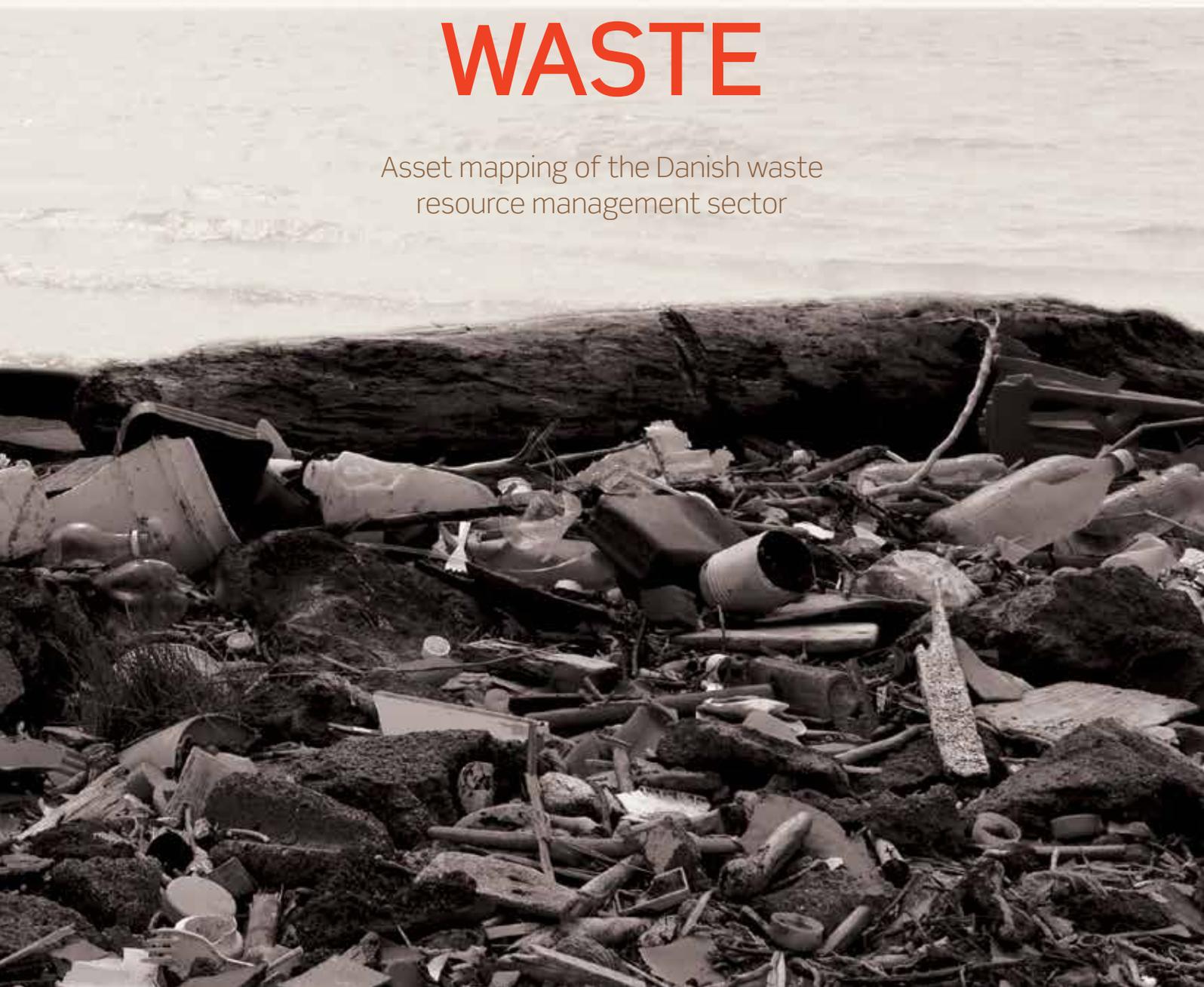


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# DENMARK: WE KNOW WASTE

Asset mapping of the Danish waste  
resource management sector



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KONKURRENCEEVNE

## Foreword

This report provides a broad overview of the Danish waste resource management sector. Ninety-seven companies working within the sector have contributed to the mapping of this sector.

The purpose of the report is to:

1. Introduce the global waste challenges and some of the many competencies in the Danish waste resource management sector which deal with these issues.
2. Provide an overview of the different actors involved in the Danish waste resource management sector, including the number of employees and areas of expertise.
3. Describe the current status of the Danish waste resource management sector and its future expectations.

This report is intended to: A) Firstly, to strengthen the competitiveness of Danish stakeholders involved in the waste resource management sector by providing a unique overview of the companies operating in the sector. This could be used by Danish companies when they are trying to gain access to new export markets or engage with partners abroad. B) Secondly, the report is intended to serve as a tool for international stakeholders who are considering engaging with the Danish waste resource management sector in one way or another as possible partners, customers or suppliers.

The report has been prepared by Copenhagen Cleantech Cluster (CCC) in collaboration with Waste Denmark, RenoSam, Innovation Network for Environmental Technology, and Complex Cleantech Solutions.

### Acknowledgements

This report would never have been completed were it not for the many companies which have contributed by filling out the questionnaire. We would therefore like to express our sincere gratitude to these companies for taking their time to assist CCC in obtaining relevant and interesting information about the Danish waste resource management sector.

Furthermore, a number of people have been especially helpful in the process of drafting the report. We would like to give thanks to Nana Winkler, Special Consultant, Waste Denmark; René Møller Rosendal, Consultant, RenoSam; Kirsten Reinholdt Bojsen, Project Developer, RESURSIUM; and Neelabh Singh, Head of Complex Cleantech Solutions.

Please note that the author is solely responsible for the contents of the report.

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## Introduction

The Danish and international waste industry is currently facing the challenges of increasing political demands for sustainable waste management, the development of new waste treatment technologies and the large-scale reorganization of the waste sector.

This increased focus on waste is being caused not only by the potential threat to human health and the environment posed by the world's growing waste streams, but also by a global lack of resources. Waste is no longer a leftover by-product of the global production and consumption chain, but has now become a valuable resource.

This transition from waste to resource, which Denmark like many other countries are currently undergoing, means that the future resource management industry must be based on new and innovative waste treatment methods. These methods will be able to harvest the energy of the biological waste stream while at the same time re-introducing the valuable nutrients it contains into the

agricultural soil. Furthermore, the raw materials of the technological waste stream will be recovered and reused in new production.

For over 100 years, Denmark has been developing comprehensive knowledge and skills regarding waste prevention, collection, sorting and treatment. The country is therefore in a unique position to deal with the transition from waste to resource.

Although this transition begins at the design stage of products, which should be designed with the entire life-cycle in mind, this report focuses on Danish technologies and services relating to the end-of-life treatment phase. It therefore presents a number of state-of-the-art technologies and services for waste management with the aim of reusing, recycling and recovering the resources and the energy in waste.

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**WASTE CAN  
HELP RELIEVE  
THE WORLDWIDE  
GLOBAL CON-  
CERNS ABOUT  
FOSSIL FUEL  
DEPENDENCY  
AND RESOURCE  
SCARCITY**

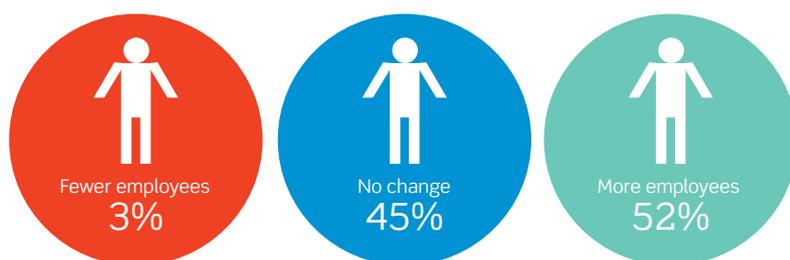
## The status of the Danish waste resource management sector

The ninety-seven companies presented in this report employ more than 10,000 people of which around 50 percent work directly with waste resource management. Furthermore, in 2011 they had a combined turnover of approximately 834 million EUR.

Around 77 percent of this turnover - the equivalent of 645 million EUR<sup>1</sup> - was generated by the companies' waste related activities.

Figure 1. Companies' expectations for the coming 5 years in regards to the number of employees working within waste

Source: Copenhagen Cleantech Cluster survey (n=93, excluding 3 companies answering "do not know")



A projection of these numbers onto the rest of the sector suggests that the whole of the Danish waste resource management sector employs more than 8,000 people. Not included in this number are the employees working abroad and the haulage contractors, which means that the total number of employees related to the sector might be far greater.

In terms of revenues, it is difficult to provide a precise answer to the question of the total turnover of the sector. However, a simple projection of the numbers provided by the survey suggests a conservative estimate of approximately 1.3 billion EUR. Of course, this

<sup>1</sup> This number does not include the haulage contractors which are solely engaged in waste transport.

number is biased by the fact that the companies not participating in the survey might not correspond directly to the companies which provided the necessary information.

Besides turnover and numbers of employees, the companies were asked to provide information about their performance during the last five years (2006-2011), and their expectations for the coming five-year period (2012-2017). The survey shows that 66 % of the companies have experienced an increase in turnover during the last five years in spite of the financial crisis. This is a good indicator of the ongoing transition from waste to resource management; waste is increasingly becoming a source of income rather than just a residual product.

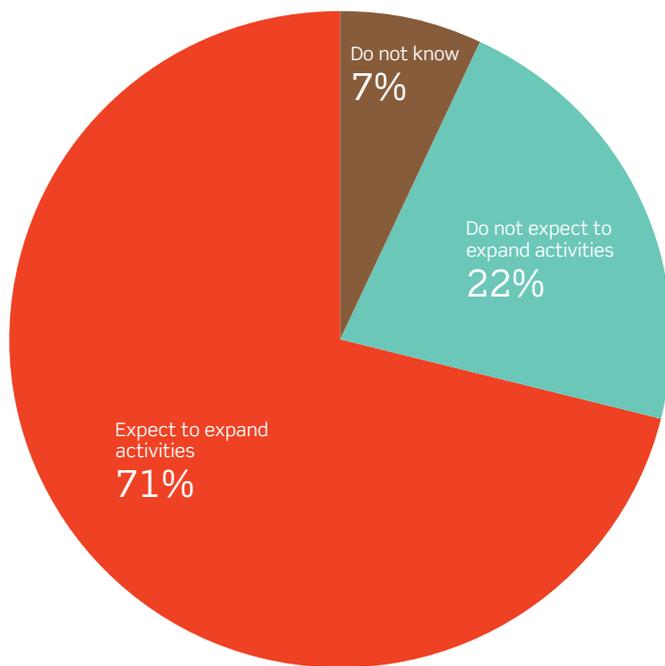
When looking at the expectations for the next five years, the survey shows that the companies working in the waste resource management sector in general have very positive expectations about the future. More than half of the companies say that they expect to employ more people within the coming 5-year period (see Figure 1). Additionally, 71 % of the companies expect to expand their activities relating to waste resource management within the same period (see Figure 2). These numbers testify that the sector is developing rapidly and is likely to grow considerably in the next five years.

### Increased focus on collaboration

The companies were asked to comment on which forms of collaboration they currently engage in. The majority of the companies collaborate with suppliers, customers, and subcontractors. Furthermore, 40 % of the companies join forces with one or more knowledge institutions, which indicates a widespread integration of academic research in the sector.

Figure 2. Companies' expectations for the coming 5 years in regards to activities relating to waste

Source: Copenhagen Cleantech Cluster survey (n=94)

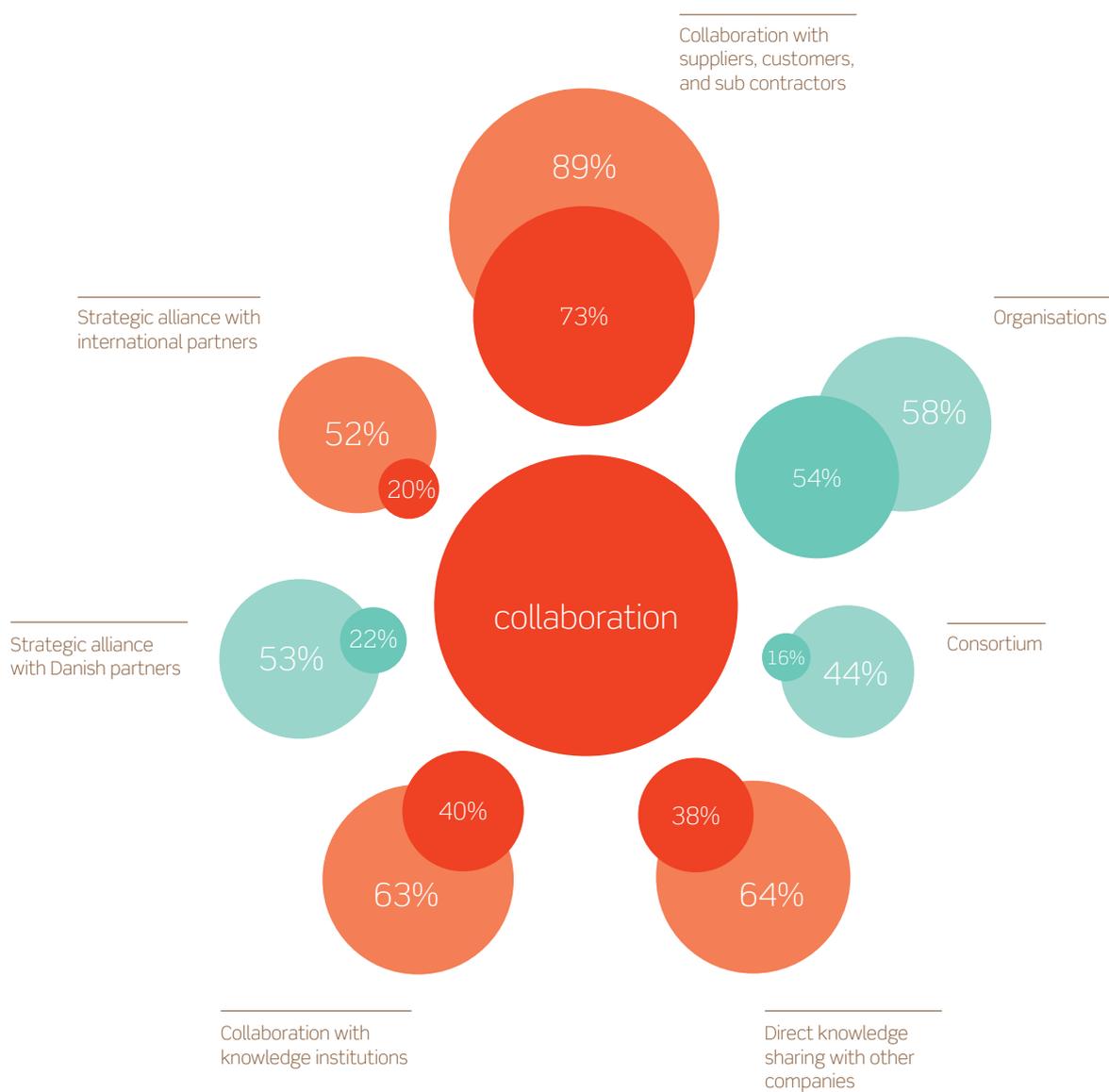


The companies were also asked to comment on the forms of collaboration they find most important in order to tackle future challenges. The three most important future forms of collaboration seem to be collaboration with suppliers, customers, and subcontractors, partnerships with knowledge institutions and direct knowledge-sharing with other companies. More than 60 % of the companies “strongly agree” or “agree” that these forms of collaboration will strengthen the company in the future. In general, more companies seem willing to engage in new forms of collaboration in the future as compared to at the time of the survey. The answers point to another interesting trend as more than half of the companies indicate that they would be willing to engage in future international strategic alli-

ances with other companies if the opportunity presents itself. This is almost three times the number of companies currently engaged in international strategic alliances. Furthermore, the number of companies willing to increase their expertise in the future, either through direct knowledge-sharing with other companies or through collaboration with knowledge institutions, has doubled in comparison to the current number. This suggests that the entire sector will become more knowledge intensive as collaboration between the private sector and knowledge institutions grows (see Figure 3 on page 8).

Figure 3. Waste companies' current forms of collaboration (inner circles) and the forms of collaboration which are expected to strengthen the company in the future (outer circles)

Source: Copenhagen Cleantech Cluster survey (n=94)



## A brief history of Danish waste management

Over many years of policy-making about waste, Denmark has developed a unique expertise regarding waste management processes. The history of waste management in Denmark can best be described as a long and collective learning process, which has slowly developed into the current Danish waste resource management system.

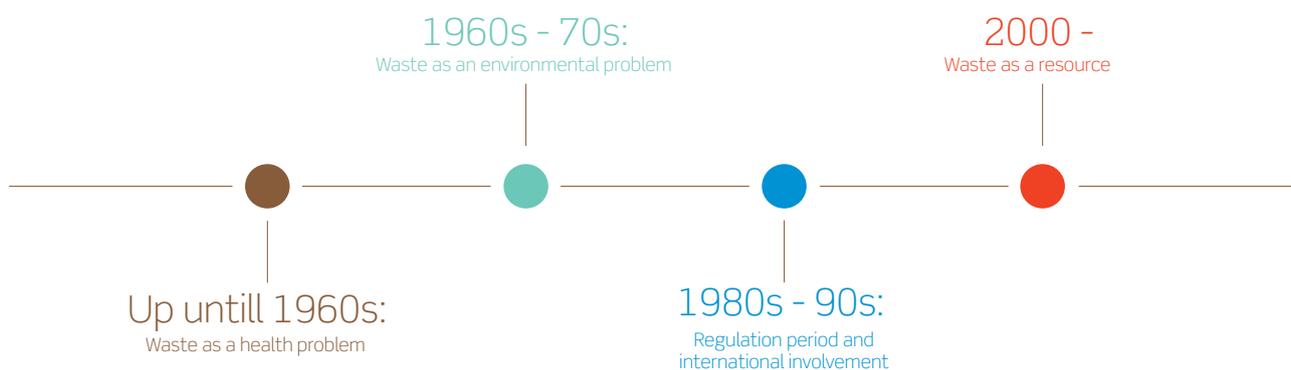
To start with, waste was perceived of primarily as a health problem, and was therefore deposited in landfills outside the big cities. As environmental concerns started to grow in the 1960s and 70s, waste increasingly came to be seen as an environmental problem that had to be dealt with not only because of its threat to human health, but also in order to protect the environment. In 1973, this increased focus on the environment led Denmark to become the first country in the world to pass an environmental protection law. From the beginning of the 1980s, when there was little room left for landfills, waste incineration

and composting became the primary waste treatment solutions, diverting the waste away from landfills, while at the same time contributing to the production of heat and electricity. Danish waste management through the 1980s and the 90s was characterized by two developments: increased international involvement, especially from the European Union, and the gradual development of a comprehensive Danish regulatory framework for waste handling. These two developments made Denmark one of the first countries in the world to achieve high recycling rates and minimize the amount of landfilled waste.

Figure 4. The history of Danish waste management

Source: CCC, inspired by DAKOFA's timeline

For a more detailed description of the history of Danish waste management, see [www.dakofa.dk](http://www.dakofa.dk)



## From waste management to resource management – future challenges

Today waste is no longer just a health problem, nor does it only pose a serious environmental problem; it is above all a potential resource with the capability to provide raw materials for production, nutrients for agriculture, and a source of energy.

This calls for a transformation on a global scale of the way waste is managed in which the focus is placed on resources rather than waste. In other words, there is an urgent need to move up the waste hierarchy (see Figure 5) away from landfills and towards the reuse and recycling of products. This is also the case in Denmark, where focusing on resources and

before a truly sustainable Danish resource management can be achieved. First of all, it will be a major challenge to reduce the overall amount of waste generation - not only relative to economic growth but also in absolute terms. This process - which must also be facilitated at European level - should encourage companies and manufacturers to design their products with end-of-life treatment in mind. At present a number of Danish R&D projects are aiming to develop new and smarter products, which will decrease the overall amount of waste generation. Please see "Research and Development projects" on page 28 for more information on some of them.

Figure 5. The waste hierarchy

Source: Copenhagen Cleantech Cluster



the reduction of the environmental impact of waste will be key issues in the coming decades. New and innovative technologies for waste collection, sorting and treatment will play an important part of this transformation process.

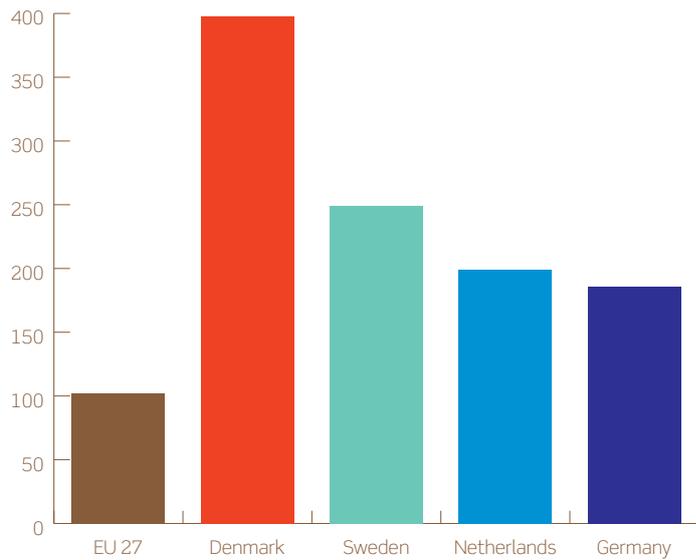
The transition from waste to resource, however, is not going to be an easy process, and there are a number of challenges to overcome

Secondly, Denmark should move further up the waste hierarchy towards greater recycling and reuse. To give an example, each year around 1 million tons of organic household waste is incinerated. Instead, this particular waste stream could be used as a valuable input in biogasification and composting processes, thus helping to close the loop in the organic waste stream<sup>1</sup>. Efforts to move up the waste hierarchy are a general concern among the companies participating in this survey. When asked what challenges will be characteristic of future waste resource management in Denmark, there were many comments along the lines of "achieve higher rates of reuse and recycling" or "improve the recycling percentage".

<sup>1</sup> COWI 2010: Miljøteknologi på affaldsområdet. Danske styrkepositioner og potentialer. Danish Environmental Agency Project nr. 1327 2010

Figure 6. Danish waste incineration capacity in 2008 (kg/inh.)

Source: Eurostat 2012



Thirdly, even though Denmark sends very little waste to landfill, there is still a need to move away from landfilling towards greater reuse, recycling or energy recovery. A small part of the residual products such as fly ash or shredder waste still ends up in landfills.

Lastly, several companies mention technological developments as a challenge for future waste resource management. The introduction of new and complex products onto the Danish market demand constant development within the waste management sector. Besides this, existing waste streams such as soft PVC, WEEE and plastic still constitute technological challenges which need to be overcome<sup>1</sup>. These challenges provide a golden opportunity for cooperation with knowledge institutions and foreign companies.

<sup>1</sup> CRI 2011: Potential for Intelligent Demand in the Waste Sector. Copenhagen Resource Institute

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**IN 1997  
DENMARK BE-  
CAME THE FIRST  
COUNTRY IN  
THE WORLD  
TO BAN THE  
LANDFILLING  
OF WASTE  
SUITABLE FOR  
INCINERATION**

## Ambitious political aims

The transition from waste management to resource management is not only reliant on a flexible and innovative waste management industry, but must also rely on strong political leadership. The current political climate surrounding Danish waste issues is setting the agenda for a more sustainable future.

In order to move Denmark up the waste hierarchy and further encourage the transition from waste management to resource management, a Danish waste management strategy was presented in 2010. This new strategy has two main focuses: waste prevention and the development of new waste management technologies. According to the waste strategy, “the challenge now is to make sure that we landfill less waste while at the same time conduct a targeted development of new technologies for making usable the materials in the waste”. The long-term aim of the Danish waste strategy is that all waste

should be either prepared for reuse, recycled or converted into energy<sup>1</sup>.

Furthermore, in March 2012 a new political Energy Agreement for the period between 2012 and 2020 was reached with broad support from most of the political spectrum. The Energy Agreement, which is an important step in the achievement of Denmark’s goal to be 100 % fossil free in 2050, ensures significantly increased funding for biogas and bioenergy production<sup>2</sup>.

Lastly, a new national Resource Strategy is expected to be approved in 2012 which will increase the focus on reuse and recycling even more.

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1 Miljøstyrelsen 2010: Affaldsstrategi '10, [www.mst.dk](http://www.mst.dk)

2 Energistyrelsen 2012: Energiaftale, [www.ens.dk](http://www.ens.dk)

## Danish waste resource management competencies

The waste resource management sector in Denmark is home to a number of market leading companies, technologies, and test facilities. The following is a short introduction to some of the key competencies within the sector.

### **Waste is the shared responsibility of both public and private actors**

Danish waste competencies are characterized by the special relationship between public and private actors in the waste sector which has developed in Denmark over the last four decades. "The Danish Waste Model", which was developed in the 1980s, places the responsibility for the treatment of all waste on the municipalities (since 2010 recyclable business waste is excepted). The model has ensured that Danish municipalities have gained an in-depth knowledge of the quantities and different types of waste streams. The model is based on "allotment rights" for the municipalities, which indicate one or more waste facilities where the waste should be treated. In turn, private companies are obliged to use

the facilities allotted by the municipalities. The many years of mutual dependence between public and private actors in the sector has not only ensured efficient collaboration, it has also allowed leading experts, universities, companies and policy makers to work together to develop a constant stream of new and innovative waste management solutions.

### **Industrial Symbiosis - When the waste of one company becomes a valuable resource for another**

Another benefit of the close collaboration between public and private actors is the possibility of creating industrial symbiosis between industries within the different municipalities. An industrial symbiosis is a local collaboration between public and private companies which buy and sell residual fractions for mutual economic and environmental benefit. In an industrial symbiosis the waste of one company is a valuable resource for another company.

#### CASE

#### Kalundborg Symbiosis

The industrial symbiosis created in the Danish municipality of Kalundborg is one of the world's first functioning industrial symbioses. Here, waste from one company has become a valuable resource for another, and both public and private actors within the municipality collaborate to close the loops of the different waste streams. The symbiosis not only helps the companies generate profit, it also helps make sure that almost all waste is recirculated either as energy, nutrients or raw materials in new production. Agricultural waste products provide one example of how a certain waste stream is being brought into use. The company Inbicon receives waste products from the agricultural sector in Kalundborg which it then converts into energy and bioethanol. The ethanol is sold to Statoil. Another example of a waste stream comes from heat and power generation. Dong Energy produces heat and power through incineration of coal. The residual products, such as fly ash, are used by nearby Gyproc in the production of gypsum. [www.symbiosis.dk](http://www.symbiosis.dk)

### Specialized waste stream treatment technologies

According to the waste hierarchy, where the generation of waste is unavoidable, reuse and recycling are the next best options. Danish companies have developed a number of special waste management techniques aiming to either directly reuse or recycle specific technological waste streams, such

as glass bottles, gypsum, pvc, stone wool, car tyres, bitumen sheets for roof waterproofing and wind turbines. Even though these waste management processes differ greatly from one another, they all have in common the fact that they prepare the materials for reuse and recycling in new production.

#### CASE Genan

Genan is a good example of one of the many Danish companies which have specialized in the treatment of a specific waste stream. Genan is the world's largest tyre recycling company. The company currently possess four large tyre recycling plants in Europe, while a fifth plant - the biggest of its kind in the world - is under construction in Texas in the USA. Genan's recycling technology has undergone continuous advancements since it was originally developed in 1990. The end products resulting from the recycling of scrap tyres are used as high-quality substitution applications, such as asphalt and bitumen modification which is used to make roads stronger and longer lasting. [www.genan.eu](http://www.genan.eu)

#### CASE Gamle Mursten

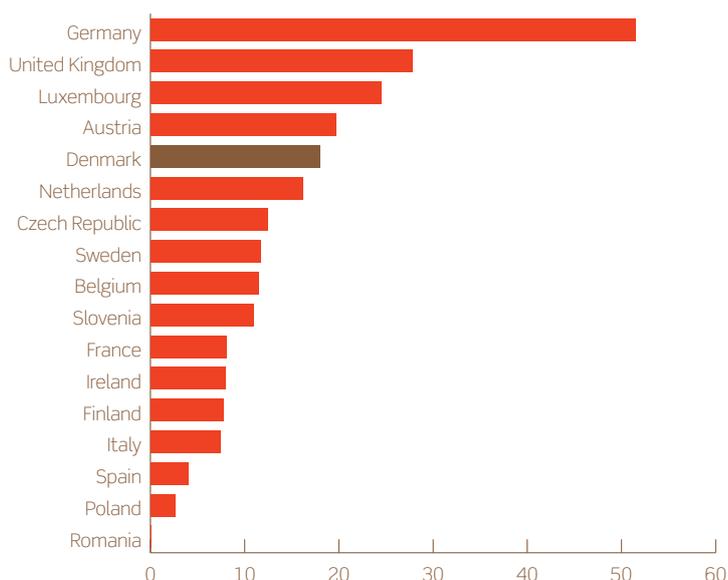
Gamle Mursten is another example of a Danish company which has specialized in the reuse of a specific waste fraction - old bricks. Even though Gamle Mursten is a relatively small company, it is the only company on the market with a patented solution for preparing old bricks for reuse. The bricks are cleaned using only vibration; no chemicals or water is used for the cleaning, which means there is no discharge of dangerous substances connected to the process. The old bricks are used in new buildings and renovations where the developer wants to protect the environment from unnecessary carbon emissions, or where there is a desire to create particular styles full of personality and history. [www.gamlemursten.dk](http://www.gamlemursten.dk)

#### CASE Gypsum Recycling International

Gypsum Recycling International is the first company in the world to have implemented a complete system for recycling plasterboard and gypsum wallboard waste. The company's patented technology is designed to successfully deal with all kinds of "old" gypsum waste from demolition and reconstruction activities. Currently around 60 % of all Danish gypsum is being recycled, which is a very good result in comparison to most other European countries. Gypsum Recycling International started in Denmark in 2001, and is now active in many countries both within and outside of Europe, including Sweden, Great Britain, and the US. [www.gypsumrecycling.biz](http://www.gypsumrecycling.biz)

Figure 7. Primary biogas energy production per inhabitant in 2009 (toe/1000 inhab.)

Source: Euroserver, Biogas barometer 2010



#### CASE Maabjerg Energy Concept

Maabjerg Energy Concept is an example of an energy consortium, which involves several public and private actors. The project integrates the production of biogas, heat and electricity, and biofuels in a single holistic treatment system in which several treatment methods work together in synergy, and all residual products are reintroduced into the local soil as valuable nutrients. Maabjerg Energy Concept is home to the world's biggest biogasification facility, Maabjerg Bioenergy. This converts an annual amount of around 650,000 tons of biomass into clean energy, heating, and electricity. [www.maabjerg-bioenergy.dk](http://www.maabjerg-bioenergy.dk)

#### CASE Solum Group

The Solum Group turns waste streams into value streams. It is Denmark's largest supplier of compost, growing media and turf care products. The Solum Group's patented Aikan Technology uses anaerobic digestion and in-vessel composting to turn organic waste into valuable biogas and fertilizer. The Solum Group is currently engaged in joint ventures with local companies in North America and Indonesia with the goal of setting up new Aikan facilities. Besides this, the Group is engaged in a number of R&D projects related to the use of enzymes in biogas production. [www.solum.com](http://www.solum.com)

#### Biogas

There are several technologies available for the reuse and recycling of the biological waste stream, one of them being biogasification. Denmark plays an important role within the European biogas technology sector (see Figure 7). Even though the Danish biogas market is relatively small in comparison to other European biogas markets, the long history of Danish agriculture has had a positive influence on the development of biogas technology in Denmark and led the country's per capita production of biogas to be the fifth highest in Europe. Furthermore, Denmark is a strong test market for biogasification processes with the world's biggest test facility located at the University of Aarhus. Denmark is also home to the world's biggest biogas production facility, Maabjerg Biogas, which opened in 2011.

Biogas has the potential to close the loop of the biodegradable waste stream, reintroducing nutrients into agricultural soil, while at the same time replacing fossil fuels. Although the biggest potential source of biogas in Denmark is livestock manure, there is also great potential for using food waste, source separated municipal solid waste or sewage in the production process.

### Bioethanol/Biodiesel

Another way of closing the loop of the biological waste stream, while at the same time recovering energy from waste, is through the production of biofuels. The technology for producing ethanol and diesel from biomass such as organic waste has existed for a long time. The big problem has been to make it competitive. So far it has been difficult to use the biological fraction of the household waste stream in the production of biofuels as cost-efficient separation technologies have not been developed. However, a new and very promising Danish technology, REnescience, is able to separate the biological waste fraction of household waste using enzymes.

### Thermal gasification

Technology for the thermal gasification of biomass is one of the central tools in the quest to replace fossil fuels with biofuels made from the biodegradable waste stream. Thermal gasification is a process whereby the heating of organic material under anoxic conditions releases gas which can subsequently be used to produce electricity and heat. The technology is very flexible, and the gasification facilities can easily intensify or lower the electricity output according to demand. If there is no demand for the electricity, the gas can be converted into liquid fuels or synthetic natural gas. Therefore, the technology fits well into a future smart grid energy system<sup>1</sup>.

#### CASE REnescience

One major challenge in future waste management will be to separate the biodegradable waste stream from the rest. Biodegradable kitchen and garden waste is currently the biggest fraction of municipal solid waste in most European countries. What happens to this fraction of municipal solid waste will influence the overall impact of waste management on the climate<sup>2</sup>. REnescience technology uses enzymes to separate municipal solid waste into valuable fractions. It can turn more than 95% of the biodegradable material contained in mixed municipal solid waste into a "bio-liquid" which can then be used in the production of biogas and bioethanol. The technology handles municipal solid waste without prior pretreatment such as shredding or sorting. [www.dongenergy.com/renescience](http://www.dongenergy.com/renescience)

1 For more information about smart grid, see the Copenhagen Cleantech Cluster report "Denmark - a European smart grid hub"

2 EEA 2011: Waste Opportunities. Past and future climate benefits from better municipal waste management in Europe.

#### CASE Babcock & Wilcox Volund

Babcock & Wilcox Volund is one of the world's leading suppliers of equipment and technologies designed to convert household waste and biomass into thermal energy. With over 70 years of experience, the company has supplied more than 300 waste-to-energy solutions worldwide. In 2013 the company will present the next generation of Best Available Technology standards, which have been developed in collaboration with Swedish Götaverken Miljö. These new standards will ensure even higher efficiency and lower emissions from waste-to-energy plants. [www.volund.dk](http://www.volund.dk)

### Incineration plants

Another way of recovering energy from waste is through waste incineration. With more than 100 years of experience in energy recovery from waste, Denmark is the world leader when it comes to this waste management method. Danish waste incineration plants are

connected to the energy grid providing district heating and electricity to the Danish market, while at the same time decreasing the volume of the waste by up to 70 percent. Thanks to many years of research, Danish incineration plants are the cleanest and most efficient in the world, generating approximately 2 MWh heat and 2/3 MWh electricity from every ton of waste incinerated<sup>1</sup>.

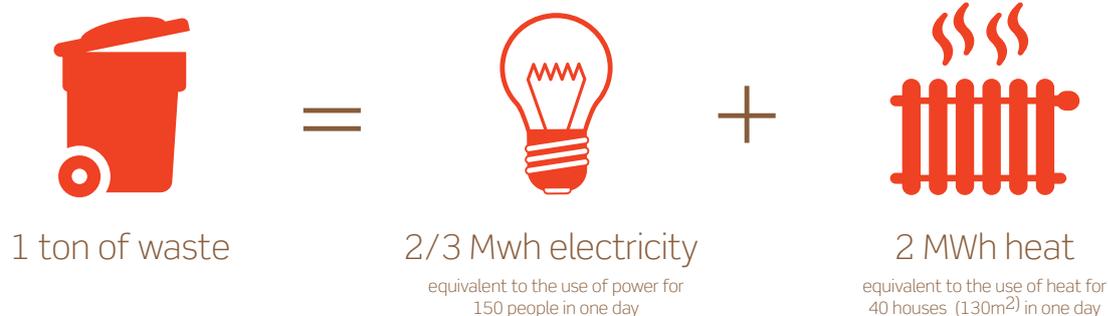
#### CASE Vestforbrænding

Vestforbrænding serves more than 850,000 citizens and 60,000 companies. The company's waste incineration facility is the country's biggest, converting an annual quantity of around 520,000 tons of waste into valuable heat and electricity. The production of heat and electricity from waste incineration replaces production from coal and oil. Vestforbrænding is owned by 19 municipalities around Copenhagen and Northern Zealand. The company's work is based on a non-profit cost-coverage principle, which means that the company should make neither a profit nor a loss in the long run. Besides waste incineration, Vestforbrænding engages in a whole range of other activities, such as recycling stations and research and development. Furthermore, the company plays an important role in educating schoolkids and students from all over Zealand in the importance of valuing waste as a resource. [www.vestfor.dk](http://www.vestfor.dk)

<sup>1</sup> Rambøll & RenoSam 2005: Affaldsforbrænding i Danmark. Europas mest effektive affaldsbehandling

Figure 8. Output from waste incineration

Source: Rambøll & RenoSam 2005



## Mapping of the Danish waste resource management sector

To provide a general overview of the Danish waste management sector, we have listed the companies in a matrix containing information on their size and areas of expertise. 92 companies are listed in the matrix.

### Company matrix

The company matrix is limited to companies based in Denmark working within the Danish waste resource management market. Information on multinational companies only applies to the products and services that their Danish branches offer.

The matrix lists the companies according to the technologies or services they provide in a waste management process. It is important to note that the matrix only includes companies working at the end-of-life phase of products. We have not included companies in the matrix which work with waste prevention, but have restricted the matrix to companies reusing, recycling or recovering the resources or the energy in waste. Furthermore, we have decided to exclude haulage contractors from the matrix which are only engaged in transportation of waste. The information presented in the matrix was provided by the companies

through the survey. The symbols in the matrix are as follows:

Type of product<sup>1</sup>:

■ = Service provider

■ = Technology provider

Number of employees:

● 1-10

●● 11-25

●●● 26-50

●●●● 51-100

●●●●● 101-500

●●●●●● >500

● = employees working with waste resource management

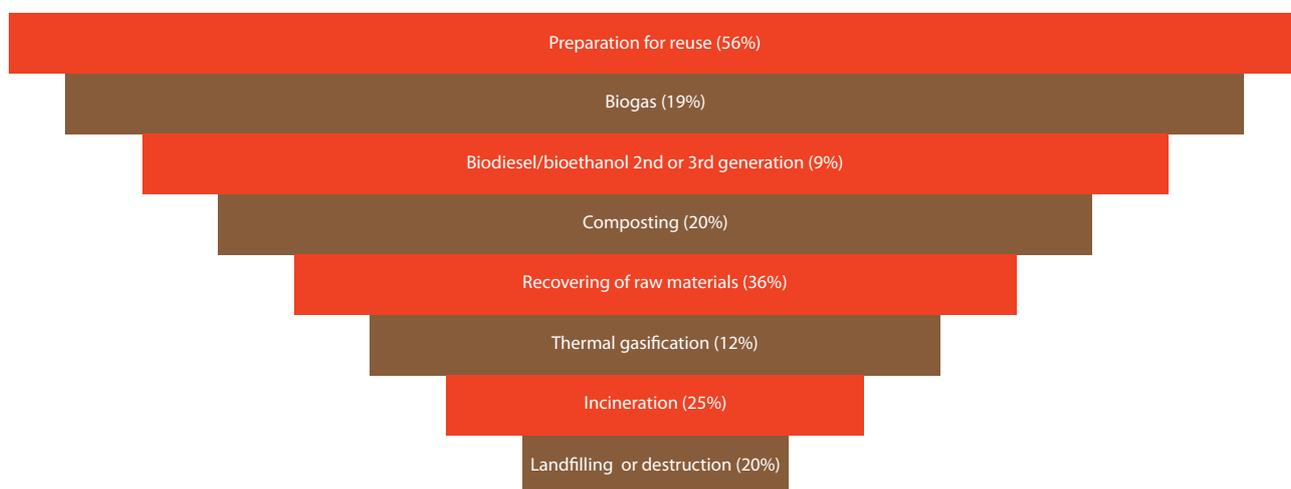
● = employees not working with waste resource management

Companies which are not included in the list but wish to be so, can contact the editor for information on how to be included.

<sup>1</sup> Companies listed both as technology and service providers may not provide technology for all indicated categories. Please see the 'service & technologies' column for specification of competencies

Figure 9. Waste hierarchy distribution of the companies' areas of expertise

Source: Copenhagen Cleantech Cluster survey (n=97)



## Technology company matrix

Technology companies	Products and Services	Waste collection	Waste sorting	Preparation for reuse	Biogas	Biodiesel or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Thermal gasification	Incineration	Deposit or destruction	Other
Aage Vestergaard Larsen ApS ●●●●●	Granules, collection and recycling	■ ■	■ ■	■ ■				■ ■				
ACTA Recycling A/S ●	Reprocessing of all types of recyclable materials							■ ■				
Affaldplus ●●●●●	Recycling stations, composting and incineration of waste		■	■			■	■		■	■	
Amagerforbrænding ●●●●●	Sorting of waste, incineration and preparing for reuse		■ ■	■ ■						■ ■		
Andritz Feed & Biofuel A/S ●●●●●	Waste pelleting, gasification, drying			■		■			■			
Averhoff A/S ●●●	Collection and treatment of WEEE	■		■				■				
A.V. Pehrsson A/S ●●	Regeneration of plastic waste, compounding	■	■	■				■				
Avø A/S ●●●●●	Waste collection, incineration facility, landfills, recycling stations	■	■	■			■	■		■	■	
Babcock & Wilcox Vølund ●●●●●	Turnkey waste fired combine heat and power plants, Advanced combustion or gasification systems. Tailor-made steam boilers								■	■		
Barsmark Composites ●●	Recycling of production residues from wind turbines, plastic and glass industry	■ ■		■ ■				■ ■				
B. I. Miljø ApS ●	Collection of used frying oil	■										
Bigadan ●	Biogas technology, construction of biogas plants, production of biogas				■							
Biogasol ●●●	Pretreatment, fermentation, 2nd generation bio-ethanol, bio chemicals					■						
Biocover ●	Acidification of slurry, reduction in ammonia emissions and odors											■ ■
BioNorden A/S ●	OHD technology, recovery of liquid organic waste, industrial effluents							■ ■				■ ■
Bramidan ●●●●●	Compression of reusable packaging waste, vertical and horizontal bale press	■	■	■								

■ Service provider

■ Technology provider

Technology companies	Products and Services	Waste collection	Waste sorting	Preparation for reuse	Biogas	Biodiesel or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Thermal gasification	Incineration	Deposit or destruction	Other
Combineering ●●	Import, export, biogas, agriculture	■ ■		■ ■	■ ■		■ ■	■ ■				
Compoil Danmark ApS ●	Composting, recycling			■			■	■				
Dansk Genkhus ●	Collection and pre-processing of construction- and industrial waste		■	■								
Dansk Olie Genbrug ●●●	Reprocessing, re-refining of used oil, waste water purification	■		■				■				
Denova* ●●	Sorting, reprocessing and treatment of various types of waste		■ ■						■ ■	■ ■		
DHI Group ●●●●●	Sampling, characterization, testing, leaching tests, construction waste											■
Envac A/S ●	Waste suction, mobile waste suction, central suction, paper basket suction, optical sorting		■									
Enviropac	Compaction machines, composting, grinder systems for organic wastes, total solutions for source separation											■
Faxe Forsyning A/S ●●●	Collection schemes as well as electricity and heat production through gasification of sludge	■		■					■			
FilterSupport	Bag filters for gas purification, dosing equipment, pneumatic transport systems, control systems											■
FJ Separation ApS* ●	Treatment installations for cooling lubricant waste, alkaline cleaning fluids, oil contaminated water.	■ ■	■ ■	■ ■							■ ■	
Fornæs ●●●	Recycling, shipbreaking	■ ■	■ ■	■ ■				■ ■			■ ■	
Gamle Mursten ApS ●	Waste, bricks, tiles, recycled tiles, old bricks			■ ■								
Genbrugsceneter Pap & Plast ●	Recycling of cardboard, plastic and aluminum waste, waste wood	■	■	■				■				

■ Service provider

■ Technology provider

\*Service & technologies' column filled out by Copenhagen Cleantech Cluster

Technology companies	Products and Services	Waste collection	Waste sorting	Preparation for reuse	Biogas	Bioethanol or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Thermal gasification	Incineration	Deposit or destruction	Other
Gendan* ●	Complete solutions for waste treatment, consultancy, reprocessing of construction and business waste	■	■	■				■				
Gen-Tek ●	Concrete crushing, garden waste treatment, gypsum recycling, construction waste		■	■			■	■		■	■	
Grønnes Miljø ●	Sorting and collection of waste. Storage of organic waste without odor nuisance.	■ ■	■ ■	■ ■	■ ■							
Gypsum Recycling International A/S ● ●	Recycling of gypsum waste			■				■				
Haldor Topsoe ● ● ● ● ● ●	Filter technology, catalytic smoke cleaning, gas cleaning, SCR technology, catalytic oxidation				■	■			■	■		
Hals Metal ● ●	Recycling, hazardous waste, metal separation, reprocessing		■ ■	■ ■				■ ■		■ ■		
Hashøj Biogas ●	Biogas technology				■ ■							
IMDEX ● ●	Car tires, rubber granules, rubber tiles, tire cord, rubber pad			■ ■				■ ■				
Joca A/S ● ●	Sale of equipment for waste collection in Denmark	■ ■										
Kali i/s ●	Biogas purification, carbon dioxide reuse, protein		■		■							■
KommuneKemi ● ● ● ● ● ●	High temperature incineration of hazardous waste, consultancy regarding hazardous waste treatment. Neutralization of alkaline and acidic waste types.	■ ■	■ ■	■ ■				■ ■		■ ■		
Komtek Miljø A/S ● ●	Reprocessing of organic waste		■ ■	■ ■	■ ■		■ ■					
Kyborg A/S* ●	Software for waste data handling	■ ■										
Lemvig Biogasanlæg ●	Treatment of fat-sludge from sewer manholes				■ ■			■ ■				
Lotra A/S ● ● ●	Waste collection, sorting, reuse, marketing of materials	■	■	■								

■ Service provider

■ Technology provider

\*Service &amp; technologies' column filled out by Copenhagen Cleantech Cluster

Technology companies	Products and Services	Waste collection	Waste sorting	Preparation for reuse	Biogas	Biodiesel or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Thermal gasification	Incineration	Deposit or destruction	Other
L90 ●●●●●	Collection, transport, processing, landfill and incineration, sludge incineration	■	■	■	■		■	■		■	■	
Meldgaard MILJØ A/S ●●●●●●	Sorting, collection of household waste, residual product handling, slag sorting	■ ■	■ ■	■ ■			■ ■			■ ■	■ ■	
Miljøteam A/S	Consultancy, transport, waste management, collection, sorting	■ ■	■ ■									
Modtagestation Vendsyssel I/S ●	Collection systems for hazardous waste, clinical waste, slop oil facility		■ ■									
Munks Produkt* ●	Decomposing, scrap yard, construction waste	■	■	■								
Nomi I/S* ●●●●	Sorting and treatment of business waste		■ ■	■ ■	■ ■	■ ■		■ ■		■ ■		
Nordforbrænding I/S ●●●●●	Incineration plant, district heating supply, recycling stations, landfills, hazardous waste	■	■	■				■		■	■	
Nordisk Computer Recycling ●	Environmental treatment of electronic equipment and security destruction			■								
NORRECCO A/S ●●●●●●	Recycling of construction waste, waste transport, innovation in the waste area	■ ■	■ ■	■ ■				■ ■			■ ■	
Novozymes* ●●●●●●●●	Enzyme production and development				■	■						
NVRaffald I/S ●●	Waste collection, packaging waste collection, operation of recycling stations	■										
Odense Waste Management Company* ●●●●●●	Collection and treatment of various types of waste. Consultance, R&D, educational activities	■ ■	■ ■	■ ■			■ ■	■ ■			■ ■	
Organic Fuel Technology ●	Conversion of biomass and organic materials for bio-oil					■						
P. Olesen & Sønner A/S ●●	Collection, sorting, reprocessing, recycling, marketing	■	■	■								
Polyloop ApS ●	Plastic waste, plastic granules residues	■	■	■				■				

■ Service provider

■ Technology provider

\*Service & technologies' column filled out by Copenhagen Cleantech Cluster

Technology companies	Products and Services	Waste collection	Waste sorting	Preparation for reuse	Biogas	Biodiesel or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Thermal gasification	Incineration	Deposit or destruction	Other
Provas ●●●●●	Recycling Stations, collection of municipal waste and recyclable materials	■	■	■			■					
Re-Bag ●	Production of recyclable bags made of recycled material		■	■				■				
Reiling Glasrecycling Danmark Aps ●●●●	Recycling of glas, transport of bulk goods	■	■	■				■				
Reno Djurs i/s ●●●●	Recycling stations, municipal waste, landfills, waste planning, settling tank system	■	■	■							■	
Reno-Nord i/s ●●●●●	Incineration and landfilling. Treatment and crushing of construction waste		■							■	■	
Renofyn i/s ●●●	Collection of waste suitable for incineration, sorting of recyclable waste and shredding of confidential documents	■ ■	■ ■	■ ■								
RenoSyd i/s ●●●●●	Collection, preparation for recycling, composting, construction waste, incineration	■ ■	■ ■	■ ■			■ ■			■ ■	■ ■	
Revas ●●●●	Waste sorting, processing, composting, all kinds of waste, logistics	■	■	■			■	■		■	■	■
Runi A/S ●●●	Compactors, dewatering, EPS, REJEKT, PET			■								
Shark Solutions ●●●	Regeneration of PVB from crushed car windows and laminated glass							■				
Simatek A/S ●●●●●	Flue gas purification, adsorption, absorption, filtration, ash handling											■
Special Waste System A/S ●●●	Hazardous waste incineration									■		
Stjernholm A/S ●●●●	Sand washing so that sand from sewage can be reused			■								■
Svendborg Kraftvarme A/S ●●●	Incineration plant, decomposition, heat and power generation									■		
TAS i/s ●●●●	Waste incineration, REnescience									■ ■		■ ■
Vand og Affald ●●●●●	Municipal Solid Waste collection, operation of recycling stations	■					■					

■ Service provider

■ Technology provider

Technology companies	Products and Services	Waste collection	Waste sorting	Preparation for reuse	Biogas	Biodiesel or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Thermal gasification	Incineration	Deposit or destruction	Other
Theilgaard Mortensen A/S ● ● ●	Software, environmental management, waste registration and reporting, CSR, environmental impact											■
T. K. Energy ● ●	Waste drying, decomposition, dosage, ash handling			■					■			■
TonerGenbrug ●	Collection of used printer toners and ink cartridges			■								
Varde Forsyning i/s ● ●	Waste collection from private households, recycling stations	■					■					
Vattenfall ● ● ●	Waste incineration, production of heat and electricity									■		
Veksø A/S ● ● ● ●	Waste Baskets, environmental stations, container guards	■ ■	■ ■									
Vestforbrændning ● ● ● ● ●	Planning and operation of waste schemes for household waste, recycling stations, waste incineration, educational activities	■		■						■	■	■
Vipilon ApS ●	Software, waste Data reporting, System to System, Automated reporting, Easy management of waste data.											■
Weiss A/S ● ● ● ●	Complete incineration plants in standard sizes 2-4-8 Mw.									■ ■		
3P Technology ●	Software, automation of processes for waste incineration											■ ■

■ Service provider

■ Technology provider

## Consultancy company matrix

Technology companies	Products and Services	Waste prevention	Procurement	Collection & sorting	Mapping of waste streams & Life Cycle Analysis	Biogas	Biodiesel or bioethanol, 2nd or 3rd generation	Composting	Recovery of raw materials	Incineration (including thermal gasification)	Landfill (including landfill mining)	Other
COWI ●●●●●●●●	All aspects of waste management from planning and studies to procurement, supervision and operational optimisation, as well as policy and regulatory development	■	■	■	■	■	■	■	■	■	■	■
Force Technology ●●●●●●●●	Sensors, sorting, feasibility studies, technology surveys, incineration, training, LCA, emission monitoring			■	■				■	■		
Geerticon ●	Legal permits, operational guidelines, innovation, project management									■		■
Holmboe Consult ●	Resource Management, Strategies, Environment, Production and Development	■	■	■	■	■			■	■		■
P&I Engineering ●	Enzymatic conversion, drying in superheated steam, gasification					■	■			■		■
Rambøll ●●●●●●●●	Recycling, energy recovery, biosolids, planning, landfills	■	■	■	■	■	■	■	■	■	■	

■ Consultancy

## Conclusion

In a green and sustainable future the world's waste streams must be regarded as valuable resources. Danish technology and know-how is ready to provide green fuel for this transition away from waste.

The Danish waste resource management sector is currently undergoing the transition from waste management to resource management. This not only prompts the development of new and innovative waste treatment technologies, it also demands investment, knowledge-sharing and collaboration across all levels of society. Luckily, Denmark is a small country with a long tradition of cooperating in developing the right solutions. The Danish waste resource management sector is characterized by a strong industrial composition which provides leading technologies for key waste management processes, such as bio- and thermal gasification, the recycling of specific waste streams, and incineration. Furthermore, the sector is currently being influenced by an ambitious political climate in which politicians are willing to make the necessary investment and take the necessary steps to facilitate the transition towards resource management. All this has infused the sector with self-confidence and optimism about the future - an optimism which is reflected in the high expectations of the companies for the coming years, and their willingness to engage in new forms of collaboration.

## Research and Development projects

Below is a table of selected current research and development projects, supported by public funding. Their findings will be published as they progress and can be used as a base for further research or as inspiration for new projects. The table does not cover all projects. Accordingly, if there is a company or research institution which wants to have a project included in the table, please contact the editor.

Title	Project aims	Partners
<b>Plastic Zero</b> <a href="http://www.amfor.dk">www.amfor.dk</a>	The aim of the project is to reduce the amount of plastic in the waste.	Municipalities of Copenhagen, Malmo, and Hamburg. The waste companies Amagerforbrænding, LiepajasRAS, and Tampere. Danish Technical University and Aalborg University.
<b>CleanWaste</b> <a href="http://www.cleanwaste.dk">www.cleanwaste.dk</a>	The aim of the CleanWaste project is to combine the competences of the strongest research groups in Denmark and to develop cost-effective, and environmentally friendly technologies for the Danish and global livestock industry.	University of Southern Denmark, University of Copenhagen, University of Aarhus, Denmark, University of Limerick, Ireland.
<b>Sustainable textiles - from sugar for polyester</b> <a href="http://www.hoejteknologifonden.dk">www.hoejteknologifonden.dk</a>	The project aims to develop a process that can transform sugar into a chemical building block: a dicarboxylic acid, which can be used in the production of polyesters.	Novozymes A/S, DTU Kemiteknik, DTU Kemi
<b>Bread waste as biomass</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The project aims to test and document the optimal conditions for biogas production based on waste from bread production mixed with cattle and pig manure.	Kohberg Brød A/S
<b>From organic waste to biofuels</b> <a href="http://www.hoejteknologifonden.dk">www.hoejteknologifonden.dk</a>	The aim of the project is to develop an effective and environmentally friendly process for producing biofuels from a range of different waste streams.	SCF Technologies A/S, University of Aarhus, University of Aalborg
<b>Reprocessing of organic waste to Biopulp</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The aim of the project is to demonstrate that it is an advantage to reprocess (mix and pulp) organic wastes for energy production on biogas plants before they are used for agricultural purposes.	KomTek A/S
<b>Development of new technique for phosphorus extraction from ashes from the incineration of sewage sludge</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The project aims to develop and test a process for separation of ash from the incineration of sewage sludge, so that the phosphorus is recovered in a form useable as fertilizer.	DTU Byg
<b>TopWaste</b> <a href="http://www.topwaste.dk">www.topwaste.dk</a>	The project aims to develop a coordinated set of tools to analyze and plan investments and activities, taking into account that the waste management sector and the energy sector are intertwined and will be subject to new market conditions.  Important questions which the project seeks to answer: "What is the future optimal treatment of waste fractions in terms of economy and the environment: recycling or energy production?" "Which regulatory and organizational measures may support the achievement of political goals under different market conditions?"	Aalborg University, Risø DTU National Laboratory for Sustainable Energy, University of Southern Denmark, RAM-solve computer, Holmboe Consult, IVL Swedish Environmental Research Institute, KTH Royal Institute of Technology, Lund University, Yale University, Amagerforbrænding, Reno-Nord, Ramboll, COWI, Grontmiljø Carl Bro. Advisory board members from Scuola Agraria del Parco di Monza, The Federation of German Consumer Organization (VZBV), Danish Energy Agency, Danish Environmental Protection Agency, Waste Denmark, RenoSam, European Topic Centre on Sustainable Consumption and Production.

Title	Project aims	Partners
<b>Aikan – Transforms organic waste from the city and the countryside into energy and fertilizer products</b> <a href="http://www.aikantechnology.com">www.aikantechnology.com</a>	The project aims at further developing the Aikan biogasification technology.	Solum Group A/S
<b>Molitor</b> <a href="http://www.molitor-ruc.dk">www.molitor-ruc.dk</a>	The project aims to develop a production facility that converts organic waste from private kitchens and industrial companies into valuable insect protein and fertilizer material.	Kalundborg Municipality, Vækstforum Sjælland
<b>Sustainable biodiesel using enzyme technology</b> <a href="http://www.hoejteknologifonden.dk">www.hoejteknologifonden.dk</a>	The aim of the project is to develop a method to produce a 100 % green biodiesel using enzymes.	Novozymes A/S, Emmelev A/S, DTU Kemiteknik, DTU Management, University of Aarhus
<b>Electrodialytic upgrade of flue gas wastes from hazardous waste to secondary resource</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The project aims to further develop the elektrodialytic upgrade of flue gas waste and document the quality of the output products and their possible application.	DTU Byg
<b>Combining of flue gas purification wastes and “scrubber liquid” from incineration facility using HALOSEP process</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The aim of the project is to finish the design of the HALOSEP-technology for treatment of flue gas from waste incineration facilities. Furthermore, the project aims to clarify opportunities for the recycling of certain fractions of residues.	Stena Metall A/S
<b>Development of 2. generation biofuels</b> <a href="http://www.hoejteknologifonden.dk">www.hoejteknologifonden.dk</a>	The aim of the project is to improve technology for pretreatment of biomass, which can then be used in the production of 2nd generation biofuels.	DONG Energy A/S, Novozymes A/S, Statoil A/S, Biogasol ApS, Topsoe Fuel Cell A/S, DI, DTU Systembiologi, Copenhagen University - LIFE, RISØ DTU
<b>Recycling of Stone Wool</b> <a href="http://www.fornyelsesfonden.dk">www.fornyelsesfonden.dk</a>	The project aims to develop a recycling concept for stone wool. This will primarily include the reprocessing of used stone wool to new stone wool. But the project will also seek to find alternative uses.	Enviso Group A/S, Recyclingcenter Horsens, Rockwool A/S, NCC Roads A/S
<b>Biomass should provide us with chemicals and fuel the world's ships</b> <a href="http://www.hoejteknologifonden.dk">www.hoejteknologifonden.dk</a>	The project aims to develop technology and biology so that we can produce sustainable chemicals and fuels for shipping. The project brings together some of the world's strongest players in biomass, biotechnology and shipping	Copenhagen University - LIFE, DTU - Kemiteknik, A.P. Møller-Mærsk A/S, DONG Energy Power A/S, Haldor Topsoe A/S, Novozymes A/S, Man Diesel & Turbo
<b>Market maturation of environmentally friendly and cost effective packaging for the food industry</b> <a href="http://www.fornyelsesfonden.dk">www.fornyelsesfonden.dk</a>	The purpose of this project is to market mature a new type of packaging for the food industry which will replace plastic products (polypropylene and polyethylene).	Primodan A/S, Naturmælk a.m.b.a, WecaPack A/S
<b>Shredder waste: Low-tech exploitation of resources in Shredder waste via size distribution</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The project objective is to develop and test a low-tech and easily implemented concept for the optimal recovery of resources in shredder waste deposits.	DHI
<b>Recycling of fly ash from biomass-fired plants</b> <a href="http://www.fornyelsesfonden.dk">www.fornyelsesfonden.dk</a>	The project aims to develop a facility which cleans the heavy metals out of fly ash. After the cleaning process the ash will be used as fertilizer.	4 envi, CompSoil Danmark ApS, Balgårde-Landhandel, Dansk Aquakemi A/S, SH Management, Efftech Ltd., Birmingham
<b>Improved resource efficiency of shredder waste</b> <a href="http://www.ecoinnovation.dk">www.ecoinnovation.dk</a>	The project aims to finish developing a technology for the recycling of heavy metals from shredder waste as well as recovering the energy content of the waste	H.J. Hansen Recycling Industry A/S

Title	Project aims	Partners
<b>RETROMAX</b> <a href="http://www.ens.dk">www.ens.dk</a>	The project aims to develop a manure treatment technique which increases the amount of manure biomass suitable for biogas processes.	Liqtech International A/S, LSM Pumper ApS
<b>Fuel flexible, efficient and sustainable low-temperature biomass gasification</b> <a href="http://www.dongenergy.com/pyroneer">www.dongenergy.com/pyroneer</a>	The project aims to test the PYRONEER gasification technology as a promising platform for the use of difficult biomass in heat and electricity production	Risø DTU, Dong Energy, University of Aarhus, HedeDanmark, Knowledge Center for Agriculture, AgroTech
<b>Demonstration of sustainable bio-oil production using CatLiq technology</b> <a href="http://www.stateofgreen.com/www.ens.dk">www.stateofgreen.com/www.ens.dk</a>	The project will develop a CatLiq demonstration unit for industrial-scale use, capable of converting low-value feed streams such as pig slurry into high-value bio-oil, which can subsequently be used for CHP production.	SCF Technologies, Vattenfall, University of Aalborg
<b>REneScience Waste Refinery</b> <a href="http://www.dongenergy.com/REnescience">www.dongenergy.com/REnescience</a>	The aim of the project is to develop the REnescience technology which separates organic material from inorganic material in waste using enzymes.	Dong Energy, Amagerforbrænding, Copenhagen University - LIFE, University of Aarhus, DTU, Tas i/s
<b>Catalytic Decomposition of tar from biomass gasifiers</b> <a href="http://www.ens.dk">www.ens.dk</a>	The project aims to develop a gas cleaning unit, which will be used to clean gas from biomass gasification processes. The project focuses on removing the high boiling tar compounds, naphthalenes, by catalytic decomposition.	Technological Institute, Haldor Topsoe A/S, ChimneyLab Europe ApS
<b>Thermo-alcalic NIX-pretreatment of manure for biogas production</b> <a href="http://www.ens.dk">www.ens.dk</a>	The project aims to develop the NIX-pretreatment method in order to be able to create more homogeneous biomasses and achieve higher biogas yields.	Xergi A/S, LM Stålinindustri A/S

## Knowledge Institutions and Organisations

Name	Website
Aalborg University	<a href="http://www.en.aau.dk">www.en.aau.dk</a>
Aarhus University	<a href="http://www.au.dk">www.au.dk</a>
Cradle-to-Cradle - EKEA Copenhagen	<a href="http://www.vuggetilvugge.dk">www.vuggetilvugge.dk</a>
DAKOFA - Danish Competence Centre on Waste	<a href="http://www.wasteandclimate.org">www.wasteandclimate.org</a>
Danish Centre for Verification of Climate and Environmental Technologies	<a href="http://www.etv-denmark.com">www.etv-denmark.com</a>
Danish Environmental Protection Agency	<a href="http://www.mst.dk">www.mst.dk</a>
Danish Ministry of the Environment	<a href="http://www.mim.dk">www.mim.dk</a>
Dansk Miljøteknologi	<a href="http://www.danskmiljøteknologi.dk">www.danskmiljøteknologi.dk</a>
Danish Nature Agency	<a href="http://www.nst.dk">www.nst.dk</a>
Danish Producer Responsibility - DPA-system	<a href="http://www.dpa-system.dk">www.dpa-system.dk</a>
DI Bioenergi	<a href="http://www.bioenergi.di.dk">www.bioenergi.di.dk</a>
DTU - Technical University of Denmark	<a href="http://www.dtu.dk">www.dtu.dk</a>
Innovation Network for Environmental Technology	<a href="http://www.inno-mt.dk">www.inno-mt.dk</a>
RenoSam	<a href="http://www.renosam.dk">www.renosam.dk</a>
Risø - DTU	<a href="http://www.risoe.dtu.dk">www.risoe.dtu.dk</a>
Symbiosis Center	<a href="http://www.symbiosecenter.dk">www.symbiosecenter.dk</a>
University of Copenhagen	<a href="http://www.ku.dk">www.ku.dk</a>
University of Roskilde	<a href="http://www.ruc.dk">www.ruc.dk</a>
University of Southern Denmark	<a href="http://www.sdu.dk">www.sdu.dk</a>
Waste Denmark	<a href="http://www.affalddanmark.dk">www.affalddanmark.dk</a>

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