

GOOD PRACTICE

CORDOBA LANDFILL CASE

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Session on Eco-innovation in waste management

Policy Learning Platform Event on Energy and Resource Efficiency

COCOON in brief

European Parliament event October 2015

- 3 discoveries
 1. European Commission (EC) has no idea on landfill situation in EU. It doesn't realise that 90% of landfills are not in line with the Landfill Directive of 1999.
 2. EC has no idea of remediation costs of landfills.
 3. There is no EU funding for Enhanced Landfill Mining (ELFM) projects.

- European Parliament asks EURELCO to perform three tasks:
 1. To map the landfills and the landfill situation in EU.
 2. To develop a vision on landfills.
 3. To find new innovative technologies to deal with landfills and Enhanced Landfill Mining (ELFM).

COCOON in brief: Partners



Rijkswaterstaat
Ministerie van Verkeer en Waterstaat



LEAD PARTNER



i-CLEANTECH
VLAANDEREN
enabling the future



COCOON in brief

Overall objective of COCOON is to improve relevant policy instruments with regard to Landfill Management (LfM)

- Improving the existing soil policy in Flanders and the Netherlands.
- Improving the ERDF operational programmes for Andalusia, Brandenburg, Cyprus and Malta in their approaches for landfills.

Proposed approach

- Exchange of experience among project partners/regions.
- Development of a regional Landfilling Management action plan, with stakeholders.
- Implementation and monitoring of the regional action plans.
- Communication and dissemination of the project results.

Good Practise

Cordoba Landfilling Management

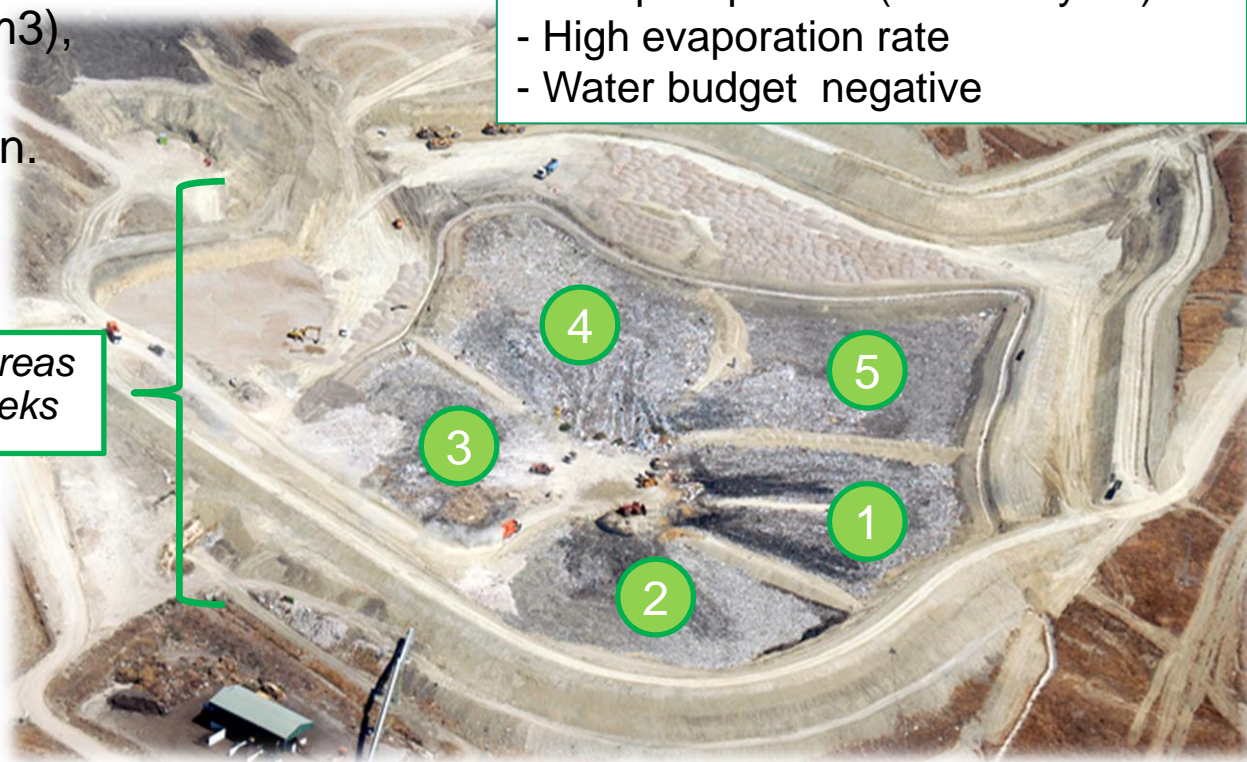
Landfill Model:

- ✓ High density (1,3 t/m³),
 - ✓ No cover land,
- ✓ Aerobic fermentation.

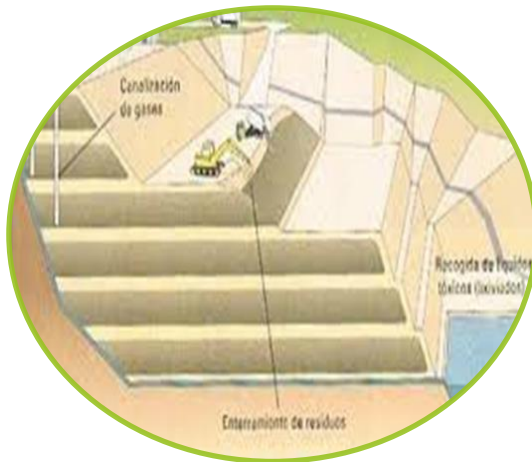
WEATHER CONDITION

- Low precipitation (650 mm/year)
- High evaporation rate
- Water budget negative

*Working on different areas
in service every 2 weeks*



Good Practise: Landfill Management



- Anaerobic Fermentation
CH₄ extraction
- Periodically covering
- Medium density 0,6-0,8 t/m³



- Aerobic fermentation
(No CH₄)
- Waste in piles, which are
turn over frequently
- No cover land
- High density 1.3 t/m³

Good Practise

Cordoba Landfilling Management



Increasing Odors and vectors

High technical control and machinery needs

Waste stabilisation in line with EU Lf Directive

Less Occupation
(no cover land \uparrow 7,5%)
(\downarrow 50% organic waste volume)

Less GHG emissions
No CH_4, SH_2



Cordoba Good Practice...for whom?

Replicability Potential in...



DRY and HOT WEATHER CONDITIONS

RELEVANT ORGANIC FRACTION OF
WASTE

LOCATION FAR FROM HABITATED
AREAS

More information on Cordoba Landfill Management System in:

www.sadeco.es



**ECOWASTE
4 FOOD**
Interreg Europe

**Interreg
Europe**



**Supporting eco-innovations to
reduce food waste and promote a
better resource efficient economy**

www.interregeurope.eu/ecowaste4food

Ambition of the project

- ECOWASTE 4 FOOD intends to:
 - help territorial authorities to better address the reduction of food waste along the food chain by the support of eco-innovations through regional and local policies as part of a more global territorial strategy for food security
 - address the crucial issue of food waste in EU city and regions and to demonstrate that food waste reduction and redistribution management could be at source of a resource efficient and environmentally friendly economy for the territories
 - provide valuable inputs for the debate on future priorities of ERDF beyond 2020, including governance, strategies and delivery mechanisms at City and Regional levels by focusing on the nexus between food security, resource efficiency, circular economy and territorial





Lead partner



Partner

Eco-innovations identified (July 2017)

	Efficiency process/product in the food industry	Food waste Re-use/ management	Food saving	Food redistribution
Limitation of food waste at source	NordZucker Polska – Agrico – Food4Good - Alavuden			
Concept & design of products			Intelligent package	
Use of products otherwise unusable or unserviceable	Carta Crusca – SAGA – Biotrem - Nutritis	Grocycle – The Pig Idea	Ugly faces – Omenhahaus	
Services provided	MFCA		Hävikkimestari – WebPea – Winnow – Finish your plate at home – Minves - - TakeStock - Active EcoLab - RistoriAmo - InSymbio Last minute sotto casa Circular economy Protocol (Fico) Rete spreco zero Food Rescue Dinner for (with) Neighbours Espilgoladors – Pesa i Pensa - ResQ club	Barcelona shares food – PAA - FondAlim Last minute market - Brutti ma buoni - Ferrara Buskers Ecofestival - Frigo OK - Eco dal frigo Bottura's – Recup - Cibo amico School refection - Il Gusto di Igles – Rattatuille – DCFA – Eatby – Food Bridge – Food Cycle – Club – Food sharing Poznan – Food instead of bombs –Reus – Botiga solidaria - Espigoladors

Good practices' examples in MOWR

- Specific raw materials or by-products (i.e. whey in the dairy sector, expellers from rapeseed oil production as an additive for wheat bread, chokeberry pomace instead of dried chokeberry fruit to receive infusions, addition of dried apple pomace for the production of dry wafers)
- Innovative production lines in food processing industry, e.g. comprehensive technology lines for drying fruit and vegetables based on drying technology in multi-drier vacuum dryer
- new technologies for the production of bioactive food of a pro-health nature: i.e. products enriched with a potato juice (one of the waste products in the potato starch production process) for people with non-specific inflammatory bowel disease: gluten-free bread with potato juice, poultry soup cream with potato juice, turkey pudding with potato juice.
- Lyofood – finding a niche within the mountain climbing sector of extreme sports (use of lyophilisation process for meals which taste and look like homemade dishes which they really are, extending their shelf life even for years).

Opportunities

- Strengthen the local/regional food sector towards the sustainable regional economy by leading eco-efficient processing industries
- Create new jobs and new revenues in the food eco-processing
- Pave the way for voluntary measures and future standards (i.e. eco labels for products and services)
- Make eco-efficient food processing a non-price competitiveness advantage on the market (i.e. public procurement)
- Take advantage of regional innovative skills, favorable innovation ecosystem and capacities (if applicable)
- Contribute to lower significantly the amount of food waste generated by the regional food processing industry
- Development of bioactive food industry.

Obstacles

- Low uptake of eco-innovations by food processing businesses
- Insufficient communication of the circular economy opportunities to businesses and SMEs
- Higher cost of eco-innovative processing equipment
- Lack of ambition of the EU policy framework on food waste (i.e. EU platform on food waste, lack of food waste hierarchy in the Waste Framework Directive...)
- Costs of eco-innovation implementation for industry

THE SOLIDARITY SHOP BY CORNELLA TOWN COUNCIL



<http://www.cornella.cat/ca/Cornellaaprofitaelsaliments.asp>

“THE SOLIDARITY SHOP” BY CORNELLÀ TOWN COUNCIL



- The **Solidarity Shop** was created by several non-profit associations of the city in collaboration with different departments of Cornellà Town Council.
- It is a **food support service** for citizens in a vulnerable situation, and **redistribution channel** of edible surplus food from local shops.
- Red Cross **voluntaries** makes two collections per week from different shops of the city and it is redistributed in the Charity Shop the same day.
- The project archive two **objectives**: complements the long-life food offered in the Solidarity Shop with fresh products, and at the same time prevent this food from turning into waste.

“THE SOLIDARITY SHOP” BY CORNELLÀ TOWN COUNCIL



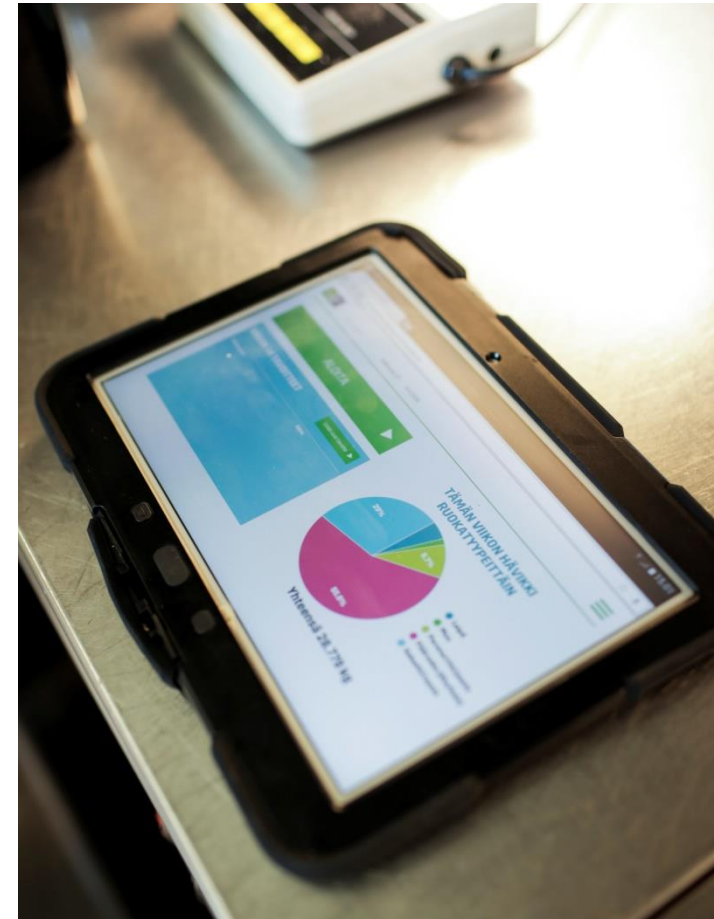
- **Donators:** 1 municipal market, 4 local shops and three supermarkets.
- **Beneficiaries:** The approximately 10,100 people who received food between 2013 and 2016.
- **Results:** Since the beginning of the project in 2012, almost **36 T** of surplus food has been collected and redistributed. That means to save an equivalent of **€116,400** in food otherwise bayed.

Hävikkimestari (FoodWaste Master)

- **The original problem: 10-25 % of the food offered in buffet restaurants in Finland is going to waste**
- **The amount of food waste is often poorly measured and monitored**
 - Without facts no efficient actions can be taken
- **Hävikkimestari is an e-service provided for restaurants and foodservices to**
 - measure and monitor the amount of food waste in real time
 - examine the results visually (graphs & diagrams)
 - change the procedures according to the achieved information

Hävikkimestari – How does it work?

- The staff members are educated to use the tool with a tablet during their everyday work
- The amount and types of food waste is marked on the tool
- Hävikkimestari gives visual information on the amount and sorts of food waste
- Conclusions and changes in the procedures can be taken by the staff
- Monthly payment for the restaurant



Hävikkimestari - What are the results?

- During a pilot in 2016 held in a foodservice unit, the amount of food waste was reduced by 45 %
- An average drop in the food waste is 30-50 %
- Investment in the service is estimated to pay off in 3-10 months
- The foodservice employees have found the tool easy to use





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BIOREGIO
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European Union
European Regional
Development Fund

BIOREGIO

Regional circular economy models and best
available technologies for biological streams

Susanna Vanhamäki

RDI specialist, BIOREGIO project coordinator

Lahti University of Applied Sciences, Finland, Lead Partner

Seville, 18.10.2017

2017

BIOREGIO In a nutshell

- Transferring expertise of cooperation models and best available technologies in bio-based circular economy
- Improving regional policies to enhance the development of bio-based circular economy

6 countries, 8 partners



BIOREGIO Interreg Europe

Regional circular economy models
and best available technologies
for biological streams
2017-2021



Utilisation of biowaste streams

Päijät-Häme region, Finland (LABIO Ltd)

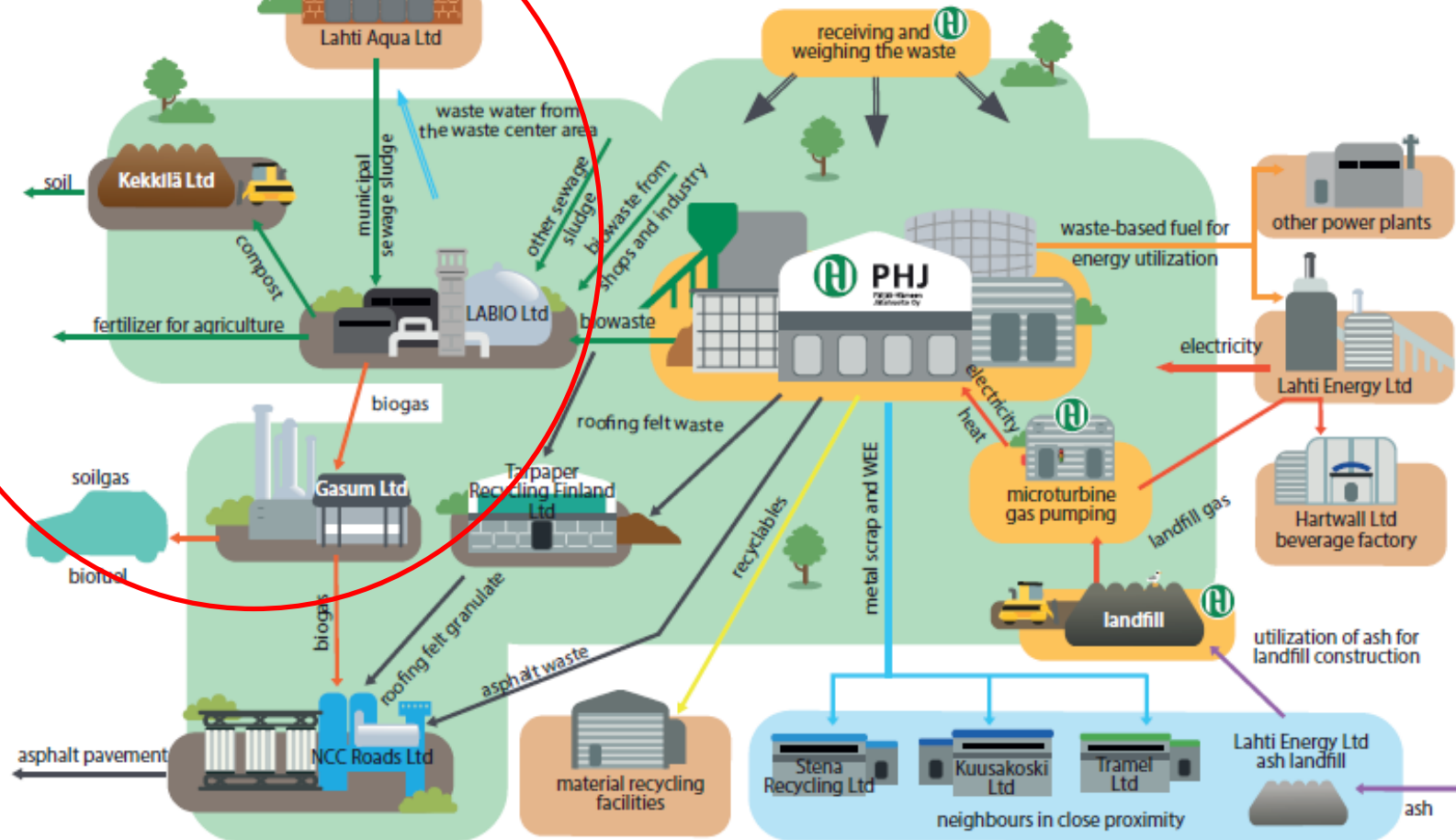
Biogas and fertilizer production from

- municipal biowaste,
 - waste from food industry,
 - sludge from wastewater treatment plants and
 - biodegradable material from farming, forestry, fisheries and horticulture etc.
-
- a part of the industrial symbiosis at the regional waste treatment center

Advantages of the good practice

- **recycling biowaste and wastewater sludge as material and renewable energy**
- **dry digestion process - almost no wastewater from the plant it self**
- **industrial symbiosis:**
 - the biogas is transported through the pipes to the nearby operator for upgrading and distribution in the gas network
 - the digestate is processed with other biowaste in the composting facility to produce compost, soil and other growing solutions
 - the compost is further used in agriculture, cultivation and gardening

Kujala Waste Centre- Industrial Symbiosis Lahti, Finland



Boosted by LADEC Designed Anna Polkutte In collaboration with Esa Ekholm and Hanna Bergman

Limitations of the good practice

- **The compost is made from a mix of biowaste and wastewater sludge**
 - Recent limitations in the use of sludge in agriculture
 - Some food producers prohibit or recommend the farmers not to use fertilizer produced from sludge in their fields
 - Need for separating the processing lines for biowaste and sludge?
 - Plastics from food packages in the compost material
- **Making more profits from the fertilizer, soil and compost material**

This good practice is useful for:

- regions renewing their biowaste and wastewater sludge treatment solutions

More information:

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www.interregeurope.eu/bioregio/



INTHERWASTE

Interreg Europe



European Union
European Regional
Development Fund

Good Practice

« Waste Rooms in Cordoba Heritage Area »

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18th October 2018, Seville

Session on Eco-innovation in waste management

Policy Learning Platform Event on Energy and Resource Efficiency

Integration of Waste Management in European Heritage Cities



CÓRDOBA



KRAKOW



TALLINN



PORTO



IBIZA

INTHERWASTE project

- **Project Aim:** To improve policies and programmes for waste management in Heritage Cities throughout Europe.
- **Partnership:**

Heritage partner cities:

- Krakow (Poland)
- Tallinn (Estonia)
- Porto (Portugal)
- Ibiza (Spain)
- Córdoba (Spain)



Advisory partner:

- ACR+
Association of Cities and
Regions for Sustainable
Resource Management

INTHERWASTE Justification

Heritage Cities share common values and problematics:

- Mostly ancient cities with winding city centres
- Problems of waste management associated with this configuration
- Invaluable historical and artistic heritage within the city
- Huge tourist potential and economic potential in services sector
- Remarkable visibility to the rest of the world

The running of waste-related services is difficult in such scenarios:

- Current waste management strategies & equipment often don't work in city centres with complex urban structures.
- Methods used in waste management often don't observe energy efficiency approaches.
- Tourist & economic activities in Heritage Cities produce high amounts of waste.
- Aesthetic interventions are imperative in Heritage Cities

Developing good practices in collection waste in old town of Cordoba

AIM: Aesthetical and enviromentql integration of waste collection system in the city



Good Practise

Waste Rooms (Córdoba)

WASTE ROOMS (or “Eco-points”) are well-equipped and adapted commercial space where waste containers are located in order to remove them from the streets.



<https://www.youtube.com/watch?v=IFtDP6T1tXM>

Good Practise

Waste Rooms (Córdoba)



Advantages and Disadvantages of Waste Rooms



No hay contenedores en las calles
Olores
Impacto visual
Posibilidad de control de acceso
Posible cobro por generación

Photo



Es un sistema caro de implantar
Y caro de mantener
Poca flexibilidad (capacidad limitada).

Photo

Advantages and Disadvantages of Waste Rooms



Costly system to implement and maintain

Limited flexibility to assume waste production changes

Less visual impact

Less odors

Access Control

Chance to implement "Pay As You Throw" system

No containers in the street



Waste Rooms...for whom?

Replicability Potential

Solutions – such as waste rooms- proved feasible in Heritage Scenarios(complex) can be **transferable to all the cities in EU**, Heritage but also to non-Heritage ones also.

The visibility of INTHERWASTE Heritage Cities worldwide will help to reduplicate solutions determined in project to many other cities outside the partnership.

More information on Waste Rooms in:

www.sadeco.es



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Thank you!



Project media