

Copenhagen
Carbon Neutral
by 2025

Copenhagen Climate Plan

The short version



CLIMATE CAPITAL
COPENHAGEN

WE WILL REDUCE CO₂
EMISSIONS BY 20%
BETWEEN 2005 AND 2015.
OUR VISION IS TO BE THE
FIRST CARBON NEUTRAL
CAPITAL IN THE WORLD
BY 2025.

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A CLIMATE CAPITAL THAT ATTRACTS ATTENTION

3

A busy Copenhagener pedals at full speed down the bicycle lane. A small group of students read peacefully in the sun on the waterfront at Islands Brygge. A tourist steadies himself on a city bike. A big crowd of passengers emerges from the metro and disperses in all directions. Children and adults swim at the recreational beach park on Amager with Øresund's windmills spinning in the background. This is Copenhagen.

Copenhagen is a dynamic home to businesses and people. We move from place to place quickly and easily. But we also have many green spaces where we relax and can breathe deeply. We care about the environment and have reduced CO₂ emissions by more than 20% over the last 10 years.

COPENHAGEN IS ALREADY A
MODEL FOR MANY BIG CITIES
AROUND THE WORLD.

But we want more. We want to reduce our CO₂ emissions by an additional 20% between 2005 and 2015. Our vision is to make Copenhagen the world's first carbon neutral capital by 2025.

To this end we have 50 specific initiatives to meet our goal for 2015. Those already underway are being stepped up now. Others are totally new. Some require further preparation or collaboration with the State or the private sector.

Among these 50, we are launching six exceptional initiatives. They are intended to set new heights for Copenhagen's climate efforts. We call them lighthouse projects.

All initiatives complement each other synergistically. Climate efforts must be seen in a broad perspective. It's not just about reducing CO₂ emissions. It's also about improving air quality. Giving the city's inhabitants room to move. Setting better standards for our homes, work place, and cultural life. Entering partnerships with business. En-

gaging and inspiring Copenhageners so that we all take on responsibility.

The plan is dynamic. Not all initiatives will look exactly as they are described here. We are part of a changing world, and national and global laws also influence our climate.

OUR GOAL AND VISION ARE
ABSOLUTELY CLEAR.

That is why we will undertake annual accounting. If things aren't moving quickly enough, we'll step up the climate initiatives. We want to make Copenhagen the Climate Capital of the world.

It is true that this has a cost now. But it is an investment with good returns. Financially speaking – and in terms of health, performance and well being, for all of us who live, work and stay in Copenhagen.

Over 70% of the world's CO₂ emissions come from cities. Cities hold the key to the global climate challenge. We want to lead internationally with our Climate Plan, and inspire others to follow suit.

Copenhagen, August 2009

Ritt Bjerregaard, Lord Mayor

*Klaus Bondam, Mayor of the
Technical and Environmental Administration*

*Bo Asmus Kjeldgaard, Mayor of the
Children and Youth Administration*

*Mogens Lønborg, Mayor of the
Health and Care Administration*

*Pia Allerslev, Mayor of the
Culture and Leisure Administration*

*Mikkel Warming, Mayor of the
Social Services Administration*

*Jakob Hougaard, Mayor of the
Employment and Integration Administration*

2015

– AN **AMBITIOUS** GOAL

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Copenhagen's CO₂ emissions must be cut by 20% between 2005 and 2015. This is an ambitious goal. Far more ambitious than those set by most big cities in the world. But in Copenhagen we dare to aim high – and we are already well on our way.

We have significantly reduced CO₂ emissions. We have a unique network of bicycle paths and a world class public transport system. We have converted our energy supply so that more than 30% comes from carbon neutral sources today. Over the past years we have established new green and recreational areas. The recreational beach park on Amager, the waterfront at Islands Brygge, and the green areas in Ørestaden are good examples of how we use the city to create a framework for the activities of our inhabitants and visitors.

BUT WE WILL NOT REST ON OUR SUCCES. WE CAN DO A LOT MORE.

In short, we want our Climate Plan to make Copenhagen a better city to live in. A city that will continue to draw attention and recognition nationally and internationally in 2015 and 2025.

By far the greatest proportion of energy use in Copenhagen is for electricity and heating. That is where we need

to make the greatest impact. But we also have to reduce vehicle traffic and develop our city so that it is ready for weather patterns expected from climate change. Finally, each of us that live in and use the city must be environmentally conscious in our daily lives.

AN INTEGRATED CLIMATE PLAN

Our goal requires that climate consciousness be integral to everything City of Copenhagen undertakes. In other words the Climate Plan isn't sectoral. All areas are included. In this way the Climate Plan supports the work the municipality has initiated.

THE CLIMATE PLAN'S GOALS ARE AN EXTENSION OF THE CITY'S OTHER GOALS IN TRANSPORT, HOUSING AND CONSTRUCTION, HEALTH, EDUCATION, SOCIAL ACTIVITIES AND CULTURE.

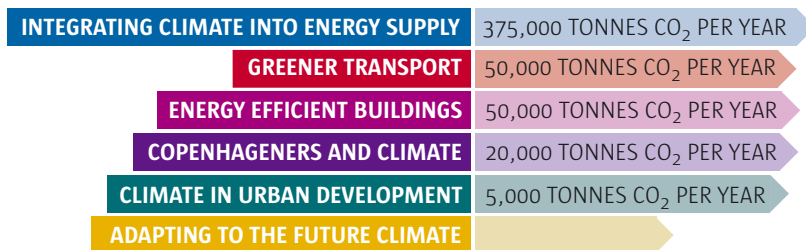
We also want to look beyond the city limits. We want to increase our influence on the national and international agenda. Challenges and barriers which we as a city can't solve on our own will be undertaken in partnership to get the best results for both Copenhagen and our global climate.

20% MEANS A REDUCTION FROM 2,500,000 TONNES TO 2,000,000 TONNES CO₂.

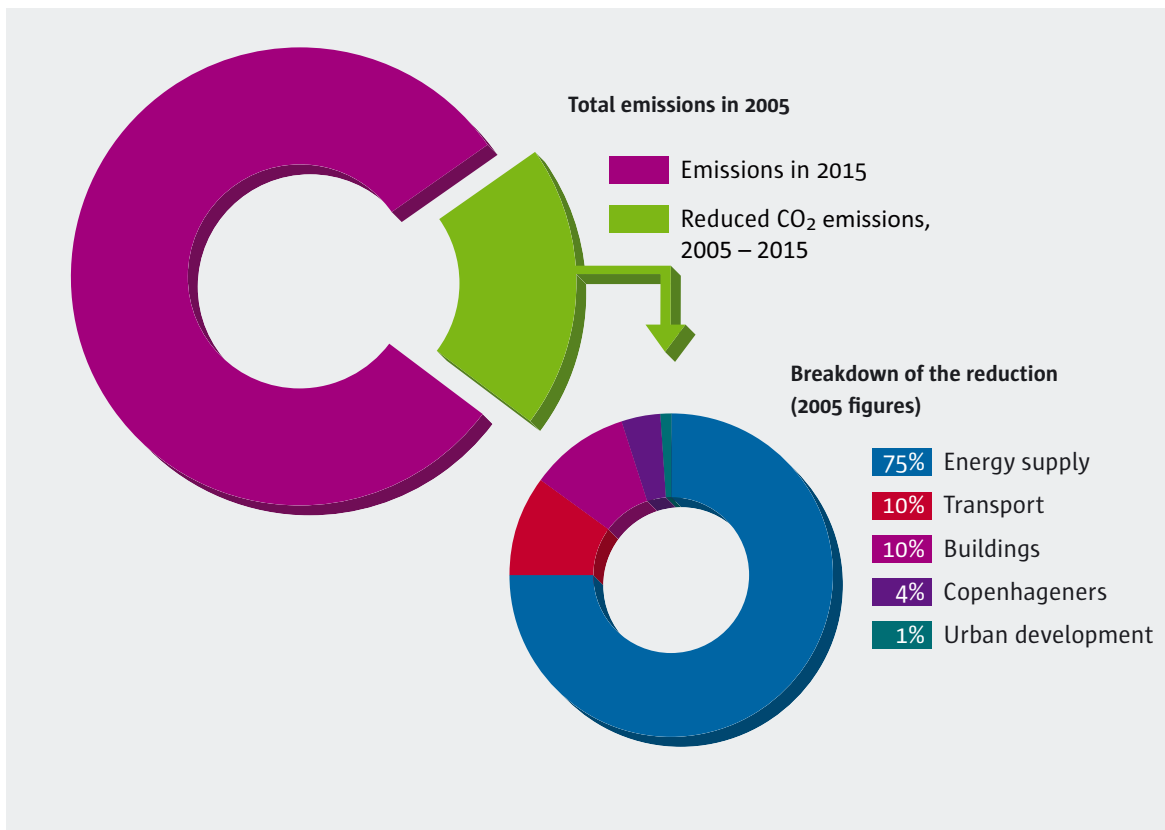
GOAL 2015: WE ARE COMMITTED

Copenhagen's CO₂ emissions must be reduced by 20% from 2005 to 2015. This requires a targeted effort each year. That is why the Climate Plan is an action plan with 50 specific initiatives.

The initiatives are inter-related, and have been grouped into six action areas. As a result they are also presented thematically, not according to priority. The six areas are:



DISTRIBUTION OF THE TOTAL CO₂ REDUCTION, 2005 - 2015



INTEGRATING CLIMATE INTO **ENERGY SUPPLY**

6

THE BIGGEST CO₂ SOURCES

We can see the windmills spinning in the Øresund. This is proof that we already do a lot to ensure green energy for Copenhageners. Also 98% of all homes in Copenhagen are connected to a district heating system based on combined heat and power plants and incineration of waste. However, renewable energy only meets a fraction of Copenhagen's total energy demand. Today 73% of our electricity is generated by coal, natural gas and oil. The good news is that by joining forces with energy companies, we can really have a positive environmental impact.

In fact, the greatest reduction in CO₂ emissions in Copenhagen will come from greening the energy supply. By far Copenhagen's greatest CO₂ emissions come from the consumption of electricity and heating. This requires two important efforts:

WE MUST CONVERT FROM FOSSIL FUELS TO RENEWABLES AND WE NEED TO USE ENERGY MORE EFFICIENTLY.

Accomplishing this includes using biomass in power stations, erecting wind turbine or windmill parks, increasing reliance on geothermal power and renovating the district heating network. These developments are in large part driven by national and international agreements. That is why it is important for us to honour all agreements and meet all our goals.

Greening the energy supply is also economically advantageous. Investments are recovered, often quickly. Reliance on renewables will also make us less vulnerable to crises and price increases on the global energy market.

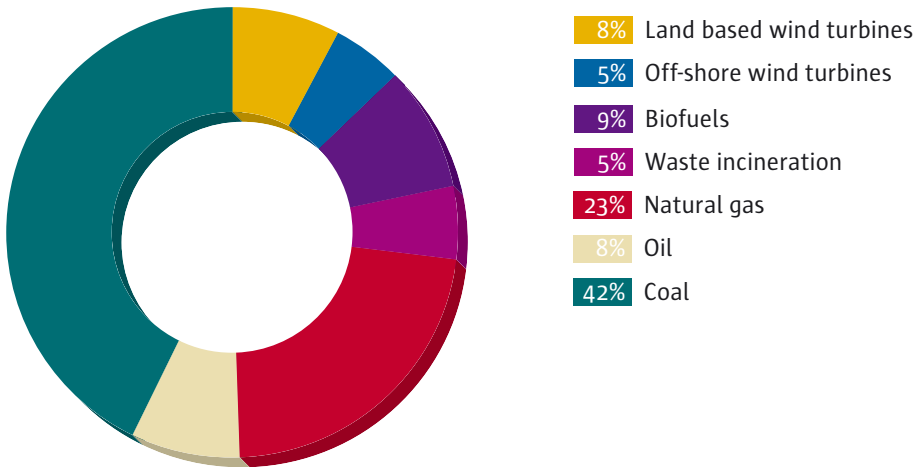
MANY OF THE INITIATIVES WILL REDUCE ENERGY COSTS FOR HOUSEHOLDS, BUSINESSES AND THE CITY ITSELF.

That is why windmills, biomass, geothermal energy and other renewable energies don't just mean reduced CO₂ emissions. They also contribute to a big city's need for stable energy supplies at a reasonable price.

GOAL:

THE CITY OF COPENHAGEN WILL MEET 75% OF THE COMBINED CO₂ REDUCTION THROUGH UPGRADING ITS ENERGY SUPPLY. THIS IS EQUIVALENT TO 375,000 TONNES OF CO₂.

ELECTRICITY CONSUMPTION IN COPENHAGEN MUNICIPALITY, 2005, BY FUEL TYPE



ENERGY INITIATIVE 1:

Renewable energy replaces coal at Amager power station Unit 1, which converts 100% to biomass (wood chips)

ENERGY INITIATIVE 2:

Renewable energy replaces coal at Amager power station Unit 3, which converts at least 40% of its coal consumption to biomass (wood chips)

ENERGY INITIATIVE 3:

A new combined heat and power station is constructed, based on renewable energy.

ENERGY INITIATIVE 4:

New windmills give Copenhageners the possibility of directly investing in real green electricity.

ENERGY INITIATIVE 5:

Heating with geothermal energy is increased six-fold by expanding the demonstration geothermal facility at Margretheholm.

ENERGY INITIATIVE 6:

Heating efficiency is improved at waste incineration plants by introducing flue gas condensation units.

ENERGY INITIATIVE 7:

The district heating network is modernized to reduce heat losses from the pipes.

FULFILLING VISION 2025

A new, integrated energy system is needed to fulfil the vision of a carbon neutral Copenhagen. Copenhagen's power infrastructure is ideally suited to adding a diversified selection of renewable energy sources. What is still needed is a system for storing energy over days and seasons and which can operate regardless of wind and weather conditions.

LIGHTHOUSE PROJECT

NEW WINDMILLS

GREEN ENERGY TO GREEN COPENHAGENERS

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Most energy sources are limited. But wind is an inexhaustible resource. We can produce wind energy regardless of international events and shifting political tides. Furthermore, we live in one of the countries which has made the greatest strides in the development of wind technology.

THAT IS WHY THE CITY OF
COPENHAGEN WANTS TO
TAKE THE LEAD IN A NEW
WINDMILL PROJECT.

The project is not just about reducing CO₂ emissions. It's also a project that gives Copenhageners, businesses and the municipality the opportunity to buy green electricity, electricity derived from expanding renewable energy production. In this way we create a platform from which all of us together can actively participate and invest in a more climate-friendly Copenhagen.

We will work to build new windmills which deliver the equivalent of the entire municipal government's electricity needs and which will come to contribute more and more towards fulfilling the vision of carbon neutrality by 2025.

Establishing new windmills take time, collaboration and partnerships. From now on Copenhagen wants to contribute towards enhancing this trend, regardless of whether windmills are built within or beyond city limits.

We also want to work towards securing a flexible national energy system. This system must be able to store far greater amounts of renewable energy. This could for example be achieved by storing surplus electricity in electrical car batteries, by conveying electrical power to a heating system or by storing solid waste for incineration. A flexible energy system which is not affected by changing seasons is absolutely necessary if we are to fully exploit the renewable energy windmills provide.

GREENER TRANSPORT

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A FUNCTIONAL CITY – WITH LESS NOISE AND LESS POLLUTION

Copenhageners bike so much that other big cities send delegations to see the phenomenon. Our bicycle paths are in a league of their own internationally and we continually make improvements, easing life for cyclists. This is important because it establishes the framework which makes it practical and agreeable to choose a climate-friendly solution.

For a big city to be functional, people must be able to get around – quickly and easily. Good transport options are necessary for business and are a precondition for development.

TRANSPORT GIVES
MOVEMENT
AND LIFE
IN THE CITY.

But traffic also creates problems. Car traffic emits large quantities of CO₂. It generates stress, noise, air pollution and sometimes traffic accidents occur. There are no signs that in the coming years Copenhageners will have fewer cars.

We therefore want to create a city which favours biking and walking. Copenhagen must be the world's best city for bicycles. We must continue to develop and maintain the multitude of bicycling and walking possibilities which Copenhagen offers today. And we must continue to extend our successful and accessible public transport system with metro, busses and trains.

Cars must be used more efficiently. We will promote car-sharing, offer climate-friendly driving courses and have traffic signals which facilitate smooth traffic flows. And we must drive electric and hydrogen-powered cars. If the legal provisions can be agreed to we will also introduce congestion charges.

TRAFFIC IS NOT THE AREA
WHERE GREATEST CO₂
EMISSION REDUCTIONS CAN BE
ACHIEVED, BUT IT IS THE AREA
WHERE OUR INITIATIVES DO THE
MOST FOR OUR HEALTH.

As more people stop using their cars we won't just get better air quality, less congestion and noise and improved city life. We will also get closer to our goal of creating a healthy metropolis.

GOAL:

THE CITY OF COPENHAGEN WILL MEET 10% OF ITS TOTAL CO₂ REDUCTIONS VIA THE TRANSPORT SECTOR. THIS REPRESENTS ABOUT 50,000 TONNES OF CO₂.

TRANSPORT INITIATIVE 1:

Yet more people choose to bike – we add new and improved bike paths, green bike routes, bicycle and pedestrian bridges, and better bicycle parking notably near public transport stations.

TRANSPORT INITIATIVE 2:

Public transport gets even better – we invest in comfort, reliability, minimal travel times and smooth linkages between the different public transportation systems. We investigate whether even better solutions can be introduced.

TRANSPORT INITIATIVE 3:

Busses must emit less CO₂, and to this end bus companies are required to reduce bus CO₂ emissions by 25%.

TRANSPORT INITIATIVE 4:

We lobby the government for the right to introduce congestion charges.

TRANSPORT INITIATIVE 5:

We lobby the government for the right to establish environment zones in dense downtown areas where only environmentally friendly cars and trucks are allowed.

TRANSPORT INITIATIVE 6:

Rerouting traffic away from shopping streets will improve conditions for bicyclists and busses, while reducing automobile traffic.

TRANSPORT INITIATIVE 7:

Parking restrictions create the incentive to choose alternatives to automobile transport.

TRANSPORT INITIATIVE 8:

Partnerships and publicity campaigns focus on more effective car use – car sharing, car pooling and climate-friendly driving techniques.

TRANSPORT INITIATIVE 9:

It must be made advantageous to buy climate-friendly taxis and drive them in a climate-optimal way.

TRANSPORT INITIATIVE 10:

Intelligent transport systems optimise the city's traffic signals to the benefit of bicyclists and busses, and GPS-transmitted parking opportunities reduce congestion from drivers on the hunt for a parking space.

TRANSPORT INITIATIVE 11:

Private citizens as well as bus and taxi companies are encouraged to use electrical and hydrogen powered vehicles – the City of Copenhagen provides refuelling stations and free parking.

TRANSPORT INITIATIVE 12:

All the municipality's administrations develop implementation plans for environmentally friendly transport, both during work hours and for their employee's commute to and from work.

TRANSPORT INITIATIVE 13:

The municipality's vehicle fleet is converted to hydrogen-powered and electrical cars.

TRANSPORT INITIATIVE 14:

Energy use in the transport of Copenhagen's waste is reduced by a third through procurement criteria, improved fuel efficiencies and targeted waste processing.

TRANSPORT INITIATIVE 15:

Street lighting is made less CO₂ intensive by switching to more energy efficient lighting and by collaborating in the development of LED technologies which could cut energy use for lighting in half.

FULFILLING VISION 2025

Developing a transport system which contributes to a carbon neutral capital, requires goal oriented urban planning, based on reduced transport needs, improved access to public transportation and improved bicycle and pedestrian flows. A fee system and an infrastructure to support electrical and hydrogen-powered cars is also necessary. Despite great efforts, achieving non-CO₂ transport in Copenhagen by 2025 remains beyond reach. The task is to reduce CO₂ emissions as much as possible. The City of Copenhagen will actively build partnerships in the transport area.

LIGHTHOUSE PROJECT

CARS MUST RUN ON WIND ENERGY

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Electrical and hydrogen-powered cars emit significantly less CO₂ than fossil fuel powered cars. They can run on wind energy, a limitless resource with plenty of capacity to cover our transport needs.

WE WILL THEREFORE ESTABLISH THE BEST CONDITIONS TO ALLOW INHABITANTS AND BUSINESSES TO DRIVE ELECTRICAL AND HYDROGEN-POWERED CARS.

Electrical and hydrogen-powered cars will dominate the future street scene. The benefits go beyond what can be seen with the naked eye. It is by reducing all the things we can't see – CO₂, NO_x, particulates, noise – that changes will be most dramatic. That is why the new cars are a vital condition for our vision of a carbon neutral Copenhagen by 2025.

They are also an important step towards a healthier, cleaner and more enjoyable Copenhagen for everyone.

Electrical and hydrogen-powered car batteries and the production of hydrogen also allow storage of surplus energy produced.

Today there are periods when energy is lost, for example when windmills produce energy during the night.

That is why we want to create opportunities to improve this technology by building filling and recharging stations and by promoting collaboration and technology development in the area. We want to continue to expand wind energy to generate green energy for the cars of the future. And those who drive electrical and hydrogen-powered cars will continue to be rewarded with free parking in the city.

THE CITY OF COPENHAGEN WILL ALSO LEAD IN THE PURCHASE OF ELECTRICAL AND HYDROGEN-POWERED CARS.

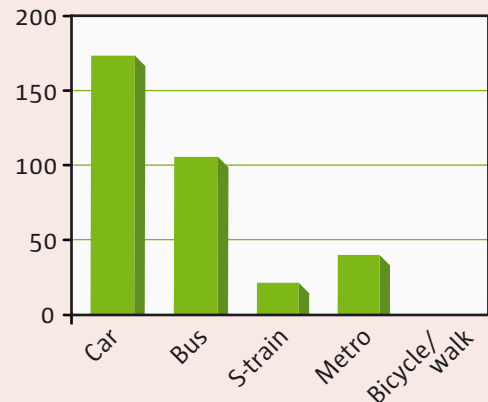
As of January 1st, 2011, all the cars bought by the municipality will be electrical or hydrogen-powered. By 2015 85% of the municipality's cars will be electrical or hydrogen-powered. This amounts to about 600 new cars. In addition to reducing CO₂ emissions, the new cars will cut the municipality's fuel expenses in half.

Already in the spring of 2009 the first 11 electrical busses were introduced to central Copenhagen, and 30 new electrical and hydrogen-powered cars will have been put into service by December 2009.

We hope that even more taxis, busses and private cars will take advantage of the city's new incentives for climate-friendly transport.

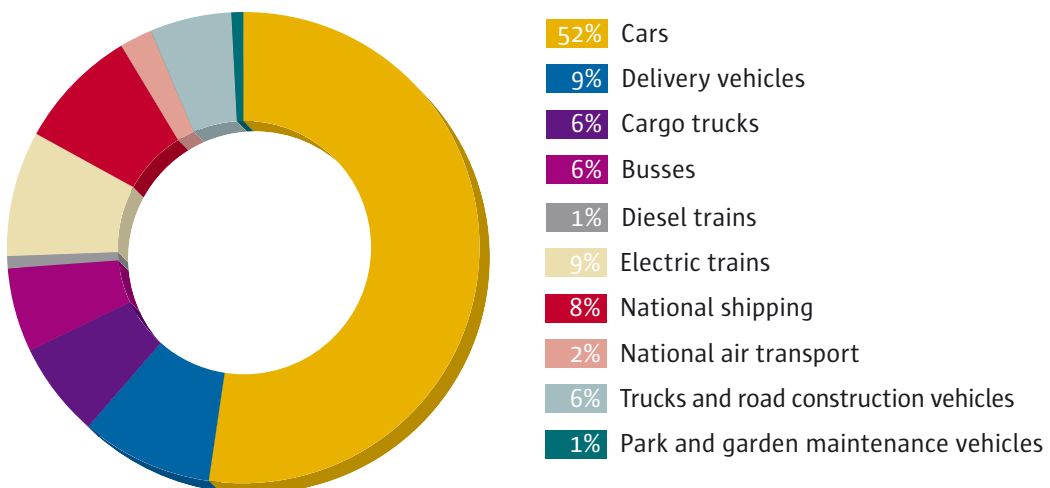
PER CAPITA CO₂ EMISSIONS PER KM TRAVELLED

Grams CO₂





CO₂ EMISSIONS FROM TRANSPORT IN COPENHAGEN MUNICIPALITY, 2005



ENERGY EFFICIENT BUILDINGS

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LOWER ENERGY BILLS, BETTER INDOOR CLIMATE AND LESS NOISE

Copenhagen stretches from the old buildings in the Latin Quarter to the prize-winning modern architecture in Ørestaden and on Holmen Island. It is common sense that all renovation and construction projects must share the goal to reduce energy consumption. This reduces CO₂ emissions and is an investment which can be recovered relatively quickly.

At least as important are the major quality of life benefits for both children and adults that result from building renovations and energy efficient management. Levels of learning, concentration and stress are directly related to the quality of the indoor climate. That is why we must manage and upgrade the city's schools, institutions and work places to improve ventilation, temperature controls, lighting and noise levels. Renovated buildings are also visually appealing and improve the look of the city as a whole.

THAT IS WHY THERE MUST BE
EFFICIENT ENERGY MANAGEMENT
FOR ALL MUNICIPAL BUILDINGS.

We focus on climate both in new construction projects and in renovation projects. Energy conservation must be a requirement for buildings which the municipality rents. We will advise owners of private and public buildings, consultants and trade workers about energy conservation in buildings. Advanced heat sensitive photographic techniques will be used to visualize heat losses from buildings.

Renovation of Copenhagen's extensive real estate holdings requires big investments – from both public and private sources. But the technical solutions are available and well proven, and there are huge savings to be retrieved from energy conservation in buildings.

THIS MAKES ENERGY
CONSCIOUS RENOVATION
AND MANAGEMENT A
GOOD INVESTMENT – FOR
WELL BEING, CLIMATE AND
FINANCES.

GOAL:

THE CITY OF COPENHAGEN WILL ACHIEVE 10% OF ITS TOTAL CO₂ REDUCTION BY 2015 THROUGH CONSTRUCTION AND RENOVATION PROJECTS. THIS IS EQUIVALENT TO 50,000 TONNES OF CO₂.

BUILDINGS INITIATIVE 1:

All of the municipality's buildings are managed and maintained in an environmentally correct manner.

BUILDINGS INITIATIVE 2:

The municipality puts a climate focus on all renovation projects for municipal buildings.

BUILDINGS INITIATIVE 3:

All of the municipality's new construction and municipally financed construction is based on low energy principles.

BUILDINGS INITIATIVE 4:

All buildings the municipality rents must meet energy conservation criteria.

BUILDINGS INITIATIVE 5:

The municipality establishes an energy fund with savings from climate upgrading to finance upcoming projects.

BUILDINGS INITIATIVE 6:

Building owners, renters, trade workers and consultants receive targeted training on CO₂ reduction opportunities.

BUILDINGS INITIATIVE 7:

Inhabitants and businesses gain perspective on their building's heat losses via the "hotmapping" function on the municipality's homepage.

BUILDINGS INITIATIVE 8:

The municipality starts a dialogue with businesses about energy conservation measures and the significant economic benefits these bring.

BUILDINGS INITIATIVE 9:

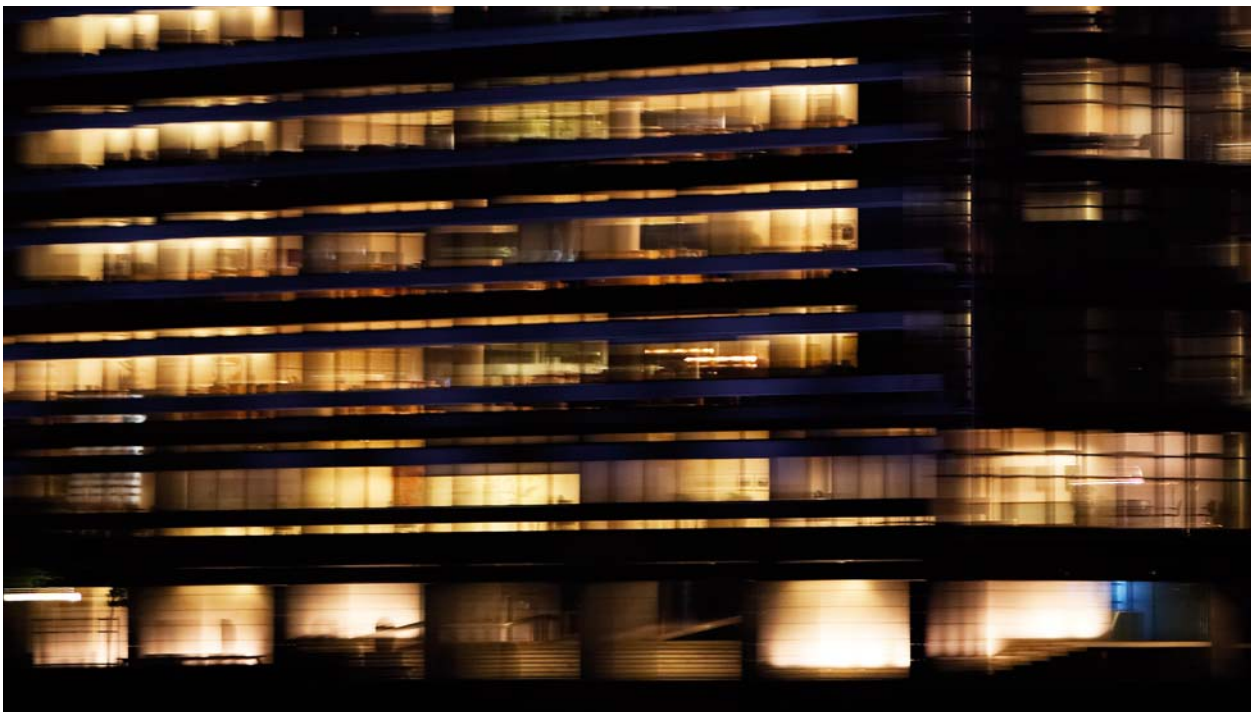
The municipality opens a dialogue with the national and regional governments about energy upgrades of their buildings in Copenhagen.

BUILDINGS INITIATIVE 10:

The municipality will contribute towards establishing and developing solar cell solutions through partnerships and a heightened information campaign.

FULFILLING VISION 2025

By 2015 a number of the city's buildings will have become significantly better places to live, work and be in. These sensible investments will continue at the same pace through to 2025. New building construction initiated after adoption of the Climate Plan will make up 15% of the municipality's total real estate holdings. It is therefore important that the buildings meet the best low energy standards. Energy savings among Copenhageners, businesses and the municipality are a central component of the emissions reductions needed to achieve carbon neutrality by 2025. Our buildings and the energy savings opportunities they offer play a decisive role in this.



LIGHTHOUSE PROJECT

CLIMATE UPGRADING OF MUNICIPAL BUILDINGS

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With an ambitious climate plan, the City of Copenhagen will lead by example. Municipal buildings will be climate upgraded, reducing energy use and making them nicer to be in. Energy upgrades are excellent investments because energy losses are reduced as well as general consumption.

THAT IS WHY WE ARE PUTTING
THE CITY OF COPENHAGEN ON
AN ENERGY EFFICIENT DIET.

Diets are not only about reducing over-consumption. They are also about well-being. This applies to energy consumption as well. When we conserve energy, we take initiatives that also improve the indoor climate and the physical spaces we occupy daily. This helps childcare workers, teachers, students, administrative personal and all others that work and use the municipality's buildings.

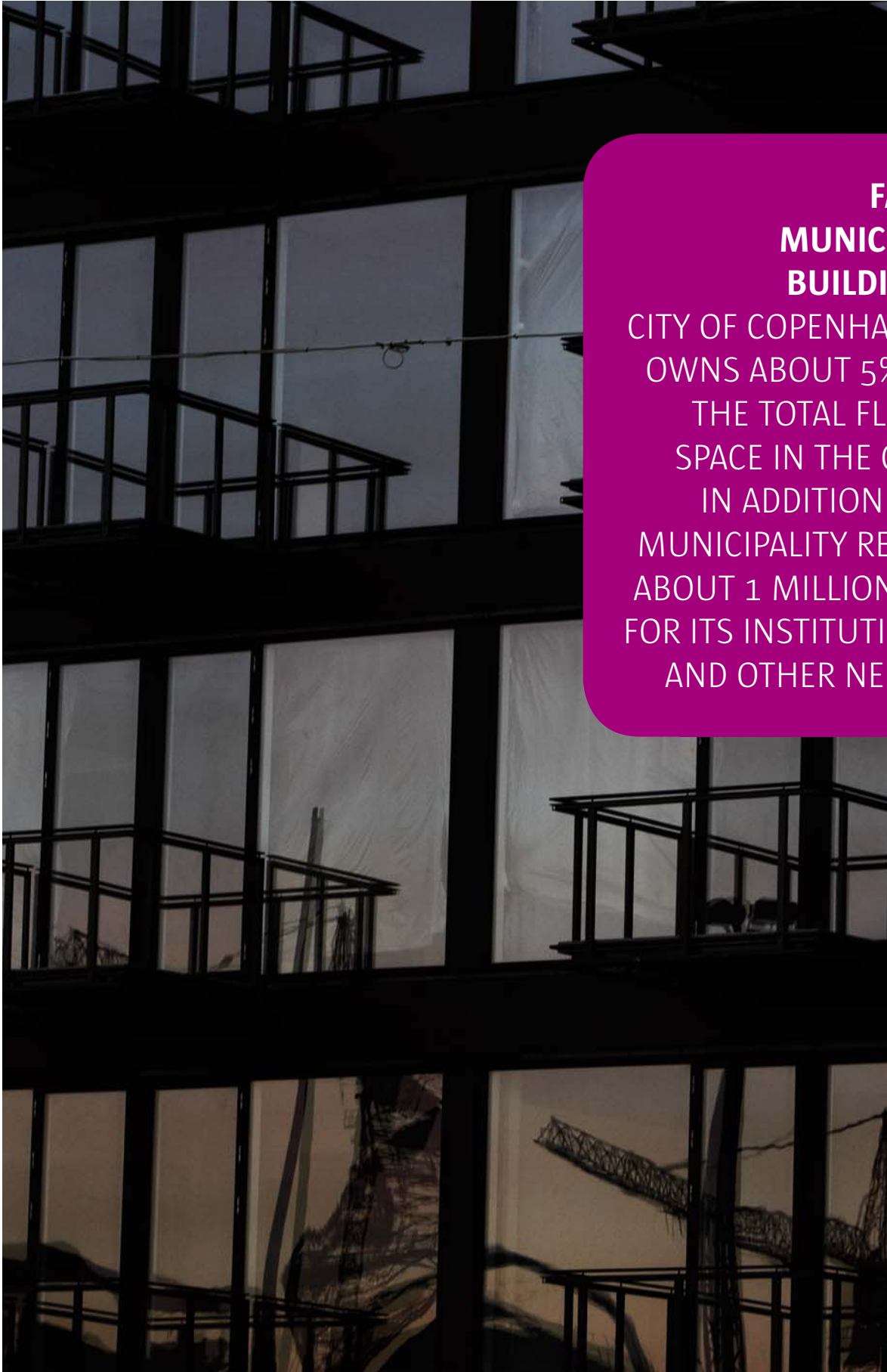
This will get results! Schools, institutions and sports centres will become more attractive to use. Less noise, fewer drafts, better lighting and ventilation improve the workday, improve performance and lead to less stress and illness. We expect to save up to 15 million kroner (approximately 2 million euros) a year just on our energy bill. To that we can add the value from reduced absenteeism.

WE WILL UNDERTAKE ALL THOSE
ENERGY SAVING MEASURES IN
MUNICIPAL BUILDINGS FOR
WHICH THE INVESTMENT CAN
BE RECOVERED WITHIN 10
YEARS. WITH THAT WE DOUBLE
UP EFFORTS.

A national energy labelling scheme for public buildings is the basis for developing climate upgrades of municipal buildings. The Danish local government association (Local Government Denmark) has entered into an agreement with the national government through which all climate upgrade projects with less than a five year payback period will be completed within five years of receiving the energy label. We are doubling that investment horizon. This means we will execute climate upgrades in municipal buildings even when it takes up to 10 years to get a return on the investment.

And that's not all. We will take an even longer term view with bigger renovation projects. Where synergies exist, they will be exploited, opening the possibility for investments for which the payback period may extend to 2025 or beyond. This allows us to safeguard municipal buildings for the future in the most efficient way while securing energy savings, CO₂ reductions, better lighting, good indoor climate and less noise.

We are already climate screening our renovation projects in accordance with our 2025 vision. This is both a necessity and an opportunity.



**FACT:
MUNICIPAL
BUILDINGS**

CITY OF COPENHAGEN
OWNS ABOUT 5% OF
THE TOTAL FLOOR
SPACE IN THE CITY.
IN ADDITION THE
MUNICIPALITY RENTS
ABOUT 1 MILLION M²
FOR ITS INSTITUTIONS
AND OTHER NEEDS.

COPENHAGENERS AND CLIMATE

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DAILY EFFORTS

Copenhageners are active bicyclists and skilled navigators of the public transportation system. We live in space saving apartments and have an efficient district heating system. We are already engaged and interested in climate and environmental issues. Consequently we emit much less CO₂ than the average Dane. And that is why our ambitious CO₂ goal is realistic.

Nonetheless, there is still much more we can do to integrate concern for the climate into our daily lives: we must consider electricity and heating consumption, our means of transport, our purchases and our waste recycling. This applies to households, work places, schools, institutions and the municipality itself.

THE CITY OF COPENHAGEN
FOCUSES ON ALL THESE
ISSUES THROUGH
INFORMATION, CONSULTING
AND TRAINING.

We make a special effort to reach children and youth. We will establish a science centre, launch demonstration projects and stimulate debate. We emphasise that climate investments as a rule pay for themselves over time. We coach and advise industries and establish partnerships with the business sector. The municipality itself leads by example, so that all Copenhagen's municipal employees consider sustainability issues in their work and decision-making.

SPECIFIC INITIATIVES

COPENHAGENER INITIATIVE 1:

Climate knowledge on the internet – debate, inspiration and specific actions for Copenhageners

COPENHAGENER INITIATIVE 2:

Climate consultants advise Copenhageners about electricity and heat conservation in their own homes, about transport options and waste separation – possibilities, savings advice and much more.

COPENHAGENER INITIATIVE 3:

Plastic is separated from the waste stream, and waste generation is minimized.

COPENHAGENER INITIATIVE 4:

The new virtual climate science centre makes Copenhagen a leader in climate education of children and youth, and helps to create a new generation of climate-wise Copenhageners.

COPENHAGENER INITIATIVE 5:

Companies are encouraged and supported in reducing their CO₂ emissions.

COPENHAGENER INITIATIVE 6:

Climate partnerships, network solutions and scope for innovation in private enterprises link business development to climate action.

COPENHAGENER INITIATIVE 7:

Business and academia combine forces in an innovative think-tank to develop proposals for CO₂ reductions and economic development.

COPENHAGENER INITIATIVE 8:

The municipality's employees are trained in climate-friendly conduct.

COPENHAGENER INITIATIVE 9:

The municipality sharpens focus on energy efficiency in all its procurement efforts.

We will simultaneously influence national authorities. Laws and fees must reward climate initiatives taken by individuals and businesses.

There's still a long way to go before Copenhagengers become carbon neutral, but the will to do more exists. The City of Copenhagen can show how knowledge can be translated into action.

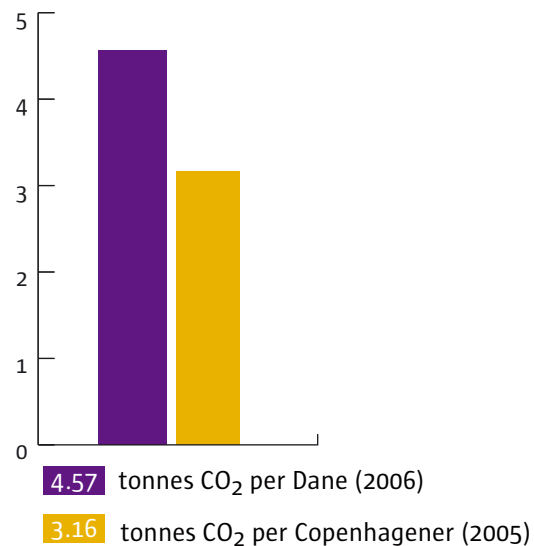
BEING A CLIMATE-
CONSCIOUS CITIZEN
MUST BE MADE AN EASY
CHOICE IN CLIMATE CAPITAL
COPENHAGEN.

FULFILLING VISION 2025

Fulfilling the vision of a carbon neutral capital requires new ways of thinking and strengthened partnerships – amongst Copenhagengers, businesses, organisations and municipalities. We must develop new collaborative modalities and partnerships. The municipality itself needs to lead. Our effort won't end in 2015 but will be followed up on with additional specific initiatives that raise awareness, inspire and educate all those who live in and use the city.

GOAL:
THE CITY OF
COPENHAGEN
WILL MEET 4% OF
THE TOTAL CO₂
REDUCTION GOAL IN
2015 BY ENGAGING
COPENHAGENERS
IN THE EFFORT.
THIS CORRESPONDS
TO ABOUT 20,000
TONNES OF CO₂.

DANISH PER CAPITA CO₂ EMISSIONS FROM ELECTRICITY, HEAT AND TRANSPORT COMBINED



LIGHTHOUSE PROJECT

WE ARE TRAINING A NEW CLIMATE GENERATION

20

Children and youth are the family's big energy users. They influence family habits and climate knowledge. They are the future's problem solvers on climate issues.

THAT IS WHY ALL CHILDREN AND YOUTH IN COPENHAGEN WILL BE EDUCATED TO BECOME CITIZENS OF A CLIMATE CAPITAL.

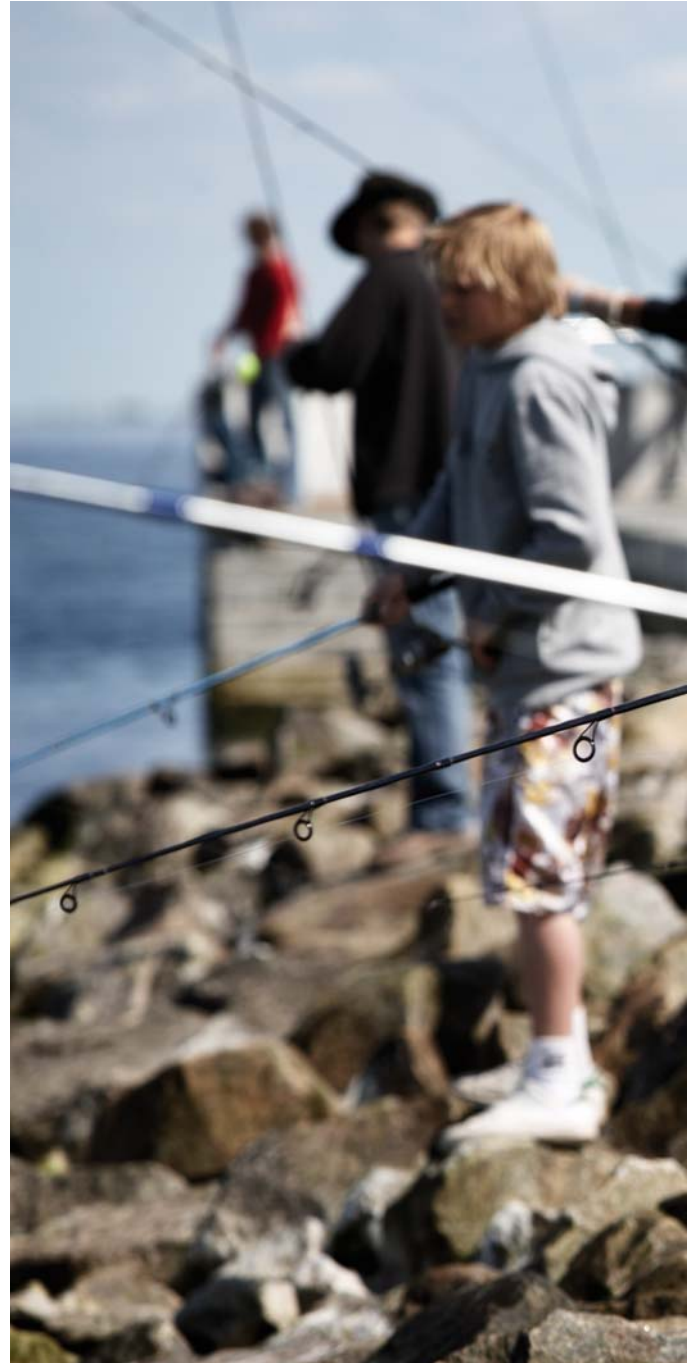
Habits form and take root as we grow up. It is our responsibility to ensure that the natural choice for the next generation will be to take the bicycle, switch off the computer and conserve water while showering. It's our responsibility to ensure that the next generation understands the consequences which today's bad habits have on our climate, nature and city life – and on their own lives and health.

A NEW SCIENCE CENTRE WILL MAKE COPENHAGEN A LEADER IN CLIMATE EDUCATION FOR CHILDREN AND YOUTH.

We will open a virtual science centre which will bring climate education for children and youth to new heights.

We will educate teachers and childcare workers, develop new teaching concepts and create new climate projects for children and youth. We will also collaborate with other municipalities and national research institutions.

Each year children from the ages of 0-18 years will be able to participate in one of the centre's activities. A minimum of 1,500 climate ambassadors, capable of promoting energy conservation among friends and family, are to be trained. At least 10,000 children will have the opportunity to plant a tree in the city's new "climate forest".





WE WILL EDUCATE A WHOLE NEW CLIMATE GENERATION. THIS IS A DECISIVE PART OF OUR 2025 VISION.

CLIMATE IN URBAN DEVELOPMENT

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THE RIGHT CONTEXT FOR CLIMATE INITIATIVES

As with all big cities, Copenhagen is in constant development. Buildings shoot up or are renovated, open spaces are converted to recreational areas. Entire neighbourhoods materialize. That is why climate and environment must be integral to all aspects of urban planning.

WE SEE CLIMATE AS AN
OPPORTUNITY FOR MAKING
COPENHAGEN AN EVEN
MORE ATTRACTIVE BIG CITY.

Every time decisions about new roads, buildings or transportation possibilities in a given area are taken, the focus must be on climate and environmental requirements.

We can get far with good planning. If the facilities Copenhageners use – boutiques, schools and green areas – are nearby, we'll reach them by walking. If there's a train station nearby, it's easy to choose public transport. The energy-smart choice only becomes attractive when it also is the easiest and most practical choice.

Buildings that are constructed or renovated must be green. Literally. Grass on rooftops and plants along the external walls can serve to insulate against cold in winter and heat in the summer – while also adding beauty. In general, all new construction must satisfy low energy criteria.

Our city planning already integrates climate challenges. In the development areas of Nordhavn, Carlsberg and Amager Fælled, we are committed to creating carbon neutral neighbourhoods of the future. These neighbourhoods will offer both green areas, public transport and everyday necessities.

BIG CITIES CHANGE, BUT
A COMMON APPROACH
IS NEEDED ACROSS ALL
SECTORS AND IN CLOSE
COLLABORATION WITH
LOCAL INITIATIVES.

Through collaboration we will ensure that the municipality establishes the necessary framework for creating wholeness and coherence with the overriding climate effort. It is this coherence that makes the vision of a carbon neutral Copenhagen achievable.

SPECIFIC INITIATIVES

URBAN DEVELOPMENT INITIATIVE 1:

The municipal plan addresses climate by promoting a dense city less dependent on transport

URBAN DEVELOPMENT INITIATIVE 2:

Climate is integral to sustainability planning in all city development projects

URBAN DEVELOPMENT INITIATIVE 3:

All new city development areas are designated low energy areas with the toughest low-energy standards

URBAN DEVELOPMENT INITIATIVE 4:

The municipality will enforce compliance with low energy requirements.

FULFILLING VISION 2025

In order to fulfil the vision of a carbon neutral Copenhagen, all municipal plans must actively ensure the creation of neighbourhoods with minimal transport and energy requirements. The municipality will establish pilot areas where additional requirements must be met. Experience and knowledge gained through these pilot projects will improve our climate-friendly planning in the future.



GOAL:
CITY OF
COPENHAGEN
WILL ACHIEVE 1%
OF ITS TOTAL CO₂
REDUCTION IN
2015 THROUGH
URBAN
DEVELOPMENT.
THIS EQUALS
ABOUT 5,000
TONNES OF CO₂.

LIGHTHOUSE PROJECT

LOWEST ENERGY CLASS

FOR ALL TIMES

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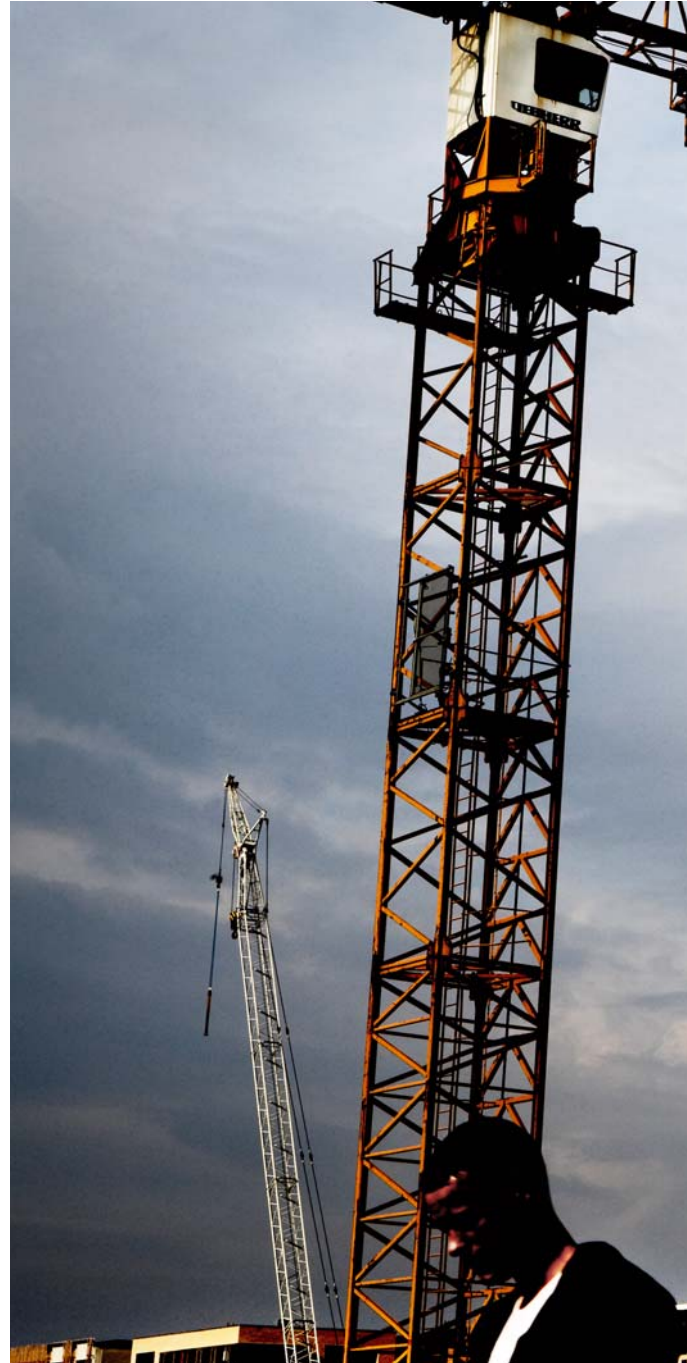
Roughly 400.000 residential and business square metres are built each year in Copenhagen. These buildings will mark Copenhagen long into the future. They must not only be beautiful, they must also have minimal energy consumption to ensure that they have the lowest CO₂ emissions possible.

THAT IS WHY ALL NEW
NEIGHBOURHOODS MUST
BE LOW ENERGY AREAS.
BUILDING STANDARDS IN
COPENHAGEN MUST SECURE
THE LOWEST ENERGY CLASS
AND REQUIREMENTS MUST
ALWAYS EXCEED THOSE IN THE
NATIONAL BUILDING CODE.

We must reduce energy consumption in Copenhagen's old buildings by renovating, accommodating and converting. For new buildings, all options are open. We can't let this opportunity slip through our hands. We must set requirements - for insulation, building materials, screening, electrical installations, and ventilation systems. This will cost a bit more in the short term. But it is profitable in the long term - for our climate and economy.

Owners, architects and entrepreneurs will be challenged to always integrate low energy standards in their designs and procurement terms. We will support their effort by ensuring that low-energy areas can be powered in the most sustainable way.

The municipality will also lobby for a regulatory system that integrates the nationwide low-energy labelling system for new buildings with the municipal authority. If we are to meet our 2015 goal and fulfil our vision of carbon neutrality by 2025, new buildings must live up to low-energy standards. In the absence of a national control system we will focus on energy requirements when giving permits for new construction projects.





ADAPTING TO THE FUTURE CLIMATE

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READY FOR DROUGHTS AND DOWNPOURS

Global climate changes will set their mark on Copenhagen over the next 100 years: Dry summers with intensive rain events, wetter winters, higher temperatures and rising water levels. We don't know all the consequences nor when they will appear. But we do know that floods will be more frequent as will storm surges. At the same time Copenhagen must continue to be the preferred big city for citizens and businesses.

IT IS OF KEY IMPORTANCE THAT WE PROTECT OUR CITY FROM EXTREME WEATHER EVENTS AND SAFEGUARD OUR CITY FOR THE FUTURE.

The City of Copenhagen is already safeguarding the city against climate changes so that we will be able to manage greater rainwater volumes in the future.

However, we still don't know all the effects, risks and economic consequences associated with the tools we can use to safeguard our city. That is why we will develop a climate adaptation plan.

The plan must ensure that climate adaptation is undertaken in the best and most cost effective way possible. Long-term investments and good planning will ensure that climate safeguarding investments are significantly reduced over time. The plan must also create synergy between all environmental initiatives and continue to improve the city's recreational opportunities.

IN THIS WAY THE DESIRE TO SAFEGUARD THE CITY AGAINST CLIMATE CHANGE CAN GO HAND IN HAND WITH THE WISH TO MAKE COPENHAGEN A BETTER PLACE TO LIVE.

FACT: CLIMATE CHANGES EXPECTED IN COPENHAGEN

PRECIPITATION WILL INCREASE BY 30-40 % UP TO 2100.

WATER LEVELS AROUND COPENHAGEN WILL RISE BETWEEN 33-61 CM IN THE PERIOD 2000-2100.

CHANGES COME GRADUALLY BUT WILL HAPPEN FASTER AND FASTER AND THE MOST DRAMATIC CHANGES WILL OCCUR AFTER 2050.

GOAL:

THE CITY OF COPENHAGEN WILL DEVELOP A CLIMATE ADAPTATION PLAN TO ENSURE THAT THE CITY IS READY FOR THE WEATHER ANTICIPATED FROM CLIMATE CHANGE.

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SPECIFIC INITIATIVES

ADAPTATION INITIATIVE 1:

The municipality develops various ways of draining water from big downpours – and applies these methods throughout the city.

ADAPTATION INITIATIVE 2:

Additional green areas, pocket parks, green roofs and green walls slow rainfall run-off, thus reducing the risk of flooding.

ADAPTATION INITIATIVE 3:

More buildings use alternatives to air conditioning units, such as sunshades, improved ventilation and insulation.

ADAPTATION INITIATIVE 4:

Safeguarding against flooding and rising sea levels.

ADAPTATION INITIATIVE 5:

The municipality develops a comprehensive climate adaptation strategy.

FULFILLING VISION 2025

A climate adaptation plan with long-term investments and timely planning give us the needed edge to ensure that the city is prepared for violent rainstorms and heat waves.



LIGHTHOUSE PROJECT

POCKET PARKS AS BREATHING SPACES

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The powerful downpours and higher temperatures associated with climate change present challenges to all cities. Floods and droughts affect city spaces and all of us in them. We choose to see this as an opportunity. While preparing ourselves for the weather of the future we can also make Copenhagen a better place to live.

THAT IS WHY WE WILL HAVE POCKET PARKS ALL OVER THE CITY.

Pocket parks are small green spaces which help cool the city on hot days and absorb rain on wet days, and which at the same time open possibilities for fun and sports activities to the benefit of Copenhageners and their health.

Pocket parks create synergy between buildings and green spaces. As we prepare our city for the weather of the future the opportunity arises of establishing living oases where, until now, concrete has dominated. These oases will be placed in the midst of the concrete, tiles and asphalt and between skyscrapers, in alleys and side streets. We can develop a green and healthy environment in an urban setting, providing meeting places for Copenhageners and our guests.

When we talk of adapting to the climate of the future, our perspective is on the city's development. That is why we want to establish pocket parks of high landscaping and architectural merit, at least two new attractive pocket parks for Copenhageners each year. Variations in plants, functions and elements must allow different experiences, atmospheres and uses – in the course of the day and through changing seasons. Rainwater must be an integral part: water that flows, water that freezes, water that cools.

As we make the city greener we'll optimise water absorption. In that way we'll buffer the flows to sewers during heavy rains, and enhance green areas with stored water for warm and dry days.

We could choose from various adaptation approaches. We favour the green one. In many ways it's the cheapest solution while being an investment in a more beautiful, healthier and better city, allowing us to combine environment with city life and play. It is the solution which offers greatest benefit and most enjoyment to us all.



VISION OF A CARBON NEUTRAL CITY

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The climate plan describes 50 ambitious initiatives which will lead us to our goal in 2015. But we want to go further. The City of Copenhagen has a vision of being carbon neutral by 2025.

Can you imagine a big city which does not contribute to global CO₂ emissions? We can. We dare to visualize a Copenhagen which combines continuing growth with decreasing CO₂ emissions. In the bargain we get cleaner air, less noise, more green areas and healthier indoor climates.

Carbon neutrality in 2025 will send a dramatic signal to the world. If everyone did as Copenhagen, the climate problem would be solved. We will inspire other big cities by showing that investing in environment goes hand in hand with economic growth. We hope our effort has a far greater impact than reducing Copenhagen's CO₂ emissions.

THEREFORE THE EFFORT
IS NOT AN EXPENSE, IT
IS AN INVESTMENT. AN
INVESTMENT IN A BETTER
LIFE FOR COPENHAGENERS
AND AN INVESTMENT WITH
GOOD FINANCIAL RETURNS
IN THE LONG RUN.

WHAT DOES CARBON NEUTRAL MEAN?

Carbon neutral means that on balance we don't contribute CO₂. To meet this goal we must first and foremost reduce our CO₂ emissions. We can do this by erecting more windmills before 2025. By doing more to reduce emissions from cars and busses. And by having still more Copenhageners conserve energy at home and at work.

By implementing the climate plan's initiatives – and assisted by the expected developments – we expect to reduce Copenhagen's CO₂ emissions from 2,500,000 tonnes CO₂ today to about 1,150,000 tonnes in 2025.

To become completely carbon neutral we must also remove just as much CO₂ as we produce. We will need to compensate for the 1,150,000 tonnes of CO₂ in 2025 by for example investing in still more windmills, using new technologies or plant forests which absorb CO₂.

WILL IT WORK?

The climate plan's 50 initiatives up to 2015 are an important step towards carbon neutrality. But of course efforts won't stop in 2015.

WE KNOW THAT IT IS BOTH
POSSIBLE AND REALISTIC
TO MAKE COPENHAGEN
CARBON NEUTRAL BY 2025.

It requires action, will and collaboration. It requires partnership. We all need to set and meet goals – businesses, citizens and the municipality. We need to convert to renewable energy sources. We must establish the best framework for energy friendly transport. And we all need to be ready to cut back more on our energy consumption.

But we also depend on factors beyond our control. Our national energy system must be upgraded. And the ambitious national and international climate goals and agreements must be fulfilled.

THIS IS HOW WE WILL WORK TOWARDS FULFILLING VISION 2025

UNDERTAKE A THOROUGH ANALYSIS OF ALL THE TOOLS WHICH IN TIME CAN BRING ABOUT OUR 2025 VISION.

INVITE PRIVATE AND PUBLIC SECTOR STAKEHOLDERS TO JOIN US IN PARTNERSHIPS WITHIN ALL ACTION AREAS.

TAKE LEADERSHIP IN ENSURING THAT NATIONAL GOALS ARE MET – AND THAT NEW, AMBITIOUS GOALS ARE ADOPTED.

DRAW INSPIRATION FROM INITIATIVES IN OTHER AMBITIOUS BIG CITIES.

FOLLOW UP THROUGH ANNUAL ACCOUNTING, A MID-TERM EVALUATION IN 2012 AND ACTIVE DECISION-MAKING ON NECESSARY ACTIONS.

MEASURES FOR 2025	REDUCTION POTENTIAL, TONNES CO ₂
ENERGY SAVINGS	230,000
ENERGY SAVINGS IN THE MUNICIPALITY'S OWN OPERATIONS	19,000
CONVERSION OF BIOMASS	300,000
GEOHERMAL POWER	25,000
SOLAR HEATING	1,000
HEAT PUMPS AND ELECTRICAL ELEMENTS	65,000
IMPROVED WASTE SEPARATION	9,000
INCREASED WINDMILL CAPACITY	925,000
URBAN DEVELOPMENT	30,000
REDUCED ROAD TRAFFIC	150,000

This is how Copenhagen can become carbon neutral by 2025. A scenario for Copenhagen as a carbon neutral city. The potential of these measures are calculated using 2005 CO₂ emissions as the baseline. The combined effect of all measures is smaller than the sum of the individual contributions.

Climate Capital Copenhagen

Can one imagine a city which on
balance has no net CO₂ emissions?

We can.

Copenhagen will create the best big
city environment in the world.

As an eco-metropolis we walk the talk and base our words on specific initiatives.
We show others how a greener cityscape leads to a better life.

Copenhagen has made a climate plan which demonstrates that CO₂ emissions can
be effectively reduced without negatively impacting economic growth. We show
how environmental criteria stimulate city development. We want the world to
come to Copenhagen and see how progressive environmental policy can be imple-
mented in the 21st century.

*Further information on
Copenhagen's climate effort
is provided in the complete
plan, "Carbon neutral by 2025
– Climate Plan Copenhagen",
in Danish. Methods and as-
sumptions are also explained
here. Unless otherwise stated,
the CO₂ figures provided are
from 2005.*

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The Technical and
Environmental Administration
City Hall
1599 Copenhagen V
www.kk.dk/climate

August 2009
Design: phonowerk
Printing: Jønsson Grafisk A/S
Number: 5.000
Photography: Tine Harden



GOAL:

CO₂ EMISSIONS REDUCED BY 20%
FROM 2005 TO 2015.

VISION:

COPENHAGEN IS CARBON
NEUTRAL BY 2025.