

Political level

Societal level

Technical level

# BLUEISLANDS

## Waste Management Handbook



Interreg  
Mediterranean



Project co-financed by the European  
Regional Development Fund



BLUEISLANDS

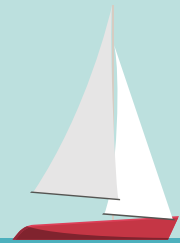
# Tourism footprint on Mediterranean islands coastal areas

During the study phase of the **BLUEISLANDS** project, the impact of tourism on the waste generated in the coastal areas of Mediterranean islands was assessed. The generation and accumulation of marine litter on beaches and the enrichment of coastal waters by nutrients of anthropogenic origin were investigated. The results are clear: the population increase during the summer is associated to an increase of the waste generated, representing a challenge for the local authorities.

During the high season, the accumulation of marine litter related to recreational activities is multiplied by 3.4 to 4.2, compared to the low season, on touristic and popular beaches. Amongst the most common items, cigarette butts and plastic fragments, represent on average more than 70% of the marine litter. An accumulation index was developed to better assess the dynamics of the marine litter on beaches, to support efficient mitigation strategies by local authorities and to move towards a more sustainable tourism.

During the summer, the rise of the population increases the sewage discharge leading to higher contamination of marine coastal areas by nutrients of anthropogenic origin. Although no dramatic extent of anthropic input was detected in the investigated sites, specific strategies will be proposed and adopted in order to further limit input of anthropic nutrients in the marine coastal areas, which so far seem mainly driven by the presence of bathers and recreational boats.

The **BLUEISLANDS Waste Management Handbook** gathers examples of good practices and innovations that are implemented in Mediterranean islands coastal areas, to answer the problems highlighted during the study phase.



# “Passing of Law 8/2019, of February, 19th, of Waste and Contaminated Soils”

## / Mallorca

### Description of the good practice

Reducing the amount of waste generated at source is regarded as the highest priority according to the Waste Hierarchy established in the Waste Framework Directive. Waste prevention is closely linked with improving manufacturing methods and influencing consumers to demand greener products and less packaging. Law 8/2019, of February, 19th, of Waste and Contaminated Soils of the Balearic Islands has a deep impact on prevention of waste prohibiting a wide range of one-use-only products. Therefore, from January, 1st 2021 on the Balearic Islands the following restrictions will emerge:

- Commercial establishments will not be able to distribute one-use-only plastic bags, only composting ones.
- Use, distribution and selling of one-use-only plastic plates, glasses and cutlery will be forbidden except composting ones.
- Use of single-dose food products and one-use-only tools at HORECA sector for the consumption of food or drink at the same place will be forbidden except cellulose ones.
- Plastic straws, lollypop sticks and cotton swabs will only be able to be commercialized and distributed if they are made of compostable products. One-use-only coffee, herbal teas and beverages capsules, sold at the Balearic Islands must be made of compostable materials or (organically or mechanically) easily recyclable.
- Distribution and selling of products containing microplastics and nanoplastics; non-re-

usable and non-rechargeable toners and cartridges for printers and photocopiers and models of lighters which cannot guarantee at least 3.000 effective lights will be forbidden.

- Distribution of beverages in one-use-only packages will not be allowed in buildings hosting Public Service.
- On public events, including sportive ones, supported by Public Sector, alternatives to the selling and distribution of one-use-only beverages and one-use-only glasses must be implemented and access to non-packaged water supply or in reusable bottles must be guaranteed.
- HORECA sector establishments must offer free non-packaged water supply.
- On January, 1st 2025, distribution and selling of non-rechargeable shaving razors will be forbidden. Rechargeable ones will also have to be made of recyclable materials.

“Plastic straws,  
lollypop sticks and  
cotton swabs will  
only be able to be  
commercialized and  
distributed if they are  
made of compostable  
products”





## Results

The compliance of these restrictions is supposed to contribute to reduce the generation of waste at the Balearic Islands and to mitigate the appearance of some waste categories detected on our beaches throughout the marine litter surveys already conducted at the BLUEISLANDS MED project.

### Type of waste

Minimisation of all types of waste.

### Location

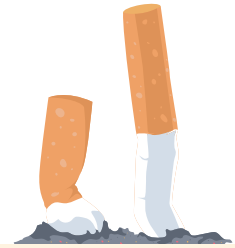
Balearic Islands.

### Further information

[www.caib.es/eboibfront/ca/2019/10944](http://www.caib.es/eboibfront/ca/2019/10944)

# “Installation of ecological ashtrays”

## / Mallorca



### Description of the good practice

This action is developed because of the results of the marine litter surveys carried out in the frame of BLUEISLANDS project. Therefore, on the touristic beach, over 5.000 units of cigarette butts were found on the surveys.

Cigarette butts are highly contaminating as they are made of monoacetate, a non-biodegradable derived from oil, that decomposes in 15 years.

The ecological ashtrays will be set on the beach. They contain 26 cans already completely opened on one side that can be used as ashtrays.

At their arrival to the beach smokers can take one of them, use it the whole day as an ashtray and leave it back to the lectern after emptying the content of the can inside the net attached to the lectern (so sand drains through it).

The strengths of this system are that cans are recycled and reusable for a long period of time. On the other hand, these ecological ashtrays are made by an organization that works with people in danger of social exclusion.

These ecological ashtrays have never been used on Majorcan beaches yet but have on other Balearic Islands such as Ibiza and Formentera getting a wide acceptance.

“Cigarette butts  
are highly  
contaminating as  
they are made of  
monoacetate, a  
non-biodegradable  
derived from oil,  
that decomposes  
in 15 years”



Modelo  
patentado en  
España:  
U201330836



## Results

This campaign is expected to avoid littering of cigarette butts on the beach

### Type of waste

Cigarette butts on the beach.

### Location

On some beaches in the municipalities of Artà and Calvià (Island of Mallorca).

### Further information

<http://sincolillas.com/>

<https://www.diariodemallorca.es/part-forana/2019/04/11/calvia-colocara-latas-playas-recoger/1408311.html>

<http://www.calvia.com/responsive/general.plt?KNOTICIA=4292&KIDIOMA=2&KNO-DE=2>

# “Extension of the existing methanisation plant”

## / Mallorca



### Description of the good practice

Lately Consell de Mallorca has concentrated its efforts on policies that encourage the development of organic waste collection and treatment.

In 2018, 25.350 tonnes/year of organic waste were collected. This organic waste together with 14.040 tonnes of sewage sludge were treated last year at the methanisation plant.

This methanisation plant is intended for the production of biogas from the fermentation of the organic waste obtained from the municipal selective collection.

The transformation of organic material in the presence of humidity and in environments without oxygen causes this material to degrade and gas to be produced, mainly methane gas (which is used as fuel to generate electricity). The resulting matter (digested) is directed to composting plants. And non reused sewage is addressed to a wastewater treatment unit for subsequent use.

Moreover, the methanisation plant has a pre-treatment area where paper, glass, film and bulky waste are separated if found at a pre-selection cabin. Organic waste is also cleaned of metals (mainly aluminium) through a Foucault separator and a magnetic separator.

Once organic waste is introduced into the digester and by the action of bacteria with a lack of air and at a certain temperature, it suffers a biological process in which biogas is produced.

The biogas produced is used as a fuel in a cogeneration engine module for electrical production used both for plant consumption and for export to the power grid.

Therefore, because of the increase of organic waste selectively collected foreseen for the following years, an extension of the methanisation plant is already been built and will probably be operative in July 2019. With this extension the capacity of the plant will grow up to 63.000 tonnes/year.

This extension will add treatment capacity to the whole Majorcan public waste management system together with the 4 existing composting plants and the existing solar drying facility.

“This methanisation  
plant is intended  
for the production  
of biogas from the  
fermentation of the  
organic waste obtained  
from the municipal  
selective collection”



## Results

Higher amount of organic waste treated.

### Type of waste

Organic waste.

### Location

Island of Mallorca.

### Volume treated

63.000 tn/year.

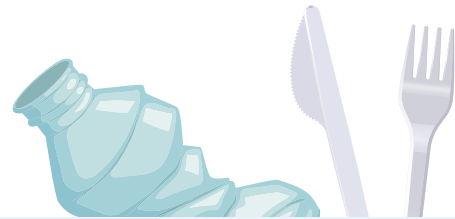
### Further information

[/www.tirme.com/uk/methanization\\_02f9s.html](http://www.tirme.com/uk/methanization_02f9s.html)



# “Plastic Free”

## / Sicily



### Description of the good practice

The “plastic” problem is an emergency, in particular the island ecosystems are the most sensitive and damaged by plastic pollution.

In Sicily this issue is added to the difficulties related to separate collection and recycling of waste, in every single city. In the summer period and the high tourist season, especially in the main tourist cities, the problem has taken on great importance.

For this reason, dozens of local mayors signed municipal ordinances to prohibit the use of disposable objects. A bottom-up initiative that involved several cities all over the island: Lampedusa and Malfa first, Avola and Noto then, Augusta, Alcamo, Acireale, Pietraperzia, Pantelleria, Siracusa, Favignana, Linosa, Capo d’Orlando, Augusta, Pachino, Capaci, etc.

These new regulations are imposing a ban on sales and use disposable tableware (cutlery, plates, straws, glasses, bags and any disposable container that is not biodegradable), suggesting the use of compostable plastic objects (easily deposited in the wet fraction). Shoppers will also need to be replaced by paper or canvas bags.

After a year, this local initiative of the municipalities was shared by the Sicilian Parliament with a regional draft law called “Plastic Free” bill. The proposal has been prepared by the Environment Commission of ARS (Re-

gional Sicilian Assembly) in order to limit the use of plastic products. The bill aims to encourage the industrial reconversion of Sicilian producers of disposable plastic towards biodegradable materials, to radically reduce the use of disposable plastic, to finance start-ups searching for new non-polluting materials, to promote Sicilian green beaches and create an advertising campaign. The spirit of the law wants to be more incentive than sanctioning.

The regional proposal will now pass under the Budget Committee and then it will arrive in the Chamber for the final approval.

“The “plastic”  
problem is an  
emergency, in  
particular the island  
ecosystems are  
the most sensitive  
and damaged  
by plastic pollution”



## Results

Ban on the sale and distribution of plastic bags.

Ban plastic from all the administrations belonging to the Region and replace it with biodegradable and therefore non-polluting materials.

Promote virtuous behaviors providing incentives for virtuous institutions and citizens (ex. reduction of the tax on waste, encouraging separate collection).

Introduce deterrent measures and sanctions in order to discourage negative behaviors.

### Type of waste

Non biodegradable disposable containers and crockery.

### Location

Tourist cities, sites and historical centers  
Public canteens, “venues” under public competence and responsibility, machines in loan, internal bars and restaurants of regional offices.

### Volume treated

Environmentalists estimate the use of 120,000 tons of disposable tableware in Italy per year.

### Further information

<http://www.comune.noto.sr.it/files/noto/images/stories/comune/ordinanze/2018/236.pdf>

<http://www.comune.noto.sr.it/news/ultimenews/2018/07/22/plastica-un-ordinanza-per-dire-usaegettanograzie--3604/>

<http://www.comunepantelleria.it/atti/2018/ORDINANZE/07-LUGLIO/index.php?download=ORDINANZA%20N.%2074.pdf>

<http://www.comune.lampedusaelinosa.ag.it/documenti/ORDINANZ%20SINDACALE%20N.%2007%20-%202018.pdf>

<https://www.siracusatimes.it/siracusa-plastic-free-dal-1-aprile-eliminazione-scorte-plastica-monouso-per-i-commercianti/>

[https://palermo.repubblica.it/cronaca/2019/01/26/news/sicilia\\_boom\\_di\\_comuni\\_plastic\\_free\\_sono\\_la\\_meta\\_di\\_tutta\\_italia-217540713/](https://palermo.repubblica.it/cronaca/2019/01/26/news/sicilia_boom_di_comuni_plastic_free_sono_la_meta_di_tutta_italia-217540713/)

<https://gds.it/articoli/politica/2019/04/03/sicilia-tra-le-primarie-regioni-plastic-free-il-ddl-del-m5s-varato-in-commissione-680e5a1f-a9c9-4934-bf06-3b5948139356/>

# “Sicilia Munnizza Free”

## / Sicily



### Description of the good practice

Legambiente is the main Italian environmentalist association, born in 1980.

“Sicilia Munnizza Free” is an information, awareness-raising and environmental volunteering campaign to promote circular economy and limit the local waste emergency due to the absence of sustainable management policies since the 1990s.

The Sicilian situation is characterized by massive landfill disposal, low recycling and a lack of recycling facilities. So Legambiente decided to apply here the same method already experimented in Campania.

The campaign is rich in initiatives and events involving local administrations and institutions, schools and citizens:

- “Competition of ideas and prototypes. The school in the CIRCLE: Ready to use”, an initiative aimed to support the development of “smart” school ecosystems. Students, starting from the observation of their own school context, have to think about their lifestyles in a more eco-friendly way, designing of objects / devices or anything else used, improving sustainability even starting from the reuse of waste materials.
- “The Provincial EcoForums on Waste and Circular Economy” (different dates and cities).
- “The 2nd Regional EcoForum on Waste and Circular Economy: Legambiente awards best practices” (March 29, 2019, at the Mediterranean Space of Legambiente Sicily, at the Cantieri culturale alla Zisa).

- “100 piazza per differenziare”, an itinerant event with the aim of transforming the Sicilian squares in temporary ecological stations. Citizens can voluntarily provide valuable materials (paper and cardboard, glass, plastic, metals) and their weight will be converted into “ecopoints”, a voucher to trade with Bio food products of Campagna Amica Sicilia of Coldiretti Sicilia. During the events recycling and reuse and information and awareness-raising laboratories will be activated for families and citizens on the need to make a quality separate collection, reducing the selection costs and maximizing the economic value of the waste.



“The campaign is rich in initiatives and events involving local administrations and institutions, schools and citizens”

**LEGAMBIENTE SICILIA**

**SICILIA MUNNIZZA FREE**

**CONCORSO DI IDEE E PROTOTIPI  
LA SCUOLA IN CIRCOLO:  
RIFIUTI PRONTI ALL'USO**

Inventa un modo per recuperare materiali di scarto,  
costruisci, illustra un prototipo e vinci la sfida della sostenibilità

**A CHI È RIVOLTO?**  
L'edizione è aperta alla partecipazione individuale o a gruppi di due categorie di studenti:  
**categoria A:** studenti degli ultimi tre anni delle scuole medie di secondo grado.  
**categoria B:** studenti della secondaria di primo grado e dei primi due anni della secondaria di secondo grado.  
Ogni studente può partecipare con un solo progetto pena l'esclusione sua e dei gruppi di progettazione in cui è coinvolto. Il singolo o il gruppo partecipante concorre per la scuola.

**COME SI PARTECIPA?**  
L'edizione delle scuole dovrà pervenire via email a: [segreteria@legambientesicilia.it](mailto:segreteria@legambientesicilia.it) entro e non oltre le ore 04 (03) 12 Novembre 2018.

I partecipanti dovranno successivamente far pervenire presso la sede di Legambiente in via Inghisi, 2 - Palermo un **sette dell'idea progettuale**, non più lungo di 4 pagine A4. Figure incluse (in formato pdf), accompagnate da un **tema esplicativo** di non più di 100 secondi.

**Il prototipo:** il cui funzionamento dovrà essere descritto e dimostrato da un video non più lungo di 3 minuti e da una relazione tecnica di non più di 11 pagine A4 figure incluse.

**QUALI SONO I PREMI?**  
Il progetto vincitore riceveranno in premio una carta per l'acquisto di libri.

**INFO:**  
E-MAIL: [SEGRETERIA@LEGAMBIENTESICILIA.IT](mailto:SEGRETERIA@LEGAMBIENTESICILIA.IT)  
TELEFONO: 091.301663  
[WWW.LEGAMBIENTESICILIA.IT](http://WWW.LEGAMBIENTESICILIA.IT)



## Results

Create a network between public institutions, voluntary environmental associations and citizens to involve the local community.

Inform citizenship, organizing recycling and re-use and information and awareness-raising laboratories.

Promote an awareness campaign in the schools, involving young students and let them think about issues and solutions.

Educate to separate collection, learn the rules for quality separate collection, and also promoting local biofood.

### Type of waste

Recyclable materials as paper and cardboard, glass, plastic, metals.

### Further information

<https://www.legambiente.it/sicilia-munnizza-free/>  
<https://www.facebook.com/SiciliaMunnizzaFree/>

# “Orange Fiber”

## / Sicily



### Description of the good practice

Orange Fiber is a Sicilian (from Catania) company established in 2014 which produces sustainable fabrics for fashion recycling the waste products of the industrial pressing of oranges. In 2012 they developed an innovative process, together with the collaboration of the Politecnico di Milano, allowing the transformation of the over 700,000 tons of waste derived by the citrus processing industry every year in Italy in a high quality fabric.

The innovative process was patented in Italy in 2013. The first part of the transformation takes place in Sicily, where the cellulose is extracted, to then be sent to Spain, where a partner company transforms it into yarn and finally this returns to Italy, to a Como weaving mill, where it is transformed into a high quality sustainable fabric for the fashion-luxury sector.

Extracting a raw material from waste product can satisfy the growing demand for cellulose for textile use (due to the volatility of cotton and oil prices) preserving natural resources, without producing other industrial waste. Orange Fiber does not exploit natural resources, but uses a waste product destined for disposal, reducing the exploitation of soil and water, the use of polluting pesticides and the impact of textile production on the planet.

In 2016 the startup was awarded with the Global Change Award, the international award organized by the H&M Foundation (non profit foundation of the H&M brand), to support innovations with the highest potential for transformation of the fashion industry in a sustainable way.

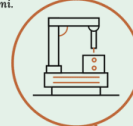
“Extracting a raw material from waste product can satisfy the growing demand for cellulose for textile use (due to the volatility of cotton and oil prices) preserving natural resources, without producing other industrial waste”

Ogni anno solo in Italia vengono prodotte oltre 700.000 tonnellate di sottoprodotto agricolo.

Grazie al nostro processo brevettato siamo in grado di estrarre la cellulosa dal cosiddetto pastazzo, quel che resta dopo la spremitura degli agrumi.



Il nostro esclusivo tessuto viene creato dal sottoprodotto dell'industria di trasformazione agricolo.



Al termine dell'estrazione si ottiene una cellulosa da agrumi atta alla filatura.



Dal filato al tessuto: la nuova vita del sottoprodotto agricolo.



Elegante, eterno e di altissima qualità, il tessuto da agrumi sposa perfettamente le esigenze di creazione della moda e del lusso.



## Results

Recycle organic waste produced in agricultural farm and industries, preserving natural resources, reducing the exploitation of soil and water, pesticides etc.

Dispose the so called "pastazzo" (in Italy every year we produce about 1 million of tons of it), a particular kind of organic waste, which represents a big problem for the citrus production chain, due to its high costs for the industries and for the environment.

Create, without any exploitation, a new high quality fiber. The famous Salvatore Ferragamo fashion house in 2016 started a collaboration with the startup that led to the creation of the Ferragamo Orange Fiber Collection, the first fashion collection made with the Orange sustainable fabric fiber.

### Type of waste

Organic waste produced by the the citrus processing industry.

### Volume treated

700,000 tons per year.

### Further information

<http://orangefiber.it/>



# “Costa Nostrum Sustainable Beaches”

Private certification protocol “Certification  
for Sustainable Management and Development  
of the Mediterranean Beaches”

## / Region of Crete



### Description of the good practice

Mediterranean beaches constitute an important natural heritage for the region and a worldwide tourism destination. However, although that they are also a highly sensitive ecosystem, until today, no properly structured effort has been made towards their sustainable development and management of the Mediterranean beaches, resulting in a variety of environmental, economic and social consequences: such as biodiversity loss, pollution of coasts from wastes, excess of the beach carrying capacity and many more others.

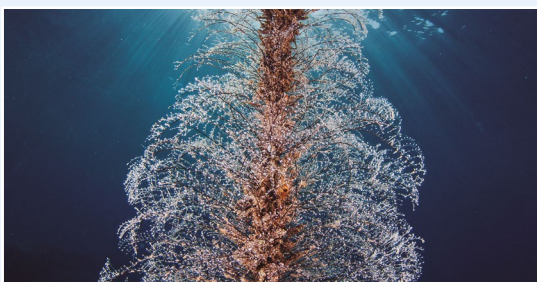
“Costa Nostrum Sustainable Beaches” (created by Costa Nostrum Ltd), is a private innovative certification standard through the effect of which the sustainable management and development of each beach may be achieved in an objective manner. Is based on specific indicators and criteria, allowing the sustainability classification and assessment of each beach, through an objective grading scale.

It can be applied at all beaches (organized and non organized, public or “private”) and can be adopted by all MUNICIPALITIES – REGIONS (the main partners of Costa Nostrum Ltd), as well as, by hotels & camp-

ing. From 2016 until 2018 Costa Nostrum – Sustainable Beaches protocol have been awarded in two international and one national innovative contest.

It consists of three main pillars: The initial study of the certified beach incorporates suggestions on the sustainable development and management of the beach based its capabilities, infrastructures and its characteristics. Secondly, the beach assessment - certification is following, with 39 objective criteria – indicators (social, economic and environmental). Finally, the third pillar is the worldwide promotion of the beach through the website ([www.costanostrum.org](http://www.costanostrum.org)) and the free mobile app, which is a free online information portal for the Mediterranean tourists, in regard to the infrastructure, classification and characteristics (natural – technical) of all certified beaches, allowing visitors to search and choose for an awarded beach depending on their personal requirements avoiding unnecessary wanderings.

Globally there is NOT any other certification standard for the sustainable management, development, certification & promotion of the beaches.



# Results

The major outcomes of the project are the environmental - sustainable and qualitative improvement of the awarded beaches, resulting firstly in environmental protection, conservation & increase of the awareness of a very fragile ecosystem; coastline, as well as, the improvement of the provided services and therefore, at the improvement of the satisfaction of visitors – tourists - bathers at each certified Costa Nostrum Sustainable Beach.

## Type of waste

The types of waste treated are all types of waste which are “produced” on a beach, recyclable and non recyclable.

## Location

Twelve (12) beaches, in the Region of Crete, from 2016 until 2019.

## Volume treated

It is estimated that more than 107.92 tons of waste treated from 2016 until 2018 at the twelve certified as Costa Nostrum – Sustainable Beaches.

The main aims of the implementation of the Costa nostrum – Sustainable Beaches Certification Standard are two: First of all to change the way people (inhabitants and tourists of Mediterranean coastline) and authorities perceive the Mediterranean beaches in order beaches to become a place where one can escape and relax, while also constituting an axis of economic development and environmental awareness for the coastal communities. Secondly, a healthy competitive environment to be created for each beach management body (public or private), focusing at the sustainable improvement of the beaches, favouring the beaches visitors, the beaches management bodies and the whole costal community around the awarded Costa Nostrum – Sustainable Beaches.

The major outcomes of the project are the environmental - sustainable and qualitative improvement of the awarded beaches, resulting firstly in environmental protection, conservation & increase of the awareness of a very fragile ecosystem; coastline, as well as, the improvement of the provided services and therefore, at the improvement of the satisfaction of visitors – tourists - bathers at each certified Costa Nostrum Sustainable Beach.

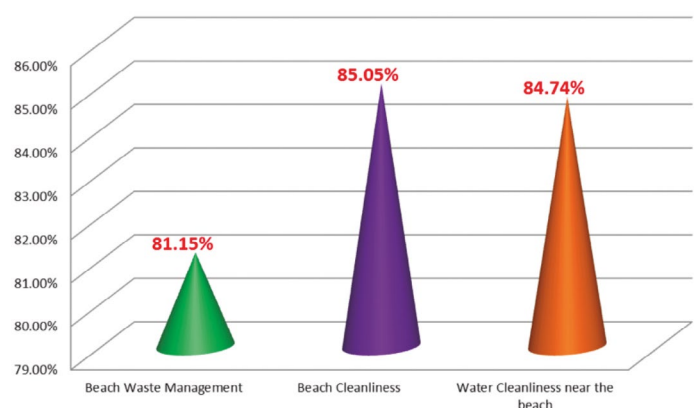
Informing the bathers about the environmental significance of the coast line, the protected species of the coastal flora and fauna, how to protect and to preserve them, the local myths and traditions of the area, as well as, about the significance & uniqueness of the nearby wetland, a very powerful bond & a very

personalized tourist experience could be achieved with several beneficial results for the environment, the local community and economy and of course for the tourists. This kind of “two-way bond”; bather – beach, is unique & very pioneer & it is the first time worldwide that something like that is trying to be achieved.

Moreover, the beach management body is trying to improve annually the quality of the beach (such as cleanliness of the beach), as well as, of the services provided aiming a higher score & therefore a healthy competitive environment is created, resulting at the sustainable improvement of the beaches; favouring both the environment and the bather. Due to the annually questionnaire survey of each awarded beach, the beach management body knows at almost real time the probable problems that a beach may facing, plus, the things which must be upgraded, improved or change. He also knows what the bathers' needs are and therefore the next year action plan could be scheduled.

Through the statistical analysis of the questionnaire survey that took place to all the awarded – certified Costa Nostrum – Sustainable Beaches (more than 4200 completed questionnaires from the bathers of the certified beaches) from summer 2016 to summer 2018, the bathers' satisfaction concerning the waste management procedures, the cleanliness of the beach, as well as, the cleanliness of the sea waters near the beaches are in very high level, as it can be obtained from the graph below.

**Mean Value of Bathers' Satisfaction Degree in all Awarded - Certified Beaches; Mean Value 2016-2018**



Therefore the implementation of the Costa Nostrum – Sustainable Beaches certification standard could be extremely helpful “tool” to every beach management body concerning the sustainable waste management of each awarded beach, as well as, the cleanliness of every awarded – certified beach.

## Further information

[www.costanostrum.org](http://www.costanostrum.org)





# “Pilot activities in touristic beaches and beaches for locals”

## / Region of Crete



### Description of the good practice

The region of Crete under the European project blueislands implements pilot actions during the high tourist season, to reduce waste produced by tourism and end up at the beaches and the sea of the island.

Pilot actions are taking place on selected beaches in the town of Rethymnon and on the beach of Arina in the municipality of Hersonisos. On these beaches, the project in 2017 & 2018 has already carried out litter surveys and studies of the origin, quantity and quality of the waste produced by the visitors of these beaches, as well as the customers of the HORECA companies (restaurant hotels, bars etc.) operating in these areas. The main results have shown that pollution is greatly increased during the high tourist season, also that 85% of the waste produced consist of plastics, and that on the most touristic beaches there is a huge number of cigarette butts thrown into the sand.

Pilot actions include a series of measures aimed at informing and sensitizing the visitor of the beach on the issue of coast and sea pollution. The Region is cooperated with the local authorities to ensure that the prevention measures are working properly and in order to ensure better results.

On the specific beaches have been placed i) pairs of bins for recyclable and mixed waste at regular intervals covering the specified area. Separation of the use of the bins is clearly distinguished (2 different colors, information in Greek and English language and

international symbols), (ii) cigarette ashtrays to cover the monitoring area. Buckets and ashtrays are properly constructed so that they are not transported by the air, visible to the visitor on the beach, stylish and practically easily discharged by the cleaner. It has also been clearly highlighted with the appropriate signs the distinction of recyclable waste into existing bins of the Municipality for the tourists who do not know the local rules.

One person is responsible on behalf of the Region of Crete to contact with the business owners around the monitoring area, to inform them about the purposes of the Blueislands pilot activities, to encourage passers-by, or habitants to avoid pollution and to protect the beaches using existing equipment.

“The main results have shown that pollution is greatly increased during the high tourist season, also that 85% of the waste produced consist of plastics, and that on the most touristic beaches there is a huge number of cigarette butts thrown into the sand”



## Results

The main objective of the pilot activities is to reduce (in relation to the results recorded during the study phase of the project) the waste that enters the environment. The proposed measures are expected to improve environmental conditions

### Type of waste

Urban solid waste generated by tourists or visitors or walkers in coastal areas and beaches.

### Location

The areas where the pilot activities take place, are the beach of the city of Rethymnon near by the old harbor, a beach with many visitors and passers tourists and locals and the beach of Arina (Heraklion - Kokkini Hani), a long beach which is preferred by the locals.

### Volume treated

In general:

- In Rethymnon 850 plastic pieces and 750 cigarette butts.
- In Arina 1250 plastic pieces and 600 cigarette butts.



# “E Garbage”

(Data collection in real-time from the waste containers using ICT tools)

## / Region of Crete



### Description of the good practice

Application E Garbage is an ICT tool to optimize waste collection methodologies which has developed under the Life E WAS project which has worked within the framework of the European project “Life+ 2013. EWAS via E Garbage introduced a network of sensors installed in the containers, for the collection of glass packages, paper and other recyclables packages. The sensors send data of filling level of each container through GPRS. The data are processed and projected online in a web based interface to the waste manager, providing him with real time information about the condition of sensors, containers, the waste materials quantity and the route efficiency.

• **Objective of EWAS project:**

EWAS aimed to ensure a sustainable management of natural resources and waste with emphasis on energy efficiency and contributing to the reduction of GHG emissions, noise and traffic congestion during the waste collection and transportation using ICT technologies.

• **Challenges in waste collection:**

- Monitoring the filling level of waste in recycling containers in remote areas, reduces the necessary routes of the collection tracks and eventually the fuel consumption.

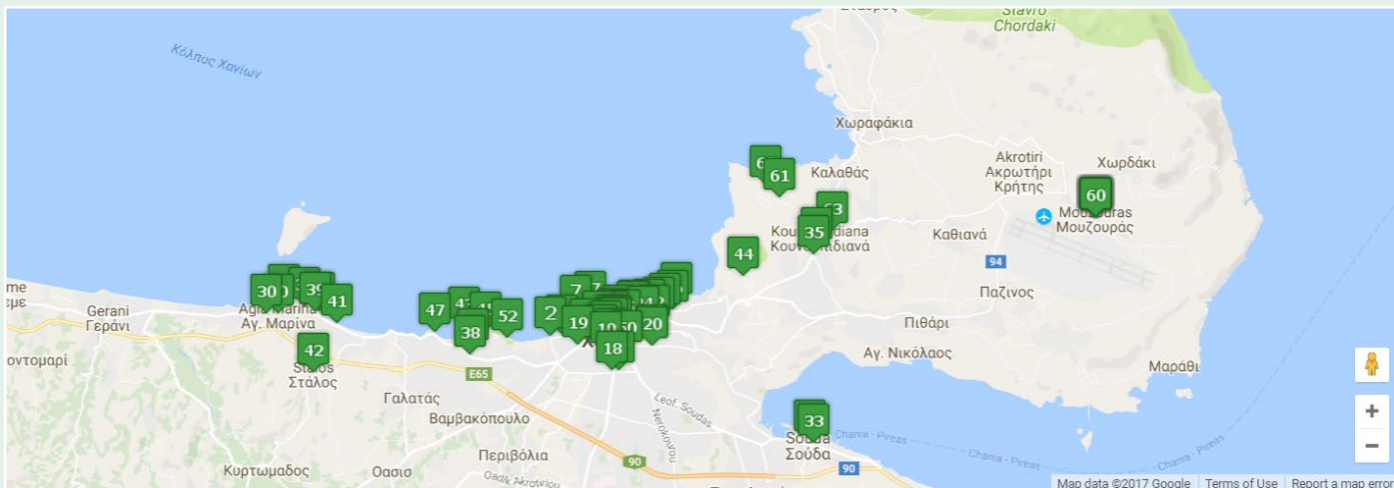
- In touristic areas with high seasonal population fluctuations between summer and winter, altering the routes in blue container for paper and recyclable packages (plastics, paper, metals & aluminum) and Yellow container for glass packages.

The pilot scale implementation in north Chania supported by the existing fleet management system E-TRACK with GPRS which DEDISA uses (waste management body).

• **Goals achieved:**

- Reduced frequency of collection routes
- Reduction of resource used.
- Cost Reduction
- Minimize vandalism
- Reduce the risk of fire
- Improved routes

“EWAS via E Garbage introduced a network of sensors installed in the containers, for the collection of glass packages, paper and other recyclables packages”



# Results

The pilot has shown very good results (reduction of 30% of collection costs of glass packages yearly and reduction of 30% of collection costs of paper and other recyclable packages in the Winter time).

These results have created a lot of interest for the replication of the experience in other routes.

Stakeholders acceptance: the citizens in most of the area showed their enthusiasm for the project and there were willing to take care of the containers in their territory.

No sensors were destroyed during the program due to vandalism or fire.

## Type of waste

Urban solid waste and in particular the recycled packaging and glass.

## Location

Pilot scale implementation in north regional unit of Chania.

## Volume treated

1.163.700 kg recyclable packaging in 2016 (1.164 tn/y) & 140.000 kg glass, the half year of 2016 (7.000 tn/y).

## Further information

<http://life-ewas.eu/el/>

<http://life-ewas.eu/el/dissemination-2/articles.html>

# “Waste management in the medieval town of Rhodes”

## / Rhodes

### Description of the good practice

The practice is about efficient waste management in the Medieval Town of Rhodes. It comprises of the control and monitoring of the generation, collection, transportation, separation and treatment of the waste from the Medieval Town, the allocation of human and equipment resources for these purposes, the continuous adaptation to seasonal changes, touristic and legal demands, a wide range of activities aimed to activate all the parties involved and the cooperation between them for a common goal: waste minimization and prevention.

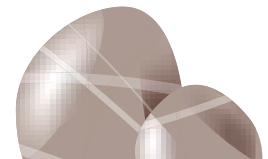
In recent years, waste management has proved to be one of Rhode's most complicated environmental, political, legal and social problems. The Municipality of Rhodes has always been responsible for the waste management in the Medieval Town, thus the implemented practices have been designed and developed internally after years of gained experience and are continually adapting to changes.

The development of waste management in the Medieval Town of Rhodes takes into account and adjusts according to the high seasonality and unpredictable waste generation during the summer season. Nevertheless, waste is collected from the small bins which are dispersed throughout the Medieval Town every day, during the early morning hours, all year long and during summer season additionally once or twice within the day. There is an arrangement in the summer that inhabitants and business owners dispose their waste only after dark in the big bins which are located in strategic parts, accessible to people and

trucks, so that the small trucks collect them before dawn. Small bins' waste is re-disposed in the big underground bins located just outside the fortification. The cobbled streets are cleaned manually and with special machinery -cleaners- every morning, and there is also a special suction pipe to cleanse the cigarette butts and other small waste from the cobbled streets, used throughout the day. Recycling bins are emptied on a daily basis by small special trucks.

The adopted practices are in full compliance with the 4042/2012 Law on Waste Management of Greece, the EU Waste Framework Directive 2008/98/EC, UNESCO directives pertaining to World Heritage sites in general and specific ones for the Medieval Town of Rhodes. Furthermore, there are restrictions imposed by the Archaeology Committee of the Medieval Town in Rhodes and guidelines by the Hellenic Recovery Recycling Corporation. The salary, the working conditions (i.e. personal safety devices), benefits and all other personnel-related issues are in full compliance with the respective Greek legislation. Procurement and budget-related issues are restricted by new laws after the economic crisis in Greece.

“The Municipality  
of Rhodes has always  
been responsible  
for the waste  
management in the  
Medieval Town”





## Results

Proven results (through indicators):

1. Reduction in petrol and maintenance cost for the equipment due to vehicle renewal: 23%
2. Environmental benefits: they are Euro VI vehicles, which means lower noise and exhaust fumes levels by approximately 65%.
3. Aesthetic improvements: not easily quantified, though obvious to citizens, tourists (enhanced overall experience from a visit in the Medieval Town) and the local and international media.
4. Recycling of generated waste: approximately 13% in the first year of implementation and continually increasing.
5. Waste Reduction (tons): around 5% per year since 2016.
6. Green Areas: around 15% increase per year since 2016.

Possible success factors:

The engagement of the community (inhabitants and business owners in the Medieval Town of Rhodes), open top-down and bottom-up communication within the Municipality of Rhodes, commitment of the Mayor of Rhodes to improve the waste management, new state-of-the-art machinery and equipment, new procedures within the responsible Department of Waste Management and Recycling, careful design of the allocated human and financial resources, close cooperation with the local Trade Union, operation of the new Recycling Facility in Rhodes, use of third-parties (privatization)

of some activities to counteract the cumbersome legislation of the public sector, specially designed campaigns to inspire and activate all the parties involved and, last but not least, the general trend towards environmental consciousness.

### Type of waste

Solid waste and Recyclable materials.

### Location

The Medieval Town of Rhodes is the largest medieval city in the world (175.000 m<sup>2</sup> total area within fortification) and was declared in 1988 by UNESCO a World Heritage city.

It is inside 4-km-long walls with 11 gates and is inhabited, unlike other Heritage Cities.

Although the permanent inhabitants of the Medieval Town of Rhodes represent just the 2.5% of the total population of Rhodes island, it is estimated that 99% of visitors (over 2 million people per year) will at least once visit the Medieval Town of Rhodes for average 5 hours.

### Volume treated

10000-12000 tn/year.

### Further information

<http://www.antapodotiki.gr/Default.aspx?tabid=396&language=en-US>

# “Rewarding Recycling Centres for citizens”

## / Rhodes



### Description of the good practice

Rewarding Recycling great success is underpinned on the application of contemporary recycling methods resulting in citizens' wide participation. The Municipality of Rhodes utilizes the international experience whereby when a packaging materials system is based only on citizens' voluntary participation in the recycling process, the attainable recycling quantitative objectives reach a certain level that cannot be exceeded no matter how much the packaging recycling system expands.

Therefore, experience worldwide has proven that the most effective way to preserve high participation levels in the recycling process is to offer incentives for the recycled packages. In this way, consumers are directly rewarded by the recycling process satisfying both their needs and their sensitivities. Through the reward incentive for the recovery of packages after use, consumers easily comprehend that empty packages are not litter but valuable materials. For this reason, citizens do not dispose of packages in the bin but promote them for recycling.

Rewarding recycling underpins its alternative management method on the Rewarding Recycling Centers where high technology equipment enables automatic collection, processing and storage operations for packaging while offering consumers at the same time a reward incentive for every recovered package. This incentive can be used either for donations in cooperating stores or to be donated for the promotion of a social cause.

It should be stressed that in every Rewarding Recycling Center all the requisite collection, sorting, processing and storage operations for packaging materials are carried out automatically. Capitalizing on the technical capabilities of the equipment, the following operations are carried out automatically:

1. *Delivery of empty packages, in a special reception funnel and with high delivery speed (up to 40 packages per minute).*
2. *Identification and separation of packages per material, where packages are identified and separated with the use of specific sensors.*
3. *Package identification, using barcode scanner.*
4. *Packaging compression or cutting, with the appropriate mechanical means, achieving up to 90% volume decrease.*
5. *Collection of recovered packages in a specially integrated closed storage area.*
6. *Storage, printing and dispatching of all statistical data and data (such as number and kind of packaging per material, amount of reward incentive offered per material, donation amount for a social cause per material, number of consumers who proceeded to recycling, number of consumers who opted for the reward incentive etc) utilizing the integrated PC, printer and modem.*
7. *Automatic printing and delivery to the recycler of the award amount receipts, utilizing the integrated PC and printer.*
8. *Automatic printing and delivery to vouchers' recycler with various offers, such as competitions vouchers, promotions vouchers, free products vouchers etc, utilizing the integrated PC and printer.*
9. *Automatic donation of the value of the corresponding pecuniary amount for a certain social cause, through the application of the Social Capital Concentration System (based on specific software and accessories placed on the equipment).*
10. *Consumer guidance and information on the equipment operation procedure for packages recovery, with the help of interactive messages appearing on every machine's special screen.*
11. *On line interconnection of automatic machinery for packages rewarding recycling with a central server using wireless communications network.*



## Results

REWARDING RECYCLING in Rhodes sets the following basic objectives:

1. To decisively contribute to the attainment of national quantitative packaging recycling objectives, pursuant to the national and community legislation, not achieved to date.
2. To change citizens' environmental behavior, rewarding local communities for the recycling process since a reward incentive is offered for the recovered packaging.
3. To promote recycling both in areas presenting further margins of improvement and in areas not integrated yet in the packaging recycling planning, such as insular areas etc.
4. To enhance citizens' purchasing power, offering a reward incentive for the recovered packaging, being very important during periods of financial recession.
5. To reduce the environmental footprint of recycling process, as –through the applied alternative management method of the Rewarding Recycling Centers- entire packages are not transported in large distances and no further processing is required at a second stage (due to the state-of-the-art equipment for packaging collection, sorting, processing and storage at only one stage, at source).
6. To improve recyclable materials quality (constituting a secondary raw material) since 100% pure material is produced using the technological characteristics of the Rewarding Recycling Centers cutting-edge technology equipment.
7. To significantly cut the cost per selected ton of packaging materials, because significant packaging quantities are collected due to citizens' wide participation and the use of high technology equipment.
8. To establish transparency and reliability of packaging recycling quantitative data, as there is immediate statistical data collection and entry through the on line link with the Rewarding Recycling Centers.
9. To strengthen environmental and social causes by means of the automatic donation (by recyclers) of the reward incentive offered in favor of bodies implementing respective actions.

### Type of waste

Recyclable materials such as glass, metals, plastics, paper.

### Location

2 areas in the city of Rhodes and there is intention for more 4.

### Volume treated

100-120 tn/year.

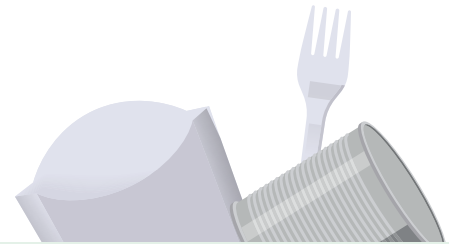
### Further information

<http://www.antapodotiki.gr/Default.aspx?tabid=396&language=en-US>



# “Development of Pilot Rewarding Mobile Recycling”

## / Rhodes



### Description of the good practice

The Municipality of Rhodes is the local authority of one of the most important touristic destinations in Greece. As a result, the Municipality has to face all the important challenges that tourism poses, including seasonality, increased per capita waste production, and typical waste composition etc. In addition to the above, Rhodes touristic product is based, to a great extent, on large scale 3S (Sea, Sun, Sand) tourism, which is associated with higher environmental stresses.

One of the main issues that the Municipality of Rhodes is facing during the tourist seasons is the seasonality and in particular the important difference between the overall production of waste between the low and high touristic season.

Moreover, an important aspect of Rhodes, in particular, is its insular nature, which increases the cost and threatens the financial viability of waste management schemes. Reduced waste production will have multiple benefits for Rhodes as an island and the Municipality as an organization; there will be less need for imported material, while lower per capita waste production would increase the financial sustainability of the management system.

The Municipality of Rhodes has benefited from the introduction of tools, methods, techniques and action plans that ensures that the investment in the tourism sector continues to generate high returns, while at the same time it safeguards the sustainability of the economic activity and the quality of life of the local population.

Rhodes Municipality will procure one Mobile Rewarding Recycling Center. The Pilot activity will operate around the year aiming at anticipating emerging needs in waste production. During the summer season it will be located in crowded areas while in the rest of the year it will be located to public buildings (schools, hospital or other).



“An important aspect of Rhodes, in particular, is its insular nature, which increases the cost and threatens the financial viability of waste management schemes”



## Results

The Mobile Recycling Center is state-of-the-art technology equipment, for the source separation and separate collection of recyclable waste, in one single processing step with automatic procedure of all necessary activities, reception, separation, processing and storage of recyclable materials.

The ability of Mobile Recycling Center is to cover seasonal recycling needs, simultaneously in numerous areas with great waste generation, without the need for creating any recycling infrastructure at these points.

The role of the Municipality is valuable as it can contribute decisively in main ways such as attracting and encouraging voluntary groups, associations, actors, active citizens and members of the educational and school community of the Municipality.

### Type of waste

Recyclable materials such as glass, metals, plastics.

### Location

The areas where the pilot activities will be implemented are the beaches of Tsambika and Faliraki (most crowded beaches of Rhodes island) and some beaches which are visited mainly by locals such as Afandou beach.

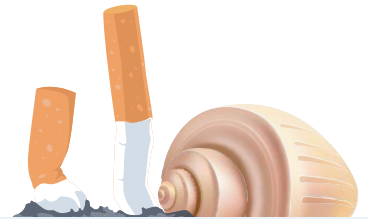
### Volume treated

30-40 tn/year.



# “Hold on to Your Butt” program

## / Municipality of Mykonos



### Description of the good practice

“Hold on to Your Butt” program has one ambitious goal: to end cigarette litter so we never have to see those butts again.

With volunteers and representatives of the Municipality of Mykonos involved in the project we will survey smokers and handing out pocket ashtrays. Smokers are overwhelmingly grateful to receive the pocket ashtray and most have never seen one before. The results of the survey will inform behavior-changing strategies. Then, the interested parties will take those strategies and put them into action by working with the members of the BLUEISLANDS project to develop messages that will raise awareness and encourage behavior change.

At the same time, the Municipality and the involved parties of the island will focus on providing butt cans, especially in crowded places and spots on the island.

Everyone needs trash cans to dispose of their regular trash. Smokers do need butt cans to do the same and avoid throwing them on the sand or around the streets. The Municipality of Mykonos is now planning to install butt cans in cigarette “hotspots”, where high concentrations of cigarette butts are identified and monitor their use during the summer period. The Municipality of Mykonos is also planning to conduct cigarette litter audits in coastal areas and crowded beaches in order to establish a baseline and identify the impact of this specific action.

Furthermore, volunteers will now install signs at the main entrances of the beaches to inform visitors and tourists about the actions and the new “rules” on the island of Mykonos. Through infrastructure and behavior change, the Municipality of Mykonos aims to keep cigarette butts out of our waterways and safeguard our Marine Protected Areas.

“The Municipality of Mykonos is now planning to install butt cans in cigarette “hotspots”, where high concentrations of cigarette butts are identified and monitor their use during the summer period”



## Results

The program aims to bring awareness to the environmental impact of the cigarette flick. Reduce cigarette litter.

### Type of waste

Cigarette litter.

### Location

All crowded beaches on the island.



# “Adopt-A-Beach program”



## / Municipality of Mykonos



### Description of the good practice

The Adopt-A-Beach program will be proposed to be implemented during summer 2019 and it will focus on the need for clean oceans, shorelines, and waterways.

Municipality of Mykonos aims to encourage local people as well as tourists that visit the island for vacation to care for it and its beaches as well and “adopting” a Beach that they are visiting.

An event will be developed through social media pages and send the link to the followers so that we can promote it and create groups of tourists/volunteers. The event will be in both Greek and English. Educational presentations for adopting groups to complement their participation in the program will be proposed and multiple groups could adopt the same beach.

Schedule and complete our cleanups  
All groups must complete 2 cleanups at their adoptable area within 3 months from their request date to qualify for their free sign, which acknowledges group’s contribution to the community as well as commitment to the environmental stewardship.

Adopt-A-Beach program coordinators will create a litter tracking card to identify what types of waste are most common on each beach. By filling out these data cards, all participants will contribute to a better understanding of the cause and source of waste on our beaches in Mykonos. Another

outcome of this awareness raising action could be the development of a legislation to prevent specific harmful waste from ending up as marine debris.

“Educational presentations for adopting groups to complement their participation in the program will be proposed and multiple groups could adopt the same beach”

ADOPT  
A  
BEACH®



## Results

The purpose of the action would be to inform and raise awareness within the local society, students, volunteers as well as tourists who visit the island.

### Type of waste

All types of waste

### Location

- a) Fokos beach
- b) Merchia beach
- c) Platys Gialos beach



# “Use of Recycling Press Container”

## / Municipality of Mykonos



### Description of the good practice

Current efforts of the Municipal authority of Mykonos in the field of waste have been carried out. The goal is the development on the island and the protection of the environment, especially during summer season.

Through a pioneering recycling and waste management program of the Municipality of Mykonos, a large Recycling Press Container has been placed. With this Press Container, many blue recycling bins are being released, recyclable material is being increased, since its capacity is equivalent to at least 100 recycling bins and the collection is normalized, which will now be done with a crane vehicle instead of waste trucks.

This will lead to a more efficient facilitation of screening and monitoring the waste management actions by the Municipality of Mykonos and the responsible technical authorities.

“Through a pioneering recycling and waste management program of the Municipality of Mykonos, a large Recycling Press Container has been placed”



## Results

Easier and more efficient waste collection.

### Type of waste

Recyclable waste/ material

### Location

Island of Mykonos



# “Easily recycling big amount of organic waste through large-scale composting”

## / Région Sud - France



### Description of the good practice

ComposTerre\* is a company created in 2006 in order to find and offer solutions to public authorities and companies regarding organic waste management. ComposTerre offers to study each particular situation of a municipality or a company, in order to propose the most appropriated solution to manage the high amount of organic waste that they generate. According to the needs of a municipality or a company, different types of composters are proposed (rotative manual composters, Compost'Air, compost platform, electromechanics composter).

Added to those feasibility studies, the company offers trainings about composting, with a special focus on collecting and composting in farms, or actions against food wastage.

Being an important part of circular economy, local composting, collection and recycling of organic waste allow to recycle and reuse them locally. The produced compost brings fertilizing elements to the soil, which can substitute chemical fertilizers.

“ComposTerre offers to study each particular situation of a municipality or a company, in order to propose the most appropriated solution to manage the high amount of organic waste that they generate”

*\*This company is member of the French regional network Éa éco-entreprises, which aim is to promote the emergence of innovative solutions and services to limit the impact of human activities on the environment.*



## Results

- Make easier to compost big volumes of organic waste in institutional catering or school canteens.
- Delete greenhouse gases due to transportation of organic waste and thus reduce the costs.
- Create local employment with no possibility of outsourcing.
- Enhance relationships between producers and users.
- Raise awareness about food wastage
- Favourish circular economy by reintroducing organic waste in new consumption or production cycle.

### Type of waste

Organic waste.

### Location

Aix-en-Provence (Provence-Alpes-Côte d'Azur, South of France).

### Volume treated

The volume of organic waste treated will depend on the needs of the structure implementing a composter. ComposTerre systematically encourages a local compost solution in order to boost the creation of a circular economy. The volumes treated can range from 0.3 tons/year to 100 tons/year for local site composters, and until 5000 tons/year for composters in farms.

### Further information

<http://www.lombric-composteur.com/composterre/cms/1/composterre.dhtml>

# “Recycling big amounts of plastics into urban furniture”

## / Région Sud - France



### Description of the good practice

MP INDUSTRIES\* is a French company specialized in the production of finished products made out of recycled plastic composite - mainly from HDPE -, for markets such as urban furniture, heavy products wedging for the metal industry, scaffolders or aquaculture.

MP Industries collects industrial, agricultural and household waste containing plastic composite. The raw materials come exclusively from waste produced in local area and are sorted, recycled, transformed and gathered in France. Those waste, which are usually incinerated, are grinded to obtain an exploitable granulate. Then, under pressure, this granulate is melted at high temperature (around 200°C), and extruded in compact top profiles with a thermo-coated aspect.

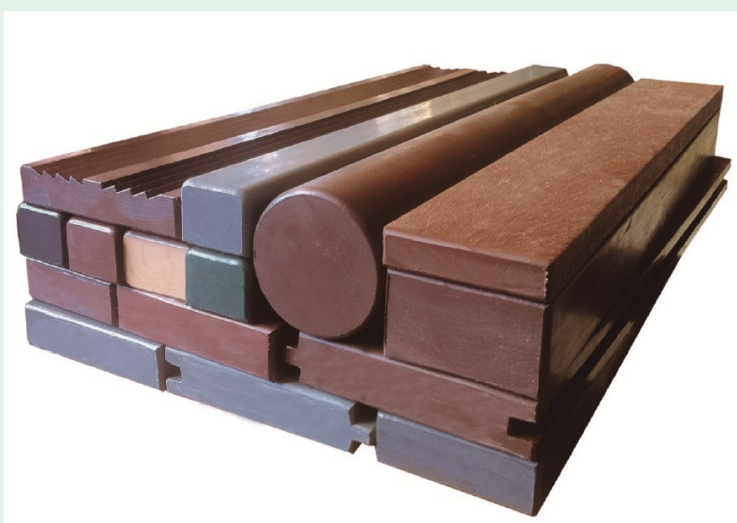
The company developed a very singular technique for plastic recycling, called the “continuous sequential compression” (CSC). This technique uses 96% of plastic (the 4% left are colorants) and compresses them in such a way that it creates a very dense material. The method shows another particularity: the machines function at a jerky rhythm, every 2 or 3 minutes, to improve the material compression.

The final material, called “Recyclène”, can be used as urban furniture, has a very good resistance to coastal climatic conditions, and can resist to marine environments.

Those characteristics make the products very interesting for public authorities, especially because they do not need any maintenance, allowing the reduction of the costs linked with public urban furniture's maintenance.

“The final material, called “Recyclène”, can be used as urban furniture, has a very good resistance to coastal climatic conditions, and can resist to marine environments”

*\*This company is member of the French regional network Éa éco-entreprises, which aim is to promote the emergence of innovative solutions and services to limit the impact of human activities on the environment.*



## Results

- Recycling big amounts of plastic collected in France.
- Production of resistant products, endlessly recyclable.
- Reduction of maintenance costs for users and public authorities.

Ecological results of recycled plastic:

- Recycle industrial, agricultural and household waste.
- Low consumption of natural resources
- Produced in France, minimum transportation.

Mechanical and technological results:

- High-quality top profiles, extruded under high pressure.
- Thermo-coated surface aspect.
- Work of the material as the wood.

### Type of waste

Industrial, agricultural and household plastic waste.

### Location

Gardanne, Provence-Alpes-Côte d'Azur (South of France).

### Volume treated

500 tons/year of finished products.

### Further information

<http://www.mix-urbain.com/>

<http://www.mpdecheterie.com>

[https://www.youtube.com/watch?time\\_continue=6&v=XZ6tm15\\_2fE](https://www.youtube.com/watch?time_continue=6&v=XZ6tm15_2fE)

# “Evaluating and extracting highly recyclable waste in electronic devices”

## / Région Sud - France



### Description of the good practice

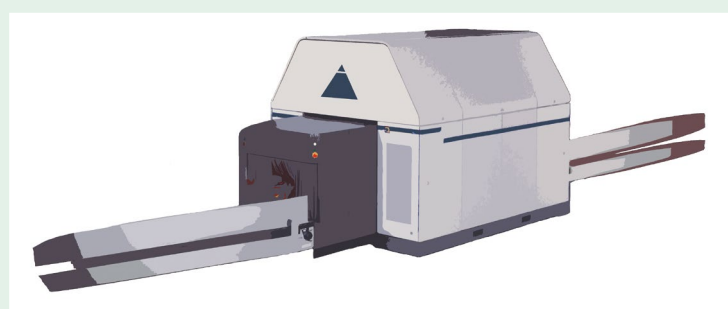
Founded in early 2017, Technologies de France (TDF)\* is an innovative company specializing in green engineering. Today, it focuses on optimizing the market for recycling rich waste : electronic cards, medical radios, telecom boxes, batteries, etc. TDF has noticed that recycling market players do not have today an effective and non-destructive tool to know the exact composition of their waste, which represents a significant shortfall, especially in high-potential recycling markets. For example, in Europe alone, the metal value to be recovered each year in electronic boards is almost 1 billion euros!

So TDF created a solution : OSIRX. Patented internationally, accurate, fast and based on X-ray imaging, OSIRX is the world's first scanner that gives collectors the true value of their rich waste. This is important because if collectors know the true value of their waste, they can sell them better and increase their profit margins. They are then more motivated to collect rich waste, have to hire to ensure the increase of activity, etc. Positive consequence of all this: the whole recycling market is boosted, and more raw materials are recovered. It's a virtuous circle, especially knowing how harmful the mining industry is to the environment.

Take the case of gold (which accounts for about 80% of the value of e-waste): according to the World Gold Council, about 2,700 tons of gold are extracted from quarries each year. This represents 54 MT of CO<sub>2</sub>, 400 MT of cyanide, 810 GL of water, 475 PJ of energy (equivalent to half of the annual energy consumption of a country like Belgium). Those very high numbers are another reason to look for innovations such as OSIRX to boost the recycling of rich waste. The OSIRX technology combines high technology, circular economy, respect for the environment and economic profitability.

“OSIRX is the world's first scanner that gives collectors the true value of their rich waste”

*\*This company is member of the French regional network Éa éco-entreprises, which aim is to promote the emergence of innovative solutions and services to limit the impact of human activities on the environment.*



## Results

- Bring more transparency to the recycling market, by giving for the first time the real value of highly recyclable waste such as electronic boards, without destroying them.
- Innovate and improve the recovering of raw materials from rich waste.
- Quickly analyse and quantify the precious/critical metals and rare-earth elements (17 metals such as scandium, yttrium, lanthanide) in the rich waste, especially in electronic boards of WEEE.
- Create a global map database in order to improve WEEE recycling management.
- Maximize the benefits of rich waste collectors.
- Boost the high-potential recycling markets.

### Type of waste

Every rich waste, especially the electronic boards of WEEE (computers, smartphones, tablets...).

### Location

Technologies de France is based at Technopole Arbois for the environment in Aix-en-Provence (Provence-Alpes-Côte d'Azur, South of France). A prototype of OSIRX has also been implemented in a subcontractor in Gardanne (Provence-Alpes-Côte d'Azur, South of France).

### Volume treated

The OSIRX technology can characterize 5 tons of electronic boards per day.

### Further information

<http://www.compagnie-france.com/osirx/>  
<https://www.laprovence.com/article/edition-marseille/5322845/osirx-valorise-les-dechets-electroniques-en-or.html>  
<https://www.provence-pad.com/entreprises/osirx/>  
<https://dai.ly/x75mppm>  
 (overall presentation of the OSIRX principle, in French).  
<https://www.dailymotion.com/video/x780rvo> (3D presentation of the 2nd prototype: OSIRX C).

# “Sort It Out Campaign”

## / Wasteserv Malta



### Description of the good practice

Following the successful implementation of a pilot project for organic waste collection in the Maltese Islands, the collection of organic waste was extended nationwide on the 31st October 2018. All households were provided with ventilated bins and bin liners in order to incentive the public to separate the organic waste. Additionally, each household was provided with a set of stackable bins which caters for other waste streams other than organic; mixed recyclables, glass, sanitary waste and other waste. The latter was done to further incentive the public to separate their waste at home. Apart from the provision of various bins, there was an extensive awareness campaign with the use of various media including television, radio, social media platforms and also billboards, bus advertising and newspapers.

All organic waste collected is sent to Sant' Antnin Waste Treatment Plant in Marsaskala where sorting systems are in place. This waste is turned into liquid form and placed into tanks without oxygen. A bacterial process (anaerobic digestion) will then take effect, generating gas. This process takes roughly 30 days to complete. At the end of the process, this product is then dewatered, leaving a material similar to compost.

Apart from the compost-like material, treating the organic waste also leads to the generation of heat and electric energy. The electricity is put back into the national grid while some of the heat generated is used to heat

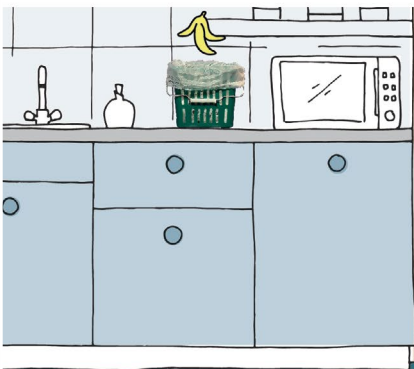
the swimming pool at the Inspire Foundation which is used for therapeutic swimming.

Simultaneously with the Sort It Out campaign, there were amendments to the littering regulations where there were a number of new proposals which aim at bettering our environment whilst also conditioning our civic duty. Such proposals included the introduction of harsher penalties for irregular/incorrect waste disposal and the amalgamation of the waste collection schedules to the littering regulation.



“Apart from the compost-like material, treating the organic waste also leads to the generation of heat and electric energy”

PROJECT PART-FINANCED BY THE EUROPEAN UNION



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[www.wasteservmalta.com](http://www.wasteservmalta.com)



Operational Programme I – European Structural and Investment Funds 2014 – 2020  
"Fostering a competitive and sustainable economy to meet our challenges"  
Project part-financed by the Cohesion Fund  
Co-financing rate: 85% European Union; 15% National Funds



**WASTESERV**  
CREATING RESOURCES FROM WASTE

## Results

The Sort It Out campaign was very fruitful since over 14,000T of organic waste was collected since the project nationalisation. Apart from this, Malta recorded an increase in the volume of recyclable waste and a decrease in the volume of mixed waste.

### Type of waste

This campaign focused mainly on organic waste, however, it also promoted proper waste management of other waste streams including recyclables and glass.

### Location

This campaign was introduced in the Maltese Islands.

### Volume treated

More than 14,000,000 kg

### Further information

<https://www.wasteservmalta.com/sortitout>



# “Awareness Campaign – BlueIslands pilot project”

## / Wasteserv Malta



### Description of the good practice

Between June and August 2019, Wasteserv will be conducting a pilot project with the aim to tackle waste management problems on two beaches; Golden Bay and Gnejna. Wasteserv representatives will be present on site as an outreach to beach visitors, offering information and tips on good waste management practices. Whilst on site, our representatives will be distributing merchandise; beach ashtrays in order to tackle the problem of cigarettes butts and reusable water bottles in order to tackle the issue of single-use plastics.

Simultaneously, Wasteserv will be working on a small awareness campaign. Various media will be utilised to reach different demographic groups, mainly radio, social media and local websites. Also, in order to directly reach incoming tourists, Wasteserv is looking into the possibility of having an advert on magazines such as ‘il-Bizzilla’, which is the in-flight magazine for AirMalta.

The main theme of the campaign will be the importance of proper waste management on beaches and how can waste affect marine life. This message will also be put on posters which will be affixed at the main entrances of both beaches.

“Wasteserv  
representatives will  
be present on site as  
an outreach to beach  
visitors, offering  
information and  
tips on good waste  
management practices”



## Results

The expected result is to have a good response to the awareness campaign and that beach visitors are more aware of the repercussions marine litter has.

### Type of waste

The awareness campaign will tackle the issue of marine litter in general.

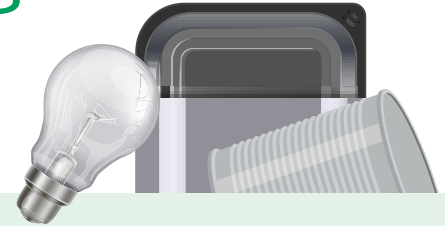
### Location

The awareness campaign will be conducted in the Maltese Islands.

Wasteserv representatives will be at Gnejna and Golden Bay.

# “Kerbside collection vehicles as a social marketing campaign”

## / Wasteserv Malta



### Description of the good practice

Later on in 2019 (tentative launch - November 2019), five specialised kerbside collection vehicles will be operating across the Maltese Islands. The public will be invited to dispose of their source segregated waste to a parked vehicle which comes at a known time, place and date. The trucks will be accepting several waste streams, including polystyrene, plastic, lights bulbs and metal. Main aims of this initiative:

- To promote sustainable waste practices with respect to separation efforts.
- To make it easier for the public to dispose waste properly.
- To create education and awareness.
- To engage the public.

“The public will be invited to dispose of their source segregated waste to a parked vehicle which comes at a known time, place and date”



## Results

Wasteserv is expecting this initiative to work really. Apart from the convenience of having a mobile disposal unit, the kerbside vehicles will incentive the public to segregate their waste at source.

### Type of waste

The kerbside vehicles will be accepting:


- Cooking Oil
- Textiles
- Cardboard and paper
- Light bulbs
- Glass
- Plastic
- Metal
- Polystyrene

### Location

Maltese Islands

# “Regional Program for Beach Management in the Primorje-Gorski Kotar County”

## / Primorje – Gorski Kotar County (Croatia)



### Description of the good practice

Beaches are one of the most significant coastal resources with great recreational and economic potential. During the season, they are in focus of tourist interest, making them the most commonly used space in the tourist destinations. Beaches are one of the key motives of tourist arrivals in Primorje-Gorski Kotar County, so rising their attractiveness while taking care of long-term sustainability and protection is one the key issues. Therefore it is crucial to establish a quality beach management system by which the adoption of Regional Program for Beach Management in 2015 represents a crucial step.

According to the Programme, Primorje-Gorski Kotar County has 406 beaches as defined by a spatial planning document. While this resource represents a high and diverse attraction based on the beauty of locations, purity of the sea, security and accessibility, there are many elements that need to be improved. They are mostly related to infrastructure interventions such as access, parking and sanitary conditions in some cases, as well as a number of unused opportunities for raising the quality of tourist offer, introduction of various recreational contents, and stronger profiling of offers to specific target groups of guests.

The challenge is also the seasonal feature of tourism in Primorje-Gorski Kotar County, which results in problems of overcrowding

and noise at the peak of the season, making the beaches in some destinations lose part of their attractiveness. It is a high-value resource from the aspect of natural, social, economic and recreational potential. In order to make beaches a function of tourist offer and positioning of tourist destination on the tourist market, and to make the tourist product of the destination more attractive, it is necessary to enrich the beach offer according to the wishes of the market segments while respecting the principles of sustainable development.

“While this resource represents a high and diverse attraction based on the beauty of locations, purity of the sea, security and accessibility, there are many elements that need to be improved”



## Results

The Regional Program for Beach Management aims to improve the quality of beaches in Primorje-Gorski Kotar County by intensifying activities at the regional and local level by defining the needs of local communities, developing and implementing beach management plans with organizational support.

### Location

Primorje-Gorski Kotar County.

### Further information

<https://www2.pgz.hr/doc/dokumenti/2018/03-Regionalni-program-uredjenja-i-upravljanja-morskim-plazama-PGZ.pdf>

# “Blue Bag”

## / Primorje – Gorski Kotar County (Croatia)



### Description of the good practice

The Blue Bag Initiative is one of the many ecological initiatives carried out in the area of the Croatian islands, including the Primorje-Gorski Kotar County. It is an ecological and tourist project designed for yachtsmen, tourists, local inhabitants and all other nature lovers who want to encourage and participate in volunteer cleaning of the coast and beaches.

The Blue Bag Project is being implemented by the Association “Obala naših unuka” (which means “Coast of Our Grandchildren” in Croatian) with many partners since 2015. The first Blue Bags on the Croatian coast have appeared on the island of Krk, which demonstrated leadership in many innovative actions that encourage ecological awareness, environmental preservation and sustainable development. The goal of the Blue Bag is to get every sailor during the season to collect at least one Blue Bag of waste from the coast. It takes about 5 minutes of someone’s holiday to collect waste or debris that was washed ashore on some hidden, less accessible beach. After return to the port the Blue Bag just has to be left in a nearest dumpster. The goal is for every sailor, either tourist or local, to collect a bag of debris or waste during the course of a tourist season. If that can be accomplished, there would be

no need for various actions and massive resources to keep the coastline clean. All the waste that washes ashore could be collected: plastics, cans, ropes, nets, jars, shoes, clothes, wooden objects.... but following items are not collected: branches, leaves, bones, remains of regional flora and fauna.

“The goal of the Blue Bag is to get every sailor during the season to collect at least one Blue Bag of waste from the coast. It takes about 5 minutes of someone’s holiday to collect waste or debris that was washed ashore on some hidden, less accessible beach”



## Results

The goal is for every sailor to collect a bag of garbage during the course of a tourist season.

### Type of waste

plastics, cans, ropes, nets, jars, shoes, clothes, wooden objects.

### Location

Croatian islands.

### Further information

<https://www.bluebag.eco/en/>



# “Eco Island of Krk”

## / Primorje – Gorski Kotar County (Croatia)



### Description of the good practice

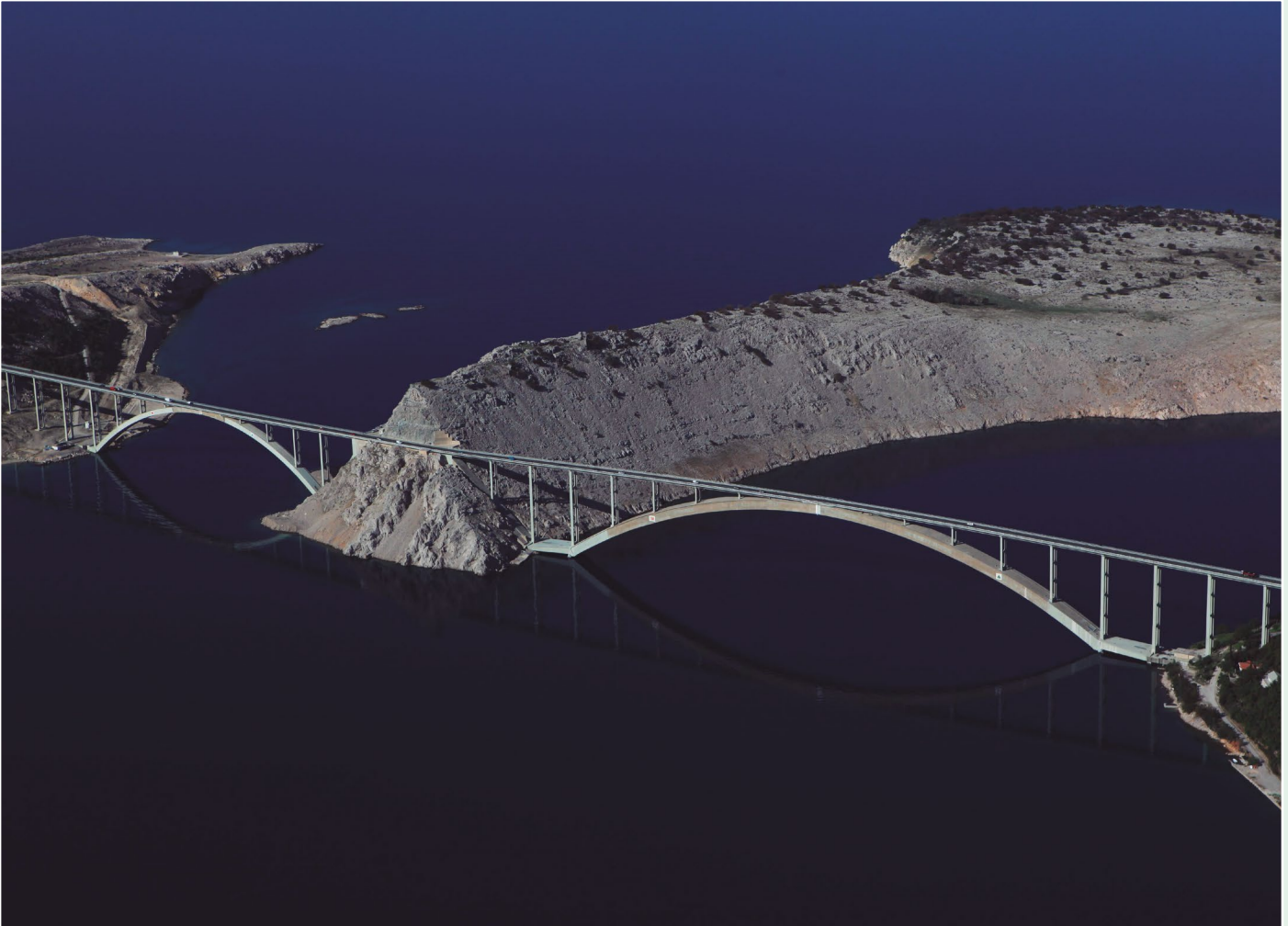
In June 2005, on the Croatian island of Krk, an ecologically based communal waste management system was introduced, widely known as “Eco Island Krk”. The “Eco Island of Krk” represents a comprehensive waste management model, the first of its kind in the Republic of Croatia which allowed the adequate disposal of all kinds of waste. According to this system, household waste is collected separately in special containers (bio-waste containers, paper, plastics, glass, etc.). Therefore, municipal waste collection system on the Island of Krk consists of:

- A system of collection of mixed municipal waste and biodegradable waste from households by “door to door” model
- A waste collection system through “green islands“
- Waste collection system through “recycling yard”
- A system of collecting large (bulk) waste;
- Textile waste collection system

Company “Ponikve Eco Island Krk Ltd.” manages the „recycling yard” (with sorting and composting facilities). The waste disposal site is located at the location of Treskavac where all municipal waste from the area of the island of Krk is transported. At the waste disposal site Treskavac a weighing scale is installed and all data on the

collected quantities of waste are recorded. In addition to the Treskavac waste disposal site, there is a recycling yard, sorting and composting facility on which separately collected waste is separated, pressed, baled and composted separately. The sorted waste is processed and prepared for recycling and transport. The waste is then handed over to companies that, in accordance with a signed contracts, take over special categories of waste or recyclable fraction of mixed municipal waste. Produced compost is delivered to local self-government units and interested citizens free of charge in annual actions.

“The ‘Eco Island of Krk’ represents a comprehensive waste management model, the first of its kind in the Republic of Croatia which allowed the adequate disposal of all kinds of waste”



## Results

At present, about 54% of waste is collected separately in the area of the island of Krk. 6500 containers have been installed in 1400 places on the island in order to ensure the successful operation.

### Type of waste

Mixed Municipal (Communal) Waste.

### Location

Island of Krk (Croatia).

### Volume treated

The island of Krk gathers around 19,500 tons of communal waste per year, of which some 12,000 tons is gathered during the summer season.

### Further information

[http://www.krk.hr/en/the\\_island\\_of\\_Krk/Eco\\_island\\_Krk](http://www.krk.hr/en/the_island_of_Krk/Eco_island_Krk)



# “Ban plastic into the beaches”

## / Sardinia



### Description of the good practice

In Sardinia several coastal municipalities decided to anticipate the deadline to adjust to the European Directive banning disposable plastic within year 2021.

The Municipality of Carloforte, South Sardinia, will ban the commercialization and the usage of disposable plastic objects as plastic plates, straws and plastic cutlery. This is part of their plastic free ordinance, which is already signed and will take effect starting from June 17th.

The Municipality of Olbia will ban the usage of disposable plastic and smoking starting from June 1st.

Their disposable plastic ban will take effect in the seaside as well as in other sensible areas like archeological sites, public parks and urban squares. The smoking ban will impede to light cigarettes anywhere closer than 8 meters from the seaside and outside appropriate equipped areas.

Other coastal Municipalities who are banning the usage of disposable plastic are: Badesi, Aglientu, Trinità d'Agultu e Vignola, Arzachena, Olbia, Loiri Porto San Paolo, San Teodoro, Siniscola, Castiadas and Sant'Antioco. Among them, some have extended the ban inside school canteens and public offices.

“Their disposable plastic ban will take effect in the seaside as well as in other sensible areas like archeological sites, public parks and urban square.”



## Results

### Type of waste

The types of waste treated are disposable plastic and cigarette butts produced on the beaches.

### Location

Several coastal municipalities in Sardinia.

### Further information

<https://www.comunecarloforte.gov.it/sites/default/files/comunicati/Ordinanza%20Sindacale%20N%C2%B0%2020/2019/sudetords202019ordinanzaprorogaplastica.pdf>

<https://www.olbianova.it/notizie/tutela-dellambiente-e-salute-arrivano-due-ordinanze-contro-plastica-e-fumo/>

Political level

Societal level

Technical level

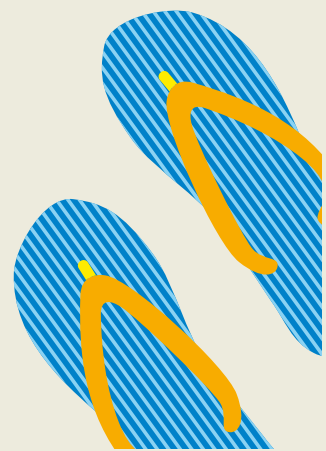
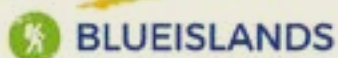
# BLUEISLANDS

Additional sheets

Region SUD - FRANCE



Project co-financed by the European Regional Development Fund





# Awahi, sportswear made in bottles of recycled plastic

## / Region SUD - France

### Description of the good practice

Marseille, Awahi (with reference to Hawaii) is an ethical brand of sportswear, technical clothing, eco-designed (in recycled plastic bottles), versatile (material hybrid for water and land sports) and made in France. Our philosophy is both to reduce waste, by avoiding as much as possible to draw on our natural resources, but also to limit the environmental and social impacts of the textile industry.

In an economic approach circular, the brand collects sports waste (neoprene suits, kitesurfing wings, boat sails, etc.) and reuses it in accessories (bags, pouches, bracelets...) in partnership with an insertion structure. In an economic approach circular, the brand collects sports waste (neoprene suits, kitesurfing wings, boat sails, etc.) and reuses it in accessories (bags, pouches, bracelets...) in partnership with an insertion structure.



### Results

	 Polyester recyclé	 Polyester	 Coton
Bouteilles recyclées	10	0	0
Consommation d'eau	15 litres	30 litres	2 700 litres
Pesticides	Non	Non	Oui



Type of waste plastic bottles, sports waste


Location Marseille, France

Volume processed 10 plastic bottles for leggings

Further information

[www.awahi.fr](http://www.awahi.fr)

 Awahi

 awahi\_sports



# Lemon Tri, a funny and effective recycling way

## / Region SUD - France

### Description of the good practice

Since its creation in 2011, Lemon Tri aims to improve the outdoor waste collection. For this purpose, they have deployed a set of innovative and incentive-based sorting solutions. The machines are able to identify waste, perform efficient source sorting and eliminate sorting errors.

This ensures a homogeneous and high quality material flow that can be sent directly to recycling without going through a sorting centre. In order to stimulate the sorting process, the machines are programmed to reward users with a purchase voucher, a physical gain or a solidarity donation.



### Results


- Recycling rate improvement
- Significant water and energy savings
- Reduction of CO2 emissions.
- Public awareness (via the reward scheme)
- Source sorting without intermediaries and in short circuits

Type of waste bottles (PET, HDPE), cans (aluminium, steel), glass (collection without breakage: deposit for reuse)

Location Marseille, France

Further information

<https://lemontri.fr/>

 @lemontri.fan

 @LemonTri

 @LemonTri

# Bigbelly : a compactor powered by solar energy

## / Region SUD - France

### Description of the good practice

The Bigbelly recycling bin is innovative in its operation: solar-powered compactor, connection to a cloud for data transmission (rate of filling, refuse collector hours...). It is connected to a sorting reward system, which makes it possible to recognize waste material through their bar codes and give points to citizens who sort their waste correctly.



### Results

- Sorting in the city centre
- Savings in collection costs
- No overflows
- Respect for the environment


Type of waste street waste and packaging waste


Location Meyreuil, France


Volume treated 600L of waste in a 120L basket

Further information

[www.connect-sytee.com](http://www.connect-sytee.com)

 @connectsytee

 @ConnectSytee

 @ConnectSytee





# Zero plastic bottle challenge / Region SUD - France

## Description of the good practice

The Zero Plastic Bottle Challenge supports all types of actors towards the adoption of alternatives to plastic water bottles. These solutions (fountains, washable containers) are technically easy to install and inexpensive. But although popular, their adoption by the majority of users requires incentive-based support: reconciling with tap water, giving visibility to water access points, getting the bottle adopted, creating a collective dynamic... After a pilot with Arlesian retailers, the Zero Plastic Bottle Challenge is now open to any company to join this participatory and innovative programme, supported by the South Region. Participants will benefit from tailor-made advice, support in setting up the equipment, fun and attractive activities to mobilise users, and a promotion of their commitment through visibility on networks and media, and the presentation of a trophy.



## Results

  
The possibility of being a signatory of the Zero Plastic Charter of the South Region

  
Concrete and valuable results

  
An improved working environment for your employees

Type of waste Plastic bottles  
Location Pays d'Arles, France  
Further information  
[zero-bouteille-plastique.org](http://zero-bouteille-plastique.org)

  
The mobilization of your teams around a CSR action in which they recognize themselves

  
**Visibility** in the media and on social networks with an appreciated **commitment** on a very shared subject.

  
The reduction of your plastic waste



# La consigne de Provence: a channel for the reuse of glass / Region SUD - France

## Description of the good practice

Ecoscience Provence is an association that is building a concrete way to reuse glass: collection, washing and distribution: La Consigne de Provence. This approach is the result of collaboration with local stakeholders, including a waste treatment and recovery union (SIVED NG) and an association of companies in the wine sector (Le Cluster Provence Rosé). These collaborations have led to the emergence of a rigorous methodology to implement the project: from the evaluation of the sector's potential, to the preparation of the investment in an industrial washing line, to the creation of the logistics circuit and a guide.



## Results

- The reuse of glass reduces CO2 emissions: for a wine bottle, 46% of CO2 emissions are related to the manufacture and transport of the bottle.
- Re-use reduces the CO2 footprint of a bottle by a factor of 4.
- The returnable glass allows you to save up to 75% of energy and 33% water compared to recycling.

Type of waste Plastic bottles  
Location Pays d'Arles, France  
Further information  
[zero-bouteille-plastique.org](http://zero-bouteille-plastique.org)



# La Nouvelle Mine : revaluation of waste through design and artistic creation

## / Region SUD - France

### Description of the good practice

La Nouvelle Mine aims to preserve our natural resources by reducing waste. La Nouvelle Mine enhances the value of materials intended for waste through design and artistic creation, and the development of spaces that encourage reuse. It develops a wide range of transmission and awareness actions in terms of creation and sustainable development in a collective intelligence approach. La Nouvelle Mine is structured around 5 poles: Collection: Targeted collection of business waste and voluntary

contributions from individuals; Eco-design creation: Revaluation of waste by overcycling or upcycling; Artistic: artistic installations, works of art made from recycled materials; Transmission/awareness: creative workshops, educational workcamps; Zero waste: support and event entertainment offers at zero waste for companies, communities and individuals.



### Results

- Reuse of many neglected materials or objects in artistic creations
- Development of spaces to promote well-being at work
- 30% reduction of waste produced within the companies within 6 months

**Type of waste** abandoned furniture and objects, wood scraps, pallets, shutters, hardware, electrical equipment in good condition, remaining construction sites (insulation, parquet floors, glass plates, plexi, brushes, paint cans...

**Location** Métropole Aix Marseille, France

**Further information**

<https://lanouvellemine.fr/>



# Mini Green Power : production of renewable energy from plant residues, and SRF\*

## / Region SUD - France

### Description of the good practice

Mini Green Power offers innovative solutions for the production of renewable energy - heat, cooling, electricity - from plant residues, waste wood and solid recovered fuels (SRF) in installations from 500 kWth to 6 MWth, for companies and local authorities. The variety of fuels used and the moderate size of the installations make it possible to work in short circuit on waste deposits near the recovery site and give an energy price

much lower than traditional biomass. solutions.

The transformation into energy of the SRFs, the woody fraction of the territory's green waste and used wood, valorizes a deposit of several tens of thousands of tonnes for the territory's urban areas and more than one million tonnes on a regional scale by reducing the costs of transport, landfilling, incineration, composting and energy costs at the same time !



### Results

- Replacing fossil fuels
- Limit the number of trucks on the roads (long-distance transport of waste)
- Raise awareness of waste sorting through an educational approach based on power plants

**Type of waste** green waste or wood waste (class B wood), SRF.

**Volume treated** 1000 to 20 000 tons/year

**Location** Hyères, France

**Further information**

[www.minigreenpower.com](http://www.minigreenpower.com)

 @minigreenpower

 @MiniGreenPower



# Committed against pollution coming from cigarette butts

## / Region SUD - France

### Description of the good practice

Since 2015, RecyClop has been contributing to the protection of the environment and acting against pollution generated by cigarette butts. Its approach is based on 3 axes:

**Raising awareness:** Information session on the problems and solutions related to the management of cigarette butts; sharing of good practices for the adoption of new eco-responsible actions; green seminar and support for cultural and sporting events.

**Cigarette butts collection:** Smoking area management service for private and public companies; collection system dedicated to bars and places welcoming the public; Collection point for individuals and associations.

**Cigarette butts recovery:** Our collections are sent to a hazardous waste disposal facility at a local partner.



### Results

- The smoker becomes the first actor in the revaluation chain
- Committed local high places (Cours Julien and Estiennes d'Orves, Vallon des Auffes, Vieux port)
- Local energy recovery

Type of waste cigarette butts  
Volume treated 575 Kg  
(1 437 000 butts)

Location Pays d'Arles, France

Further information

find us on LinkedIn, Instagram, and Facebook (website under construction)



# UpCycle: locally compost your organic waste

## / Region SUD - France

### Description of the good practice

Upcycle works for a local return to land of organic waste, a key issue in the fight against climate change and improving food resilience. Its specialization: transform bio-waste into resources to feed the soil and produce quality food, create and empower virtuous circular economy loops to reclaim organic resources, anticipate regulation and make economies of scale. UpCycle equips, supports

and trains restaurants, canteens, local authorities, supermarkets and supermarkets, industries - so that they compost bio-waste on site using electromechanical composters. The challenge is both to meet regulatory challenges and to propose an innovative and exciting approach to the circular economy.



### Results

- Compost all types of organic waste, on site, in 15 days, odourless and damaging insect free
- Lowest carbon footprint on the market
- Avoid many truck rotations
- Feed the soils of local territories

Type of waste Organic waste

Volume treated Adaptable according to the needs

Location Région SUD, France

Further information

[www.upcycle.org](http://www.upcycle.org)

# VH93 : an easy and accessible hydroelectricity

## / Region SUD - France

### Description of the good practice

VH quatrevingtreize develops machines to produce a sustainable energy system that respects our environment and our living conditions on the planet. They are wave turbines, i.e. hydrostatic rotors capable of extracting energy from rivers from tidal currents but also from waves. They are the result of research at Aix-Marseille University but also of experience of the territories' needs in terms of energy transition. They are designed globally to be biosourced and fully

recyclable into other machines, interact gently with the aquatic environment, and have payback times on energy and financial investments of less than five years. Machines transform the movement of water into electricity in a sustainable and environmentally friendly way: they produce significantly more energy during their lifetime than their life cycle consumes. They absorb atmospheric CO2 because they are built from plants and are 100% recyclable.



### Results

- CO2 absorption during production
- Low CO2 emission energy production thanks to a hydro turbine made of bio-sourced materials, fully recyclable
- Drastic reduction of the cost of the electricity bill while allowing the consumption of renewable energy

**Type of waste** Pine needles, flax or hemp fibre

**Volume treated** 20 kg of waste to produce one machine

**Location** La Ciotat, France

**Further information**

[www.vhquatrevingtreize.com](http://www.vhquatrevingtreize.com)

# GLOKIS& IADYS, a collaboration for clean ports

## / Region SUD - France

### Description of the good practice

GLOKIS is a company which aims to set up a local economy with a strong environmental and social impact in Bouches-du-Rhône region, in partnership with the company IADYS. GLOKIS works jointly with fishermen to support them in better management of discarded fishing gear. Designer of the Jellyfishbot robot, IADYS uses end-of-life fishing nets to collect macro-waste in ports. These nets are first recovered from GLOKIS and then mended by a seamstress (local company), according to pre-

cise specifications. This gives fishing nets a second life. Circular and integrated into a sustainable development approach, our partnership addresses a major issue of the management and enhancement of discarded fishing nets. The Jellyfishbot, from the Sea-neT project, is a small remotely operated robot (~ 20 kg) that recovers pollution on the surface and is able to sneak into the smallest nooks and crannies where waste is concentrated. With low cost and an autonomy of between 6 and 8 hours, it can treat a surface area of

1000 m<sup>2</sup>/h (at an average speed of 1 knot).



### Results

- Waste collection in ports
- The use of fishing nets to collect macro waste
- Involvement of local players in an industrial symbiosis approach and development of a new sector in the region.
- Eco-designed product without transformation allow to valorize a waste and to remove pollution.

**Type of waste** Plastic materials (bottles, bags, packaging, cotton rods), glass (bottles), metal (cans, boxes) as well as micro hydrocarbon emissions (iridescence on the surface of the water).

**Volume treated** for GLOKIS, 30 m of valued fishing nets/month

**Further information**

[@iadys](#)

