CPH 2025 CLIMATE PLAN

COPENHAGEN CARBON NEUTRAL BY 2025

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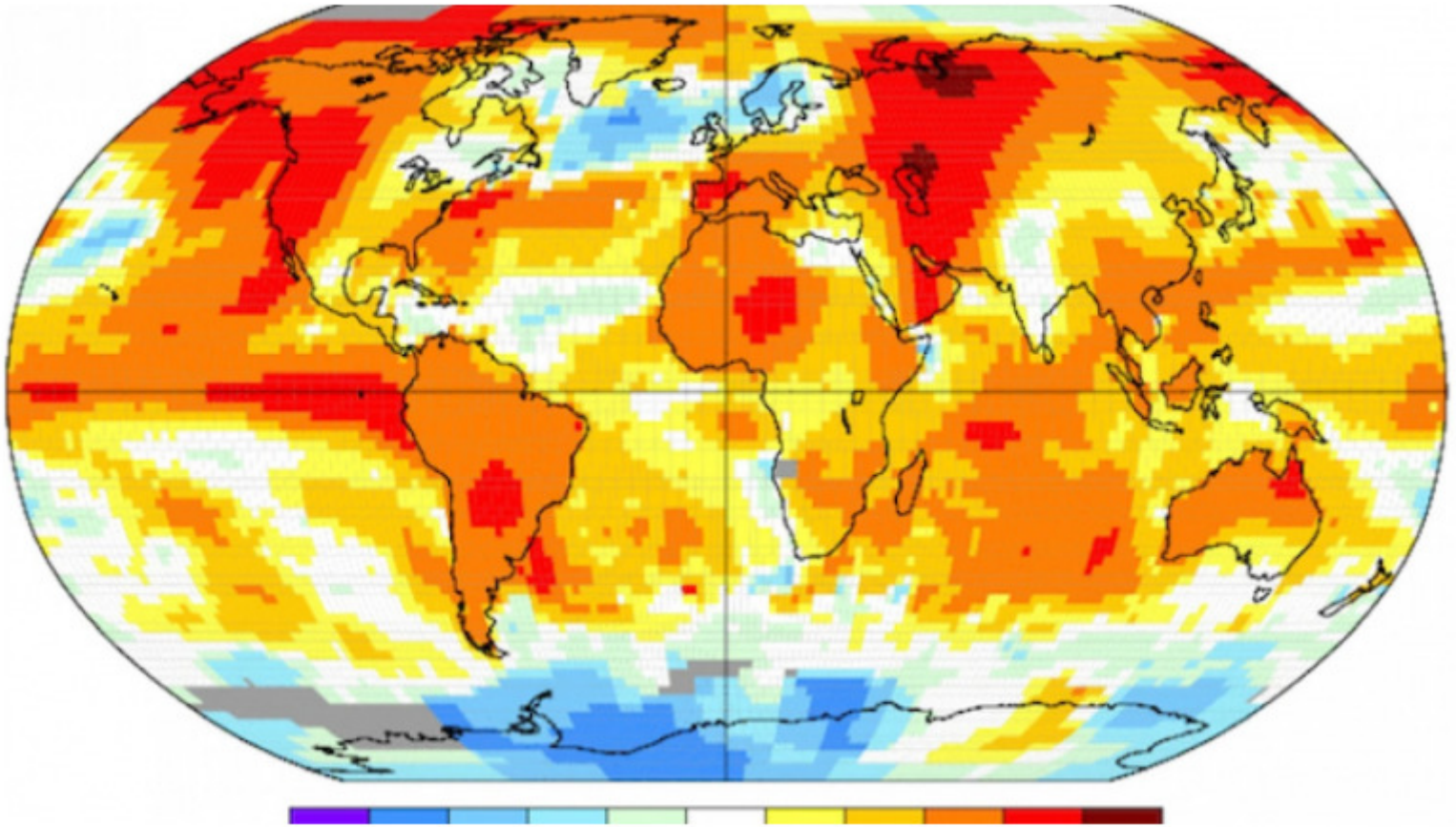
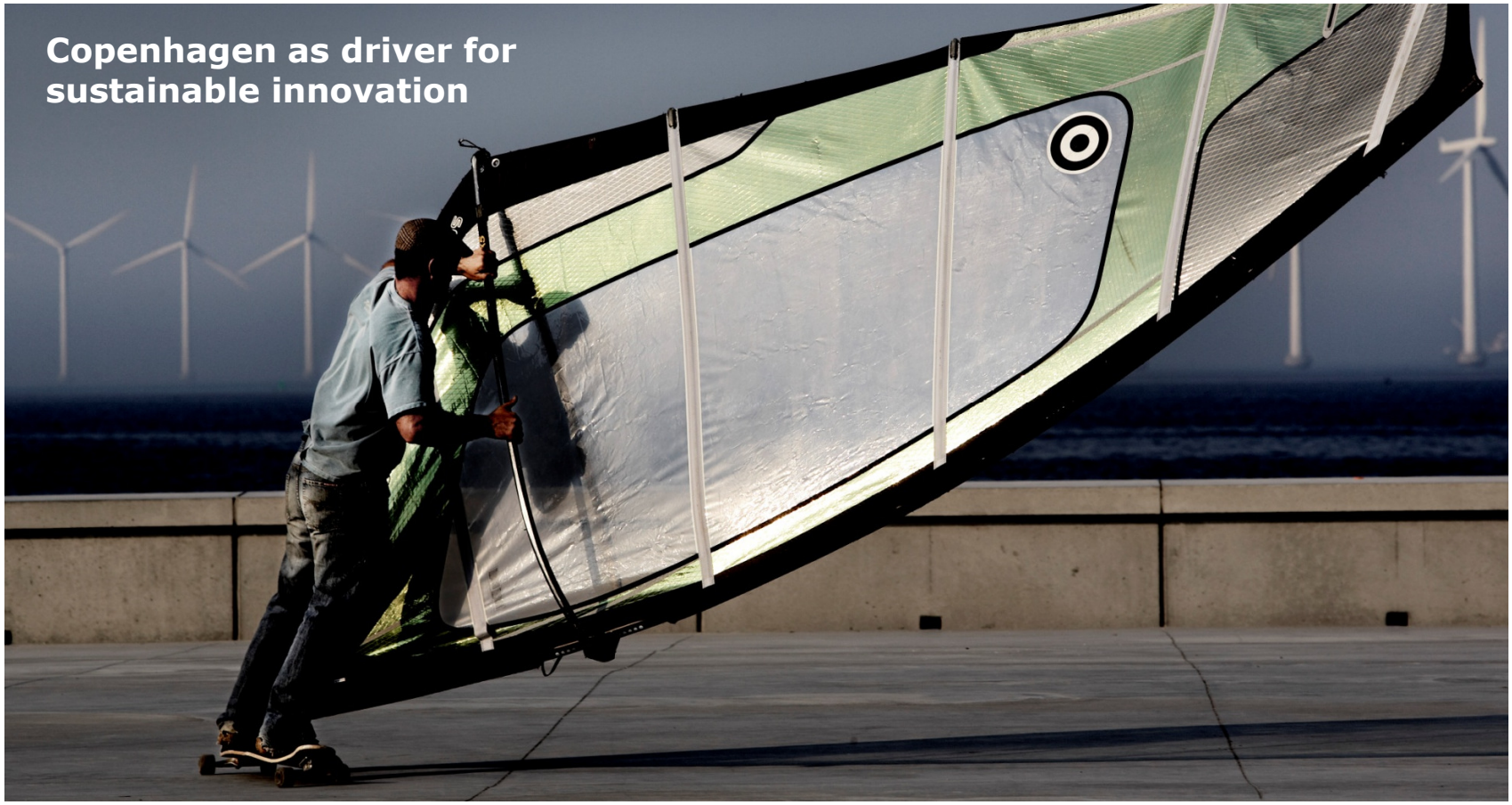
Executive Climate Project Director

WORLD TEMPERATURE – JUNE 2015

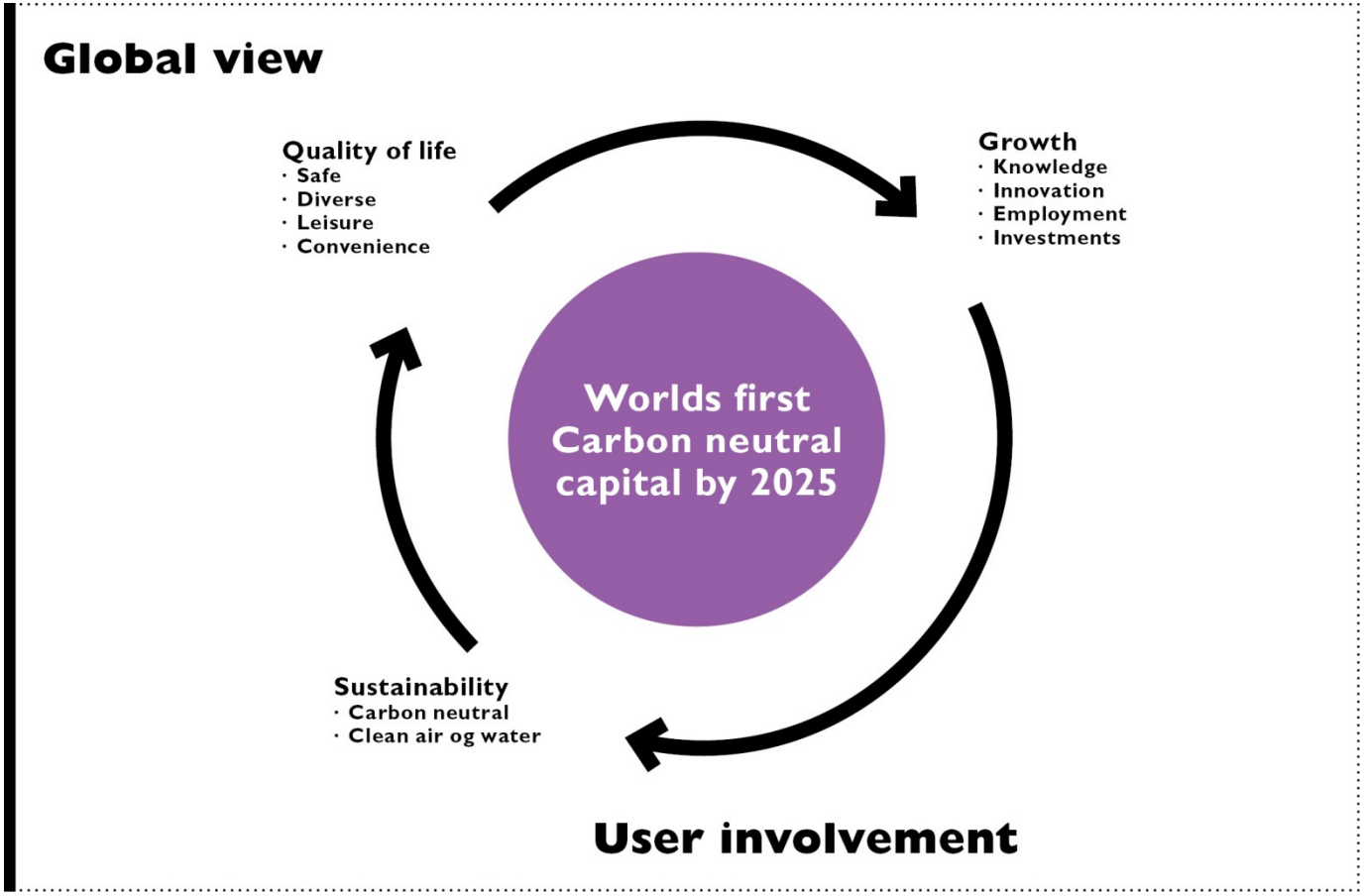


Source: Nasa

CLIMATE AND GREEN GROWTH
- PUTTING VISIONS INTO PRACTICE



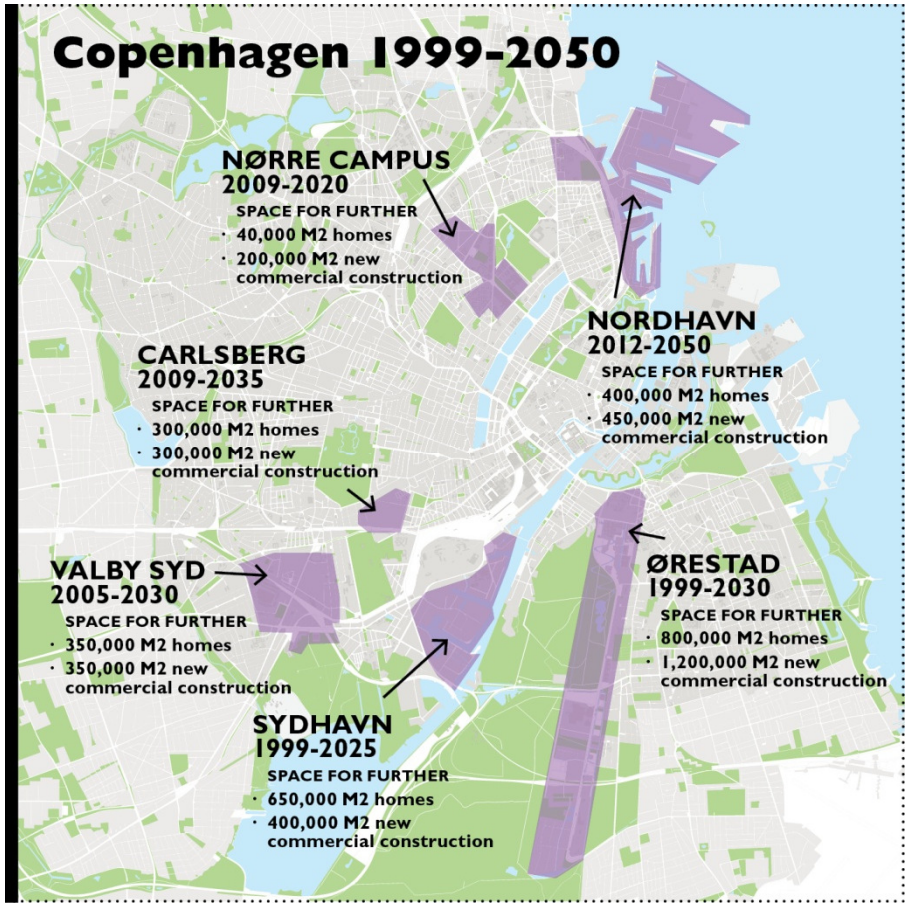
THE COPENHAGEN STORY



POSSIBILITIES AND SOLUTIONS

ROOM FOR GROWTH

- **1000 new inhabitants every month**
- **20 % increase to 2025**
- **670.000 in 2025 (800.000)**



COPENHAGEN AT THE TOP

FIVE HIGHLIGHTS

'EUROPEAN GREEN CAPITAL 2014'
The European Commission

'COPENHAGEN, MOST LIVEABLE CITY 1st in 2013 + 2014, 10th in 2015'
Monocle

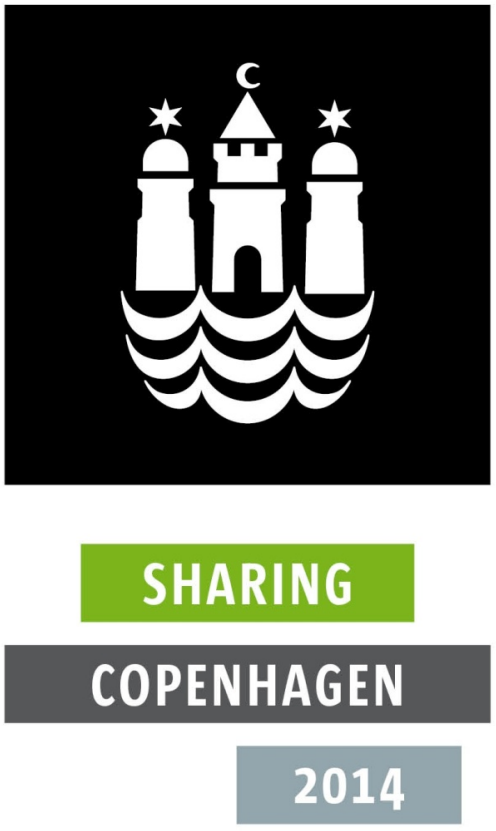
'COPENHAGEN, THE GREENEST MAJOR CITY IN EUROPE'
Siemens Green Index

'COPENHAGEN, NAMED WORLD'S HEALTHIEST CITY'
CNN, 2014

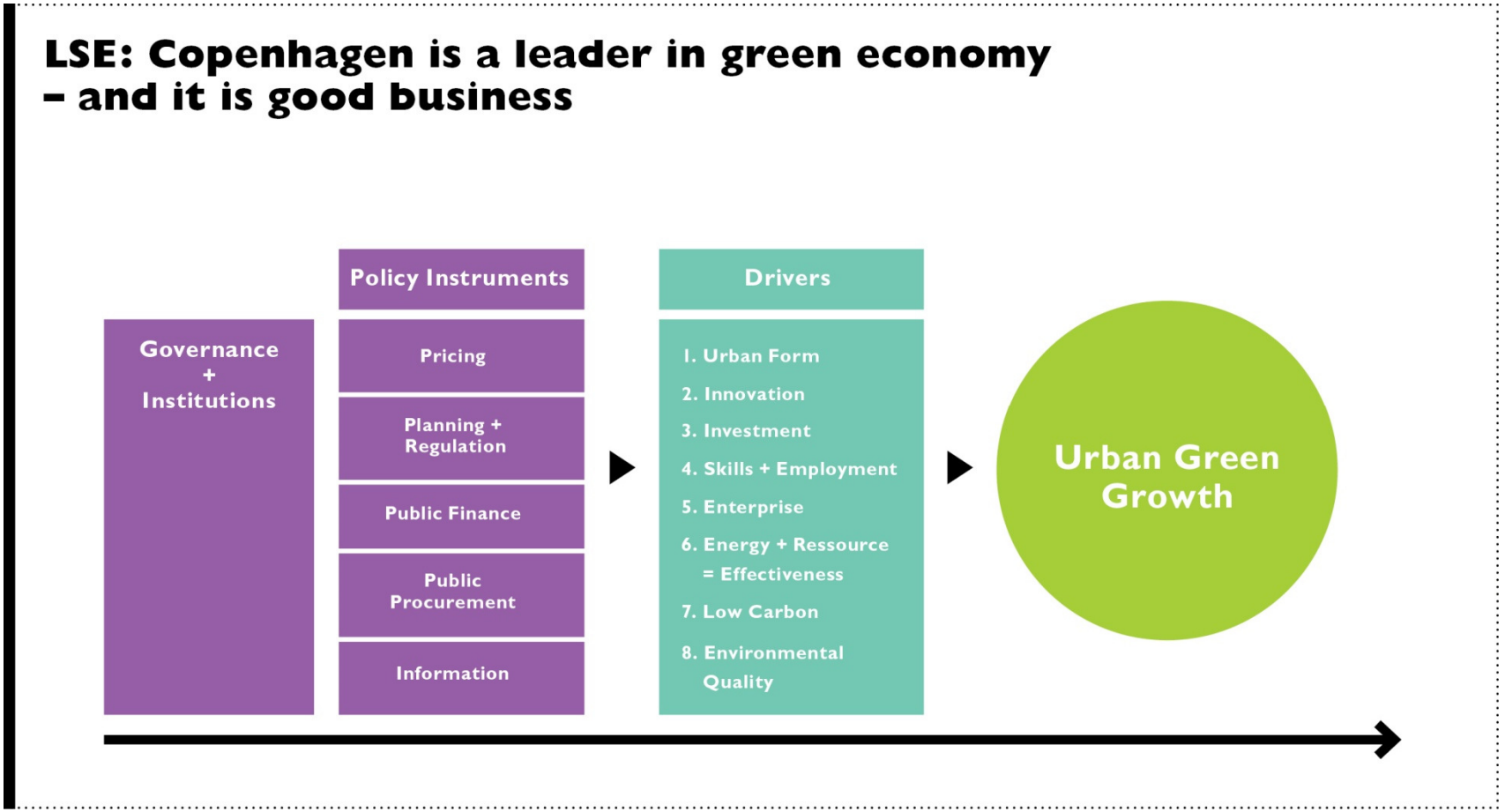
'COPENHAGEN SMARTEST CITY IN EUROPE'
Boyd Copen Smart City Index
2012 + 2013

C40 CITY LEADERSHIP AWARD 2013
Carbon Measurement and Planning

SHARING COPENHAGEN



LSE: COPENHAGEN IS A LEADER

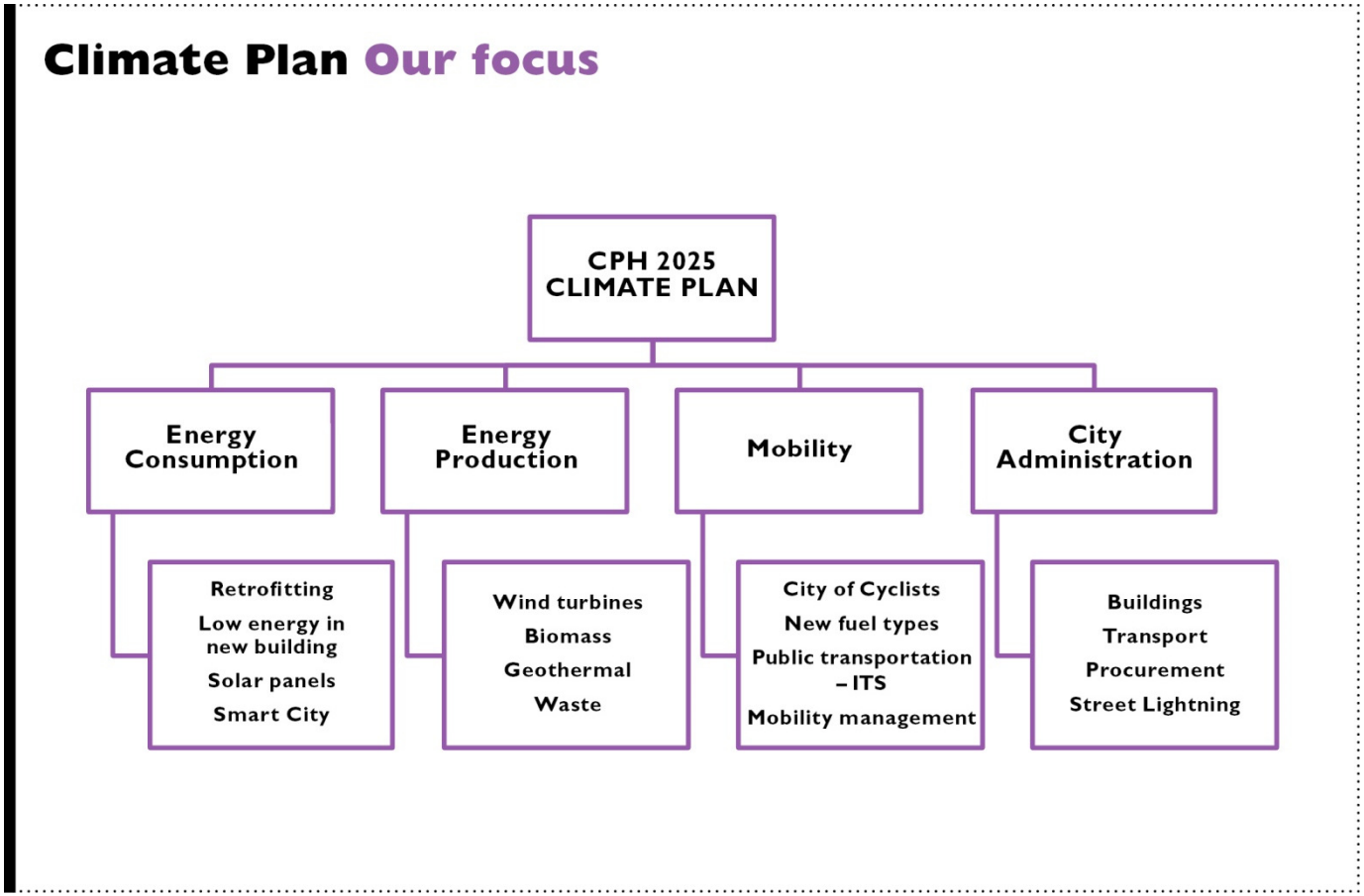


WORLD CLASS INITIATIVES WITH POTENTIAL FOR KNOWLEDGE SHARING AND EXPORT

A GOOD STARTING POINT

- **Bicycle infrastructure and our many bikers. 45 % of all trips to work or study by bike**
- **98 % of all heat consumption from district heating**
- **100 % renewable energy in energy production in 2025**
- **100 wind turbines in 2025**
- **2020 Low Energy Class buildings**
- **Electric vehicles in our fleet of cars**
- **Climate Adaptation**

22 BUSINESSPLANS AND 200 STAKEHOLDERS
3 + 3 MONTHS

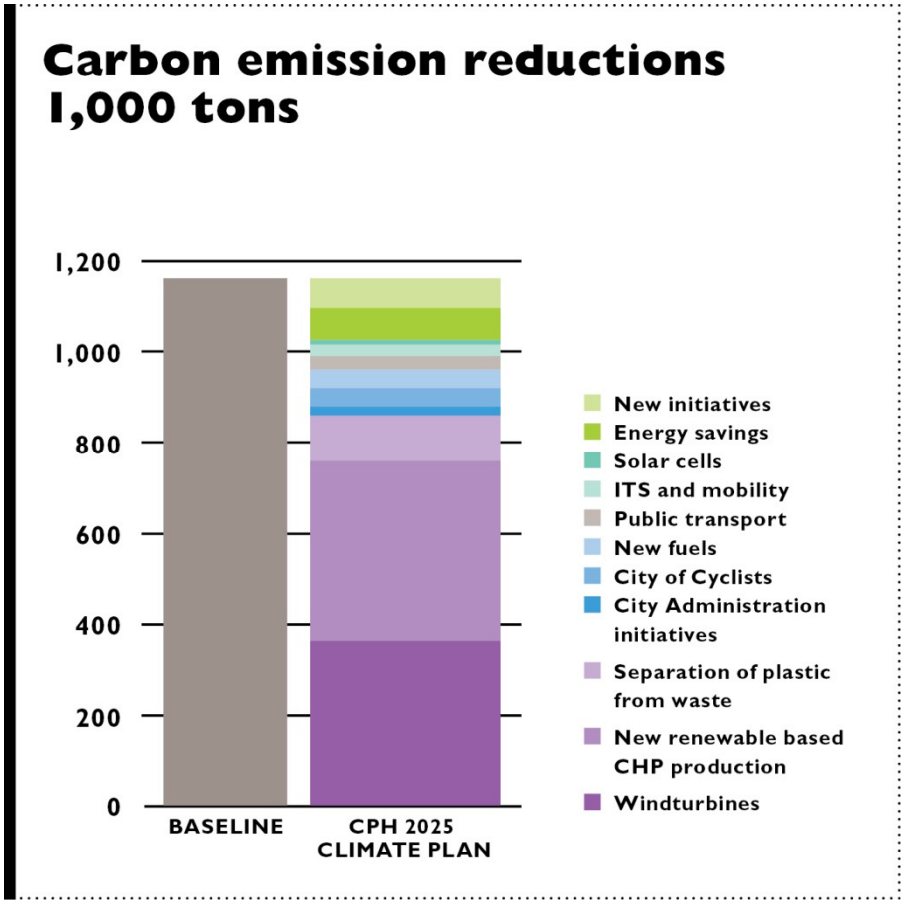


22 BUSINESSPLANS AND 200 STAKEHOLDERS
3 + 3 MONTHS

22 BUSINESSPLANS AND 200 STAKEHOLDERS
3 + 3 MONTHS

CARBON NEUTRAL IN 2025

- **Ambitious but realistic!**
- **31 % CO2 reduction in 2014**



ENERGY CONSUMPTION

MAJOR GOALS FOR 2025

- **20 pct. reduction in heat consumption**
- **Improvement of building structures and conditions**
  - Strategy for reducing the energy consumption in CPH
  - New financial and organizational models
- **20 pct. reduction of electricity consumption in commercial and service companies**
- **10 pct. reduction of electricity consumption in households**
- **Installation of solar cells**
- **Smart City, Open data Portal, Copenhagen Connecting**

COPENHAGEN CLIMATE PROJECTS
THE FUTURE OF OFFICE BUILDINGS

ATP-House at Langelinie

Purpose

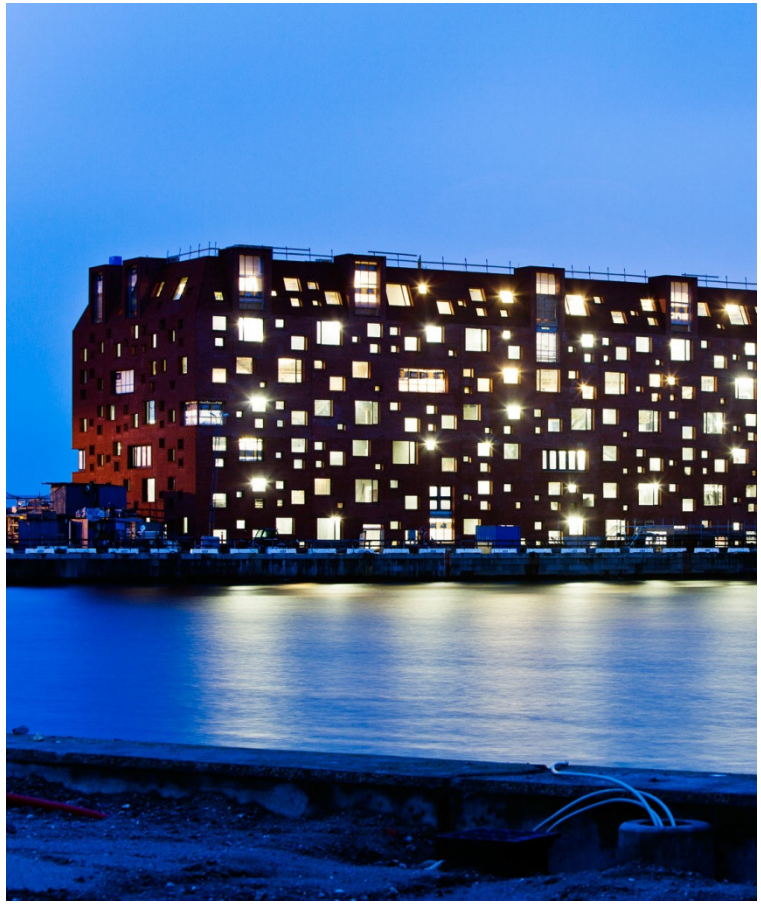
- Low maintenance and operating costs through keeping energy costs at a minimum in office buildings

Actions

- Used air in building provides heat via heat pump
- Fresh air pulled into building by vents
- Groundwater used for cooling

Results

- 70 % less energy on heating
- 80 % less energy on cooling



COPENHAGEN CLIMATE PROJECTS

PUBLIC FINANCIAL SUPPORT CUTS ENERGY CONSUMPTION IN HALF

Bellmannsgade – Energyretrofitting

Purpose

- Achieving 50 % reduction in energy consumption by supporting renovation of 1960s apartment building with new financing model

Actions

- Integrating energy retrofitting in the renovation process
- Funding half of the renovation costs through the Danish State and the City of Copenhagen
- Implementing solar panels

Results

- Energy consumption for heating and hot water after renovation was cut in half
- Improvement from energy ranking ”D” to ”B”

ENERGY PRODUCTION

MAJOR GOALS FOR 2025

- **Carbon neutral district heating in CPH**
- **Electricity production is based on wind and biomass**
  - **100 wind turbines before 2025; onshore and offshore**
- **Geothermal, heatpumps and solar heat.**
- **Plastic waste is separated**
- **Biogasification of organic waste**

COPENHAGEN CLIMATE PROJECTS
FIRST WIND TURBINES INSTALLED IN CPH

Wind turbines at Prøvestenen

Purpose

- Installing wind turbines as key to more flexible and CO_2 neutral energy system

Actions

- Erecting 3 wind turbines close to city centre, which supply energy to 3,400 households for a whole year, inviting the public, companies and organizations to purchase 33 % shares in turbines

Results

- Covering the annual electricity need of 3,400 households in only 10 months

COPENHAGEN CLIMATE PROJECTS
ENZYMATIC TREATMENT OF UNSEPARATED WASTE

Renescience – DONG Energy

Purpose

- Turning solid waste from households into high-yield fuel while separating recyclable resources

Actions

- Introduction of REnescience bioreactor where enzymes and bacteria break down organic fractions and separate biodegradable from solid waste

Results

- Recovery of 90 % biodegradable material , 65 % plastic and 90 % metal
- Producing 130-170 Nm^3 biogas per ton of waste

MOBILITY

MAJOR GOALS FOR 2025

- **75 pct. of all trips in Copenhagen are on foot, by bike or public transport.**
- **50 pct. of trips to work or school in Copenhagen are by bike.**
- **20 pct. more passengers use public transport.**
- **20-30 pct. of all light vehicles run on new fuels**
  - electricity, hydrogen, biogas or bioethanol.
- **30-40 pct. of all heavy vehicles use new fuels.**

COPENHAGEN CLIMATE PROJECTS
NEW CYCLE BRIDGE CONNECTS THE CITY

Purpose

- Connecting two districts of CPH via elevated bike lane to make cycling more attractive, easier and more comfortable

Actions

- Building an elevated, two-way bike lane (Cycle Serpent) connecting Vesterbro and Amager

Results

- 11,500 cyclists use the Cycle Serpent daily
- Cycle traffic on the connecting Bryggebro bridge is increased by 25 %

COPENHAGEN CLIMATE PROJECTS
THE ELECTRIC MAILMAN

Post Denmark

Purpose

- Trimming business to meet future demands where mailmen have to cover longer distances carrying heavier loads

Actions

- 1.800 specially designed cargo bikes put in operation, in 2014

Results

- Each mailman can cover 50 km carrying up to 130 kg
- Diesel consumption reduced by 1,3 million litres per year
- Savings in fuel and wages totaling around DKK 40 million per year

COPENHAGEN CLIMATE PROJECTS
FAST LANES ("QUICK WAY") FOR BUSSES

Quick Way

Purpose

- Increasing number of bus passengers by making traveling by bus through the city faster and more efficient

Actions

- Lanes for buses called "Quick Way"
- Intelligent traffic signals
- Easier boarding for passengers by elevating bus-stop platforms
- Higher frequency in departures (a bus every 3 minutes)

Results

- Dedicated bus lanes transport 30,000 students and employees every day.
- Travel time is reduced by 20 %

CITY ADMINISTRATION INITIATIVES

MAJOR GOALS FOR 2025

- **Reduce energy consumption in municipal buildings by 40 pct.**
- **Municipal new build meet 2020 Low Energy Class.**
- **Vehicles run on electricity, hydrogen or biofuels.**
- **The energy consumption for street lighting is halved.**
- **60,000 sq meters solar panels.**

COPENHAGEN CLIMATE PROJECTS
SHEDDING NEW LIGHT ON THE CAPITAL

New Street Light

Purpose

- Cutting the electricity consumption on lighting in half by 2016, compared to 2010

Actions

- Replacing 20.000 street lighting fixtures with LED lights
- Replacing 8.000 poles
- Replacing 1.140 electrical cabinets

Results

- A 57 % reduction in the amount of electricity used to light up the city's street lights by 2016
- A 70-80 % rendering of the colours as opposed to 20-30% rendered by the former sodium-vapour lamps

COPENHAGEN CLIMATE PROJECTS
INVESTING IN GREEN TRANSPORTATION

85 % electric in 2015

Purpose

- Increasing use of electric or hydrogen cars in the City of Copenhagen to 100% in 2025

Actions

- GPS-based fleet management
- Buying electric cars when old ones get replaced
- Involving other cities in the procurement process to ensure lower prices

Results

- Saving up to 30 % of full price through joint procurement
- Number of the city's green cars has increased from 13 % to 43 % in only one year

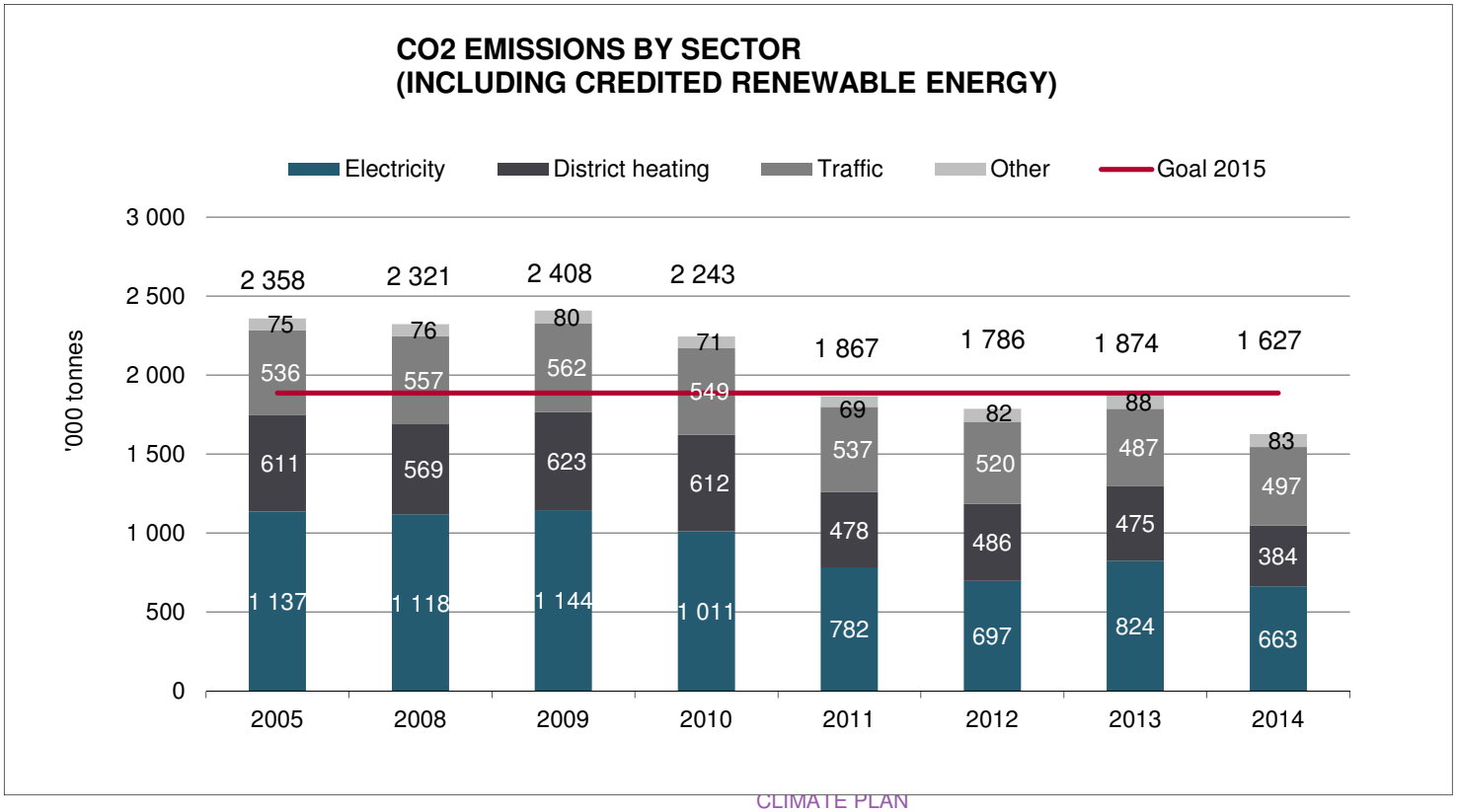
STATUS: ROOM FOR IMPROVEMENTS

- **Retrofitting of our buildings and new build**
- **Copenhagen as a smart city - we can do better**
- **Waste: Recycling - plastic and organic waste**
- **Our public bus transport in Copenhagen**
- **New fuels - EV's, gas, hydrogen and new synthetic fuels**
- **Our own buildings - Copenhagen Properties**
- **Procurement**
- **Involvement of Copenhagernes and stakeholder**

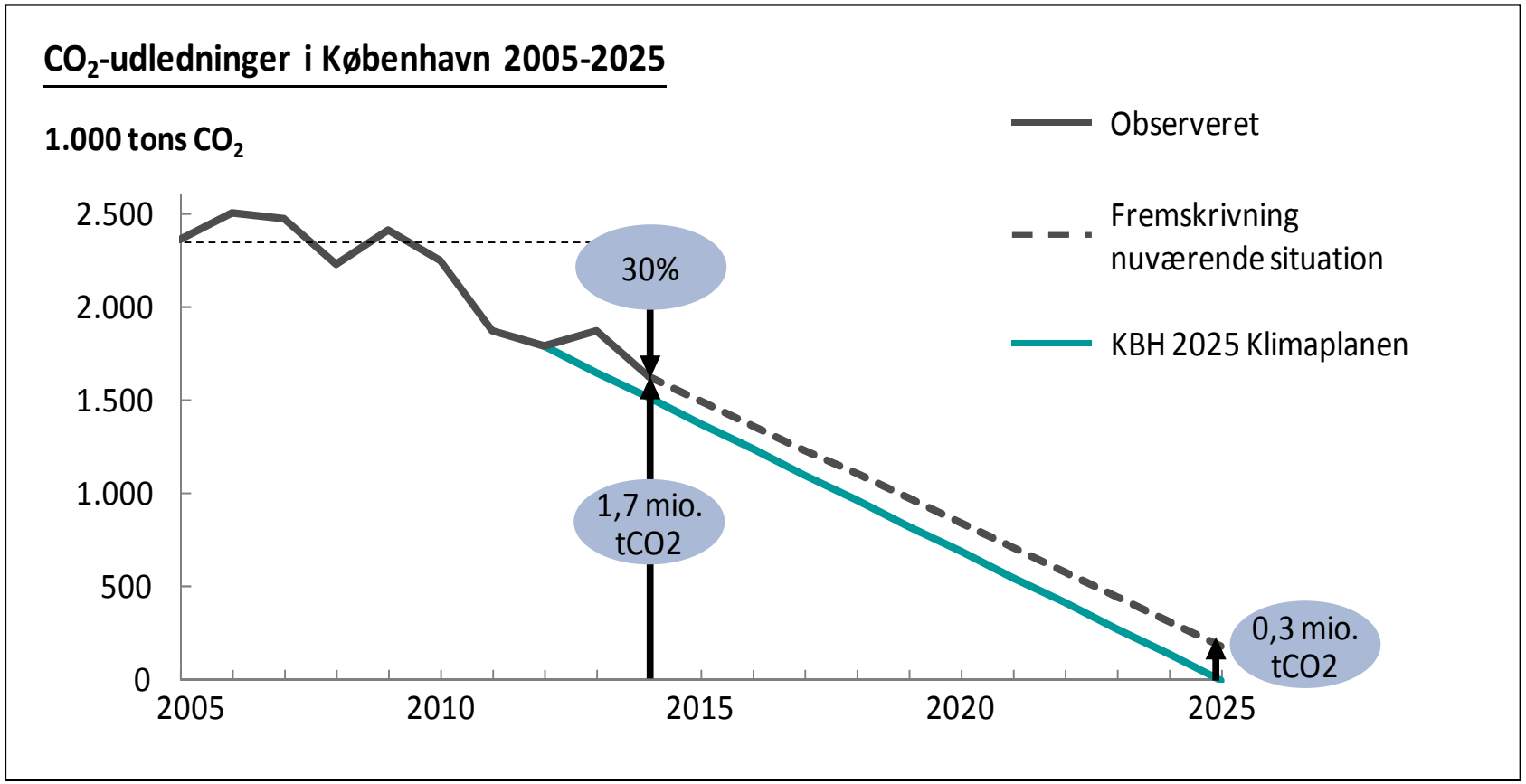
Copenhagen can learn from other cities

CARBON NEUTRAL IN 2025 – STATUS 2014

- 2,8 t CO2 per capita in 2014
- 31 % CO2 reduction (2005-2014)
- 7 % CO2 reduction in transport (2010-2014)
- 15 % increase in population (2005-2014)
- 18 % increase in local economy (2005-2014)



CARBON NEUTRAL IN 2025 – STATUS 2014

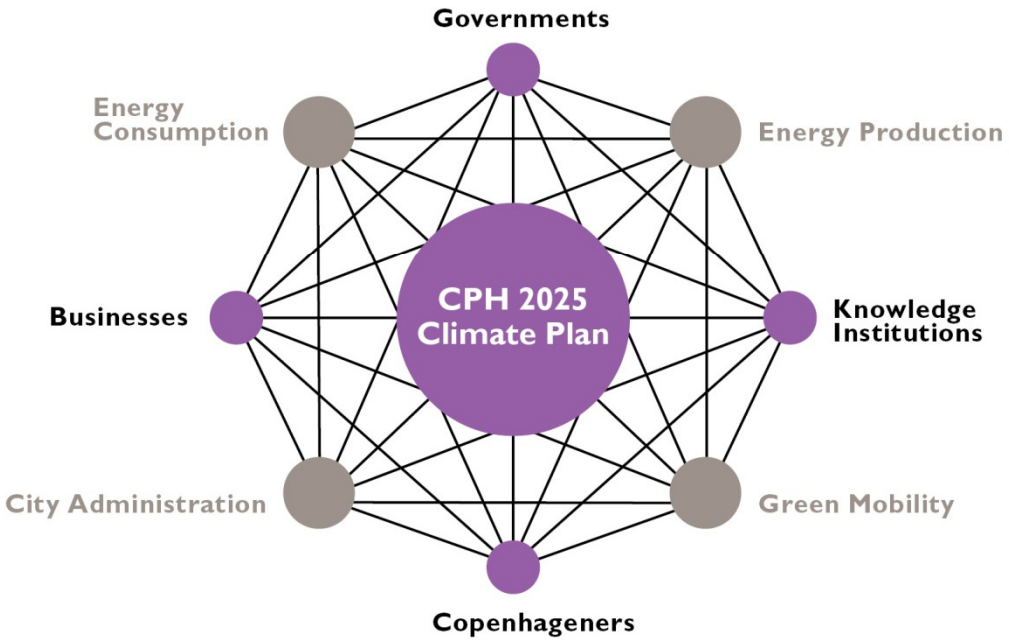


INVESTMENTS IN COPENHAGEN: A NEW ROLE AND NEW STAKEHOLDERS

PUBLIC INVESTMENTS **City of Copenhagen** **2,7 bn.dkr.**	Copenhagen Real Estate: Bicycle: Public transport: Street lightning: Others:	0,9 bn. dkr. 0,6 bn. dkr. 0,3 bn. dkr. 0,3 bn. dkr. 0,6 bn. dkr.	**1**
PRIVATE INVESTMENTS **Direct investments in energy- and climate** **20-25 bn.dkr.**	Wind turbines New power plant: Geothermal: Amager Resource Center PV District Cooling Infrastructure, metro + others	5,5 bn. dkr. up to 4,0 bn. dkr. 1,0 bn. dkr. 3,0 bn. dkr. 0,5 bn. dkr. ? bn. dkr. ? bn. dkr.	**9**
PRIVATE INVESTMENTS **Energy- and climate related investments** **200-250 bn.dkr.**	New buildings: Retrofitting: New cars: Others:	140 bn. dkr. 50 bn. dkr. 25 bn. dkr.	**85**

STAKEHOLDER INVOLVEMENT

Focus areas and stakeholders contributing to the CPH 2025 Climate Plan



PARTNERSHIPS AND CLUSTERS

KØBENHAVNS UNIVERSITET

AALBORG UNIVERSITET

SIEMENS

Schneider Electric

NCC

ABB Power and productivity for a better world™

DTU

COPENHAGEN CLEANTECH CLUSTER

HENNING LARSEN ARCHITECTS

Technical University of Denmark

RAMBØLL

THE ROAD TO COPENHAGEN 2025

COMMITMENT

- **Strong political commitment in the City Council**
- **Financial support to new initiatives**

COLLABORATION

- **Broad stakeholder involvement**
- **New partnership models**

COORDINATION

- **Common business plans**

COMMUNICATION

THANK YOU

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