkoa to work with people with risk of social exclusion to distribute 741 tons of food to those in need.

The food that the large retail outlets were going to dispose of, due to either the sell-by date had passed or because the packaging was damaged, was collected and sorted and the food suitable for human consumption was distributed. In order to encourage reuse, in collaboration with the EMAUS social foundation, Ecocenters were built to recover materials and promote a second-hand sales service. This measure has



also made it possible to create jobs for people at risk of social exclusion.

Regarding the incinerator, the fact that it was not built represents a breach of contract with the banks and the European Investment Bank and the citizens of Gipuzkoa ended up paying 8,19 million euros for an investment that didn't take place in an infrastructure that was not needed. Yet even with the payment of these fines the zero waste plan for Gipuzkoa has saved 258 million euros in comparison with the incinerator and will continue to deliver economic, social and environmental benefits for the next years.



*For 2015, only data for first trimester was available.

2011 - 2015

- 7% waste production
- 32% residual waste

Recycling rate:
from 32% in 2011
to 51% in 2015

2013 - 2015: ZW rolls out throughout the province

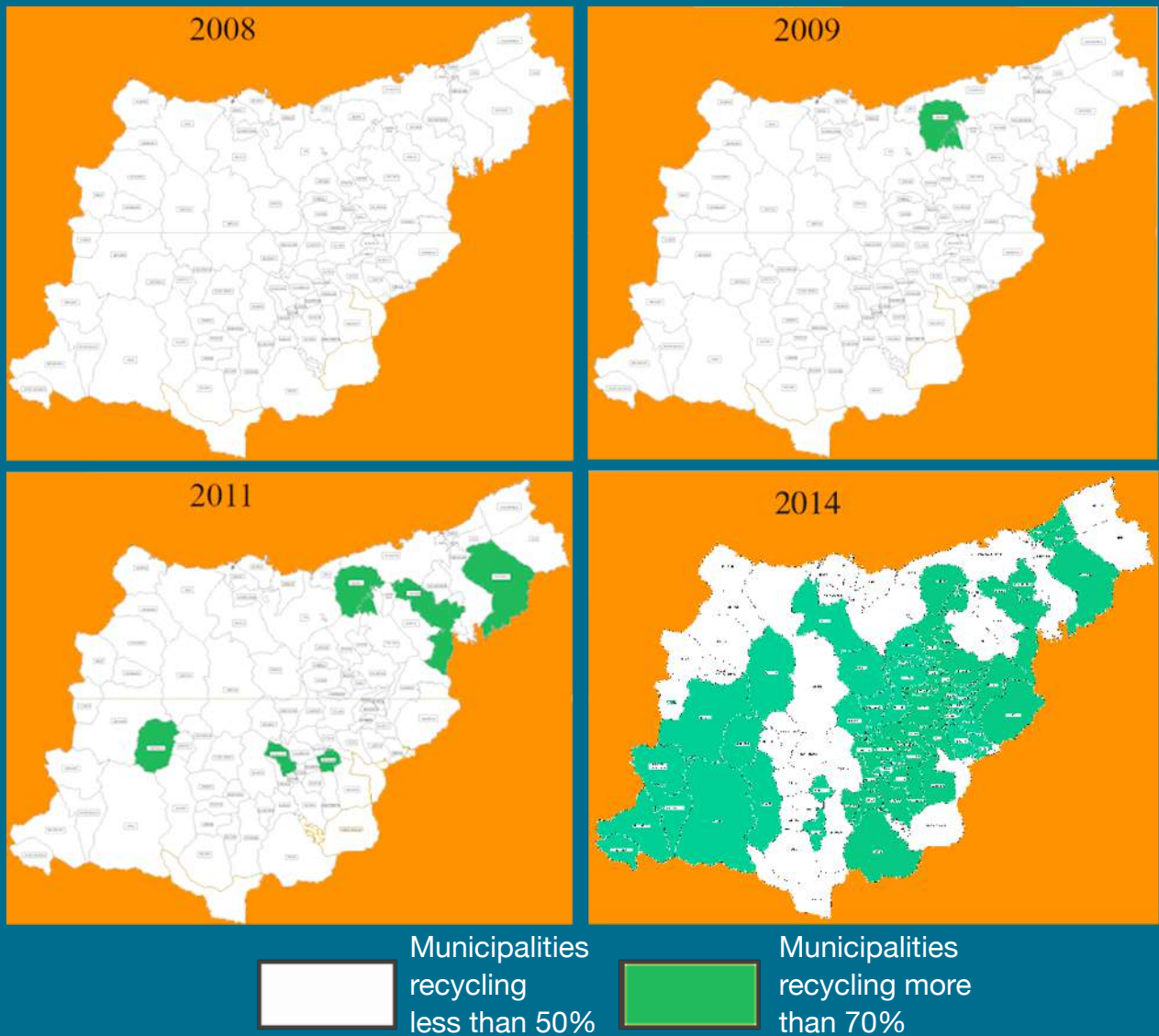
At the beginning of 2013 there were only five municipalities in Gipuzkoa that had gone through the transition and were collecting over 70% of the waste separately. By the end of 2014 the number had grown to 60, that is 2/3 of the municipalities in Gipuzkoa that were collecting over 70% of its waste separately, with many of them recycling above 80%.

The implementation to new municipalities continues to be rolled out and in the beginning

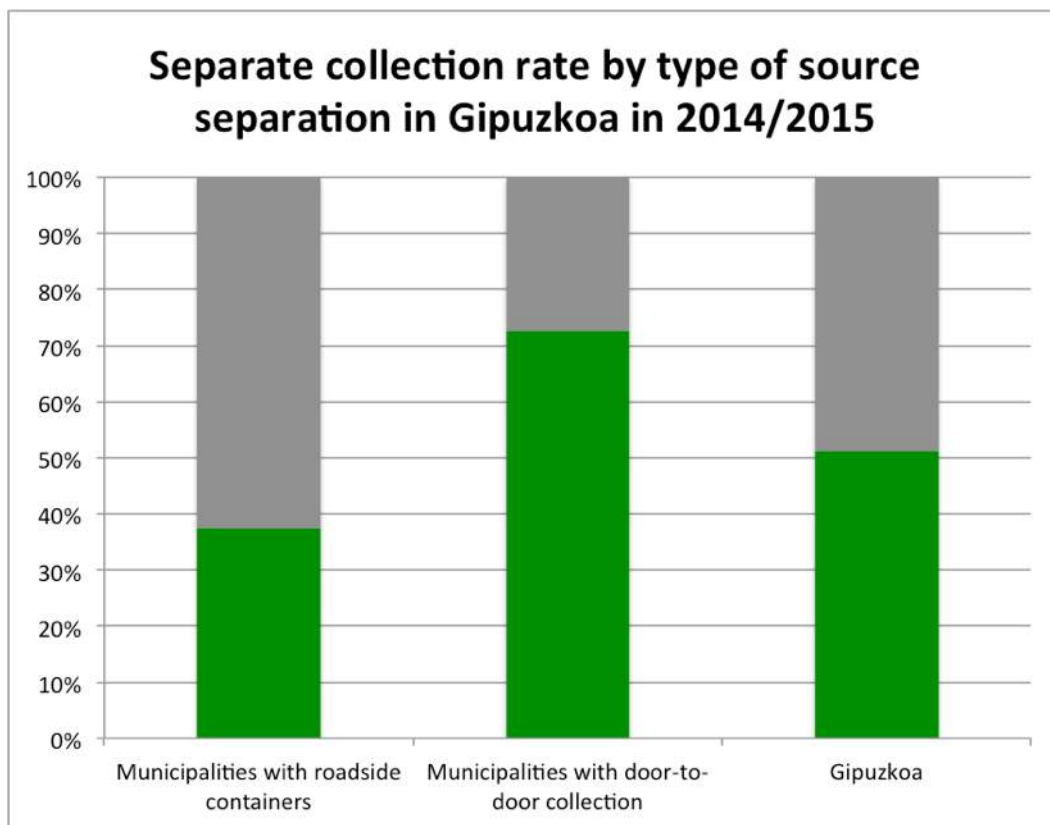
of 2015 Gipuzkoa was at 53% separate collection and therefore had met the European recycling targets set for 2020. The target for 2020 is to achieve 70% meeting the targets that the EU is considering to set for 2030.

Proactive waste prevention continues to throw results with waste generation decreasing despite the GDP growth of the last years. 57,218 inhabitants (1/10 of the population) are either home-composting or doing community composting, saving money for them and the community.

The evolution of separate collection in Gipuzkoa



The improvements are even more significant when considering that only one fifth of Gipuzkoa's population live in municipalities that have followed a transition, which prove that the results of these municipalities are outstanding, some of them above 80 or even 90% of separate collection.



Next steps & conclusions

Gipuzkoa represents the fastest transition from disposal based system to zero waste in Europe, almost doubling recycling rates in four years and with perspectives to continue increasing over the years to come.

It confirms that leapfrogging incineration is not only possible but also advisable for it is cheaper, allows faster and higher recycling rates, generates more jobs with substantially lower environmental impact.

It proves that it is possible to transition from low recycling rates to 70% in only 10 years, making it perfectly possible for the EU to set recycling targets of 70% for 2030.

Written by
Joan Marc Simon
Zero Waste Europe
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Sources

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Ibaiondo Industrialdea 27-3,
20120 Hernani Gipuzkoa;
www.ghk.eus



For more information visit:

www.zerowasteurope.eu
www.facebook.com/ZeroWasteEurope

Or contact:

info@zerowasteurope.eu
Twitter @zerowasteurope