



Copenhagen  
Carbon Neutral  
by 2025

# CPH 2025 CLIMATE PLAN

A GREEN, SMART AND  
CARBON NEUTRAL CITY



# CPH 2025



**“WITH THE CLIMATE PLAN, WE ARE INVESTING IN GROWTH AND QUALITY OF LIFE; COPENHAGENERS WILL HAVE A BETTER DAILY LIFE. THE INVESTMENTS ARE ENSURING JOBS NOW - AND THE NEW SOLUTIONS ARE PROVIDING THE FOUNDATION FOR A STRONG GREEN SECTOR.”**

A handwritten signature in black ink, which appears to read 'Frank Jensen'.

Lord Mayor of Copenhagen, Frank Jensen



**“A CARBON NEUTRAL CAPITAL WILL ONLY BECOME A REALITY WITH SUPPORT AND COMMITMENT FROM COPENHAGENERS. WE MUST CHANGE OUR DAILY LIVES AND OUR HABITS. THE REWARD WILL APPEAR IN THE FORM OF A NUMBER OF ENVIRONMENTAL BENEFITS SUCH AS CLEAN AIR, LESS NOISE AND GREATER QUALITY OF LIFE.”**

A handwritten signature in black ink, which appears to read 'Ayfer Baykal'.

Mayor of the Technical and Environment Administration,  
Ayfer Baykal



**COPENHAGEN -  
CARBON NEUTRAL  
BY 2025**

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## CPH 2025 CLIMATE PLAN: A HOLISTIC PLAN

THE CPH 2025 CLIMATE PLAN IS A HOLISTIC PLAN AS WELL AS A COLLECTION OF SPECIFIC GOALS AND INITIATIVES WITHIN FOUR AREAS - ENERGY CONSUMPTION, ENERGY PRODUCTION, GREEN MOBILITY AND THE CITY ADMINISTRATION. WORK IN THE FOUR AREAS MUST BE SET IN MOTION IMMEDIATELY FOR COPENHAGEN TO BECOME THE WORLD'S FIRST CARBON NEUTRAL CITY.

THE CPH 2025 CLIMATE PLAN DESCRIBES HOW OUR AMBITIONS FOR CARBON NEUTRALITY SHOULD BE USED AS LEVERAGE FOR A BETTER QUALITY OF LIFE, INNOVATION, JOB CREATION AND INVESTMENT IN GREEN TECHNOLOGIES, AND HOW THE GOAL OF CARBON NEUTRALITY CAN BE ACHIEVED BY 2025 THROUGH CLOSE COOPERATION BETWEEN PUBLIC AUTHORITIES, BUSINESSES, KNOWLEDGE INSTITUTIONS AND COPENHAGENERS.

## **COPENHAGEN – CARBON NEUTRAL BY 2025**

As a metropolis and capital, Copenhagen can and must take its share of the responsibility for climate change. At the same time, we must show that it is possible to combine growth, development and increased quality of life with the reduction of CO<sub>2</sub> emissions, so that by 2025 we will be able to call ourselves the world's first carbon neutral capital. It is about finding solutions that are smarter, greener, healthier and more profitable: solutions that do not make it more expensive to be a Copenhagener, yet promote green growth and enhance the quality of life for the individual citizen.

Work done to become the world's first carbon neutral city is not only a gain for the climate and environment. The initiatives will have positive effects on Copenhageners' lives generally as well as on an everyday basis. Copenhagen is now internationally recognized and designated as one of the world's best cities to live in. It's safe, inspiring and diverse, with a mixture of old and new buildings, green spaces where you can fill your lungs with fresh air and people who actively use its urban spaces. And it must continue to be so in 2025, when we can expect up to 110,000 more Copenhageners.

A population growth of 20 % requires major infrastructural change in Copenhagen. At the same time, these changes will give the city the opportunity both to become carbon neutral and create green growth. Since 1990, carbon emissions have been reduced by more than 40 %, while over the same period there has been a real growth of around 50 %. Copenhagen and the Capital Region are now the front runners in the green Danish economy. This position will accelerate and expand in the years ahead and our ambition is to make Copenhagen an international centre for cleantech companies. With a carbon neutral Copenhagen, Danish companies will have a unified platform to demonstrate and showcase green, Danish technologies. This will not be the case just for embryonic projects and demonstration facilities on a smaller scale, but in a full-scale metropolis, where technologies are in a symbiosis with solutions, showing their strength both separately and together at the same time.

Copenhagen is ready to make the city available as a green laboratory and, with the CPH 2025 Climate Plan, is prepared to meet the climate challenge and take the step towards a carbon neutral Copenhagen by 2025.

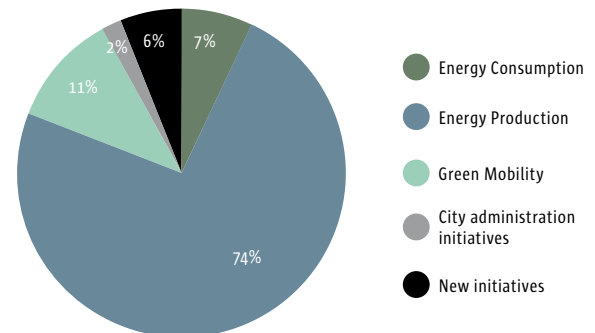
## **CARBON EMISSIONS MUST BE REDUCED BY 1.2**

### **MILLION TONS**

Climate action has been in full swing in Copenhagen since 2009, when the Copenhagen Climate Plan up to 2015 was adopted. The initiatives which were launched have contributed to substantial CO<sub>2</sub> reductions. The goal of a 20 % reduction by 2015 was already achieved by 2011, when CO<sub>2</sub> emissions were reduced by 21 % compared to 2005.

Today, Copenhagen emits 1.9 million tons of CO<sub>2</sub>. By 2025, this will have fallen to 1.2 million tons due solely to a number of planned activities, such as switching from coal to biomass in combined heat and power plants in the Capital Region and because of the conditions in the existing legislation on energy and transport.

In order to become carbon neutral by 2025, the city must use less energy than it does today and at the same time divert energy production to green energy. In addition, a surplus of green energy must be produced to offset the emissions that will continue to be generated from for example transport.



//Distribution of the CO<sub>2</sub> reduction in 2025 caused by the initiatives in the climate plan.

# ENERGY CONSUMPTION







**MAJOR GOALS FOR 2025**

- // 20 % REDUCTION IN HEAT CONSUMPTION, COMPARED TO 2010.
- // 20 % REDUCTION OF ELECTRICITY CONSUMPTION IN COMMERCIAL AND SERVICE COMPANIES, COMPARED TO 2010.
- // 10 % REDUCTION OF ELECTRICITY CONSUMPTION IN HOUSEHOLDS, COMPARED TO 2010.
- // INSTALLATION OF SOLAR CELLS CORRESPONDING TO 1 % OF ELECTRICITY CONSUMPTION IN 2025.

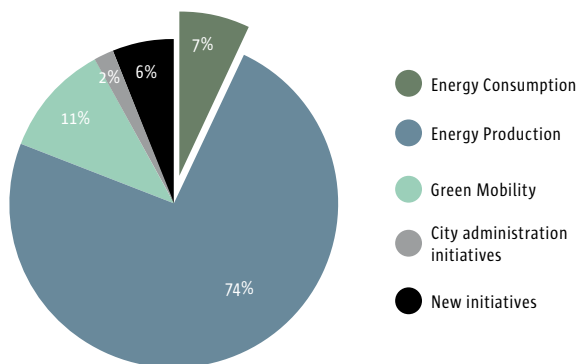


## THERE IS GREAT POTENTIAL TO MAKE EXISTING BUILDINGS MORE ENERGY EFFICIENT IN COPENHAGEN, SINCE 70% OF BUILDINGS WERE BUILT BEFORE THE FIRST BUILDING REGULATIONS WERE PASSED.

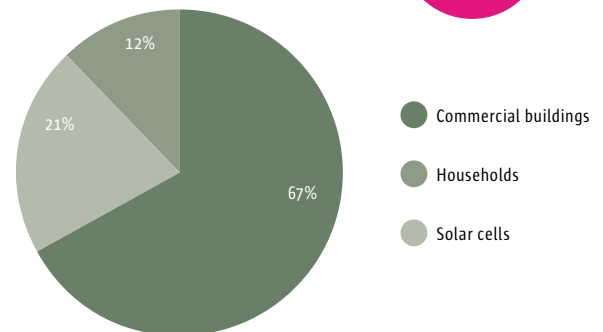
In 2010, heat and electricity consumption in Copenhagen caused the equivalent of 75 % of the total CO<sub>2</sub> emissions in Copenhagen. In the expectation that Copenhagen will grow by nearly 110,000 residents by 2025 and provide space for 20,000 new jobs, there is a pressing need to ensure that the city and those people using its facilities act as efficiently as possible with the resources.

To ensure that resources are used as efficiently as possible, the CPH 2025 Climate Plan will pave the way for significant energy reductions in both residential and commercial construction. The initiative will be comprehensive and cover all sectors in Copenhagen.

### SHARE OF TOTAL CARBON REDUCTION



### ALLOCATION OF REDUCTIONS FROM ENERGY CONSUMPTION INITIATIVES



**80.000  
TONS CO<sub>2</sub>**

**COPENHAGEN MUST BE DEVELOPED INTO A SMART CITY WITH IMPROVED OPPORTUNITIES FOR FLEXIBLE ENERGY CONSUMPTION**

## **MAIN INITIATIVES**

- Improvement of building structures and conditions, including the development and testing of a new financial model for the implementation of energy savings as well as continuing to work to change legislation towards an increased level of energy efficiency
- Energy efficient buildings in Copenhagen. Procedures and guidelines must be established, as well as funds targeted for increased climate retrofitting. Regulation of heat and domestic water supplies must be secured. A model for energy savings in commercial and service companies must be developed, tested and implemented.
- Motivate and support the dissemination of solar cells.
- Establish an organization of interested stakeholders to ensure that accumulated knowledge and experience in energy efficient building is collected at an appropriate point in time and disseminated to interested parties.
- The City of Copenhagen wants to create lighthouse projects both in new low energy constructions and energy retrofitting. A green growth partnership needs to be set up to contribute to the construction of private lighthouse buildings.
- Copenhagen must be developed into a SMART city. A digital infrastructure must be laid down for public data for electricity and heat consumption, the opportunities for flexible energy consumption must be improved, the concept of the smart building must be disseminated and the framework for the use of on shore electricity for cruise ships must be improved.

## **ECONOMY**

When coal is phased out in favour of biomass in the future of district heating in Copenhagen, heating will become more expensive, seen from an economic point of view. So, major economic benefits can be gained by reducing energy consumption in buildings. This also means that investment in new energy production can be minimised.

The City of Copenhagen's total cost for implementing the initiatives that will form the basis of the reduction of energy consumption in buildings in Copenhagen is expected to be at least DKK 170 million up to the year 2025. This implies amongst other things, concept and model development as well as funds for demonstration projects.

There will be a total economic saving of about DKK 1.6 bn by reducing heat consumption by 20 % and electricity consumption by 20 % respectively in companies and 10 % in households. An average household will save about DKK 350 per month when these goals are achieved.

The total investment in new construction and retrofitting of existing buildings will require investments of up to DKK 180 bn up to 2025. From now up to 2025, it is expected that 6.8 million sq meters of new buildings will be constructed in Copenhagen, which will mean an investment of around DKK 130 bn. When new buildings are constructed today to meet the highest specifications in building regulations, costs may increase by up to 5 %, corresponding to a total additional cost of up to 6 bn. The cost of low energy buildings is expected to adapt rapidly to the current level.

At the current rate of retrofitting, the equivalent of 11.3 million sq meters will be retrofitted up to 2025. This will mean an investment of around DKK 40 bn. If the rate of retrofitting is increased by half a percentage point, which is the Climate Plan's goal, a total of 13.7 million sq meters will be retrofitted. This will entail additional investments of around DKK 8 bn. Of these, investment in extra energy retrofitting represent DKK 3.6 bn.

The total investment in solar cells in the private sector is estimated to be at least DKK 425 million up to 2025.



# ENERGY PRODUCTION





## MAJOR GOALS FOR 2025

- // DISTRICT HEATING IN COPENHAGEN IS CARBON NEUTRAL.
- // ELECTRICITY PRODUCTION IS BASED ON WIND AND BIOMASS AND EXCEEDS TOTAL ELECTRICITY CONSUMPTION IN COPENHAGEN.
- // PLASTIC WASTE FROM HOUSEHOLDS AND BUSINESSES IS SEPARATED.
- // BIOGASIFICATION OF ORGANIC WASTE.



## COPENHAGEN MUST ENSURE THAT ELECTRICITY PRODUCTION BASED ON WIND, BIOMASS, GEOTHERMAL ENERGY AND WASTE, EXCEEDS IN TOTAL THE CITY'S ELECTRICITY CONSUMPTION.

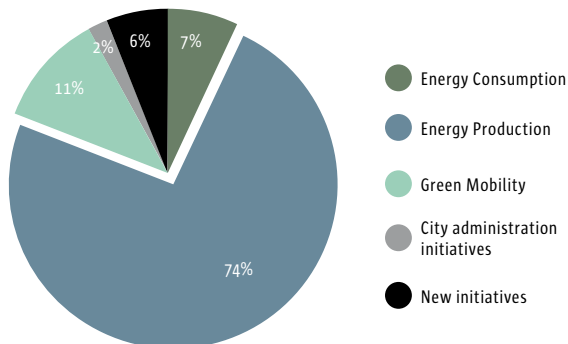
By 2025, Copenhagen's production of electricity and heating will be mainly based on wind, biomass, geothermal energy and waste. The goal is to make district heating for Copenhageners carbon neutral by 2025. Additionally, Copenhagen will establish electricity generation based on renewable energy which in total exceeds the city's electricity consumption.

Energy production combining several different renewable energy sources ensures flexibility in the energy system, making it possible to meet the varying energy needs Copenhageners and the city's businesses have throughout a twenty-four hour period. In this way,

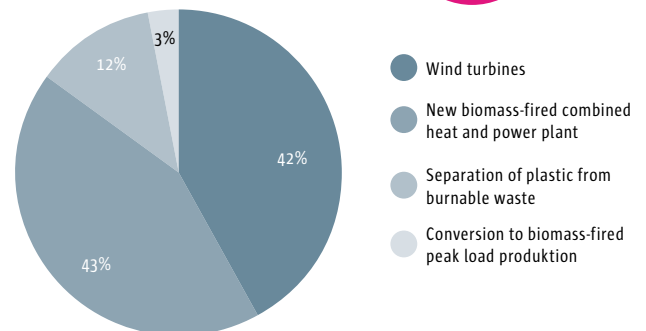
energy resources are best utilised and the reliance on the individual sources of energy is reduced .

As well as benefitting the climate and the environment globally and locally, the switch over of energy production offers opportunities for green jobs. Partly in relation to the conversion to already developed energy technologies, partly in relation to the development and demonstration of future green energy solutions in the world's major cities.

### SHARE OF TOTAL CARBON REDUCTION



### ALLOCATION OF REDUCTIONS FROM ENERGY PRODUCTION INITIATIVES



**855.000  
TONS CO<sub>2</sub>**

## **MAIN INITIATIVES**

### **100 WIND TURBINES BEFORE 2025**

More than 100 wind turbines are scheduled to be installed by 2025, with a total capacity of 360 MW. The work includes the installation of wind turbines both inside and outside the municipal boundary as well as onshore and offshore:

- Seven wind turbines will be built on Prøvestenen and Kalvebod Syd in 2012/13. The City of Copenhagen attaches great importance to anchoring activities and initiatives in the local community as well as involving the citizens. For this reason, Copenhageners will be given the opportunity to buy shares in wind turbines - initially in wind turbines in Copenhagen. An investigation will also be carried out as to how businesses in Copenhagen can have an opportunity to contribute actively to the development of renewable energy.
- Copenhagen Energy will find suitable locations in other municipalities and negotiate with the owners of the sites.
- Coastal offshore wind turbines near the coast will also be built in the Sound (Øresund). This includes a series of development projects as well as an agreed accounting model at national level.
- Copenhagen Energy has been mandated to participate in joint ventures which can make tenders for wind turbines at sea at national level for example, Kriegers Flak.

### **HEAT GENERATION AND BIOMASS**

The City of Copenhagen wants an energy system to be set up with multiple sources of energy that can supplement each other, so the city will have a flexible electricity and heat supply. This means that biomass-fired combined heat and power plants will need to adjust their energy production even more when the wind is not blowing and the turbines are generating less energy.

- By 2025, Copenhagen must have a carbon neutral heating supply, based primarily on biomass, waste and geothermal energy. The power stations at Amager and Avedøre will be converted to biomass, and a new biomass-fired combined heat and power plant capacity will be established in Copenhagen.

- Production of peak loads will be based on carbon neutral fuels.
- Within the coming years, a final decision must be taken about the role of geothermal energy in the energy production in Copenhagen; this includes any possible role Copenhagen Energy may play in a possible production.

### **WASTE AS A RESSOURCE**

There is a strong correlation between initiatives in waste incineration and district heating supply in the Copenhagen area. This applies both in relation to incineration capacity and to the new methods of treatment in waste management, as well as in relation to sorting and recycling.

- A new, high-tech waste treatment centre must be set up which would eventually include the sorting of waste, preparation for recycling, biogasification and incineration.
- Prevention, separation and recycling of plastics will be done by establishing three new collection streams to ensure that the hard plastic, metal and small electronics are sorted for recycling
- The possibilities for collecting and processing organic waste for biogasification should be charted. This would include estimating the economy and functionality in the REnescience plant.



## **ECONOMY**

Construction costs for 360 MW of wind turbines are estimated to be DKK 5.5 bn. The City of Copenhagen will stand guarantor for Copenhagen Energy borrowing money for wind turbine projects, at the same speed as each project develops.

Investment in electricity and heat generation will be partly funded by energy companies and partly funded by district heating charges. However, the City of Copenhagen may decide to make loan guarantees for:

- A wood-fired combined heat and power plant of 115-350 MW, representing an investment of DKK 1.5-4 bn
- A geothermal plant (65 MW), representing an investment of about DKK 1 bn
- A heat storage tank (capacity 200 MW), representing an investment of DKK 0.2 bn

Initiatives in the area of waste management are rate funded. It is estimated that a REnescience plant with a capacity of 80,000 tons of waste per year costs DKK 0.8 bn in capital expenditure, while a biogas plant with a capacity of 50,000 tons of waste per year is estimated to cost DKK 120-150 million in capital expenditure.

**MORE THAN 100 WIND TURBINES  
ARE SCHEDULED TO BE INSTALLED  
BY 2025 - INSIDE AS WELL AS  
OUTSIDE THE MUNICIPAL  
BOUNDARY**





**GREEN MOBILITY**





#### MAJOR GOALS FOR 2025

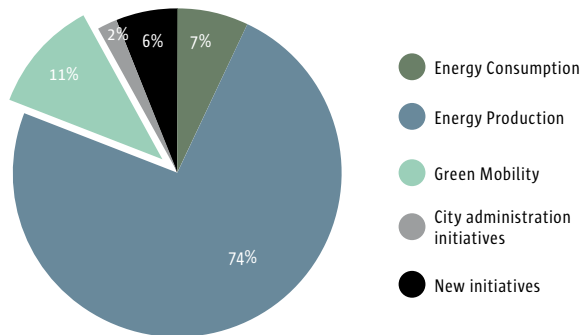
- // 75 % OF ALL TRIPS IN COPENHAGEN ARE ON FOOT, BY BIKE OR PUBLIC TRANSPORT.
- // 50 % OF TRIPS TO WORK OR SCHOOL IN COPENHAGEN ARE BY BIKE.
- // 20 % MORE PASSENGERS USE PUBLIC TRANSPORT, COMPARED TO 2009.
- // PUBLIC TRANSPORT IS CARBON NEUTRAL.
- // 20-30 % OF ALL LIGHT VEHICLES RUNS ON NEW FUELS SUCH AS ELECTRICITY, HYDROGEN, BIOGAS OR BIOETHANOL.
- // 30-40 % OF ALL HEAVY VEHICLES RUNS ON NEW FUELS.

## TAKING THE BUS OR GOING BY BIKE MUST BE MADE EVEN MORE ATTRACTIVE.

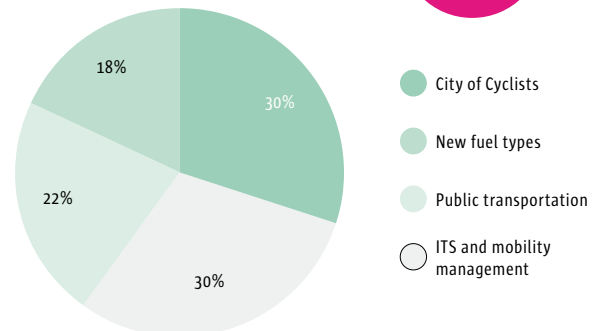
Copenhageners must either go by bike, walk or take public transport when they are getting around in the city. Transport causes a large proportion of the total carbon emissions. In 2010, transport in Copenhagen alone caused 22 % of the total volume of carbon discharged. So, Copenhagen has set a goal that by 2025, at least 75 % of all trips must be done on foot, by bike or public transport. If Copenhageners do go by car, the aim is that as many as possible use electric, or hybride and hydrogen cars, while heavier vehicles should run on new fuels such as biogas.

With an expected 100,000 more Copenhageners and 20,000 new jobs, there must also be focus on how easy it is for people to reach their destination. In a growing city, it is crucial that mobility remains high and that the limited room in the urban space is used optimally, so the city can develop in a green, smarter and healthier direction as 2025 approaches.

### SHARE OF TOTAL CARBON REDUCTION



### ALLOCATION OF REDUCTIONS FROM GREEN MOBILITY INITIATIVES



**135.000  
TONS CO<sub>2</sub>**

## **MAIN INITIATIVES**

### **ON THE WAY TO BEING THE WORLD'S BEST CITY FOR CYCLISTS**

Copenhagen is already a world class city for cyclists. But the potential and our ambition are greater, and new initiatives are needed to get even more people to cycle. The goal is that at least 50 % of all trips to work or educational institutions will be by bike.

- Bicycle connections to and from Copenhagen should be developed. Among other things, most of the PLUSnet should have cycle tracks with three lanes.
- Development of partnerships supporting innovation of cyclism solutions.
- Copenhagen business life must become involved in relation to spreading the use of electrical bikes for long rides in the Copenhagen area.
- Development of a concept on improved conditions for cyclists in order to promote the use of bicycles at workplaces.

### **CARS ON ELECTRICITY, HYDROGEN AND BIO FUELS**

Copenhagen will work to increase the use of electric vehicles, hydrogen-electric vehicles and heavy vehicles running on biofuels. 96 % of all car trips in Denmark are shorter than 50 km, so there is a basis for a large market in electric cars. A nationwide and differentiated infrastructure will allow electric cars to cover the less common driving needs for longer journeys.

- Through demonstration projects, the City of Copenhagen will contribute to the development and wider use of new fuels in transport.
- Electric charging points and hydrogen filling stations will be set up and the possibilities for a secure infrastructure for biofuels will be explored.
- Collaboration with industry and other public authorities will promote the purchase of vehicles operating on the new electricity, hydrogen and biofuels.

### **PUBLIC TRANSPORT MUST BE USED MORE**

Public transport is very visible in the Copenhagen cityscape, and in Copenhagen there are about 750,000 users of the bus, Metro or S-trains (suburban) daily. The goal is that 20 % more people will use public transport which will be carbon neutral by 2025. This transformation will also contribute to less noise and air pollution.

- Experiments with electricity and biofuels as a propellant in large buses will be initiated. This will be done through operational trials with Movia.
- The public transport system must be improved, which includes improving conditions at nodal points, as well as taking measures to make it easier for road users to get to their destination and to provide better traffic information.
- Efficient use of energy in the metro and commuter trains.

### **INTELLIGENT TRAFFIC MANAGEMENT IMPROVES TRAFFIC FLOW**

Technology has been developing very rapidly in recent years, creating new opportunities for traffic planning and traffic management which can improve traffic flow and reduce carbon emissions. In the coming years, the City of Copenhagen will create the conditions for these opportunities to be realised.

- Through traffic planning and traffic management, the City of Copenhagen will reduce carbon emissions from traffic by optimising conditions for bicycles, busses and cars. Travelling time on busses will be cut by 10 % and their regularity improved by 20 %.

### **MOBILITY PLANNING**

The demand for green modes of transport must be increased. The large investment in public transport, cycle tracks and technologies for new vehicles will in itself make carbon neutral transport more attractive to use, but the public's knowledge of the various modes of transport needs to be increased through information and campaigns.

- A business network will be set up which will help companies to make transport plans.
- Collaboration with local groups about direct offers and information to citizens about transport opportunities.
- The travelling habits of Copenhageners must be changed through campaigns to provide information and change behaviour.

## **ECONOMY**

The City of Copenhagen expects that initiatives connected with the City of Cyclists will require investments of around DKK 600 million between now and 2025. Of these, DKK 520 million will go to PLUS-net. Besides the actions associated with CPH 2025 Climate Plan, it will cost the City of Copenhagen about DKK 1 bn to develop the cycling city further.

The annual cost of bus operations in and through Copenhagen is now DKK 930 million. Of this, the City of Copenhagen contributes with DKK 400 million. In the light of the Danish Energy Agency's latest report on alternative fuels, it has been estimated that the municipality needs to designate a total of about DKK 290 million to carbon neutral public transport and bus infrastructure from now until 2025.

The municipality's total investment in intelligent traffic management is expected to be about DKK 300 million for the period 2013-2025. This does not include the establishment of a traffic management system.

The total investment for the mobility program and long-term attitude change up until 2025 is expected to reach DKK 50 million.




# CITY ADMINISTRATION INITIATIVES









## **MAJOR GOALS FOR 2025**

- // REDUCE ENERGY CONSUMPTION IN MUNICIPAL BUILDINGS BY 40 %, COMPARED TO 2010.**
- // MUNICIPAL NEW BUILD UP TO 2015 MEETS THE REQUIREMENTS OF THE 2015 CLASSIFICATION AND UP TO 2020 NEW BUILD MEETS THE REQUIREMENTS OF THE 2020 CLASSIFICATION.**
- // THE CITY OF COPENHAGEN'S VEHICLES RUN ON ELECTRICITY, HYDROGEN OR BIOFUELS.**
- // THE ENERGY CONSUMPTION FOR STREET LIGHTING IN COPENHAGEN IS HALVED, COMPARED TO 2010.**
- // A TOTAL OF 60,000 SQ M SOLAR PANELS ON EXISTING MUNICIPAL BUILDINGS AND MUNICIPAL NEW BUILD IS INSTALLED.**

## THE CITY OF COPENHAGEN MUST RAISE THE BAR FOR WHAT CAN BE ACHIEVED THROUGH ENERGY OPTIMIZATION AND CARBON REDUCTION.

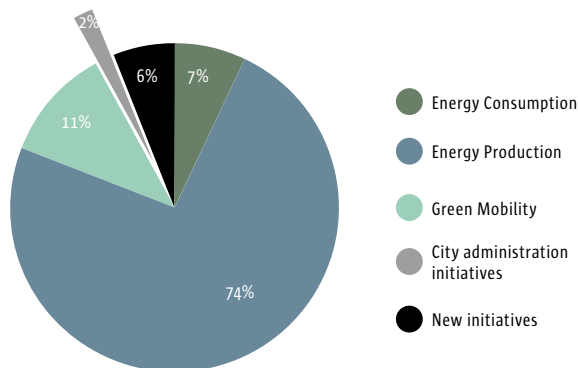
The City administration will set ambitious climate and environmental requirements for its own operations and for those of suppliers. There are excellent opportunities as a purchaser to move the market in a climate friendly direction, while as a developer and property owner, it is possible to build low energy and climate-adapted buildings.

The City of Copenhagen will collaborate with knowledge institutions and private and public players to create and disseminate new knowledge as well as gathering experience of the particular building processes, solutions for energy retrofiting, climate adapted new build and user behaviour.

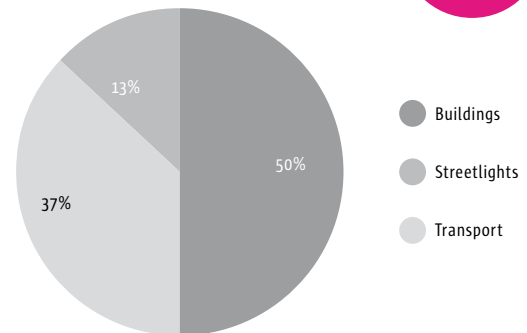
This collaboration will ensure green growth through the development of new technology, services and competences in the environment and climate sector.

Through communication, education and behavioural campaigns, the municipality will also inspire its 45,000 employees to climate-friendly actions - both at work and in their private lives.

### SHARE OF TOTAL CARBON REDUCTION



### ALLOCATION OF REDUCTIONS FROM CITY ADMINISTRATION INITIATIVES



**20.000  
TONS CO<sub>2</sub>**

## **MAIN INITIATIVES**

### **ENERGY CONSUMPTION IN MUNICIPAL BUILDINGS MUST BE REDUCED**

Running the municipal buildings accounts for the vast majority of energy consumption, and thus of carbon emissions, in the City of Copenhagen. A reduction of 40 % in energy consumption is ambitious, but achievable with a concentrated effort:

- Systematic charting and recording of energy consumption as well as energy management and environmentally correct operation
- Long-term energy saving measures and climate adaptation must be included in major retrofitting and refurbishment.
- Municipal new build until 2015 must follow the requirements of the 2015 classification and up to 2020 must follow the 2020 classification. Amongst other actions, pilot projects will be carried out for climate retrofitting and for climate adapted low energy new buildings.
- In total 60,000 sq meters of solar panels will be installed on both existing municipal buildings and on municipal new build.

**THE CITY OF COPENHAGEN HAS  
A GOOD OPPORTUNITY TO MOVE  
THE MARKET IN A MORE ENVIRON-  
MENTALLY CONSCIOUS DIRECTION  
THROUGH THE VOLUME OF ITS  
PURCHASING POWER**

### **THE CITY ADMINISTRATION MUST DRIVE GREEN**

Copenhagen is taking the lead by switching over to electric and hydrogen powered cars, thus showing that the ambitious targets are being backed by actions.

- The municipality's passenger cars must be electric and hydrogen powered; an infrastructure is being developed for charging stations for electric and hydrogen vehicles.
- Larger vehicles must use new fuels such as biogas. Copenhagen will be part of a pilot and demonstration phase for alternative fuel technologies for heavy vehicles.
- All external suppliers will be required to use electricity, hydrogen or biofuels when driving for the City of Copenhagen.

### **CLIMATE AND ENVIRONMENTAL REQUIREMENTS WILL ENSURE GREEN PROCUREMENT**

Through the size and volume of its purchasing power, the city administration has a good opportunity to move the market in a more climate and environmentally conscious direction.

- Climate and environmental requirements must be introduced in more areas of procurement than today. This must include the implementation of procurement strategies, focusing on transport, energy consuming products and the area of buildings and plant.

### **STREET LIGHTING**

A large part of the city administration's reduction in carbon emissions can be found by changing the street lighting

- In the period 2011-2014, about 11,000 mercury fittings will be replaced.
- From 2014 over the following three to four years, about 20,000 fluorescent lamps and sodium fittings will be replaced.

## **CLIMATE TRAINED EMPLOYEES**

Employees in the city administration play a considerable role when it is a matter of creating a culture in which climate and the environment are in focus on a daily basis.

- Copenhagen encourages its employees' good climate behaviour and teaches its operating staff in procurement, transportation and energy efficient operation and consumption. All new employees in the municipality are introduced to the municipality's carbon goals and climate-friendly habits and routines.

## **ECONOMY**

The combined investment in the City of Copenhagen as a climate organisation will be in the region of DKK 1 bn up to 2025 after energy savings and other lower operational expenses have been deducted.

The two major items are climate retrofitting and climate adaptation of municipal buildings together with replacement of street lighting. The cost of climate retrofitting and adaptation by 2025 will amount to a total of about DKK 1.4 bn, resulting in operational savings of about DKK 0.6 bn over this period. The cost of converting the street lights to LED totals about DKK 270 million, giving an overall saving on electricity bills during the period of about DKK 140 million.

Most initiatives will result in economic savings as early as 2014 but the full savings will not be achieved until the measures are fully implemented.



# ECONOMY AND INVESTMENTS

A long, multi-level concrete bridge spans across a body of water. The bridge features several large, square concrete pillars supporting the structure. The water is calm, reflecting the bridge and the sky. In the background, there are some buildings and a clear blue sky. The text 'ECONOMY AND INVESTMENTS' is overlaid in large, white, bold letters on the left side of the image.







## THE CPH 2025 CLIMATE PLAN GIVES A POSITIVE ECONOMIC PICTURE AND THE INVESTMENTS IN THE PLAN RESULT IN APPROXIMATELY 30.000 FULL-TIME EQUIVALENTS (FTE).

In the period up to 2025, a range of investments will be made independently of the climate plan, in those areas which the CPH 2025 Climate Plan covers. New buildings will be erected, existing buildings will be retrofitted, investment will be made in new energy production plants, new cars will be bought and so on.

It is expected that around DKK 200-250 bn will be invested in the fields of energy consumption, energy production and mobility up until 2025. The CPH 2025 Climate Plan's initiatives mean that there will be an additional investment of around DKK 20-25 bn. These amounts should be considered in conjunction with the municipal investment, which is expected to be around DKK 2.7 bn up to 2025.

The positive economic picture associated with a carbon neutral Copenhagen is primarily due to the expected rise in price of conventional energy sources like coal, oil and gas. This makes green transformation a good investment in the light of what the alternative cost would be if Copenhagen still met most of its energy needs with fossil fuels. In addition, the reduction of greenhouse gas emissions generally makes for a better economy in a city like Copenhagen than in the country as a whole. The reason is that many climate measures also help to increase Copenhagens' health and quality of life by reducing congestion, noise and particle pollution. These benefits are far greater in a city like Copenhagen, where actions have an effect on many people simultaneously compared with other cities in Denmark.

Costs are also kept down by using the following principles in the preparation of the CPH 2025 Climate Plan:

- The transformation takes place gradually and over a long time.
- Sound financial initiatives are set in motion as soon as possible.
- The shift to green transport, which is relatively expensive, starts with development projects in most cases.
- As well as reducing carbon emissions, initiatives must, as far as possible, also create green growth and enhance the quality of life.

**THE MANY CLIMATE MEASURES HELP TO INCREASE COPENHAGENERS' HEALTH AND QUALITY OF LIFE BY REDUCING CONGESTION, NOISE AND PARTICLE POLLUTION**

THE INVESTMENTS IN THE CPH  
2025 CLIMATE PLAN WILL RESULT  
IN JOBS EQUIVALENT TO APP.  
30.000 MAN YEARS

### MORE PEOPLE WILL BE EMPLOYED IN THE GREEN SECTOR

With its own effort up to 2025, the City of Copenhagen will be supporting both directly and indirectly massive investments in green growth. These investments will have a significant impact on employment in the green sector and provide opportunities for a number of innovation projects in Copenhagen in the period.

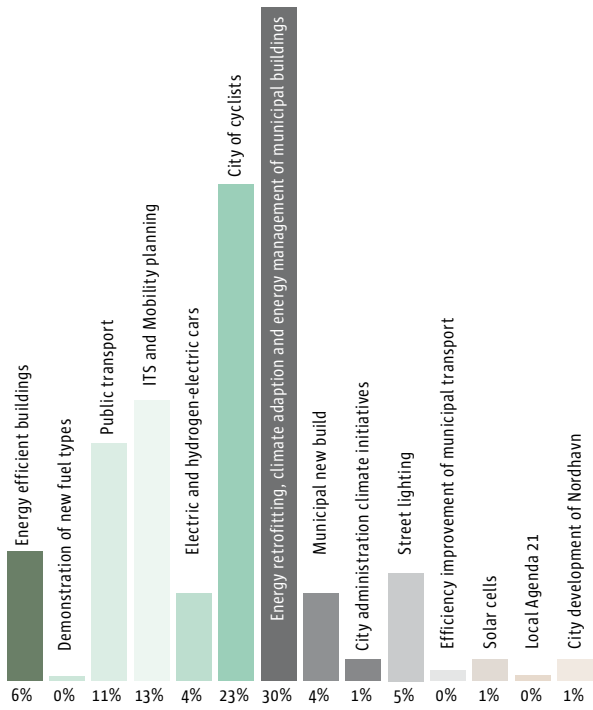
The extent to which investment creates new jobs will depend on general economic development; it will be possible to make an assessment for each project over a shorter period of time.

Based on the amount invested, a qualified estimate of the effect on employment of the initiatives over a longer period of time up to 2025 has been made.

### EFFECT ON EMPLOYMENT OF CPH 2025 CLIMATE PLAN

GREEN INVESTMENT	DKK MILLION	JOBS PR. MILLION INVESTED	EFFECT ON EMPLOYMENT (MAN YEARS)
Municipal investment	2.700	1,3	3.000
New build: Additional investment (private sector)	6.000	1,3	8.000
Retrofitting: New investment in energy retrofitting	3.500	1,3	4.500
Energy production	10.000-15.000	1,3	13.000-19.500
<b>TOTAL</b>	<b>22.000-27.000</b>		<b>28.500-35.000</b>

Source: AE og 3F: Jf. "Environment, energy and employment – main report" ("Miljø, energi og beskæftigelse – Hovedrapport"), 3F and the Ecological Council, 2005 (3F og Det Økologiske Råd, 2005).



// Combined municipal investments 2013-2025.



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