

2nd Newsletter

March 2017



<http://www.interregeurope.eu/cesme>

Editorial

The Circular Economy for SMEs (CESME) project was launched in April 2016 in the framework of [INTERREG Europe](#). As circular economy is gaining attention in the European Union and worldwide, projects such as CESME are of great significance, in order to support SMEs to enter the green economy and future proof their business in a greener and more sustainable way.

With an overall budget of €1.63 million and supported by €1.39 million of [INTERREG Europe](#) funding CESME will share experiences, identify best practices and provide guidance to SMEs to become included in the circular economy. The CESME project is expected to last for four years (until March 2020). Ten partners are taking part in the project from six EU member countries.

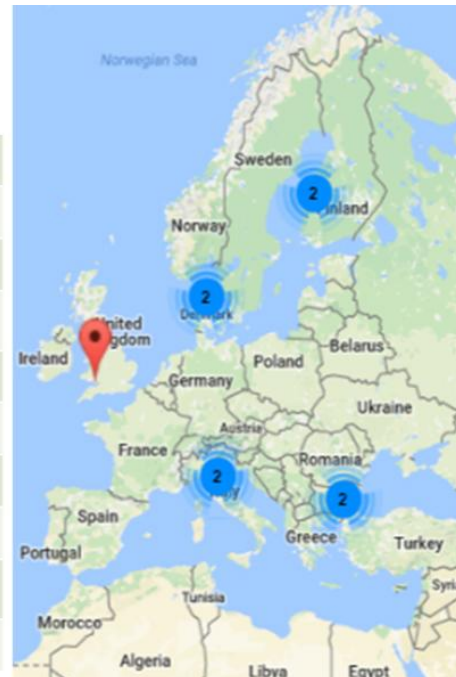


European Union
European Regional
Development Fund

CESME Partnership

The CESME partners are ten public organizations from six European countries (Denmark, Finland, Wales, Italy, Greece and Bulgaria).

	Business Development Centre North Denmark_Leader Partner (DK)
	North Denmark Region (DK)
	Metropolitan City of Bologna (IT)
	ERVET – Local development agency of Emilia-Romagna Regional Authority (IT)
	Regional Council of South Ostrobothnia (FI)
	JPYP Business Service (FI)
	Bulgarian Association of Municipal Environmental Experts (BG)
	Welsh Government (UK)
	ANATOLIKI SA, Development Agency of Eastern Thessaloniki's Local Authorities (GR)
	Region of Central Macedonia (GR)



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The INTERREG Europe Programme

INTERREG Europe helps regional and local governments across Europe to develop and deliver better policy. By creating an environment and opportunities for sharing solutions, it aims to ensure that government investment, innovation and implementation efforts all lead to integrated and sustainable impact for people and places.

By building on its forerunner, INTERREG IVC (2007-2013), INTERREG Europe aims to get maximum return from the EUR 359 million financed by the European Regional Development Fund (ERDF) for 2014-2020.

INTERREG Europe co-finances interregional cooperation projects with an amount of up to 85% of total project budget. Project activities have to be carried out in a partnership of policy organisations based in different countries in Europe.

The areas of support for 2014-2020 are: 1) research and innovation, 2) SME competitiveness, 3) low-carbon economy, 4) the environment and resource efficiency.

Read: www.interregeurope.eu

CESME activities and next steps...

During the first project semester, project partners identified key stakeholders in their countries and regions and developed a Local Stakeholder Group (LSG) per Region. Till now 23 Best Practices have recorded related with recycling plants and methods, industrial symbiosis and other practices that go in line with the circular economy perspective. A White Book platform was set up, to assist in

disseminating the concept of circular economy and presenting project results in a more systematic way. One successful interregional partner events were organized in Bologna, Italy. Local Support Group meetings took place in all participant regions.

In 2nd semester the development of the project White Book will start with all material collected up to now and with more input coming from our partners, stakeholders and experts. An interregional

partner event is scheduled to take place in **Thessaloniki, Greece**, on 10-11th of May, aiming to exchange experience among stakeholders and examine **TOOLS FOR GREEN PROFILE ASSESSMENT** and **RETURN ON INVESTMENT CALCULATIONS** within Circular Economy. Local Support Group meetings will be held in each region and partners will keep on disseminating the project and circular economy model in their countries and regions.

By high quality work from all partners the project aspires to have a positive impact and significant added value in our economies and the environment.

For further information:

[CESME website](#)

[CESME FB](#)

[CESME Twitter](#)

[CESME LinkedIn](#)

Circular Economy Best Practices

One of the outputs of the CESME project is to identify Circular Economy Best Practices. Each partner is invited to search and present its Best Practices during the interregional events held. The Best Practices collection within the field tackled could act as a turning point in order to produce concrete, transferable practices not only benefiting the partner regions, but also for inspiration to all European Regions.

Aage Vestergaard Larsen - From waste to product (DK)

In June 2014 Holbaek Municipality(HM) decided to start a project named “from waste to product”. The intention was to motivate private residents in HM to collect their plastic waste in a special designed container.HM should collect the plastic waste and sort it, so it was possible for a recycler to produce plastic granulate in a quality, so a plastic manufacturer could produce containers to the private households in HM. Also plastic waste from recycle sites (mainly handed to the sites by residents) was a part of the project. To achieve the goal HM made an agreement with plastic recycler Aage Vestergaard Larsen (AVL), plastic manufacturer/injection moulder Schoeller Plast (SP) and The Danish Institute of Technology (DTI). The project was supported by the Danish Ministry of Environment due to the focus of circular economy.

HM did not have employees with experience in plastic sorting and right skills in sorting of plastic was a success criteria number one. So, in order to overcome the difficulty 2 employees from HM got a special education in sorting plastic. Another problem is that Aage

Vestergaard Larsen did not have any production equipment for recycling of plastic from private households – either not any experience for handling plastic from private households. However to solve the problem, equipment – special designed for plastic waste was developed by experienced employees from AVL. And experience to handle plastic waste was built up internal by tests.

Scholler Plast did not have tools for manufacturing products based on raw materials from private households. Then 200.000€ was invested in new tools special designed for producing plastic from private households. All challenges were overcome and the result is the progress of the project.

It is clear that sorting the plastic waste from private households are a very important success criteria to get raw material in right quality. It is necessary to take time to educate and motivate the employees, who is taking care of the sorting process. When we met a challenge it was discussed together with the whole value chain (all partners in the project). In that way we solved the challenge for all

partners in the project and the challenge was known by all project members

For more information: <http://avl.dk/>

Aalborg Portland – Industrial symbioses in cement production (DK)

A creative recycling is taking place. The waste products from electricity production are used as a raw material producing cement. In short Nordjyllandsvaerket produces electricity. During this process electrostatic filters remove fly ash in the flue gas and a plaster system that removes sulfur. The gypsum is sold to Aalborg Portland as a raw material in producing cement. The fly ash is also used as an additive to cement. Finally the heating left over from the production of cement is used to heat the city of Aalborg.

Aalborg Portland is one of the largest cement producers in the Northern part of Europe. The company is one of the world leaders in energy efficient production of high quality cement. Furthermore, they are the world leading producer of white cement.

High temperatures and unique process conditions make cement kilns ideal for the use of alternative fuels and raw materials. Fossil fuels, particularly coal and petcoke are increasingly being substituted at Aalborg Portland by CO₂ neutral biofuel such as meat and bone meal and wood waste. All constituents in these alternative fuels are fully utilized and no new by products are formed.

Aalborg Portland began using fly ash in Cement production more than 30 years ago. Fly ash is a byproduct of electricity production at power stations. A number of other by products have since been included in the cement production. Under a longstanding partnership, Aalborg Portland supplies chalk slurry to a local power station (Nordjyllandsvaerket), which uses it in the flue gas cleaning process. This process in turn produces desulphurization gypsum which is used by Aalborg Portland as a replacement for natural gypsum.

Furthermore, production of cement takes place at very high temperatures. Aalborg

Portland cleans the flue gases from the kilns and uses the high temperature of the flue gases to heat the residents of Aalborg city. The heat supplied corresponds to the annual heat consumption of around 21.000 households. This heating is also used for the company's own factory and offices.

The products supplied by Aalborg Portland make a useful and key contribution to society's climate challenge. However the focus on sustainability and environmental responsibility also extends to product development and production. This has required significant investments. Production of cement results in CO₂ and other emissions. For many years significant investments has been made in reducing emissions, particular CO₂, SO₂ and NO_x. Since 2010 aprox. 15mEUR has been spent on climate and environmental improvements. These initiatives are set to continue as Aalborg Portland plans to install as many as 10 large wind turbines, which will potentially replace approx. 40% of the company's existing power consumption with renewable energy. Around 40% of the company's power consumption is already based on renewable energy.

Aalborg Portland's energy and environmental conditions are disclosed openly in annual environmental reports. It is also directly visible to the buyers of company products. Environmental product declarations exist on the cements. Finally all the products from Aalborg Portland can be recycled and all the constituents can be fully utilized.

The symbioses between Nordjyllandsvaerket, Aalborg Portland and partly the city of Aalborg by providing heat to the residents is a strong evidence that recycling among industry and society can go hand in hand.

For more information check the following

link: www.aalborgportland.com

Barilla G. E R. Fratelli SpA (IT)

A new material made with scraps of production. A paper made with 20% of bran coming from Barilla's mills, as a byproduct in the production of semolina (from milling process of durum wheat)

The substitution of cellulose with bran has been achieved by the papermill Favini during its process of production; the patented process guarantees the inclusion of bran particles among the fibers of cellulose.

Reduction of usage of 20% of virgin cellulose means that we can save one tree

out of 3 for the production of high quality papers.

Use of byproducts of food industry as raw materials for another industry is something that is technically feasible, provided you can find a final use for the new product obtained that is different from any other.

This also allows the food company to build communication tools throughout the supply chain

For more information:
<http://www.favini.com/gs/en/fine-papers/crush/cartacrusca-case-history/>

Bio-on S.p.A - Production of PHA biopolymers (fully bio-based and 100% biodegradable) from different agro-food wastes and by-products through the BIO-ON technology (IT)

This practice consist of the development of technologies for the production of biopolymers PHA through the valorization of agricultural and agro-industrial wastes and by-products. The final product PHA is a fully bio-based and 100% biodegradable both in soil and water products.

Nowadays plastics are mainly produced from oil and gas and they do not degrade, consequently they pollute the environment with terrible bad impacts on environment, wildlife, fauna and flora, human beings. The worldwide increase in plastic waste has involved, within the global vision of environmental protection and sustainability, a great deal of action and strategies aimed at minimizing the negative impact of the increasing production and consumption of polymer materials. Despite the efforts that have been made in the last decades, overall plastic waste volumes are tremendously growing around the world: actual and foreseen management of plastics waste remains a huge worldwide problem. The introduction into the increasing plastic market of new bioplastic as PHAs, not obtained from oil and biodegradable at

the end of their useful life, can contribute to mitigate the consequences of the increasing use of plastics both from the raw material 'challenge' side and the end-life management. Bio-on aims to demonstrate the industrial production of biopolymer PHA, 100% biodegradable both in water and soil, a new generation of linear polyesters able to replace and improve traditional plastics, oil-based and not biodegradable (e.g. PE, PP, PC, PET and others) can overcome their negative effects and contributing to the protection and sustainable management of natural resources and ecosystems through a sustainable use of raw materials.

The development of new segments of market could be a key issue - To focus on the industrialization and on the industrial impact of the initiative - Never stop to improve the process elements to reduce the costs and become more competitive and possibly integrating them with other available - Targeting the use at cascades of the resources.

For more information: www.bio-on.it

Perpetuum Mobile Albena (BG)

In 2012 the company starts construction of a installation for biogas. It is an aerobic digester for agricultural and kitchen wastes. It produced also energy with cogeneration - electric and heat. The heat is used for a greenhouse (and district heating – in progress). The digested material is used as liquid fertilizer in the agricultural fields of the company and for the parks and gardens of the resort. The production goes directly to the hotels. A new biogas installation is under construction. The company has Eco- policy implemented in all hotels and daughter companies – transport (buses and air transport, construction company, etc).

In the beginning, they had problems using kitchen wastes and started by using just agricultural residues. But after adjustment and improvement of the technology process, now they use both types of wastes.(But predominantly agricultural).

For more information:
<http://corporate.albena.bg/business.html>
<http://species.bluelink.net/2016/08/18/%D1%80%D0%B0%D0%B7%D0%BB%D0%B8%D1%87%D0%BD%D0%B8%D1%8F%D1%82-%D0%BC%D0%BE%D0%B4%D0%B5%D0%BB-%D0%BD%D0%B0-%D0%B0%D0%BB%D0%B1%D0%B5%D0%BD%D0%B0/>

AMP Recycling - Closing the loop with ILIP food packaging (IT)

I.L.P.A. Group is one of the few companies that manage the whole supply chain of r-PET: from post-consumer plastic to a new thermoformed food packaging. ILIP S.r.l. is the final stage of I.L.P.A. Group recycled-PET vertical integration converting r-PET in trays for food securing its origin and traceability.

more sustainable and innovative packaging weight and improve shelf life with MAP, 2. RECYCLING has become economically and environmentally sustainable. ILIP is part of I.L.P.A. vertical integration of the r-PET supply chain: a CLOSED LOOP SYSTEM from post consumer water bottles to food packaging and 3. RENEWABLE RESOURCES: bioplastics, plastics from plant are renewable and compostable. ILIP is the only European manufacturer with complete ranges of disposable tableware, foodservice packaging and fresh produce packaging made with PLA.

Packaging can only be assessed in relation to the product it contains and the function it serves. Such an assessment will show that in the context of sustainability, packaging should be considered as part of the solution and not part of the problem. ILIP's three main commitments are: 1. REDUCE packaging weight without compromising the safety and shelf life of the packaged products. ILIP promotes

For more information:
<http://www.ilpagroup.com/>

North Denmark Region - Less waste using industrial symbiosis database (DK)

In Denmark was in 2013 initiated a national project "Less waste Using industrial symbiosis" - in cooperation between the Danish state and regions in Denmark. The aim is to increase the share of industrial symbioses – where two or more companies cooperate with one company's waste product is the raw material for one or more companies. A very important tool in this work was

building a national resource database - GIS, Greene Industrial Symbiosis - which includes many large companies with recyclable resources as well as companies offering these resources. The project has been running for 3 years and in this GIS database, there are now over 600 companies. The database has been a focal point for the work and critical to the success of industrial symbiosis in

Denmark. The database - which is web based - contains a description of the material category, including energy, water, concrete, hazardous waste, plaster, metal, construction waste, organic waste, wood waste, plastics. In addition, the company sells / decreases, region, city, status, product feedback, etc.

The database worked well. However, there is a need for more material categories. Thus, a very large part of the resources for this reason described in a residual category "other". One problem is that only the regions and their advisors have access to the database - not other

companies. Since it is these parties which must match the companies, it may be barrier to rapid match.

The database has been the basis for many matches between companies. There are no specific figures for this - but in the order of 30% of the implemented symbiosis match because the database. We would recommend building up GIS databases as an indispensable basis for efforts circular economy.

For more information:

[The Danish database for Green Industrial Symbiosys](#)

Granarolo S.p.A. - Water saving strategy: Reuse of wastewaters (IT)

Granarolo is the leading Italian company in the sale of fresh milk and is one of the market leaders for fresh cheese (3rd largest market share). Granarolo is located in a subsidence area, i.e. an area where there is an excessive withdrawal of ground water. Before, Granarolo was taking 50% of the water needed from wells and 50% from the aqueduct (data of 2012-2013), with a total amount of about 1 million cubic meters of water. However, water consumption decreased to 860,000 m3 and then 600,000 m3 from wells given the authorized limit.

Today, thanks to the plant of wastewater treatment, water coming from the sedimentation of the purifier is treated through sand filtration (to remove most of the suspended solids) and subsequent ultra filtration to appropriately filter the water sent to final reverse osmosis. Part of this water is sent to the thermal power plant and the rest is mixed with water

coming from the ultra filtration in order to obtain a suitable mix to supply the cooling towers. Osmosis and ultra filtration concentrate will then be sent to the purification plant. Thanks to the reuse of wastewater, the water saving rate is equal to 12% compared to the last medium term 60,000 m3 of water are reused every year.

Wastewater could be reused also for other means; however, given the strict prohibition of contact with products, this is not possible. The agri-food sector is indeed a very delicate and high-controlled sector. Water saving rate is 12% compared to the last medium term. The cost of the water used is 2,00 euro per cubic meter, so the money saved through reuse of wastewater is equal to 120,000 euro.

For more information:

www.gruppogranarolo.com

Herambiente Spa - Waste selection and recovery plant – Granarolo (IT)

From the Bologna Area are collected recyclable waste from municipalities, commercial and production activities. Herambiente decided to build a modern plant to treat municipal solid waste (dry mono/multi material fractions) and non-

hazardous special waste from separate collections. To face this need arising from the local community, Herambiente has built a new owned plant, with state-of-the-art technology of mechanical treatment, based on optical sorting

systems. The two lines, one to treat paper fractions and one for the plastics, are able to guarantee a high efficiency process in terms of quality and quantity. The result is a plant with a treatment capacity of 100.000 tons per year, with a high average overall recovery percentage (70%).

Herambiente didn't have in the Bologna Area a high-technology plant capable to guarantee an efficient treatment of the waste from separate collections; therefore, it was necessary to build a new plant in a short period, with the consequential challenge to achieve immediately the high efficiency of the equipments installed.

Specific professional training and teaching activities were carried out in order to develop the staff's know-how (particularly for managing a technologically process such as the one choosed); experienced

colleagues from other nearest company plants were temporary relocated in order to share knowledges; a lot of practical and theoretical training sessions were supplied.

Herambiente Granarolo plant is able to treat up to 12 ton/h of paper wastes and up to 8 ton/h of plastic wastes; the 2016 average yearly amount treated will be 70.000 tons. The fractions recovered comply with the highest standards prescribed by the national packaging material consortia, and also required by the national and international markets. Through a deep effort from human experiences and from qualified suppliers we realized a modern and efficient plant capable to recover high quality material.

For more information:
http://ha.gruppohera.it/plants/selection_recovery/page105-082.html

Hydro Italia SRL - Pyrochar (IT)

PYROCHAR will develop a compact system to treat and dispose of the sewage sludge produced in small municipalities and their WWTPs (< 10.000 p.e.). The PYROCHAR system will dry the dewatered sludge and then use a slow pyrolysis technology to thermo-chemically convert the dried sludge into useful solid and gas by-products namely synthetic gas and biochar. Downstream, a hot gas clean-up unit followed by a combined heat & power (CHP) unit will convert the synthetic gas (syngas) in energy (heat and electricity) for the system. In addition, the by-product of small municipalities' sewage sludge pyrolysis (biochar) contains a limited amount of heavy metals as compared to sludge from big industries. This makes it perfect for homologations and reuse – for example, in land spreading.

The European municipalities and their small Wastewater Treatment Plants (WWTPs) are currently facing the following problems: Compliance with stringent European Directives - High cost of sludge treatment (storage, transport...) and lack of local infrastructures - New

technologies in adapted for smaller inputs - Mistrust against sludge reuse. Commercial advantages will be that the sludge will be treated on-site, decreasing its total dewatered volume by more than 95% and hence decreasing also in more than 50% its operating & maintenance cost. Besides, the PYROCHAR system will reuse the calorific power of the sludge to fuel its own system, making the overall system highly energy efficient. Finally, the useful nutrients such as nitrate, phosphorus or potassium, will not be lost during the process but trapped in stable by-products, the biochar, with high economic value for the end users.

Even if the project will need to be definitely completed through the construction and installation on site of a pilot plant in order to have concrete data and references in different sectors as well, Hydro Italia registered an increase of requests in a sector in which our Company was not directly involved since now, providing a complete solution not only for waste water treatment but for disposal of waste sludge as well through a system

able to fuel itself raising economical and technical benefits to potential customers.

Last Minute Market (IT)

Last Minute Market (LMM) is a Spin Off from the University of Bologna, founded in 1998 as a research initiative, today is a entrepreneurial society working at Italian national level developing local projects aimed at the recovery of unsold goods (marketable or not) in favor of non-profit organizations. LMM favors the creation of a solidarity network in the area and the contact between demand (non-profit institutions) and offer (businesses). The objective is the ZERO WASTE: all services offered by LMM are studied and designed to prevent and reduce losses and wastage. LMM was created to assist companies in recovering surplus food, turning waste into a resource. Now LMM's fields of activity have expanded to different types of goods (eg. Medicines and non-food), and thanks to the package of services ever more innovative, LMM handles 360° waste prevention. The services offered are: recovery of surpluses (food, meals, medicines, books, non food goods, etc.) - monitoring and data analysis - estimating the environmental and social impacts - training - communication and marketing projects - content production.

Some examples of LMM projects and their impacts:

- **NO-FOOD GOODS RECOVERY:** the project "Change the final", promoted by Hera, allows citizens to give a second life to large goods you no longer use (eg. furniture, appliances, etc.). In 2015 we recovered more than 700 tons of bulky goods in 5 provinces of Emilia-Romagna.

Leila Bologna – la biblioteca degli oggetti (IT)

Leila-Bologna is the first "Object library" in Italy. It's a place where people can borrow objects, so that they don't have to buy them. A place where the process of sharing things with strangers becomes the

For more information:

<http://www.hydroitalia.com>

<http://www.pyrochar.eu/>

- **PHARMACY RECOVERY:** thanks to the project "Pharmaceutical friend" we recover still valid pharmaceuticals purchased and not used by citizens and allocate them to organizations that assist disadvantaged people. In the last 3 years pharmaceuticals were covered for a total economic value of about 1 million Euros.
- **RECOVERY FROM LARGE RETAIL SECTOR:** with Despar Nordest (Aspiag spa) we have enabled the recovery of surpluses throughout the whole sales network. After 2 years of work, the 200 supermarkets directly managed do not throw into the trash unsold products, but they donate them to non-profit organizations of the area. In 2014 they donated goods for an economic value of € 2.5 millions.
- **RECOVERY OF COOKED MEALS NOT SERVED BY CANTEEN:** the recovery of meals is active since 2004 and currently involves multiple structures: canteens, such as those of the Hera group or Maserati; hospital cooking centres, such as Sant'Orsola (about 6,500 meals donated per years) and Maggiore in Bologna; school canteens and catering centres.

For more information:

www.lastminutemarket.it ,

<http://www.sprecozero.it/> ,

<http://www.sprecozero.it/waste-watcher/>, <http://www.eu-fusions.org/>

opportunity to socialize and to exchange past experiences. This is how Leila-Bologna works: people who want to join the project bring an object they want to share and, after having got their

membership card, they can borrow any object that has been shared by all the other members.

We live in a world ruled by the logic of consumerism and individualism and we don't want object and possession to be the most important thing in people's life. Instead, our project aims at putting people and their life back in a central position, giving objects the right value and humanizing the idea of trade. Leila-Bologna wants to start a small cultural revolution that invest into citizens' daily habits and the concept of buying and possess. We think the culture of sharing can be an important instrument in the process of giving back a renewed centrality to the inhabitants of towns, pushing them to cooperate with each other in order to solve the problems of our societies and everyday life. Problems have been generated by a crisis that is not only an economic crisis but also a crisis of values.

Thanks to the offer of particular (and often expensive) objects for free, Leila-

NCC Recycling Industry (DK)

NCC Recycling is a new business area for the large construction company. Several waste terminals have been established in 3 Nordic countries receiving waste materials from the construction and building industry such as soil, bricks, asphalt etc. The waste materials are being refined into new materials in order to be reused. The biggest waste flow is based on wood and plastic. The main focus is to sort as early in the chain as possible and reuse as much as possible. Closing the loop as a construction company with sustainable solutions is a big market advance right now. The impacts from the NCC Recycling are:

- Fulfillment of national and European environmental target indicators
- A profitable business area (in time)
- Strong partnerships across the business value chain

The EU Directive on Waste requires that 70% of all construction and demolition

Bologna improves the quality of life of citizens, because it increases the number of opportunities and gives the possibility to live experience that otherwise wouldn't have been possible. In particular, Leila-Bologna provides ECONOMIC advantages, since people won't have to buy objects that would use just few times; ENVIRONMENTAL and ECOLOGIC advantages, because thanks to the possibility of sharing things, people will buy less things and will produce less packaging and waste; CULTURAL advantages, because citizens will have the opportunity to reflect on the meaning of possessing things and on the consequences that a way of living based on buying and possessing can have on the quality of relations; finally, Leila-Bologna gives the possibility to try an object before buying it, so that the purchase can be more aware and useful.

For more information: [Facebook: Leila Bologna](#)

waste must be recovered or recycled by 2020 at the latest. Denmark is very close to this target by now. NCC is a major construction company that even has its own gravel pits. In time these will be depleted while at the same time construction waste seems to be a constant source as the market for recyclable industrial waste is free and the total amount of waste appears to increase in the future. NCC decided to try out a new business model; optimizing resource consumption, reducing climate impact, contributing to recycling and handling and depositing waste in a safe and environmentally friendly manner. NCC Recycling is thereby a new business area in the Nordic countries established to reduce the amount of construction waste such as stone, concrete, soil and bricks by recycling the majority of the waste into new construction materials as well as new asphalt. NCC Recycling contributes not only to the fulfillment of the EU Directive

on Waste and the key environmental challenges in the society but also to the NCC competitiveness and company profile as well as for their suppliers. So far waste terminals have been established in Denmark, Sweden and Finland. There are no strategic plans in going to Norway due to the market situation there.

NCC Recycling contributes to the fulfillment of national as well as European environmental target indicators. Furthermore, NCC Recycling utilizes an

obvious growth potential in the markets while at the same ensures access to materials within NCC's own value chain which includes a strengthened competitiveness. Finally, it contributes to solve the waste problem by customers and suppliers which allows them to reach their target indicators as well.

For more information:

<http://www.ncc.dk/produkter---og--services/recycling/>

Porto Carras (GR)

Porto Carras is a resort in Halkidiki Greece, eight times awarded by CondeNast Traveller. Porto Carras features two "5 star" Hotels, a world – class Villa, a luxurious Casino and two Thalassotherapy & Spa Centers. Furthermore, an international – standard 18 – hole golf course, a Conference Hall, a Horse Riding Academy, a Tennis Club with 9 courts, a Diving Center, a Nautical Club. The resort also features 3 helipads, 2 waterways and a 315 – berth Marina. Porto Carras has been awarded with the Green Key Eco Label. Circular economy practices already applied by the hotel management are the following:

1. Recycling wastewater to cover the golf course' irrigational needs. The resort uses a tertiary biological waste treatment plant (UV---Chlorination). The treated water is transferred to 3 reservoirs with total capacity 40.000 m3 and then the treated water is used to cover the irrigation needs of the golf course. This practice is in line with the provision for combating water scarcity, as mentioned in EU Action Plan for Circular Economy.

2. Sustainable use of sewage sludge in agriculture. Porto Carras also has the largest organic vineyard in Greece, which covers 475 ha. In its tertiary biological waste treatment plant, the sewage sludge passes from a filter press and then is sorted and dried, in order to be used as an organic fertilizer for the vineyards, as long as quality standards allow for it.

The specific waste treatment plant treats the 80% of phosphates and nitrates. The remaining percentage of nitrates and phosphates (20%), which is overlaid in the bottom of the reservoirs, creates the eutrophication phenomenon. The eutrophication is evident from the bright green water, caused by a dense bloom of cyanobacteria. In the event that eutrophication appears in the reservoirs, the water has to be discharged and the sewage sludge must be removed. This phenomenon appears approximately every 5 years.

For more information:

<http://www.portocarras.com/resort/envir onment.html>

Reno Nord - Waste; Energy and recycling (DK)

Incineration/Energy Plant: Producing hot water from waste to district heating, 43 MW equal to consumption from 18.000 Households and electricity from waste – up to 18 MW equal to consumption from

35.000 households. Water from internal waste water cleaning allows us to lead the water directly to the Limfjord.

Price for hot water for district heating is very low in Aalborg because of Aalborg

Portland and the power plant north of the fjord. This means less income to Reno Nord.

The energy production reduces the oil and coal consumption equal to approximately 50.000.000 liters oil. We reduces the need for landfilling.

Sorting plant: Will be able to make 95% pure plastic, iron and metal fractions when recycling 85% of potential plastic waste and 95% of metal waste that is source separated in households. Producing new materials from recycled plastic and metal waste reduces energy consumption at least 50% compared to producing from virgin materials and besides that we save the virgin materials. Furthermore recycling of plastic reduces the emission of CO2 based on fossil oil.

Rockwool – firesafe insulation (DK)

Rockwool produces stone wool products for insulation. The production process of Rockwool stone wool offers an opportunity for recycling end of life materials from other industries. Every year Rockwool is handling more than 800.000 tons of end-of-life materials. In order to use it in the production of new stone wool, the materials are exposed by very high temperatures. The end-of-life materials are together with new materials (stone, limestone etc.) spun into new stone wool fibers. Thereby a Rockwool product contains of 37% recycled materials. Furthermore, the excess heat from the production to heat houses in the nearby village. Finally, there is a sulfur residue from the flue gas cleaning in Rockwool. Another company uses the sulfur residue for desulphurization – the residue from that process is plaster. A third company uses the plaster for production of plasterboards.

Sani Resort (GR)

Sani Resort's Corporate Social Responsibility program pursues three strategic objectives with a well-defined set of policies, initiatives and measurable targets.

This means less CO2 charges for the energy plant.

Price for the sorting plant is high. The more waste through the plant, the better economy. The owners will pay fixed annual contribution based on depreciation of the building and the machinery. This means that we can use a much better price on the waste, which will hopefully lead to better recycling percentages.

We haven't started yet. We hope that it turns out to be good business to recycle. We need to compare price for sorting waste with price for incineration and it will help a lot on the motivation of waste sorting, if the price for waste sorting ends up to be the lowest!

For more information:
<http://www.renonord.dk>

Rockwool have a take-back system for their used products. This helps fulfill the requirements of the EU directive on waste requiring that by 2020 70% of construction waste must be recovered or recycled. When Rockwool is recycling waste, it helps solving a waste disposal problem and cuts down on the use of virgin raw materials. It also strengthens Rockwool's profile as environmentally friendly and conscious.

Rockwool is continuously measuring their impacts on the environment in order to follow the progress in the environmental work. Since 2012 Rockwool has reduced their own waste generation by 50% Rockwool has increased the use of residue from other industries from 500.000 in 2012 to 800.000 in 2015. Furthermore, they increase their recycling of their own products and packaging.

For more information:
www.rockwool.com

- A. Sustainable Hotel Operations
- B. Protection and Enhancement of Local Biodiversity
- C. Local Community Support and Human Capital Development.

Circular economy practices are relevant to the first and third strategic objective and regard the following:

1. Recycling wastewater to cover the peripheral garden's irrigational needs. According to the EU Action Plan for Circular Economy water scarcity has worsened in some parts of the EU in recent decades with damaging effects on our environment and economy. In addition to water---efficiency measures, the reuse of treated wastewater in safe and cost effective conditions is a valuable but under-used means of increasing water supply and alleviating pressure on over-exploited water resources in the EU. Specifically, Sani Resort uses recycled wastewater to cover the peripheral garden's irrigational needs in accordance with the National Legislation. Waste water is treated in a three stage biological treatment plant. The resort managed to reduce the water consumption over the years. Just between 2014 and 2015 water consumption has decreased by 7%.

2. Waste management. According to the EU Action Plan for Circular Economy, waste management plays a central role in the circular economy. Sani Resort is considered a pioneer in the waste management. The Resort implements an integrated recycling program for all waste streams. In total, it managed to recycle almost 42% of the waste produced during 2015. In cooperation with recycling companies, Sani Resort recycles Glass, Paper, Plastics, Cans, Batteries, Electrical and Electronic Equipment, Lighting Bulbs, toners, candles and Coffee Capsules. As "large quantities of plastics also end up in

the oceans, and the 2030 Sustainable Development Goals include a target to prevent and significantly reduce marine pollution of all kinds, including marine litter" (see EU Action Plan for Circular Economy: 13), it is of great significance that the Resort has banned the use of plastic bags in all owned operations and suppliers are encouraged to use reusable, paper or other bag. Moreover, used cooking oil is collected by the Resort's processor and the relevant revenue of each year is invested on the needed equipment or training of the employees for the recycling program (see further below). At 2016 Sani Resort started a pilot composting program. The green wastes produced by all green spaces of the resort are collected to a compost bin. The compost produced is used as a fertilizer in the resort's gardens. This is also in line with the interest of the EU for the promotion of organic and waste-based fertilizers.

3. Sustainable procurement. The company community policy is to support local suppliers and local products, as well as to reduce waste and chemical use. Sani evaluates all suppliers on the basis of sustainability criteria focusing on quality, locality, environmental protection and business ethics, as set out in the sustainability procurement policy. This is in accordance with the potentials of Green Procurement for extending the durability and reparability of products and hence, promoting circular economy.

For more information: http://www.sani--resort.com/el_GR/sustainability

SYCHEM – Combined GeoExchange Energy & Water System (GR)

Design and Implementation of a "combined energy & water system" for 5* Hotel & Spa, by SYCHEM SA: The combined system uses sea water and electrical energy to provide:

- Space cooling & heating;
- Underfloor heating;
- Domestic water heating;
- Pool's & spa's heating & cooling;

- Domestic water production (reverse osmosis desalination);
- Sea water supply for Thalassotherapy Center;
- Sea water & brackish water supply for pools re-filling;
- Heat rejection for hotel's centralized refrigeration systems.

The system's innovation lies into the joint use of the mechanical equipment and resources (sea water, electrical energy, reclaimed heat) for several combined uses, under the control of a sophisticated Building Energy Management System (BEMS). The main synergies of the combined system are:

- Extensive in-series reuse of the sea water by water-source chillers, water-source heat pumps, desalination plant, centralized refrigeration, thalassotherapy, pools. The route of the sea water is controlled according to the specific temperature requirements of each sub-system. The result of sea water reuse is the substantial reduction of sea water intake infrastructure and pumping energy.
- Reclaim of waste heat by water-source chillers for pool's heating and underfloor heating.
- Reclaim of waste cool by water-source heat pumps for space cooling.

- Use of thermal springs for pool's heating. Moreover, all the equipment used is of the highest energy efficiency standards and is dynamically regulated to further enhance the already very high efficiency of the innovative combined design.

The system is still in trial operation (operates from June 2016), so the energy & water consumption data are not yet reliable. The energy benefit of the "Seawater GeoExchange system" as opposed to conventional systems of air-cooled chillers & gas-heater, is estimated to 216.000€ annually. The reduction in greenhouse gas emissions is estimated to be equivalent to 632 tons of CO₂ annually. Moreover, the "combined energy & water system" is entirely hidden in the basement. No outdoor units are required, thus providing long-term corrosion-free operation & year-round energy efficiency without any noise.

For more information: www.sychem.gr
www.miraggio.gr

News and Events

... on Circular Economy

Circular economy is a hot issue in the EU and its member countries. Due to this fact there has been a lot of activity in policy setting during the past year. Some of the highlights during the past year have been the following:

EU level

- In **January 2017**, IDEO and the Ellen MacArthur Foundation have today released the first design thinking **guide for the circular economy**. Created to drive awareness of the circular economy, the practical guide encourages innovators, entrepreneurs and corporate change-makers to ask new questions about value creation and long-term business health, and apply circular principles to their own organisations.

<http://circulardesignguide.com/>

- The key initiatives for 2017 regarding CE include the presentation of a [strategy for plastics](#) in the circular economy, an assessment of options for the improved interface between chemicals, products and waste legislation, a legislative proposal on [water reuse](#) and a monitoring framework on circular economy.

- On **9-10 March 2017** the Commission and the European Economic and Social Committee organised a **Circular Economy Stakeholder Conference in Brussels**. On this occasion the European Circular Economy Stakeholder Platform was announced. You can find the web-streamed sessions online [here](#).

... on CESME project

During the first semester of CESME project partners have been very active in organizing events to establish the project in the regional milieu and to promote the concept of circular economy to relevant stakeholders:

National and regional

- In 2014 the Danish government settled the programme **Green Industrial Symbiosis**, which aim was to promote competitiveness and resource efficiency through symbioses. The programme was set up in a collaborative effort involving the five Danish regions and the Danish Business Authority. Read [below](#) the full article.

- A new innovative practice at Royal Greenland in Aalborg, Denmark uses **shrimp waste for animal feed**. Read [below](#) the full article.

- The [2nd Local Support Group Meeting](#) of the Greek project partners took place on 30.03.2017 in Thessaloniki (Greece). The topic will be: “New ways to adapt Circular Economy and awareness raising”.

In March 2017 the [2nd Local Support Group Meeting](#) of the Italian project partners took place in Bologna (Italy). The topic was: “New business models, Re-generate, Virtualize, Share: new ways for developing circular economy models”.

- In February, 2017 the [second Local Support Group meeting was organized in Finland](#), by Business Development Centre North Denmark and

... also

- The project webpage is active at <http://www.interregeurope.eu/cesme/>. The webpage will be regularly updated with project news and events. You may also search for CESME project on [Facebook](#), [Twitter](#) and [LinkedIn](#). Send to us news and good practices on circular economy to disseminate it to the public!

- The CESME White Book platform will be available soon at www.cesme-book.eu. The White Book will be collaborative developed and will contain the lessons learnt and the recommendations targeting both policy makers at strategic level, as well as SMEs at practical level.

Upcoming project events

- In May the third interregional partner event of the CESME project will take place in Thessaloniki, Greece, aiming to to exchange experience among stakeholders and examine **TOOLS FOR GREEN PROFILE ASSESSMENT** and **RETURN ON INVESTMENT CALCULATIONS** within Circular Economy. Information about the event will be available at the news section

North Denmark Region. The main objective of the meeting was to investigate the economic and social benefits of circular value chain with the concept of Circular Economy and specifically in bioenergy. Therefore they are planning to organize their study visit in other participant countries (Bulgaria, Italy), as well as exchanging experiences on their business models and their logistical processes on biogas plants, techniques, new ideas and smart solutions.

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of the [CESME project website](#) and in the social media pages of the project.

- Second semester Local Support Group meetings will be held from October, 2016 to March, 2017. The meetings will be announced in the news section of the [CESME project website](#) and in the social media pages of the project.

... also

Several events relevant to circular economy are scheduled for next semester outside the framework of CESME project. Those events will be announced in the social media pages of the project on time. Two of the events that have already been scheduled are:

- The next [Circular Economy Mission](#) that will be held in South Africa on **2-5 May 2017**. The Circular Economy Missions are a series of high-level political and business meetings in third countries to communicate and promote sustainable and resource-efficient policies. The missions are organised by the Directorate-General (DG) for the Environment of the European Commission and aim to build bridges between European institutions, NGOs and companies and the relevant stakeholders in those third countries, interested in the opportunities that the transition to the circular economy brings.
- The [World Circular Economy Forum 2017](#) presents the world's best circular economy solutions and gathers together the most recognised experts and decision makers in the field. The WCEF 2017 will take place on the **5th-7th of June 2017** at Finland Hall in Helsinki, Finland. The World Circular Economy Forum 2017 consists of 17 plenary and parallel sessions showcasing circular economy solutions for business, cities and finance. Three days of discussions, networking, workshops, side events and business excursions.



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