

Smart Energy City, Circular Economy & GPP Examples from Copenhagen



**COPENHAGEN
TOGETHER**

CITY OF COPENHAGEN
The Technical and
Environmental Administration

What is Copenhagen?

Capital in Denmark

Approx. 572.000 inhabitants

Approx. 90 km²

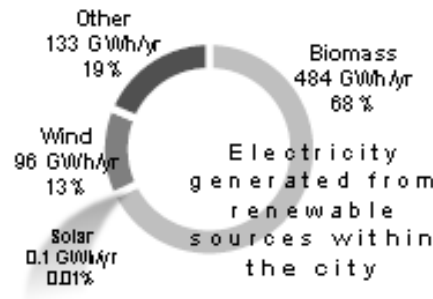
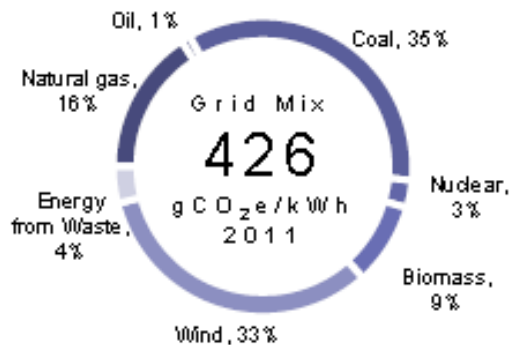
Aiming to become Carbon neutral in 2025

How to become that?

- Building on the historical basement
- Focusing on PPPs
- Circular Economy
- GPP

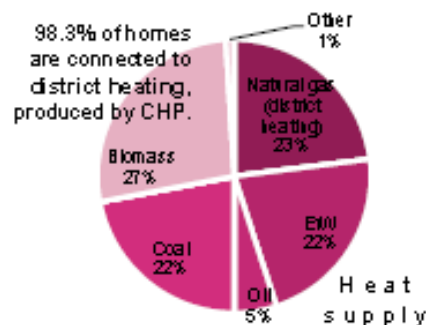
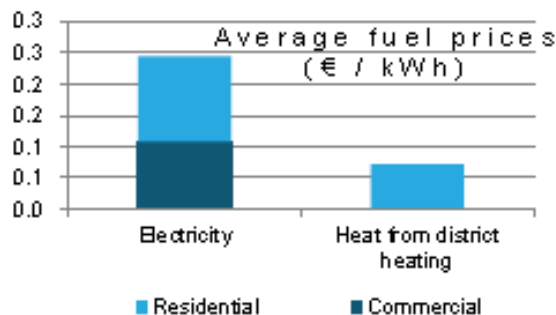


What is the historical basement?



Primary energy consumption of Copenhagen **6,878** GWh / yr

Including 2,463 GWh of electricity per year



Better utilisation of waste is prioritised, so as many resources as possible are reused and less is incinerated.

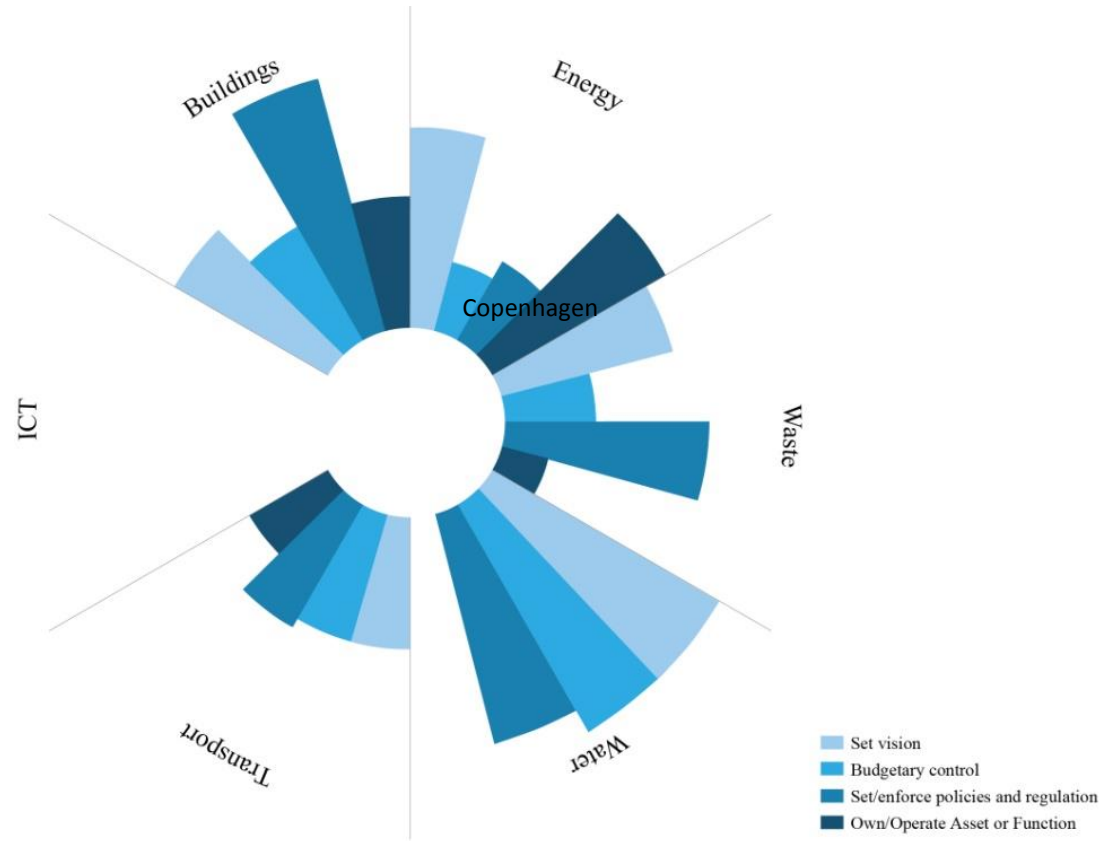
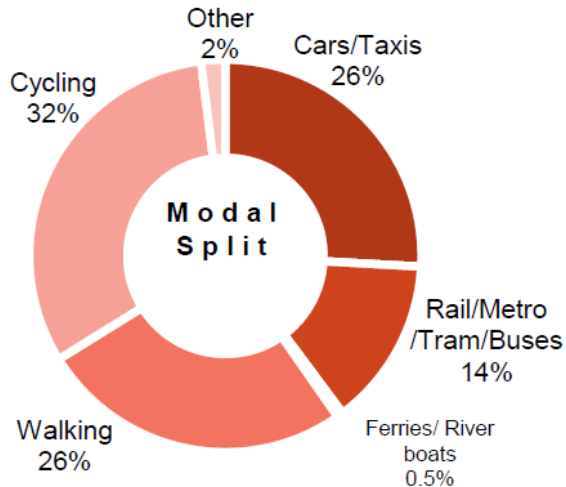
Targets:

1. Reduce the amount of waste for incineration by 20%
2. Ensure 45% of household waste is reused by 2018



What is the historical basement?

Intermodal ticketing system

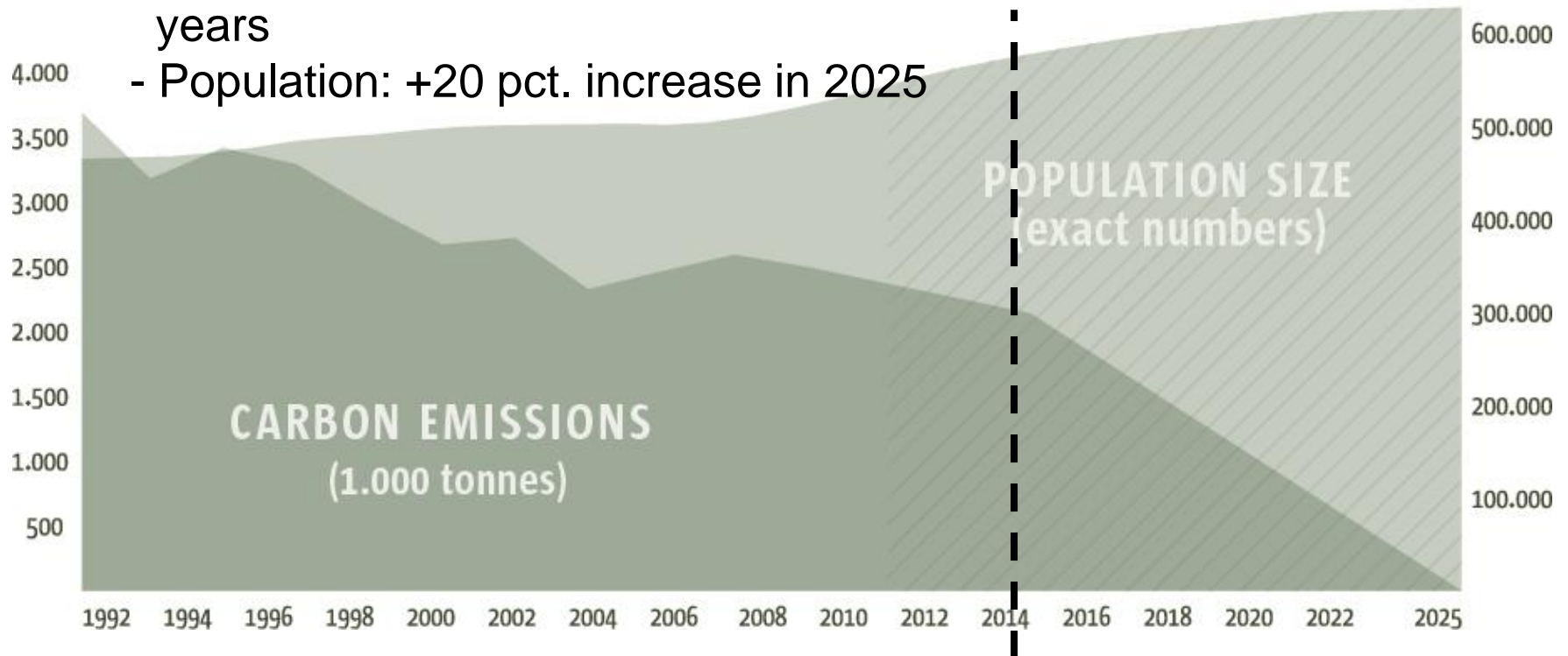


Transport is a main part of the Climate Plan 2025. Copenhagen is focused on making cycling, walking or using public transport the most attractive means of transport for Copenhagengers to get around the city.

MORE COPENHAGENERS - LESS CARBON EMISSIONS

CHALLENGES

- Carbon: From 20 pct. to 100 pct. CO₂-reduction in 10 years
- Population: +20 pct. increase in 2025



THE COPENHAGENER STORY

GLOBAL VISION

Quality of life

- Safe
- Diverse
- Leisure
- Convenience

Growth

- Knowledge
- Innovation
- Employment
- Investments

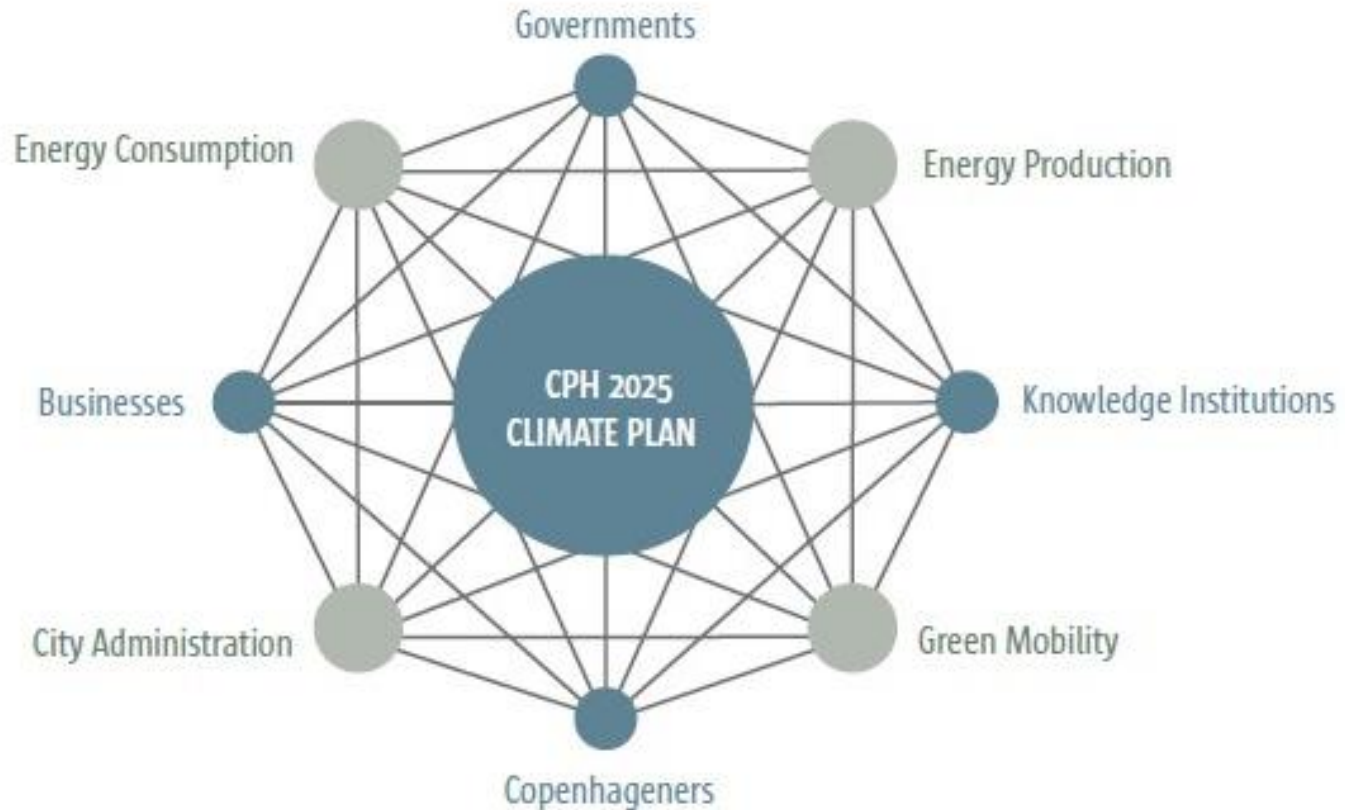
Sustainability

- Carbon neutral
- Clean air & water

FIRST CLIMATE
NEUTRAL CAPITAL
IN 2025

CITIZENS INVOLVEMENT

STAKEHOLDER INVOLVEMENT IS THE KEY!



Focus areas and stakeholders contributing to the CPH 2025 Climate Plan.

HOW TO DO IT?

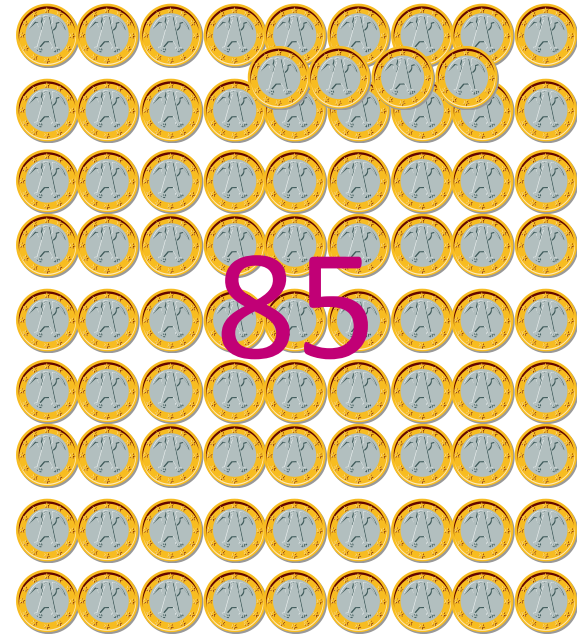
Investments in Copenhagen 2013 to 2025

1

Public investments: City
of Copenhagen
2,7 bill. DKK
365 mill. €



Private investments:
Direct investments in
energy and climate 20
to 25 bill. DKK
2,7 to 3,4 bill. €



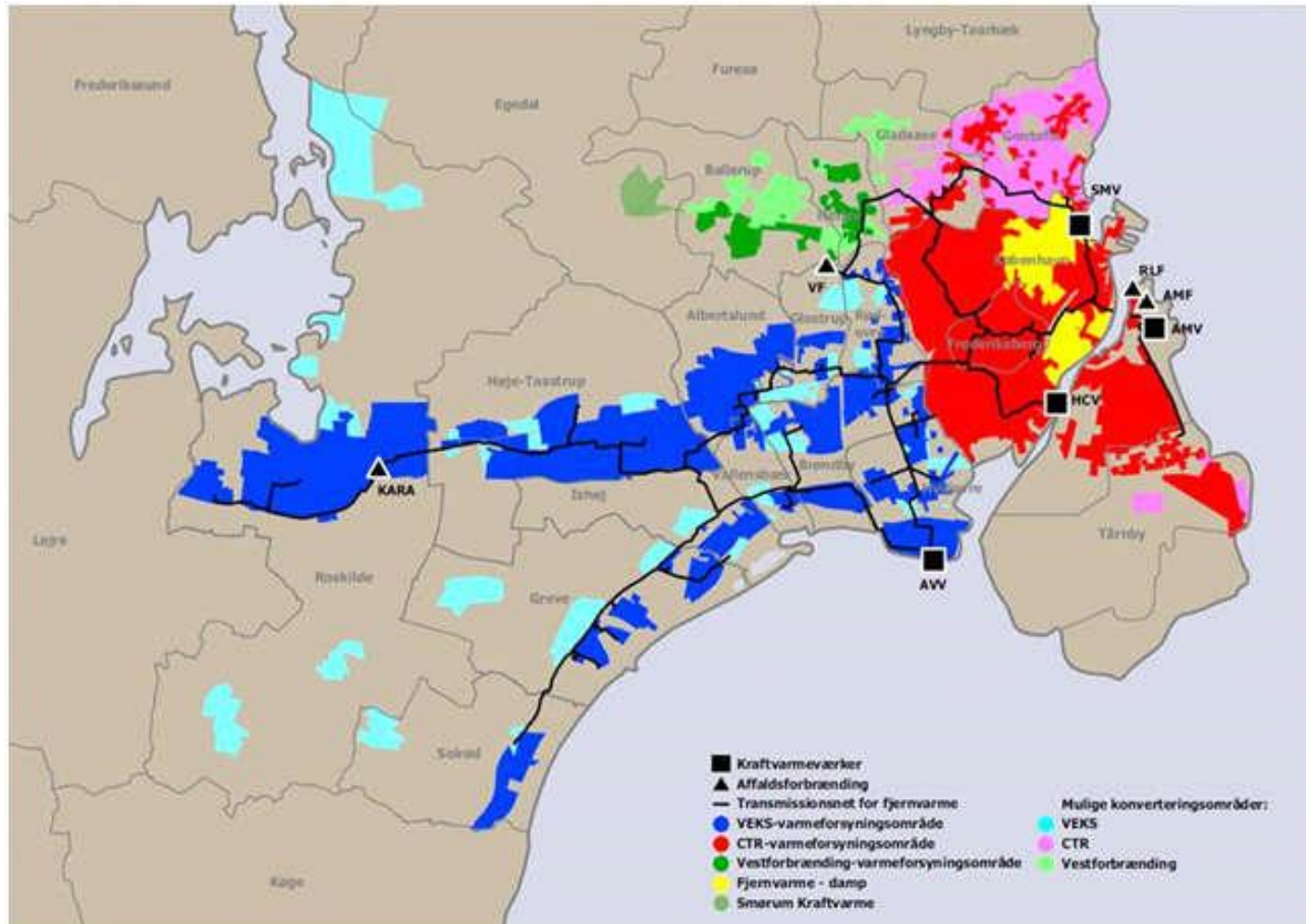
Private investments:
Indirect energy- and climate 200
to 250 bill. DKK
27 bill. to 34 bill. €

ENERGY PRODUCTION - Goals in 2025

- CO₂-neutral district heat in Copenhagen
- Electricity production based on wind
- Plastic waste sorted out
- Organic waste to biogas



DISTRICT HEAT IN GREATER COPENHAGEN



ENERGY CONSUMPTION, INITIATIVES IN 2014-15

- Mapping of building mass in Copenhagen
- Strategy for reduction of energy consumption CPH
- Plans for city districts and citizens involvement
- Pilot projects
- Forum for the 10+ biggest building owners
- Dialog with developers
- Projects on reduction of energy consumption i trade and commerce
- Municipal funding scheme for private housing, housing associations and public supported housing



MOBILITY

27. JAN 10
15:51

Du er cyklist nummer
2929
i dag

af sammenlagt
220970
cyklister i år på
denne strækning

I CPH



MOBILITY – Goals in 2025

- 75% of all travels in Copenhagen are by foot, on bike or by public transports
- 50% of all travels to school or work are on bike
- 20% more passengers uses public transportation
- 20-30% of all light vehicles use new alternative fuels, such as electricity, hydrogen, biogas or ethanol
- 30-40% of all heavy vehicles use alternative fuels



CPH 2025 SMART CITY

- 1000 new inhabitants every month
- 670.000 in 2025



“A CITY EXISTS FOR THE SAKE OF A GOOD LIFE, NOT FOR THE SAKE OF LIFE ONLY”

- ARISTOTELES (384-322 B.C)



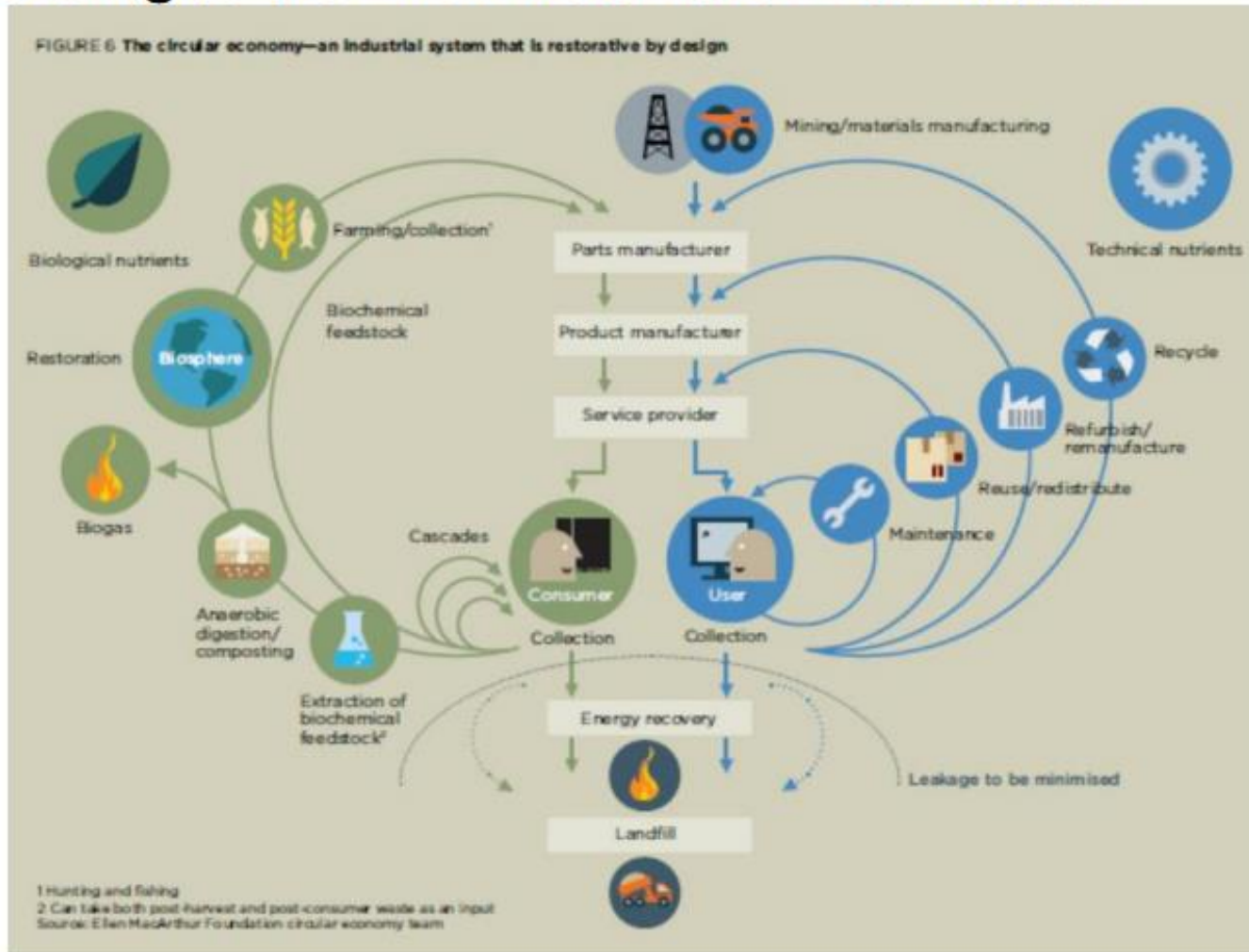
GREEN/SUSTAINABLE PUBLIC PROCUREMENT In City of Copenhagen



Total procurement volume 1,5 bill. € pr. year

Under PP contracts 0,9 bill. € (Central, local and construction)

An inspiring vision: the circular economy according to the Ellen MacArthur Foundation



Global Plastic Packaging Roadmap

Mission by 2035

From



Packaging made mainly from virgin material, topped up by recycled material

GPPR will strengthen circularity:

- **Integrated design** will allow accurate segregation, hence better quality re-cycled material at lower cost, hence more competitive to virgin material.
- **Packaging designed to incorporate this material**, so driving demand.
- **Recycling complemented** where practicable by **re-use** of intact packaging items.

To

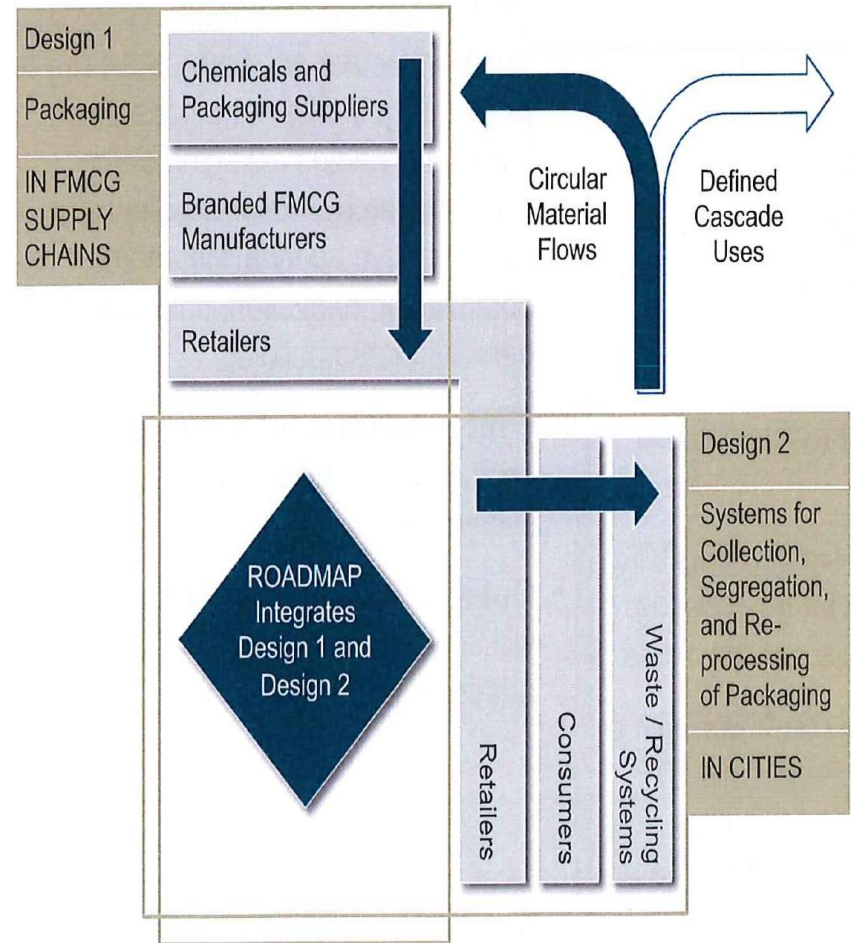


Packaging made mainly from recycled material, topped up by virgin material

Plastic packaging - the stalemate

- Individual **cities** cannot influence packaging design by global manufacturers
- Likewise, **manufacturers** cannot influence the design of collection, segregation and disposal systems in cities

=> Stalemate that limits circular flows

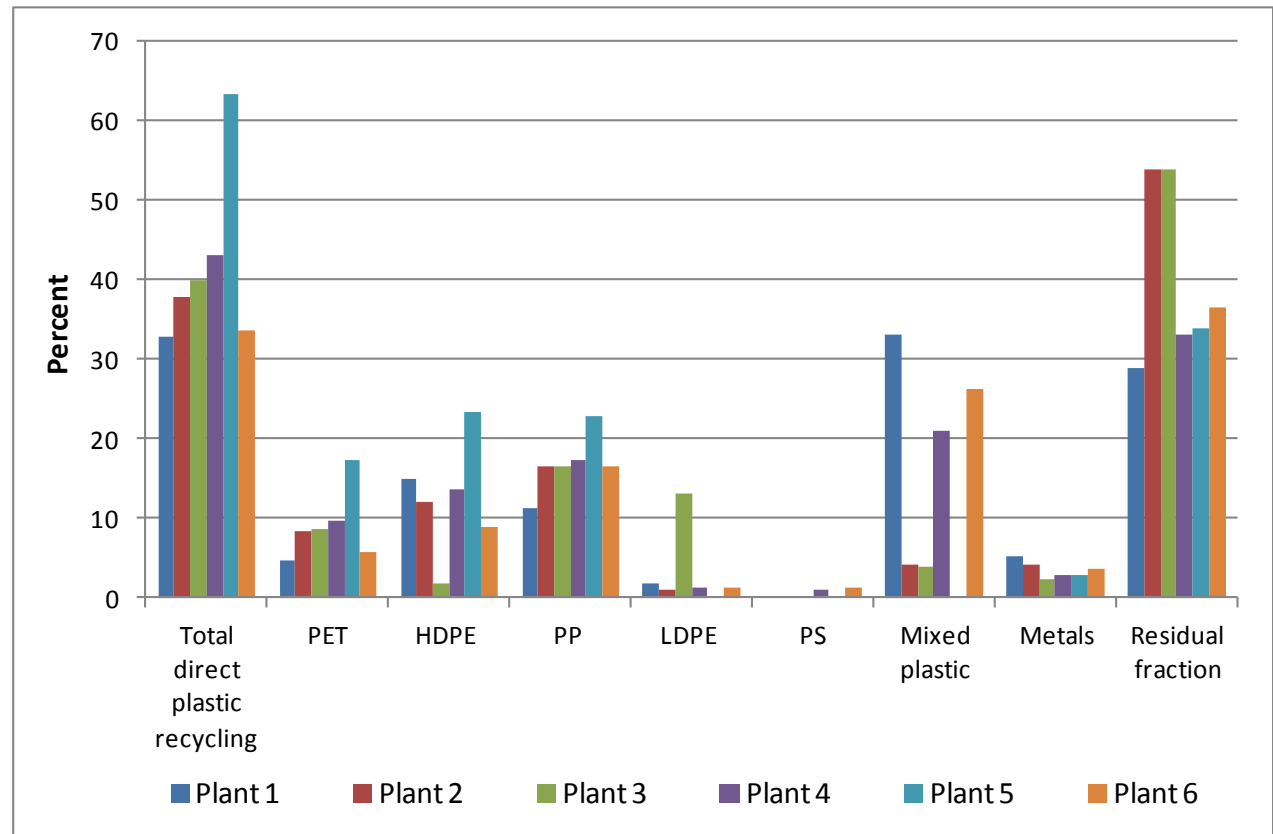


FMCG – Fast Moving Consumer Goods

Test of sorting technologies

Rigid waste plastics from blocks of flats

- High residual fraction and/or high share of mixed plastic
- Direct recycling less than 45 % - test facility achieved recycling rate over 60 %







Plant 5 is a test facility. Batch size was 200 kg. Items larger than 400 mm were removed before sorting.

Recyclability of plastic packaging

Design for recycling - criteria

- Guideline for procurers in supermarkets/retail: is the packaging designed for recycling?
- Criteria on material, lids, colour, labels and ability to empty the packaging for food/contents
- Partners: two largest Danish supermarkets, dairy company, plastic recycler, Danish Technological Institute

It is the lowest level of recyclability that determines the packaging's final ranking

Criteria \ Recyclability	Container (Main component)	Subcomponents (Closures, lids, seals, inserts, tamper resistance, labels and sleeves)	Identification	Residues	Mark level:
High	The container is made in mono-material (Either PET, PE, PP or PS). No colouring of the container, prints are reduced to a minimum, e.g. date only.	Sub-components are made of the same mono-material as the container. Adhesives are reduced to a minimum and are water soluble at max 80°C.	Labels and sleeves are made the in same mono-material as the container	No residues after use. Emptying only takes a rinsing in cold water.	
Good	The container is made in mono-material (Either PET, PE, PP or PS). Minimal colouring and prints.	Sub-components are compatible with the container. Adhesives are water soluble at max 80°C.	Labels and sleeves are compatible and does maximum cover 40 % on bottles and 60% on tubs, trays and pots.	Can be emptied in cold water or by use of a simple tool, e.g. a spoon.	
Uncertain	The container is made of compatible materials. The container is coloured and has prints on it.	Sub-components are compatible. Adhesives are water soluble.	Labels and sleeves cover more than respectively 40% and 60% of the surface.	The packaging require separation to be emptied.	
Not fit	The container is made of composite of non compatible materials. The container is black or heavy coloured.	Sub-components contain metals and/or paper. Adhesives are not water soluble.	Labels and sleeves are in a different material than the container and cover the entire surface.	The packaging cannot be emptied.	

PROCUREMENT: Transforming the market towards sustainable solutions



City of Copenhagen request services for 118 million euro pr. year.

Criteria for services:

- Effectiveness and user friendly**
- Innovation and growth**
- Environmental sustainability and CSR (!)**
- Market dialogue – what is possible?**

Market dialogue

**-
What is possible?**

CSR

**Effectiveness and
user friendly**

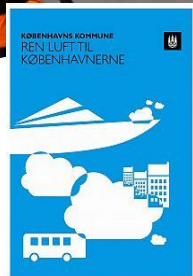
**Innovation
and growth**

GUIDELINES FOR GPP IN CITY OF COPENHAGEN

- Supporting goals in city plans
- Stimulate employment, growth and export of new solutions
- Create a framework for innovation, collaboration and results, a platform for PPP



MILJØMETROPOLER
VORES VISION CPH 2015
- et udspil



HOW TO DO?



New tender

- Description of items
- Volume



Brainstorm

- Properties
- Conditions
- Criteria's



Tendering process

- Questions & replies



Tender evaluation

- Economy versus sustainability
- Fulfilment of criteria's



Contract signing

- Procurement in process

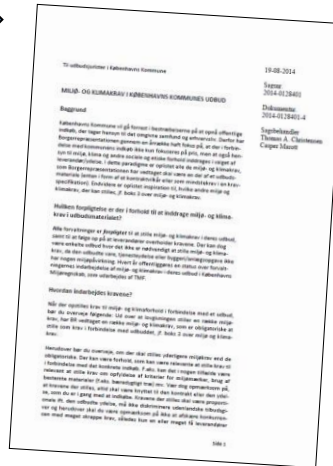
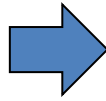


Follow up

- Fulfilment of conditions
- Company visits
- Audits



FROM GUIDELINES TO PRACTICAL WORK



	ydelse skal overholde miljøzonerkravet i København, dvs. som minimum opfylde Euro4-normen eller være eftermonteret med et effektivt partikelfilter. http://www.miljoezonen.dk [Kilde: Miljøzonen]	
Transport	Tomgang "Alle Leverandørens chauffører skal gøres bekendt med, og overholde, Københavns Kommunes tomgangsregulativ, der forskriver, at motoren i et holdende motordrevet køretøj ikke må være i gang længere end højst nødvendigt og højst 1 minut. Læs mere om reglerne i kommunens folder her: http://www.kk.dk/~/media/2B3190CE193040EE87E54A6A6FB63F.ashx " [Kilde: Københavns Kommunes Tomgangsregulativ]	Obl
Transport	Køretøjer under 3.500 kg "Person- og varebiler under 3.500 kg, benyttet til udførelse af de af Rammeaftalen omfattede ydelser som anskaffes i kontraktperioden skal som minimum overholde Euronorm 5." [Kilde: Trafikstyrelsen]	Obl
Transport	Køretøjer under 3.500 kg Personbiler under 3.500 kg, skal være el- og brintbiler. [Kilde: Borgerrepræsentationen, 2011]	Obl
Transport	Køretøjer over 3.500 kg "Dieseldrevne køretøjer over 3.500 kg, benyttet til udførelse af de af Rammeaftalen omfattede ydelser som anskaffes i kontraktperioden skal som minimum overholde Euronorm 6." [Kilde: Trafikstyrelsen]	Obl
Transport	Person- og varebiler samt personbefordring Nyindkøb af personbiler og udbud af personbefordring i personbiler til 5 personer samt varebiler op til 2000 kg skal leve op til Center for Grøn Transports anbefalinger om offentligt indkøb af energieffektive køretøjer. Anbefaling er euronorm 6 og energimærke A+. Målet er betinget af at det vurderes dieselsneutralt eller besparende set i totalomkostningsperspektiv. [Kilde: Partnerskab for offentlige grønne indkøb]	Obl
Transport	Køretøjer under 3.500 kg "Person og varebiler under 3.500 kg, benyttet til udførelse af de af Rammeaftalen omfattede ydelser som anskaffes i kontraktperioden skal som minimum overholde Euronorm 6."	Friv
Transport	Køretøjer over 3.500 kg "Dieseldrevne køretøjer over 3.500 kg, benyttet til udførelse af de af Rammeaftalen omfattede ydelser som anskaffes i kontraktperioden skal leveres med udstyr, der begrænser tomgangskørsel."	Friv
Transport	Kør grønt-kursus (eco-driving) Alle chauffører skal senest seks måneder efter kontraktindgåelsen have gennemført kursus i at køre grønt.	Friv
Transport	Trafikstyring Krau til anvendelse af et rutenplanlægningsværktøj	Friv

Examples from tendering on remover services

- Obligation on proactive sustainability work
- Description of HSE management
- Description of HSE targets and goals
- Green account

- Cardboard boxes with minimum 60 % recycled fibres
- Sustainable forestry ship produced timber
- No substances from EU and the Danish EPA lists
- No use of PVC

- Engines Euronorm 6



THANK YOU FOR YOUR ATTENTION

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www.kk.dk/climate and www.kk.dk/english