



WASTE MANAGEMENT PLAN 2012

THE SHORT VERSION

City of Copenhagen

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PREFACE



COPENHAGEN CITY HALL SQUARE – Waste Management Plan 2012 is about waste management in Copenhagen in the period 2009-2012.

Waste Management Plan 2012 is part of the City of Copenhagen's general efforts in the environmental field, and the objectives of the Waste Management Plan deal with environment, climate, and citizens' satisfaction. These are three key elements in our new target achievement, and the concrete initiatives of the Waste Management Plan aim to support these targets.

Copenhagen aims to be the Eco-Metropolis of the world in 2015. This means that focus will be on the environment as a supporting element of Copenhagen's city life, culture, and identity. To attain this, we must cooperate with people living and working in the city.

The Waste Management Plan contains a number of initiatives aiming at further development of our well-working waste management system. Initiatives deal with increase in separation of waste for recycling and new treatment technologies. Among the areas for effort in the plan, focus has been put on waste prevention, calling for significant change of attitude among us all from consumption to reuse and conscious shopping. Urban spaces are common spaces that should be utilised as suitably as possible. Therefore, the plan contains a number of initiatives contributing to adapting waste management equipment to the urban picture all while ensuring that both citizens and businesses have even more focused information about waste.

We are the largest workplace in Denmark and as such we wish to be a frontrunner, making a special effort in our own institutions. As the City's institutions become environmentally certified and focus on separation of their waste, it is important that the City takes a further step upstream preventing waste from being generated in the first place. This will benefit the environment.

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ABOUT THE WASTE MANAGEMENT PLAN

The City's vision is that in 2015 Copenhagen will be the Eco-Metropolis of the world. This means that in 2015 Copenhagen will be the capital with the best metropolitan environment of the world. This vision is described in "Eco-Metropolis – our vision for CPH 2015" adopted by the Copenhagen City Council in November 2007. It also appears here that Copenhagen will be among the world's frontrunning metropolises when it comes to environmental initiatives in all spheres.

In order to attain the vision of the best metropolitan environment we must be able to manage our waste in a sustainable manner. In this respect, Waste Management Plan 2012 is an important tool.

The Waste Management Plan is a consolidated document for the City's efforts in the waste management field describing how the City of Copenhagen will manage waste generated in the city.

Waste Management Plan 2012 – our aims

The overall objective of the Waste Management Plan is as follows:

In the City of Copenhagen we wish to reduce impacts on the environment, including climate, through sustainable management of waste. Also, we wish to ensure that citizens of the city are satisfied with waste management services.

Environment, climate and citizens' satisfaction are general topics in each of the five areas for effort of the plan, and the different initiatives under the areas for effort contribute to attaining the overall objective of the plan. The City hopes with this crosscutting approach to create the largest possible cohesion in the waste initiatives that are to be implemented in the planning period.



ECO-METROPOLIS OF THE WORLD IN 2015

We are setting a long-term goal for development until 2015 because we would like Copenhagen to be an inspirational example. Copenhagen will demonstrate to other capitals how a greener urban environment can enhance the quality of life in practical terms. This will be to the advantage of the citizens both of our city and the world. It will be to the advantage of current and future generations.

Copenhagen will be a major city which lives and breathes because of its concern for the environment, not in spite of it. The municipality will lead the way and its citizens will contribute actively to improving the environment through their daily activities.

We will set ambitious and binding new goals for 2015; we will support our words with actions; we will achieve those goals through concrete and visible initiatives.

- Extract from Eco-Metropolis: <http://www.kk.dk/PolitikOgIndflydelse/Byudvikling/Miljoe/Miljoemetropolis/Eco-metropole.aspx>



WASTE MANAGEMENT PLAN 2012 – AVAILABLE IN PRINTED AND ELECTRONIC FORM

Waste Management Plan 2012 is available in a printed version and in electronic form*.

The printed pamphlet is the essence of Waste Management Plan 2012. Here, the general objectives in the waste management field are presented and linked to the five areas for effort of the City. Each of the five areas for effort has a number of focus areas which are presented together with an outline of all initiatives.

The electronic plan gives more details of the aspects presented in the printed version, including focus areas and concrete initiatives. In addition it presents a survey of waste amounts, various forecasts, and descriptions of waste schemes for businesses and households. The plan can be found on www.kk.dk/affaldsplan.

*Note that only the short version is available in English.

COPENHAGEN'S CITIZENS – Waste Management Plan 2012 belongs to Copenhageners and those working in our city.

Process of Waste Management Plan 2012

A waste management plan is an instrument for citizens and those working in the city. It must contribute to ensuring that the City's waste management takes place in an environmentally and economically responsible manner, and that the waste management system is under constant development. At the same time, citizens must contribute to ensuring that waste schemes and new initiatives are successful – for example by changing behaviour in different fields of their everyday life. Therefore it is important to involve citizens in the work of preparing a waste management plan.

The completion of Waste Management Plan 2012 was preceded by a process where focus groups of citizens discussed the existing system for collection of waste and proposed new initiatives. Also local Agenda 21 centre staff, environmental coordinators of the City, care-

takers, and representatives of the waste management sector in general were interviewed. In addition, Waste Management Plan 2012 was submitted for consultation in summer 2008. Contributions from focus groups and consultation have been incorporated in the plan.

Waste Management Plan 2012 - framework

According to the Danish Statutory Order on Waste local authorities must prepare a plan for municipal management of waste every four years. The plan must contain a survey section, an objectives section, and a planning section, and it must have a 12 years' perspective. Therefore, Waste Management Plan 2012 contains in addition to initiatives for the period 2009-2012 a waste amount forecast for the period 2009-2020. The Waste Management Plan covers waste from households, businesses and public institutions.

Developments in waste

In recent years waste arisings in Copenhagen have been increasing and according to forecasts they will increase by around 25,000 tonnes in the planning period. Also, changes in the waste field will take place in the planning period at national and international levels affecting waste management services. The Danish waste management sector will be reorganised in the planning period and this will have an impact on the City's regulation of recyclable wastes. In addition, an agreement in the energy field will pave the way for waste being incinerated in power plants. In the EU, a new waste directive has been adopted setting targets for recycling and incineration with energy recovery. Initiatives in Waste Management Plan 2012 take these developments in the waste management field into consideration.

Crosscutting City plans

Waste Management Plan 2012 is interplaying with the City's other plans – both sector plans and crosscutting plans. This goes for general objectives and concrete initiatives some of which originate in other plans.

City Plan

The City Plan and associated local plans set up the physical framework of the City's work. The plans describe major measures changing the city's structure, and it is an important tool for ensuring that waste solutions are taken into consideration in urban spaces and design of new buildings.

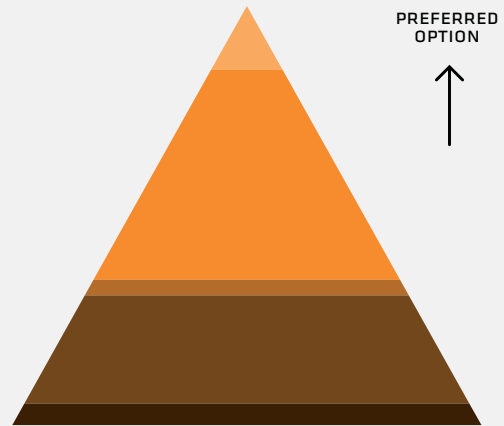
Agenda 21 Plan

Agenda 21 Plan 2008-2011 is a crosscutting plan affecting all administrations of the City. Its purpose is to promote eco-friendly behaviour among citizens and businesses and to give a boost to certain selected fields. Targets of the Agenda 21 Plan also deal with waste and thus contribute to attaining the targets of the Waste Management Plan.

Dogme 2000

The City of Copenhagen participates in the intermunicipal Dogme 2000 cooperation. A key issue in this work is to anchor environmental work, measure people's impact on nature, and prepare a plan for environmental improvements. The Dogme concepts are reflected in all environmental plans prepared in the City of Copenhagen. This is also the case for Waste Management Plan 2012.

WASTE HIERARCHY



- Prevention, including reuse
- Recycling
- Special treatment
- Incineration with energy recovery
- Landfill

STRUCTURE OF COPENHAGEN'S WASTE MANAGEMENT SYSTEM

It is a basic element of the Copenhagen waste management system that all waste must primarily be separated at source, i.e. at the place of generation of the waste. In addition, the City's waste management system builds on the so-called waste hierarchy. This hierarchy sets up an order of priorities of different waste treatment options – reflecting the impact on the environment. The basic idea is that waste treatment should be moved as high up the hierarchy as possible. The best option – from an environment and climate perspective – is to prevent waste from being generated in the first place. In some cases the hierarchy principles can be departed from, for example due to concrete environmental assessments. The Copenhagen waste management system has meant that more than half of our waste is recycled, and of the remaining waste the major part is recovered for heat and power. Only modest amounts of waste are led to landfill.

CLIMATE CONFERENCE IN COPENHAGEN

The United Nations 15th Climate Change Conference will be held in Copenhagen in December 2009. The climate conference may lead to a new agreement among the world's nations about a reduction in greenhouse gas emissions. Waste Management Plan 2012 and its initiatives are important measures liable to reduce emissions of greenhouse gases in Copenhagen.

Climate

Under the Eco-Metropolis project the City is committed to reducing CO₂ emissions by 20 % in 2015 compared to 2005. Therefore, the City has made an appropriation of DKK 150 million (approx. EUR 20 million) in 2008-2010 for initiatives reducing CO₂ emissions in Copenhagen. Before the climate summit the City will present an overall climate plan showing how to attain targets through concrete initiatives. Initiatives are, for example, campaigns directed at Copenhagengers, a climate concept for businesses, activities for children and youth, urban development, and energy-efficient renovation of municipal buildings. The Waste Management


Plan through its objective of reducing environmental impacts and its initiatives for reducing climate impacts will give its contribution to the climate plan.

Street cleaning

The City has as a target that Copenhagen should be the cleanest capital of Europe and that waste in public streets will be removed within eight hours. To attain this target the City has made an appropriation of an extra DKK 30 million (approx. EUR 4 million) yearly in the period 2007-2009. More waste bins and more staff to keep the city's streets clean are among the measures, just as binding agreements will be entered with fast-food stores to avoid littering in public spaces. The City prepares an annual Cleaning strategy describing the prioritised fields within littering.

Soil

Contaminated soil is basically treated as waste. Therefore, assignment and management of contaminated soil is part of waste management planning. The City of Copenhagen has prepared a soil strategy focusing, among other things, on prevention of soil contamination, management of contaminated soil as well as supervision and enforcement.



SOIL - Basically, contaminated soil is treated as waste.

OBJECTIVE OF WASTE MANAGEMENT PLAN 2012

- In the City of Copenhagen we wish to reduce impacts on the environment, including climate, through sustainable management of waste. Also, we wish to ensure that citizens of the city are satisfied with waste management services.

The Waste Management Plan takes up the challenges Copenhagen is facing, and it is closely interplaying with other plans of the City. Finally, the plan ensures that the City is improving its waste management continuously.

The objective contributes to ensuring a coherent strategy in the waste management field. To live up to this objective we have designated five areas for effort. Within each area a number of focus areas have been selected for special effort in the coming planning period. The focus areas translate into a number of concrete initiatives. Areas for effort and focus areas are described in more detail on the following pages.

AREAS FOR EFFORT	FOCUS AREAS	INITIATIVES
More waste prevention and reuse	Change in behaviour among consumers and producers City's institutions as frontrunners More options for reuse	Initiatives
Increase in separation of waste	Knowledge and information Separation must be easy Instruments Hazardous waste	Initiatives
Treatment system for the future	Large municipal investments Waste treatment 'on site' Import and export Environmental impacts from waste management	Initiatives
Innovative waste solutions in urban spaces	New solutions in existing urban spaces Innovative solutions in new urban development areas Development of recycling centres and local drop-off stations Vacuum waste systems	Initiatives
Tender for collection and treatment of waste	Quality and service Environmental impacts from collection, treatment and transport Knowledge-building and market focus	Initiatives

MORE WASTE PREVENTION AND REUSE

Target: Reducing growth in waste arisings by 10 % – corresponding to prevention of 2,500 tonnes of waste in Copenhagen by 2012

In Copenhagen an average of 5 kilos of waste per capita is generated every day. Waste prevention means generating less waste. Copenhageners should contribute to waste prevention by avoiding unnecessary packaging and by repairing and reusing items instead of discarding them. In the planning period communication and knowledge-sharing about waste prevention and reuse

will contribute to awareness-raising among citizens and businesses regarding the link between resource consumption and environmental burdens.

Why waste prevention and reuse is important

Many Copenhageners have had higher spending power in recent years. The negative side of this development is that waste arisings in the city have been increasing correspondingly from both households and businesses, and this trend continues. Waste prevention is therefore a key issue in Waste Management Plan 2012.

Next to all products purchased contribute to environmental impacts, since resources have been used in the manufacturing process in the form of raw materials and energy. And any product discarded as waste contributes to environmental impacts. No matter how waste is treated and how much is recycled, it is a fact that wastes not generated in the first place are better for environment and climate.

Reuse – and good facilities for reuse that citizens and businesses are satisfied with – is a significant element of prevention measures. It must be easy, for example, to give away an item after use and in this way reduce waste amounts and decrease the need for new products.

DID YOU KNOW ...

Studies show that householders on average discard food for around DKK 4,000.- yearly (EUR 550.-). This corresponds to around DKK 1 billion (EUR 135 million) in Copenhagen alone. In addition to leftovers discarded food is, for example, bread and cold cuts. Preparation, distribution and disposal of discarded food result in higher emissions of greenhouse gases such as CO₂.

REUSE AND RECYCLING

Reuse: Reuse means that the waste item is used for its original purpose – for example bottles collected, sorted, rinsed, and refilled.

Recycling: Recycling means that the waste material is used again in the production of a new product, i.e. as a resource. For example single-use bottles remelted and made into new bottles.



REUSE - Reuse of used furniture reduces waste amounts.

EXAMPLES OF INITIATIVES:

Exchange site at the City's intranet

The City of Copenhagen is the largest workplace of Denmark and wishes to be a frontrunner when it comes to waste prevention. It is therefore proposed that the City establishes an exchange site on the intranet, where the 1,500 units can exchange items.

Information campaign

The City of Copenhagen will conduct an information campaign targeting our citizens. The campaign will focus on how each Copenhagener can contribute positively to the general climate accounts by, for example, reusing items or avoiding products with unnecessary packaging.

FOCUS AREAS

Change in behaviour among consumers and producers

The City has no authority to prevent waste by rules and provisions. Therefore waste prevention must be based on voluntary action. When consumers purchase and demand goods they can request products produced with the least burden on resources and avoid unnecessary packaging. To attain this, however, a change in behaviour is called for among consumers and producers. This does not happen overnight.

As a City we can contribute to creating new attitudes by informing about impacts on environment and climate from waste. Many Copenhageners are already concerned about climate impacts. Information campaigns clarifying the link between climate and waste will therefore create awareness about waste prevention among citizens.

City's institutions as frontrunners

In the City of Copenhagen and its more than 1,500 units there are around 40,000 employees - making us the largest workplace in Denmark. This means that we can make requirements in our purchasing policy so our suppliers have to think waste prevention into their production.

Also internally we can improve our waste prevention performance. First step is to survey all waste streams and prevent waste arisings by changing routines in

the different administrations and institutions. In order to make this task a part of the City's environmental certification and crosscutting work it must be organised centrally in the City. We will also prevent waste by making it easier in the administrations internally in the City to exchange furniture and other items.

More options for reuse

Just as waste prevention, reuse also minimises waste arisings. If citizens or businesses in the city wish to discard items that may be used by others, adequate options and facilities must be available.

In the planning period initiatives will therefore be implemented creating even better options for citizens and businesses to exchange reusable items. This will take place, for example, at exchange sites at the recycling centres and through informal exchange schemes in courtyards in dialogue with caretakers.

INCREASE IN SEPARATION OF WASTE

Target: Separating 33,000 tonnes of the waste that would otherwise go to incineration in 2012 to ensure more eco-friendly treatment – corresponding to amounts for incineration being around 10 % lower compared with today



In the City of Copenhagen we have for many years had focus on waste separation at source to attain a better and more sustainable environment. Copenhageners have become good at separating their waste, but there is scope for improvement.

The City's efforts have so far concentrated on establishing and developing schemes enabling waste separation. Now these schemes are close to fully extended. So the challenge is now to have citizens and businesses use these schemes to a higher extent.

DID YOU KNOW ...

By dropping advertising material and newspapers in the paper container your paper is sent to recycling. Paper can be recycled up to five times and it saves around half the energy compared with producing virgin paper. In the recycling of 1 tonne of paper around 1 tonne of CO₂ is saved.

We will attain this primarily by enhancing our information and supervision efforts – and by using campaigns, visualising results, and making more random checks.

Why increase in waste separation is important

Waste separation is a precondition for waste recycling. What is dropped in the bin ends up in the incineration furnace – which is a loss of resources. But if newspapers and jelly jars are put into the appropriate containers they have in principle become raw materials entering a new production cycle and thus reducing resource use.

The less resource use, the less CO₂ emissions. Citizens and businesses can contribute to less CO₂ emissions – and thus taking care of our climate – by separating more waste for recycling. In this way we can all contribute to reducing environmental impacts. Also, the major part of waste management fees is levied for residual waste so money is saved by separating waste and thus reducing residual waste amounts.

Waste often contains substances constituting a risk to the environment or human health when incinerated and recycled. When waste is separated it is possible to send hazardous waste for special treatment thus avoiding contaminants ending up in the environment.



SEPARATION OF WASTE - Bottles dropped in bottle containers can be reused or recycled.

FOCUS AREAS

Knowledge and information

It is important to motivate citizens and businesses into separating their waste. To do so they need to have knowledge and understanding why it is important to separate, and not least believe that separating waste makes a difference. Through campaigns the City will give citizens and businesses the necessary knowledge about waste separation.

Separation must be easy

Experience shows that the easier it is to separate waste the better the quality and the larger the amounts of waste for recycling.

Distance to waste containers, space around them, and collection equipment are some of the factors affecting people's feelings about how easy it is to separate waste, so the City must make special efforts in these fields. For example, the City will set up containers for source separation of waste at major events in the city and conduct trials with containers for cardboard in residential neighbourhoods.

Instruments

Information and user-friendly waste solutions are means of attaining satisfactory waste separation, but it is not always enough. Enforcement of rules may be necessary. In terms of commercial waste new rules

will be implemented, among other things based on a supervision strategy. To ensure separation of waste for recycling random checks and similar will be made at treatment plants.

Hazardous waste

Batteries, paint residues, pharmaceuticals, and chemical waste are hazardous wastes. These wastes are hazardous because they contain substances harmful to human health and the environment. Therefore it is important to ensure that substances are not spread. The City of Copenhagen puts focus on separation of hazardous waste from waste for incineration or recycling. Hazardous waste must be sent to special treatment or landfill.

Construction and demolition waste and waste electronics can also contain substances that are harmful to health or the environment. It may be difficult to identify when waste contains harmful substances – therefore the City will put special focus on these wastes and how to dispose of them.

EXAMPLES OF INITIATIVES:

Construction and demolition waste

Construction and demolition waste does not always comply with quality requirements for recycling, since this waste type contains many problematic substances that are harmful to both human health and the environment. Therefore the City will in future enhance requirements for separation of such waste for landfilling or special treatment.

Collection of plastic

Incineration of plastic causes large CO₂ emissions compared with recycling of plastic. To reduce CO₂ emissions the City of Copenhagen therefore launches trials with separate collection of plastic from households.

TREATMENT SYSTEM FOR THE FUTURE

Target: Having decisions about changes in waste treatment based on a 100 % survey of present environmental impacts from treatment system

The Danish Folketing wishes increased competition, a more efficient organisation of the waste management sector, and new technologies for waste treatment. In the planning period the City of Copenhagen will adapt the treatment system to comply with the new directions.

As a local authority we will first and foremost ensure that there is sufficient capacity for incineration and landfilling of waste from the City. To solve this task we

will enhance requirements for the waste delivered at our incineration plants. We will also cooperate in the development of new treatment methods, keep focus on treatment of hazardous waste, and ensure that the City's waste treatment is assessed in a life-cycle perspective, taking all environmental aspects 'from cradle to grave' into consideration.

Why it is important to have a treatment system for the future

Increasing amounts of waste in Copenhagen put major pressure on the treatment system. All waste must be treated correctly to reduce environmental impacts as much as possible, so the City will contribute to innovation in the waste treatment field and thus guarantee a future-oriented treatment system.

As co-owner of treatment plants, waste generator, land owner, assigning authority, approving authority, and planning authority the City has a special responsibility for ensuring environmentally optimal treatment of waste for incineration or landfilling. In the design of new facilities - for incineration and landfill alike - we must therefore make sure that the largest possible respect for environment and climate is involved. This is done, among other things, by surveying overall environmental impacts from the present treatment system, thus improving our decision-basis.

DID YOU KNOW ...

Today scrap bricks are ground and recycled as gravel. Since it consumes energy to manufacture new bricks and grind used ones large amounts of energy can be saved - and with that CO₂ - if instead the entire bricks are reused. Around 20,000 tonnes of CO₂ are saved from reusing around 100,000 tonnes of brick in their entire form. Savings are realised in brickworks and in the transport to and from the City of Copenhagen.



WASTE – Increasing waste arisings in Copenhagen put major pressure on the treatment system.

EXAMPLE OF INITIATIVES:

CO₂ and shredder waste

Today shredder waste is landfilled. Shredder waste contains organic compounds and there is thus a large potential for reduced CO₂ and methane production. It will be investigated how large the reduction potential is from alternative treatment compared with today's landfill option.

FOCUS AREAS

Large municipal investments

To ensure that waste in Copenhagen is treated as environment-friendly as possible a decision about new incineration capacity in the capital area is called for. In cooperation with other local authorities in the intermunicipal companies the decision must be made how to organise capacity, including consideration of new treatment options such as co-incineration of waste at power plants and production of bio-ethanol. Future extensions of capacity must also be integrated with other sustainable measures such as geothermal energy to meet the heating needs of the City.

Capacity of the City's present landfill of AV Miljø is expected to be exhausted in 2012, and the City will establish a new landfill at Kalveboderne. It is unlikely that it will be possible in the future to establish further landfill capacity in the capital area, so it is important that the landfill at Kalveboderne is designed and operated in a way to give it as long a useful life as possible. One of the ways of doing so is to establish a control area making it possible to control reception of waste.

Through a modernisation of the intermunicipal reception centre for hazardous waste the City of Copenhagen will ensure treatment capacity of the City's hazardous waste from households and small businesses. The challenge in the planning period will be to ensure innovation in this treatment and to prepare the facility for the new market conditions when waste producers can choose freely their treatment facility.

Waste treatment 'on site'

These days, large amounts of surplus soil are excavated in Copenhagen. The City must ensure that soil, which can be recycled, is used as a resource in the city, for example in the Nordhavnen area. Details of organisation and financing model will be clarified in the planning period – including provisions for new deposits. The City must also ensure that soil posing health and environmental hazards is removed and treated to the highest possible extent, thus reducing risks to citizens and the environment. To avoid unnecessary transport the City will work for crushing and recycling of debris on site, as far as possible.

Import and export

For special fractions – recyclables as well as hazardous wastes – it is important to look beyond Denmark to find new treatment options that are ethically justifiable and sustainable. Due to increasing waste amounts focus will also be on control of import and export of waste.

Environmental impacts from waste management

In the future, the City will use the environmental assessment software EASEwaste to compare environmental impacts from different treatment options. The programme will be used in cooperation with incineration plants and other local authorities.

INNOVATIVE WASTE SOLUTIONS IN URBAN SPACES

Target: Deciding and starting implementation of at least five new waste solutions in the urban spaces

To become the Eco-Metropolis of the world in 2015 Copenhagen must be a first-mover in environmental initiatives within all fields. Continuous development of new waste solutions combining environmental concerns with aesthetic and economic aspects can contribute to meeting this vision.

In the planning period we will survey, develop and implement innovative waste solutions in urban spaces, on

private outdoor areas, and at recycling centres. These efforts must improve citizens' satisfaction with the waste system and will take place in a partnership with suppliers of waste solutions, developers, and businesses.

Why innovative waste solutions are important

Copenhagen is a metropolis where free areas are precious and in demand for recreational purposes, among other things. Since waste collection equipment and management is space-demanding it is important to design solutions that maintain the attractiveness of urban spaces. This puts high demands on equipment at streets and squares and for recycling centres.

In the planning period we will develop and evaluate waste collection to ensure innovative waste solutions. The new solutions of the City must be climate-friendly and contribute to embellishment of urban spaces. Therefore we will, among others, investigate the possibility of fitting solar cells on containers in order to compact waste. In addition, new methods for waste collection will be investigated, such as underground containers and vacuum waste systems for both street waste and domestic waste from households. This will also lead to fewer nuisances to residents from collection.

If recycling centres and local drop-off stations are neat citizens will become more motivated to use them and better at separating waste. We will therefore embellish existing centres.

DID YOU KNOW ...

Three very popular recycling centres are located in the City of Copenhagen: at Vermlandsgade (Hejredalsvej), Kulbanevej and Vasbygade. In 2007 the recycling centres had 525,000 visitors.

DEFINITION OF MOBILE AND STATIONARY VACUUM WASTE SYSTEMS

Mobile vacuum system: In the mobile system waste is collected in tanks after which a special suction vehicle collects waste. The mobile system is typically established for one property or block of flats. It has been established in many new buildings in recent years.

Stationary vacuum system: In the stationary system waste is sucked in a pipe system to a terminal where it is normally compacted and gathered in a container, which is emptied by an ordinary hook-lift vehicle. The terminal can for instance be located in conjunction with a local drop-off station. Stationary systems are found in three locations in Copenhagen: Nyhavn, Havnestaden (Islands Brygge) and Sluseholmen.



WASTE SOLUTIONS - New waste solutions must take both aesthetic and economic concerns into consideration.

EXAMPLES OF INITIATIVES:

Free newspapers

In cooperation with private actors the City of Copenhagen will improve collection of free newspapers, for example by developing and setting up containers for recyclable paper. The containers will be located, for example, at key traffic locations. In 2006 2,400 tonnes of free papers were distributed in the Copenhagen S-trains alone.

Investigation of underground waste containers

Underground containers for example for paper, cardboard and beverage containers give a larger volume of collection equipment without being particularly visible in the streets. Waste must not necessarily be hidden away, but with underground containers the possibilities of fitting in waste systems in the urban spaces are improved. Therefore the possibilities of establishing underground containers for paper, cardboard or beverage containers will be investigated.

FOCUS AREAS

New solutions in existing urban spaces

Life in the streets and extensive use of our parks generate more waste - and thus enhanced needs for waste separation - in the public space. Since the public space must remain attractive waste collection equipment must be developed that fits the urban picture naturally in terms of separation, capacity, and visual presentation.

Also in courtyards neat waste solutions must be found, so the recreational value of the courtyards can be utilised as much as possible.

Innovative solutions in new urban development areas

The City of Copenhagen gets more and more inhabitants and new urban areas - and consequently more waste. We will work for incorporation of new waste solutions when urban areas are being developed.

For example, the City will investigate the possibility of using marine transport of waste from some of the new development areas located on the coastline, such as from Nordhavnen district to the incineration plant on the island of Amager.

Development of recycling centres and local drop-off stations

Recycling centres are important facilities for the collection of waste from households and businesses with small amounts of waste. Waste amounts and number of visitors are on the increase at the recycling centres of the City. Therefore, we need to have more such centres despite the high costs in a densely populated city

like Copenhagen. On the other hand this may reduce transport through the city. Also, establishment of more local drop-off stations will give citizens the option of delivering recyclables in their local community. Local drop-off stations must be established in a dialogue with local committees, our Agenda centres, and other relevant stakeholders.

To motivate citizens into using the centres it is important that capacity is sufficient. Furthermore, to visualise the environmental aspect associated with recycling centres we will work on their visual presentation, for example through establishment of solar panels.

Vacuum waste systems

Collection of waste in vacuum systems - mobile or stationary - gives a number of benefits for occupational health and urban environment. However, vacuum waste systems may have a negative impact on climate due to energy consumption. In the planning period the different aspects associated with vacuum waste systems will be investigated and trials will be carried out.

TENDER FOR COLLECTION AND TREATMENT OF WASTE

Target: Ensuring smooth transition from monopolistic situation to competition for clients, R98 staff, and the City

Since 1964 Renholdningsselskabet af 1898 (R98 – Waste Disposal Company of 1898) has had a monopoly of collection of household waste in the City of Copenhagen. Lately, this agreement has been under pressure – not least from competition authorities. Therefore it was decided to put up collection assignments for tender in 2009-2011, having them assigned to private waste carriers.

Furthermore, the City will tender treatment of garden waste, beverage containers, and bulky waste from households.

Why tendering of collection and treatment of waste is important

It is a novelty that collection of waste is up for tender in Copenhagen, and it is the largest tender in the waste sector in the history of Denmark. The vision is to ensure for Copenhageners the world's cleanest and most efficient system for collection of household waste. One of the targets is to reduce impacts on environment and climate from waste collection as much as possible and to ensure satisfied citizens. In the planning period the target is to ensure optimum transition from R98 to private carriers.

The City has focus on quality, environment, and working environment and therefore it is important that agreements between the City and new carriers set up the best possible framework for good cooperation. Through a combination of close cooperation and stringent contract management the City will supervise that citizens get the quality they are entitled to. The City furthermore wishes a close dialogue with citizens.

Through tendering of waste treatment and sale of recyclable waste the City can ensure optimum resource recovery and minimal environmental impact. For example, it is essential to ensure that recycling is not sub-standard and that problematic wastes do not end up in the wrong places. Waste for incineration, landfill and hazardous waste etc. will as hitherto be managed by the intermunicipal companies co-owned by the City.

DID YOU KNOW ...

The tender period for collection of household waste in Copenhagen is three years.

The 2008 tender covers: Collection of domestic waste, bulky waste, paper, batteries, and cardboard in the districts of Vanløse, Valby, Brønshøj-Husum, and Bispebjerg. Collection of garden waste in the entire city. Collection of beverage containers in the entire city.

The 2009 tender covers: Collection of domestic waste, bulky waste, paper, batteries, and cardboard in the districts of Nørrebro and Østerbro.

The 2010 tender covers: Collection of domestic waste, bulky waste, paper, batteries, and cardboard in the districts of Inner City, Vesterbrogade/Kongens Enghave, Amager East, and Amager West. Furthermore, collection of hazardous waste in the entire city and a number of special assignments such as vacuum systems, micro-vehicles, special containers etc. in the entire city.



R98 - The monopoly of the Waste Disposal Company of 1898 for collection of household waste is being phased out.

EXAMPLE OF INITIATIVE:

Dialogue network for stakeholders and user groups

The City wishes to discuss issues regarding waste collection with stakeholders and user groups, environmental groups, local committees, plot owner associations etc. and with professional users (caretakers, administrators of housing associations etc.). For this purpose, permanent networks will be created where the City can discuss waste-related issues. Issues may deal with, for example, waste separation, location of containers/racks, eco-friendly waste solutions, signs and information, occupational health and safety, and development of the City's waste schemes.

FOCUS AREAS

Quality and service

The tender strategy focuses on citizens as customers. Citizens should experience a high level of service, good quality, and constant environmental improvements. One of the initiatives in the planning period is therefore to prepare a waste service strategy. Offset will be taken in continuous customer dialogues and regular citizen satisfaction surveys.

The City of Copenhagen will emphasize that quality and service towards citizens is maintained at a high level when waste collection passes over to private carriers. However, we do expect a transition period during which citizens, the City, and the new contractors must get used to the new cooperation. Efforts for new solutions will be made liable to give a better environment and higher efficiency.

Environmental impacts from collection, treatment and transport

The largest environmental impact from collection of household waste derives from the collection vehicle, for example in the form of exhaust gases and use of auxiliaries such as hydraulic oil. Today all waste collection vehicles are equipped with motors complying with Euro norms as well as with particle filters.

The City of Copenhagen in our tenders will emphasise that future carriers work focusedly to reduce environmental impacts and that in their purchase of new equipment they follow most recent environmental standards. In this way the City wishes to reduce CO₂ emissions as well as other environmentally harmful exhaust gases.

Knowledge-building and market focus

In connection with the tender for waste collection the City has a new role as tenderer and contract holder. Therefore, we need to ensure follow-up on contracts and quality assurance systems. And to have a current dialogue with the new carriers about how tasks are solved.

In the planning period the City will build knowledge and competences regarding operating technology, new methods, and innovation in the sector, enabling us continuously to update requirements and wishes in connection with new tenders and conduct of trials. Naturally we will also follow developments in markets and technology.

The City will also make sure to build relevant knowledge about treatment of waste. This will be done through requirements to the effect that the City can follow new treatment plants' environmental impacts and recycling efficiency.

INITIATIVES OF WASTE MANAGEMENT PLAN

MORE WASTE PREVENTION AND REUSE

FOCUS AREAS	INITIATIVES	
Change in behaviour among consumers and producers	1. Information about waste prevention and climate 2. Enhanced cooperation with businesses	3. Partnership with retail trade 4. Campaign about 'No unsolicited mail please'
City's institutions as frontrunners	5. General project about waste prevention in the City 6. Survey of waste prevention impact on CO ₂ burden	7. Requirement for less packaging in City's purchasing agreements 8. Exchange site on City's intranet
More options for reuse	9. Exchange centres at all recycling centres 10. Exchange centre for C&D waste 11. Information about reuse websites	12. 'Flea market' at Copenhagen Climate Festival 13. Guidance on exchange centres in courtyards 14. New recycling centres and drop-off stations for reusable materials

INCREASE IN SEPARATION OF WASTE

FOCUS AREAS	INITIATIVES	
Knowledge and information	15. Industry campaign about packaging waste 16. Information material in Polish about C&D waste 17. Information material about food waste 18. Information close to citizens	19. Paper campaign for single-family houses 20. Information about new waste regulations 21. Enhanced cooperation with caretakers
Separation must be easy	22. Establishment of drop-off stations for municipal institutions 23. Provision of more cardboard containers 24. Containers for storage of small waste fractions	25. Separate collection of plastic from households 26. Location of plastic film and cardboard containers upon occupation 27. Source-separation of waste electronics, iron and metal in multi-storey buildings
Instruments	28. Efforts for most waste-intensive industries 29. Supervision of industries with large amounts of plastic 30. Contact with newly established industries 31. Waste separation for businesses in housing estates	32. Multi-annual supervision strategy 33. Economic incentives through taxes and fees 34. Environmental diplomas, checklists and tips 35. Review of buildings before demolition
Hazardous waste	36. Requirement for documentation for C&D waste 37. Survey of industries with hazardous waste 38. PCB campaign upon window replacement 39. Campaign about waste electronics	40. Information about separation of hazardous waste in multi-storey buildings 41. Assessment of 'green vehicle' scheme 42. Follow-up on box scheme 43. Campaign for battery scheme

TREATMENT SYSTEM FOR THE FUTURE

FOCUS AREAS	INITIATIVES	
Large municipal investments	44. Increased control at treatment plants 45. Investigation of extension of I/S Vestforbrænding 46. Investigation of substitute capacity at I/S Amagerforbrænding	47. Feasibility study of merger of incineration plants 48. I/S SMOKA and future-oriented treatment of hazardous waste 49. Control and new treatment methods for waste to landfill
Waste treatment 'on site'	50. Safeguarding treatment and landfill capacity for contaminated soil in Nordhavnen 51. Utilisation of surplus soil from building and construction projects	52. Development of treatment techniques for contaminated soil 53. Temporary separation areas at construction sites
Import and export	54. Supervision and enforcement of export of waste	55. Treatment of waste abroad
Environmental impacts from waste management	56. Use of EASEwaste as decision-making tool	57. Survey of CO ₂ reduction potential in management of shredder waste

INNOVATIVE WASTE SOLUTIONS IN URBAN SPACES

FOCUS AREAS	INITIATIVES	
New solutions in existing urban spaces	58. More packaging types and new containers 59. Events etc. in the city 60. Improved collection of free newspapers	61. Cooperation with fast-food stores etc. 62. Better waste solutions in courtyards
Innovative solutions in new urban development areas	63. Alternative waste haulage in new urban development areas	64. Underground waste containers 65. Room for waste in urban development areas
Development of recycling centres and local drop-off stations	66. Establishment of two new recycling centres 67. Improvement of three existing recycling centres 68. Survey of possibilities for establishing larger recycling centre	69. New forms of recycling centres 70. More local drop-off stations
Vacuum waste systems	71. Evaluation of vacuum waste systems 72. Trial regarding vacuum waste systems for household and street waste	73. Investigation of vacuum waste system for paper

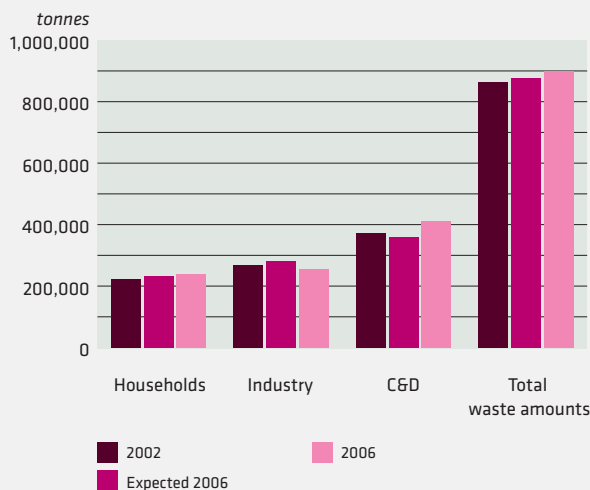
TENDER FOR COLLECTION AND TREATMENT OF WASTE

FOCUS AREAS	INITIATIVES	
Quality and service	74. Preparation of waste service strategy focusing on customers 75. Follow-up on cooperation agreements 76. Development of incentives for high quality and high customer service	77. Network for dialogue for stakeholders and user groups 78. Regular citizen satisfaction surveys
Environmental impact from collection, treatment and transport of waste	79. Highest standard for environment, occupational health and traffic safety in replacement/procurement of vehicles 80. Focus on environment, fuel efficiency and reduction of CO ₂ emissions	81. Requirements for tyres and hydraulic oils in tender documents and supplier contracts
Knowledge-building and market focus	82. Gathering of knowledge about new methods and technical solutions 83. Launch of development initiatives in supplier contracts	84. Continuous market focus

SURVEY AND FORECAST



AMOUNTS AND COMMERCIAL SOURCES - SURVEYED AND FORECAST OF WASTE MANAGEMENT PLAN 2008



Waste reflects economic activity in society, but changed consumption and commercial patterns can play an even more important role. Total waste arisings in the City of Copenhagen have shown modest increases since Waste Management Plan 2008 of around 1 % yearly. This is significantly below economic growth, which attains around 5 %.

Survey 2002-2006

The figure to the left shows waste arisings in 2002 and 2006 in Copenhagen – along with expected (forecast) amounts in Waste Management Plan 2008. Amounts of household waste increased as expected moderately in 2002-2006. Amounts of waste from businesses decreased while construction and demolition waste amounts increased steeply. The decrease in amounts of industrial waste is primarily due to more precise surveys and relocation of manufacturing industry out of the city. Increasing amounts of construction and demolition waste are due to vivid building activity. Waste amounts in this sector are typically very difficult to forecast.

Overall, waste arisings in 2006 were larger than expected in Waste Management Plan 2008, since the level of activity in the construction sector (including demolition) has generated large waste amounts.

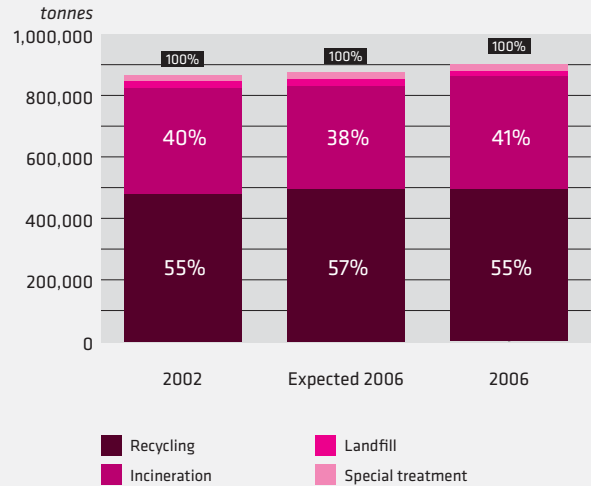


CORRUGATED BOARD - More cardboard and paper than expected in Waste Management Plan 2008 was incinerated.

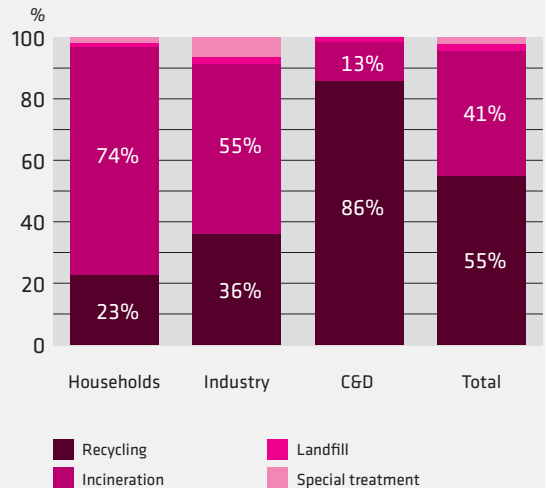
As it appears from the figures to the right recycling in 2006 was largely as expected in Waste Management Plan 2008. Initiatives in Waste Management Plan 2008 directed at industries did not result in the expected increase in recycling. In return, increasing amounts of construction and demolition waste have contributed to the recycling performance.

Amounts for incineration increased despite an expected decrease in Waste Management Plan 2008. Increasing amounts are due to more paper and cardboard than expected being incinerated. Total landfilling was lower than expected, among other factors since less waste is landfilled further to construction and demolition works.

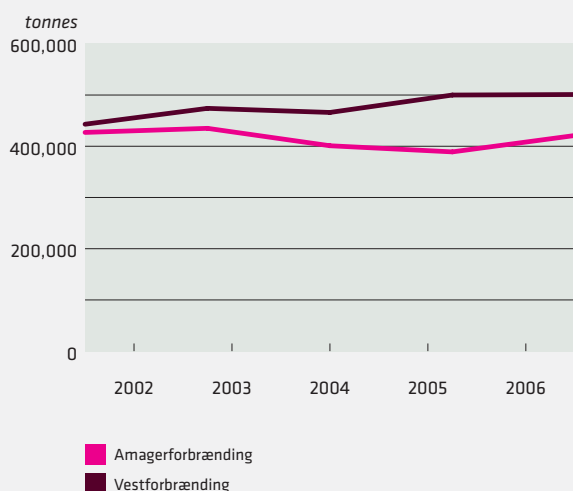
AMOUNTS AND TREATMENT OPTIONS - SURVEYED AND EXPECTED IN WASTE MANAGEMENT PLAN 2008



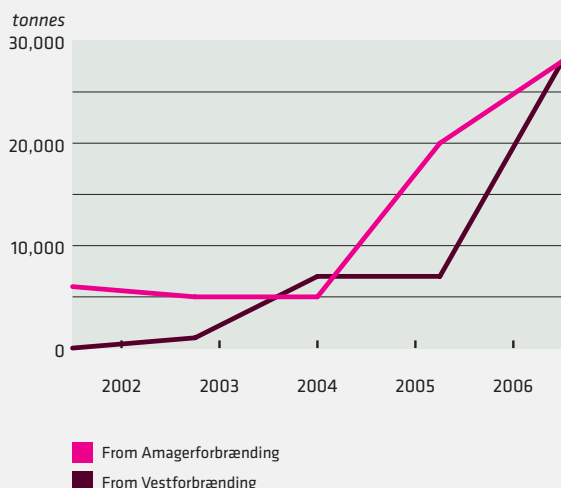
TREATMENT OPTIONS DISTRIBUTED ON HOUSEHOLDS, INDUSTRY AND C&D (2006)



WASTE SUITABLE FOR INCINERATION INCINERATED AT AMAGERFORBRÆNDING AND VESTFORBRÆNDING



WASTE SUITABLE FOR INCINERATION FOR TEMPORARY STORAGE AT AV MILJØ



Treatment capacity

Waste suitable for incineration from the City of Copenhagen is sent to one of the two incineration plants: I/S Amagerforbrænding or I/S Vestforbrænding. The City of Copenhagen owns these two plants together with other surrounding local authorities.

The figures to the left show total amounts incinerated and in temporary storage at the two incineration plants in 2002-2006. This waste derives from all the municipalities affiliated to the two facilities.

Due to increasing waste arisings in the entire region increasing amounts of waste were sent in temporary storage in view of subsequent incineration. Both Amagerforbrænding and Vestforbrænding have been granted an exemption in the planning period 2005-2008 for incinerating increasing amounts of waste.

Waste for landfill (and temporary storage) is received at AV Miljø in the suburb of Hvidovre. The facility had a remaining volume by the end of 2008 of around 500,000 m³. It thereby has an expected lifetime up to around 2012. In addition, 857,000 tonnes of contaminated surplus soil arose in the City of Copenhagen in 2006.

Forecast - waste amounts 2009-2020

Based on past developments in waste amounts we have made a forecast of developments in amounts in the future. The forecast builds on demographic growth in the city and selected economic parameters, which from experience are associated with waste generation. The forecast has been adjusted to take into consideration the effect of the initiatives in the Waste Management Plan for waste prevention and increase in separation. All initiatives will be running up to 2012.

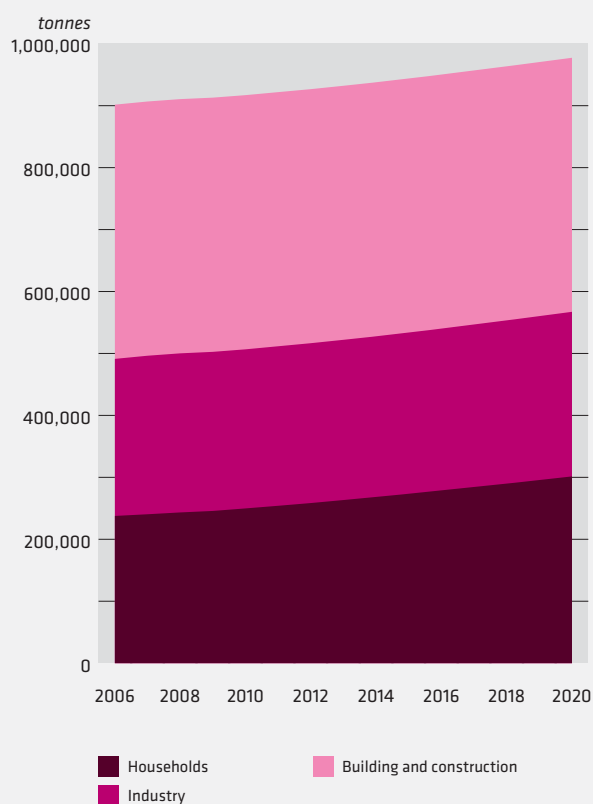
As it appears from the below figures we expect in the planning period an increase in amounts of household waste, among other things due to an increase in number of residents in the city. We also expect increasing amounts from industries relating to the service sector while the level arising from building and construction is expected to remain stable.

Total waste amounts are expected to increase by around 25,000 tonnes in the planning period up to 2012, regardless of the efforts made within waste prevention.

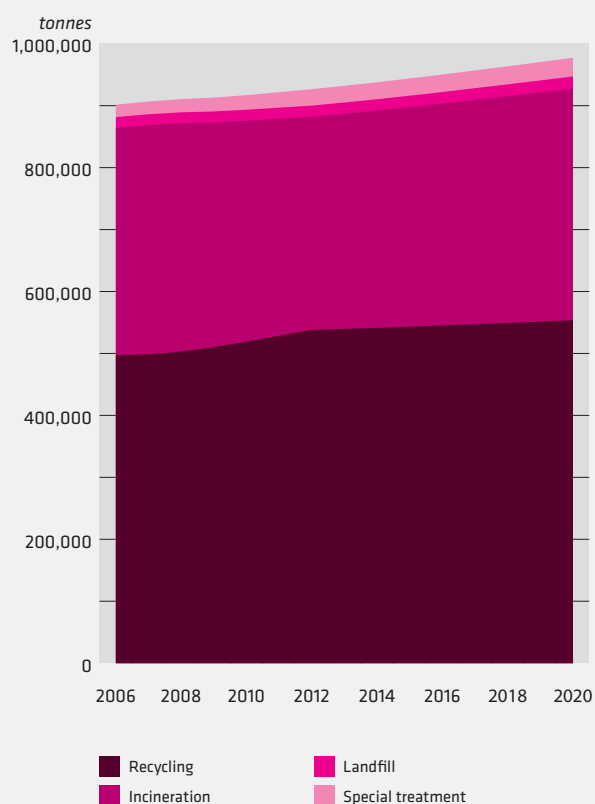
The initiatives of the Waste Management Plan regarding increase in separation will lead to increased recycling of 33,000 tonnes in 2012. More details on expected developments appear from the below figure.

Surveyed amounts and forecasts broken down on fractions, waste types etc. can be found in the electronic waste management plan on www.kk.dk/affaldsplan (Danish only).

WASTE SOURCES 2006-2020



TREATMENT OPTIONS 2006-2020



FINANCES

Around DKK 486 million or EUR 65 million (2007 figures) are levied in waste management fees from Copenhagen's plot owners - with three different fee types:

- Fee covering collection and treatment of household waste - also called tariffs
- Fee covering fixed contribution to municipally owned incineration plants
- Fee covering municipal expenses for planning and administration of waste schemes.

To increase transparency in municipal waste management fees the fee structure in Copenhagen will be changed - see figure below. This change will mean a conversion of fee levying so that fees are levied separately for private households and businesses. The conversion also means that fees are levied for specific fields.

Expenses in planning period

In the planning period collection and treatment of waste will be up for tender, and it is therefore difficult to assess the future level of expenses. The period will be marked by agreements with new contractors. At the same time, R98 must be wound up in a sensible manner.

A major project concerning waste prevention and reuse will be conducted. Funds for this project will be found in the administration fee.

The City has assigned operation and establishment of recycling centres to I/S Amagerforbrænding. Fees to cover these expenses are paid to Amagerforbrænding in relation to number of inhabitants. We also pay a fee to I/S Vestforbrænding as part of an agreement between the local authorities regarding common use of recycling centres in the entire area.

PROPOSED NEW FEE STRUCTURE

FEE AREA	YIELD	DISTRIBUTION BETWEEN BUSINESSES AND PRIVATE HOUSEHOLDS			
	DKK MILLION (EUR)	HOUSEHOLDS DKK MILLION (EUR)	HOUSEHOLDS %	BUSINESSES DKK MILLION (EUR)	BUSINESSES %
Domestic waste	266 (36)	266 (36)	100	-	-
Garden waste	13 (1.8)	13 (1.8)	100		
Bulky waste	59 (8)	59 (8)	100		
Cardboard, paper, beverage containers	31 (4.2)	31 (4.2)	100	-	-
Recycling centres	65 (8.8)	39 (5.3)	60	26 (3.5)	40
Hazardous waste	13 (1.8)	11,3 (1.5)	87	1,7 (0.2)	13
Health-care risk waste	2 (0.3)	-	0 (0.3)	2	100
Administration	37 (5)	16,7 (2.3)	45	20,3 (2.7)	55
Total	486 (65.7)	436 (58.9)		50 (6.8)	

The table has been drawn up based on figures from 2007. Actual distribution of costs on different fee areas and between businesses and private households may be different in 2009.



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The Technical and
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