



Systematic Climate & Energy Action Work in Stockholm

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City of Stockholm



Stockholms län

Sweden

9 Milj

County of Stockholm 2 Milj

City of Stockholm

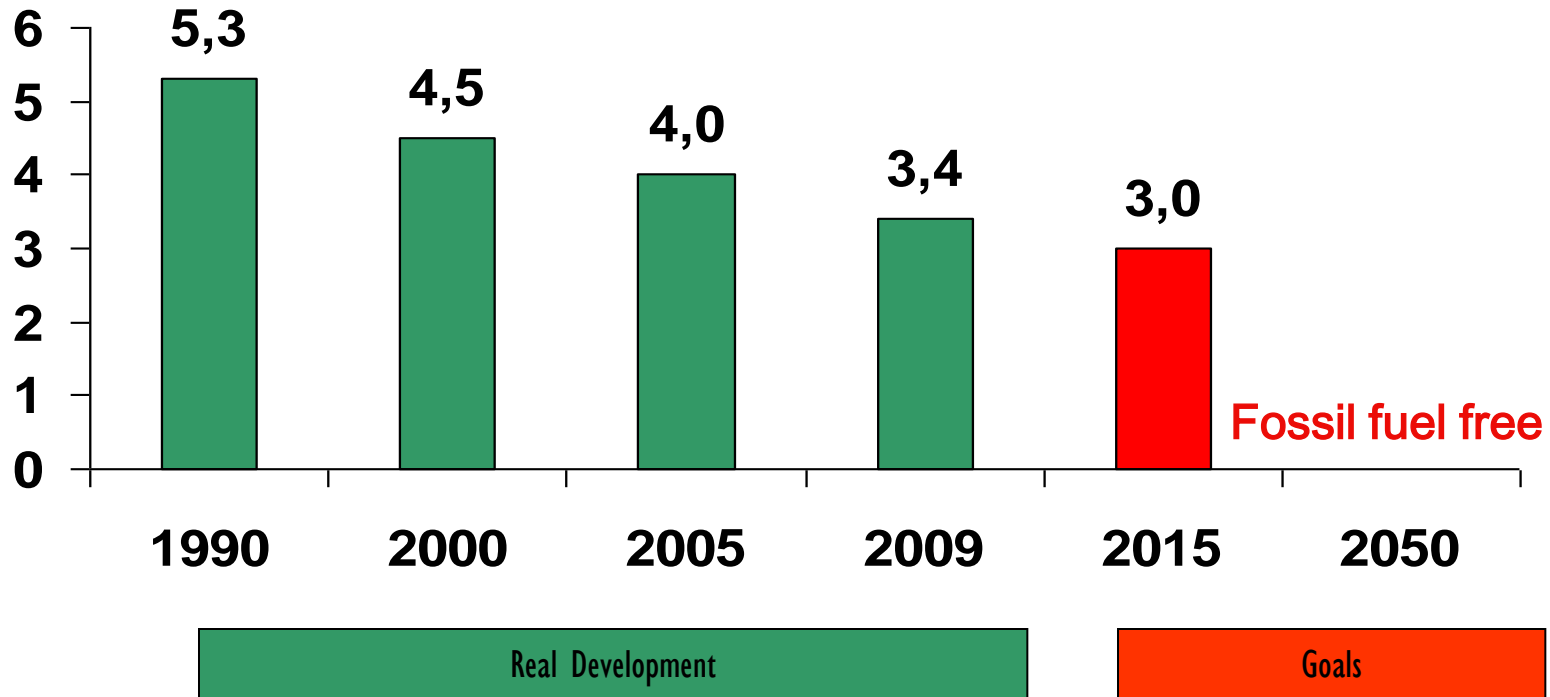
870 000



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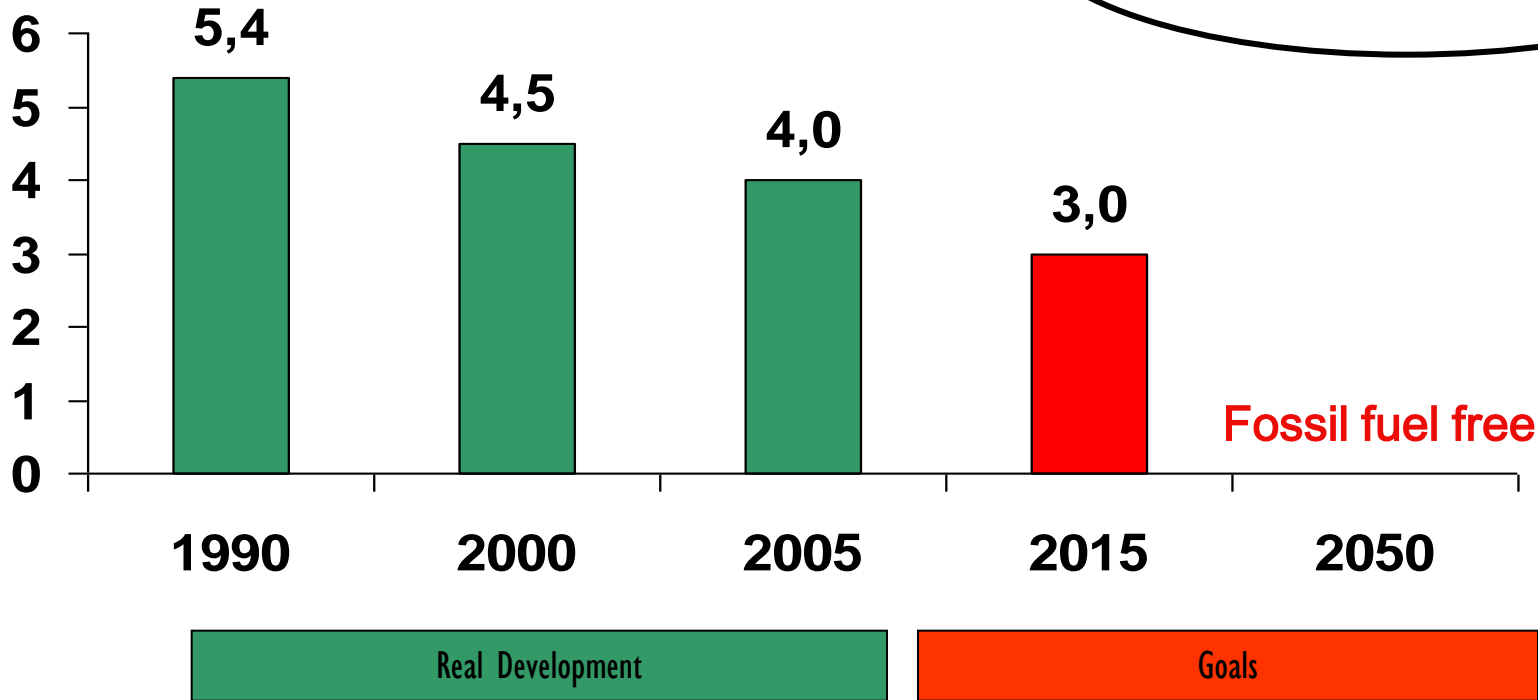
Stockholm: Goals and achievements

Tonnes CO_{2-ekv} per capita



Goals and achievements

Tonnes CO₂-ekv per capita



Systematic work

Action programmes 1996-2020

Cities for Climate Protection
Systematic work (ICLEI)
since 1996

Covenant of Mayors since 2008





Heat & cold



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District heating & Co-generation

Fossil fuels ~ 20 %

Market share ~ 80%

Decision taken:

2016: ~6-7% fossil fuel

Hammarby CHP 100% renewable fuel



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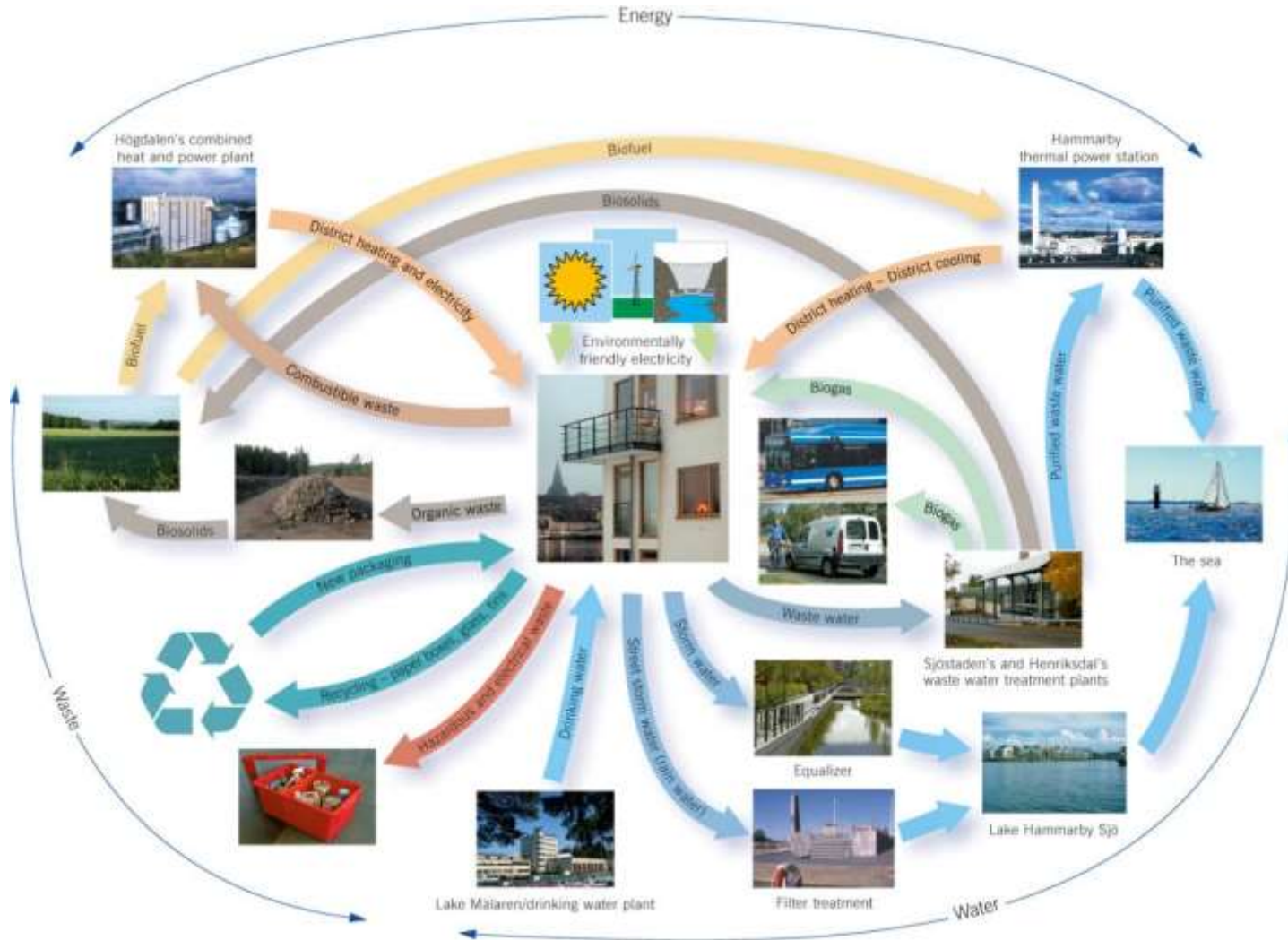


The Hammarby Waterfront project

- Size 180 ha
- 10 400 new flats
- 200.000 m² new offices, services
- Construction time 1995–2017
- Sustainable development
- Renewable energy use
- Integrated transport and land use
- Eco cycle model



The Hammarby model



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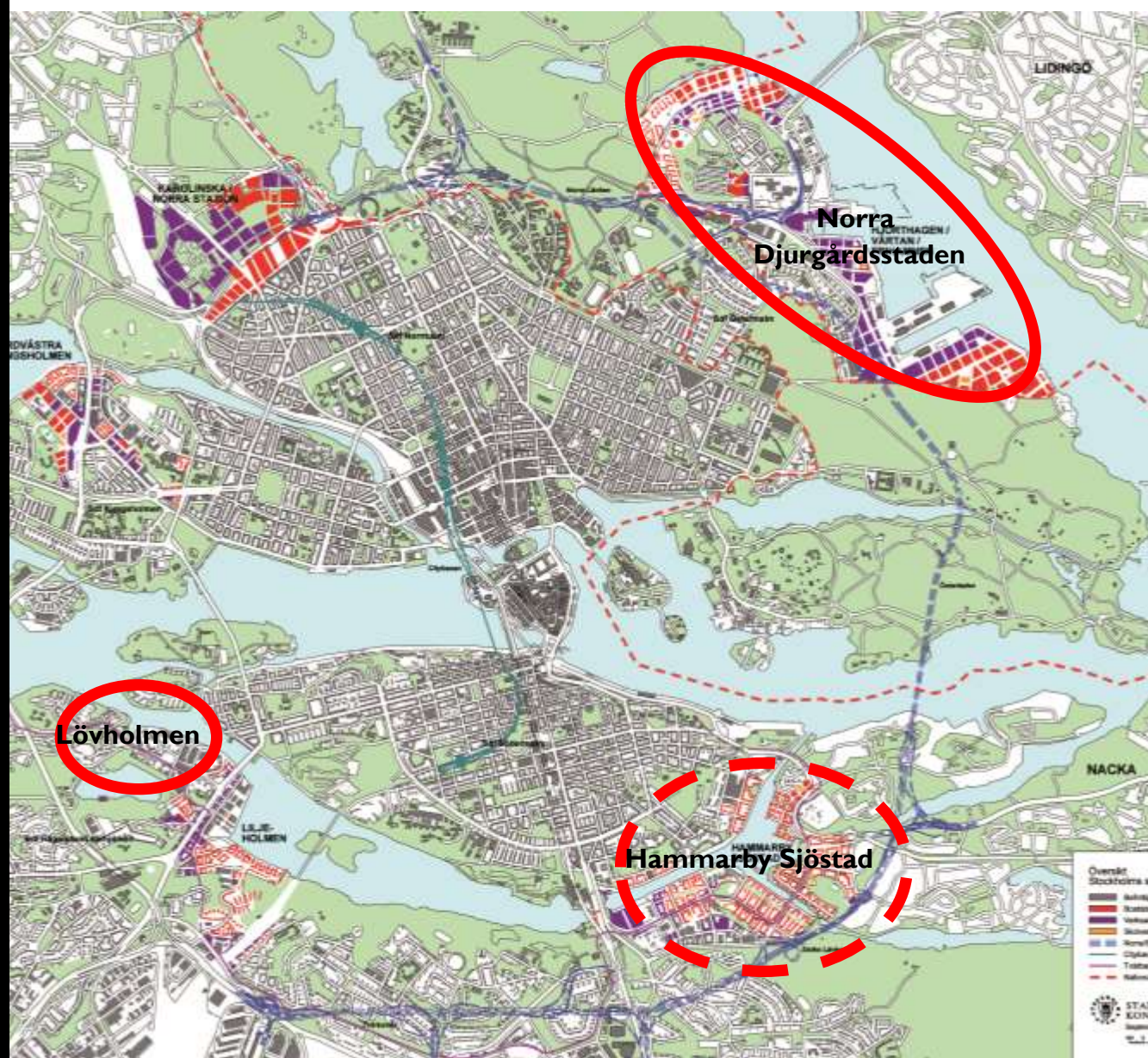
The city's development areas

A number of urban areas around Stockholm have been identified for transformation and re-use - preferably former industrial sites by the water.

The areas are mainly in direct connection to the central parts of the city, with proximity to infrastructure, service and public transport.

Soil is often contaminated, amplified etc.

The transformation can collectively make an imprint and a new "annual ring" around the inner city.



The Royal Seaport

An aerial architectural rendering of The Royal Seaport development. The image shows a dense urban area with a mix of modern glass-fronted buildings and traditional red-brick structures. A large body of water is visible on the left and bottom, with a bridge and several boats. The development is surrounded by green spaces and trees. In the background, a city skyline is visible under a bright sky.

Over all objective:

- Year 2030 is The Royal Seaport fossil fuel free

- Year 2020 under 1,5 ton per person

- A Climate adapted area

- C40 – partner for developing standards for sustainable housing

The buildings of the 1960-70:ies

- 1/3 of the building stock in Europe
- 200 million Europeans
- First generation industrialised building methods
- Low energy efficiency
- Urgent need of renovation

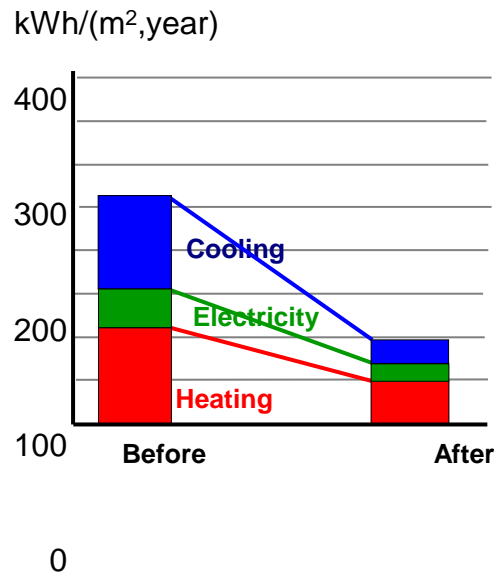


From 188 kWh/m² to 88 kWh/m²

- **Two methods**
 - Traditional construction
 - Pre-fabricated elements
- **Three house-styles**
 - Twelve story apartment blocks in Akalla
 - Five story buildings with external galleries in Husby
 - Typical three story buildings in Rinkeby



First LEED certified building in Sweden



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Energy centre

- Support energy efficiency measures in the city's companies and administrations
- Energy statistics



Energy Centre

Example: Real Estate Administration:

- Approx. 50% of building stock, ca 400 000 m²
- Investment 20 million € 2010-2013
- Energy saving 30% = 14,5 GWh/year
- Less energy cost 1,2 million €/year
- ROI year 2014
- Less GHG emissions 3000 t/year



www.stockholm.se/stockholmssolkarta

Baskarta

- Karta
- Satellitbild
- Resultat
- Solinstråning

Total takyta (m²)	632	
Total inkommande solenergi (kWh/år)	560 000	
Energiklass (kWh/m²/år)	Takyta (m²)	Inkommande solenergi (kWh/år)
>1000	180	194 000
950-1000	38	37 900
<950	413	329 000

500 825 1150
Inkommande solenergi (kWh/m²/år)



Transport

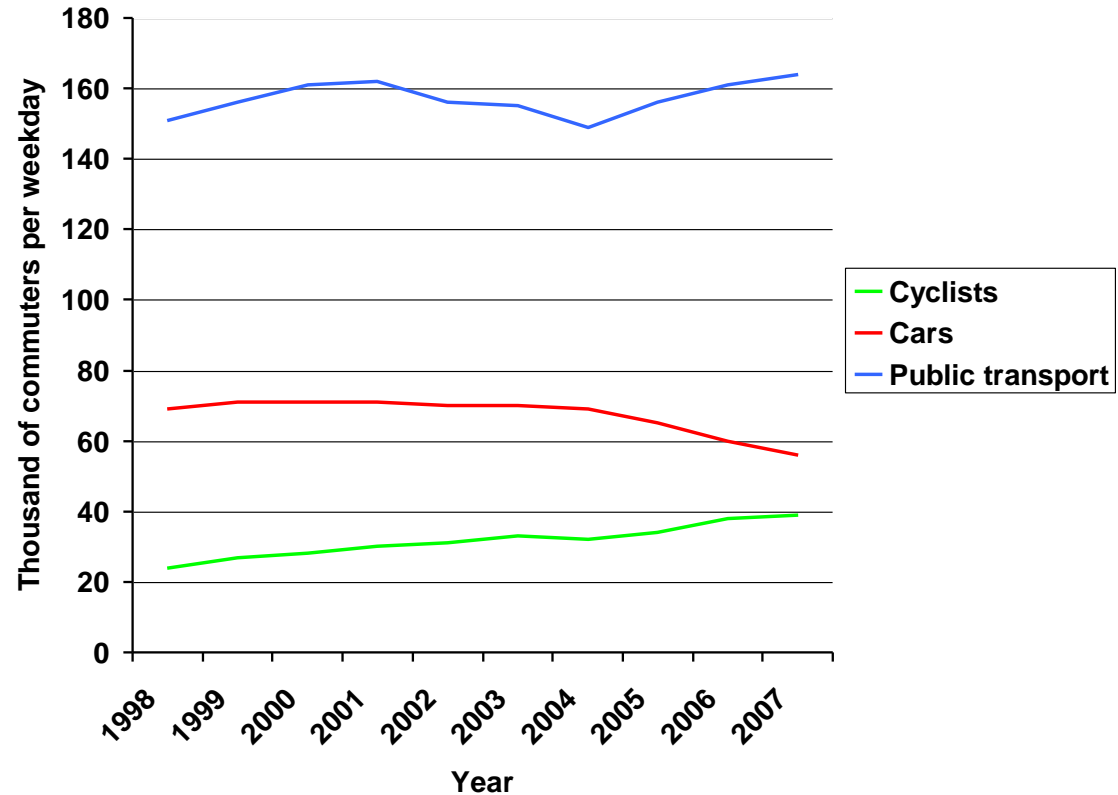


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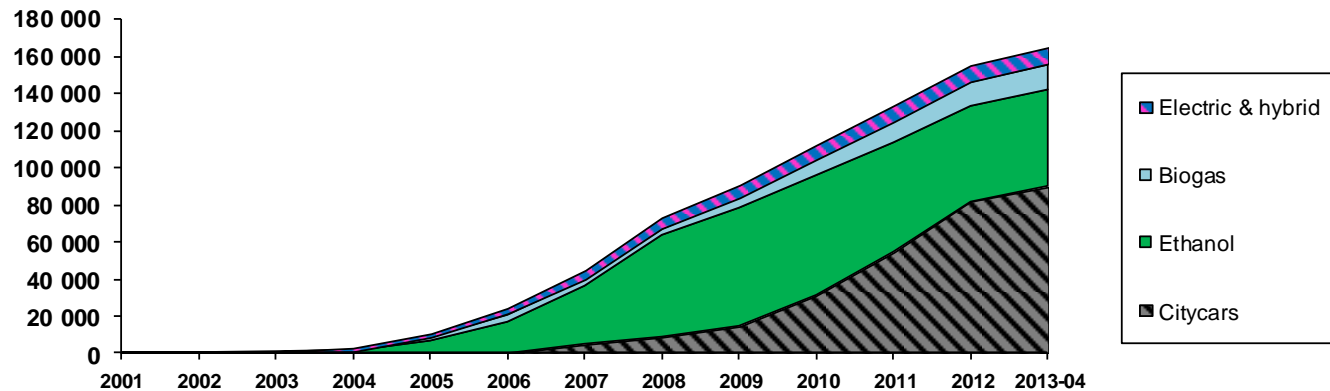


Car, cycle and public transport to the inner city



No of Clean Cars, in Stockholm County (in total fleet of passenger cars)

*Approx. 155 000
(April 2013)*



Developing market for electrical cars and hybrids

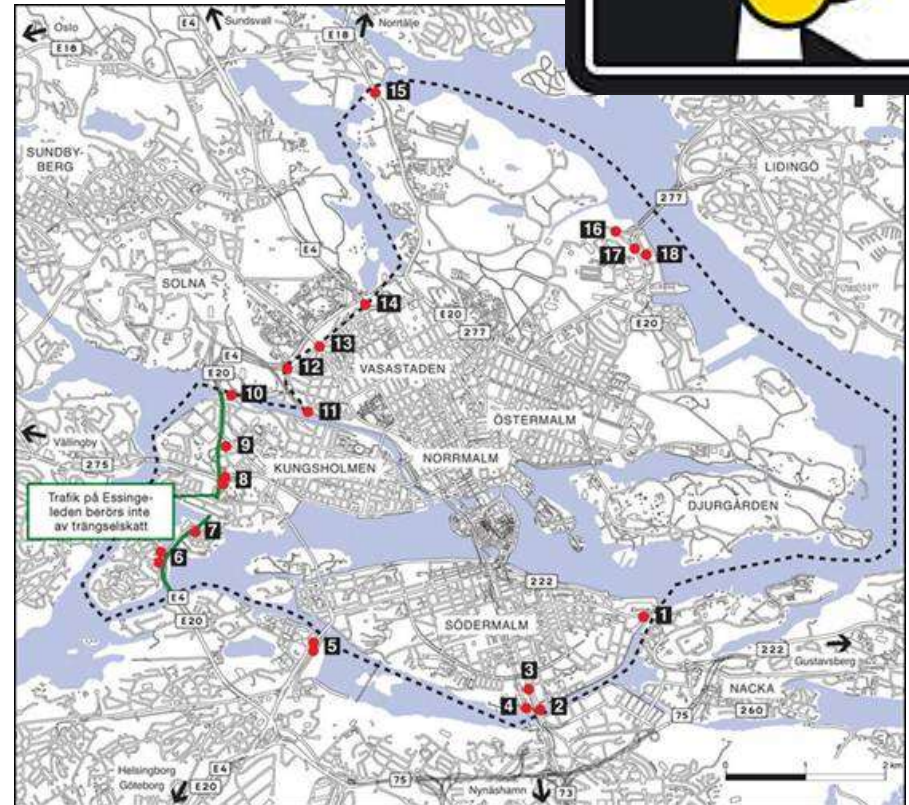
- Procurement
- Infrastructure





Congestion charges

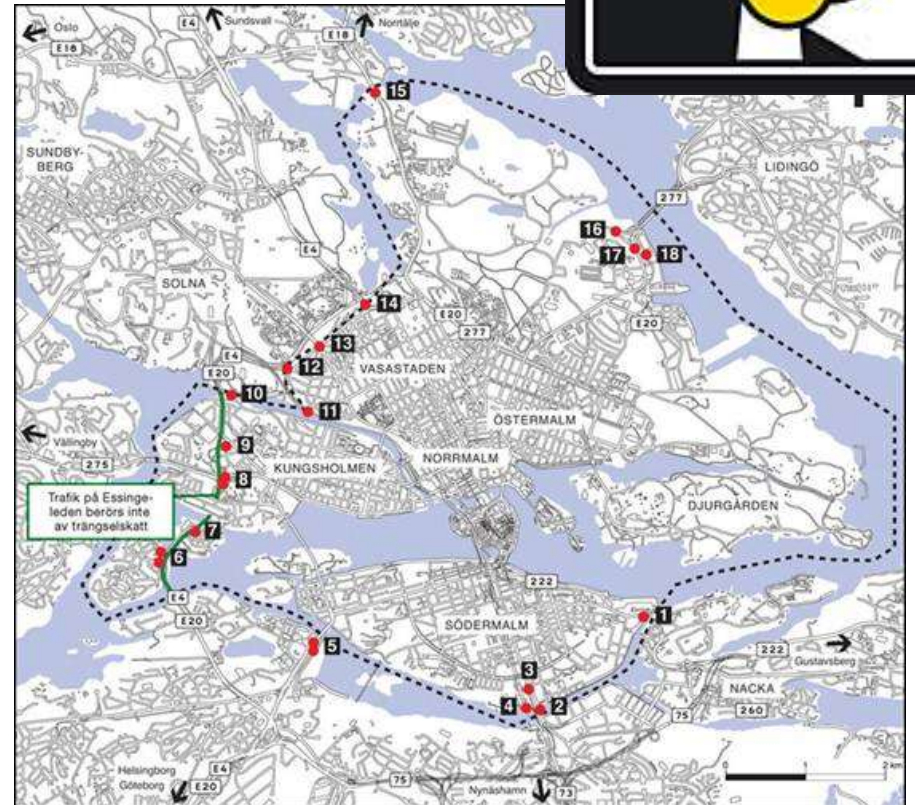
- 20 % decrease in traffic
- 10 – 14 % decrease of emissions
- 2 – 10 % better air quality
- Less human exposure
- From huge opposition to broad majority in favor



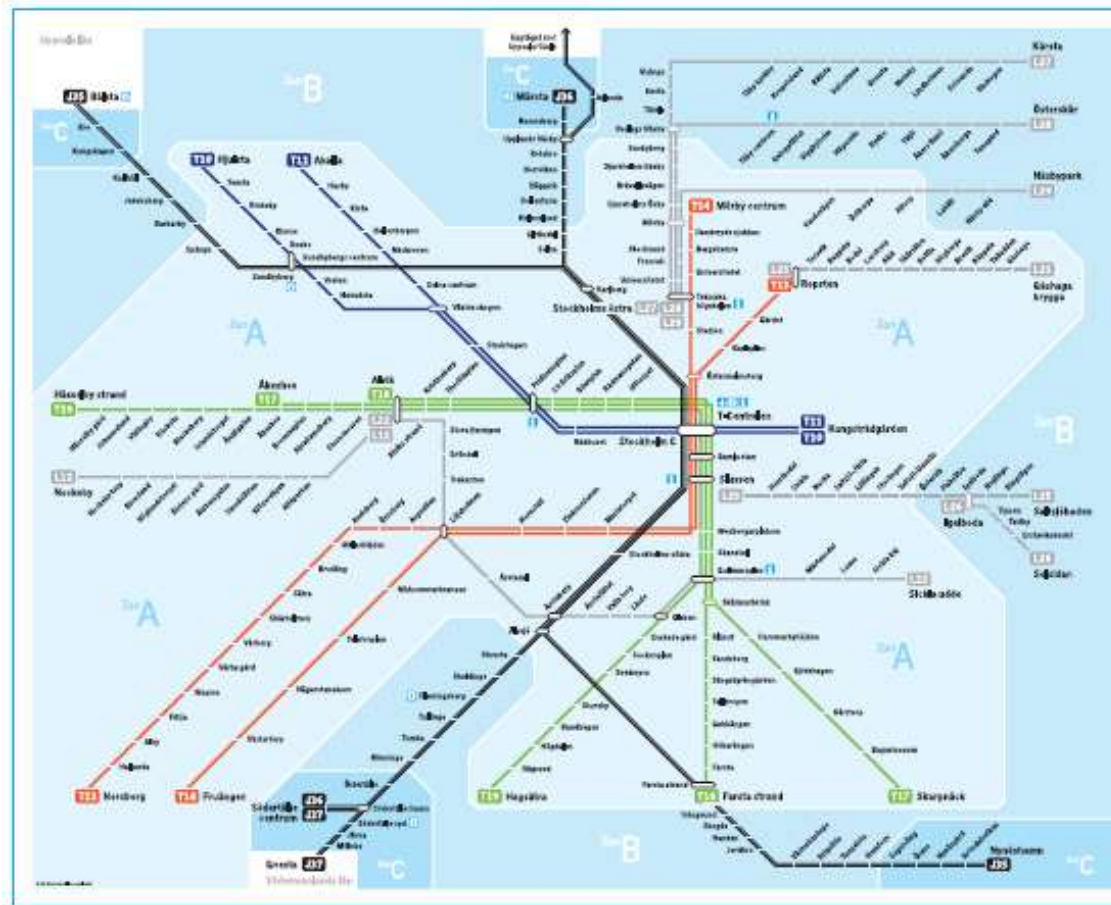
Congestion charges



- Investment cost, € 200 million
Today probably half that investment cost
- Annual revenue, € 80 million
- Annual running costs, € 15 million
- Annual net, € 65 million to new infrastructure



77 % of Stockholmers use public transit in peek hours



Innovative work to decrease environmental impact

Today

- The worlds largest ethanol bus fleet is rolling on the streets of Stockholm.
- All of SL's fixed-track services are driven with electricity produced by hydropower and wind power.
- 58 % of all buses powered by renewable fuel.

2025

100 % of all buses will be powered by renewable fuel.

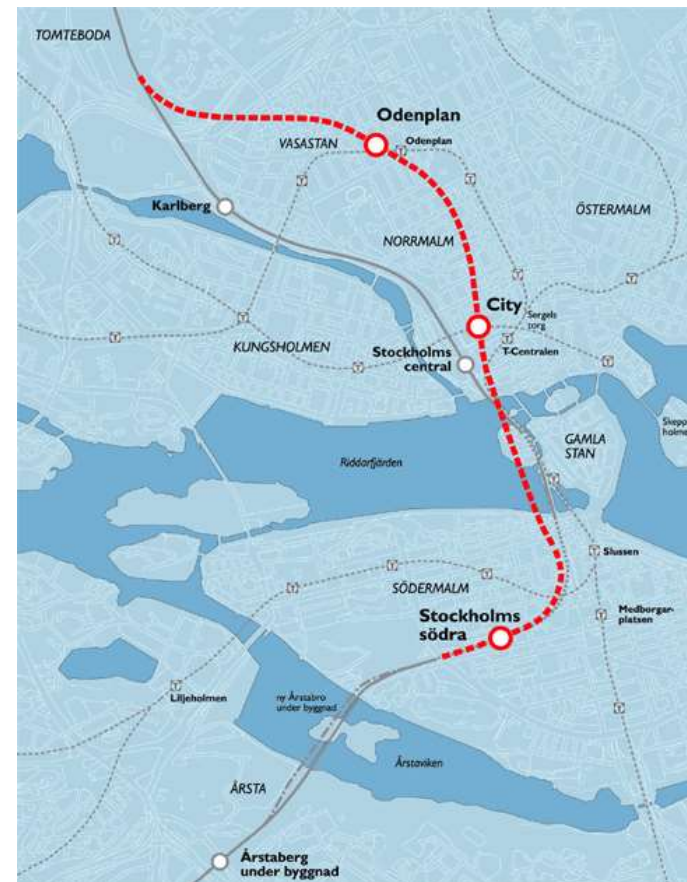


Infrastructure investments



New tram lines

New commutertrain tunnel under the inner city



Roadmap for a fossil fuel free Stockholm 2050

Sammanfattning av förslag till

Färdplan 2050

för ett fossil-
bränslefritt
Stockholm



The Capital of Scandinavia



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The budget for the City of Stockholm in 2012:

"The primary objective for Stockholm is that the city will be fossil fuel free by 2050."

The roadmap describes how the fossil fuels can be phased out through:

- energy efficiency
- conversion to biofuel



Preconditions

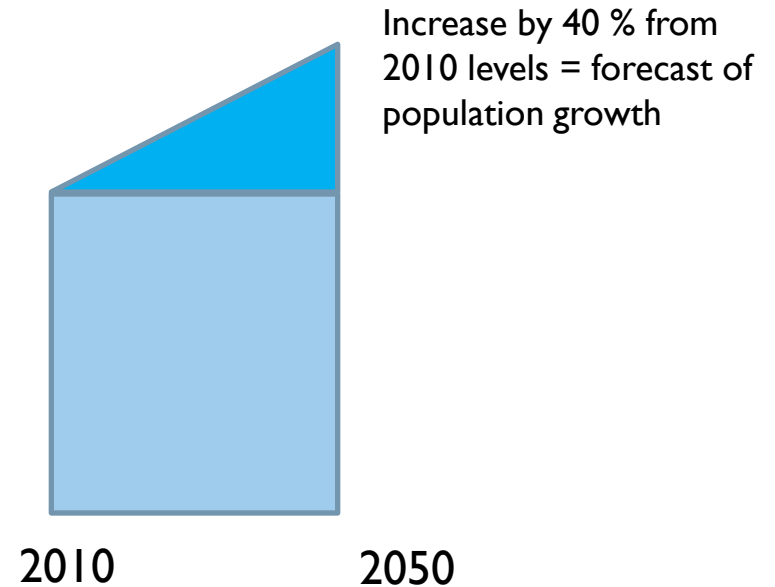
The population will increase by 40 % to 1.2 million

System boundaries:

Energy for heating, hot water and cooling

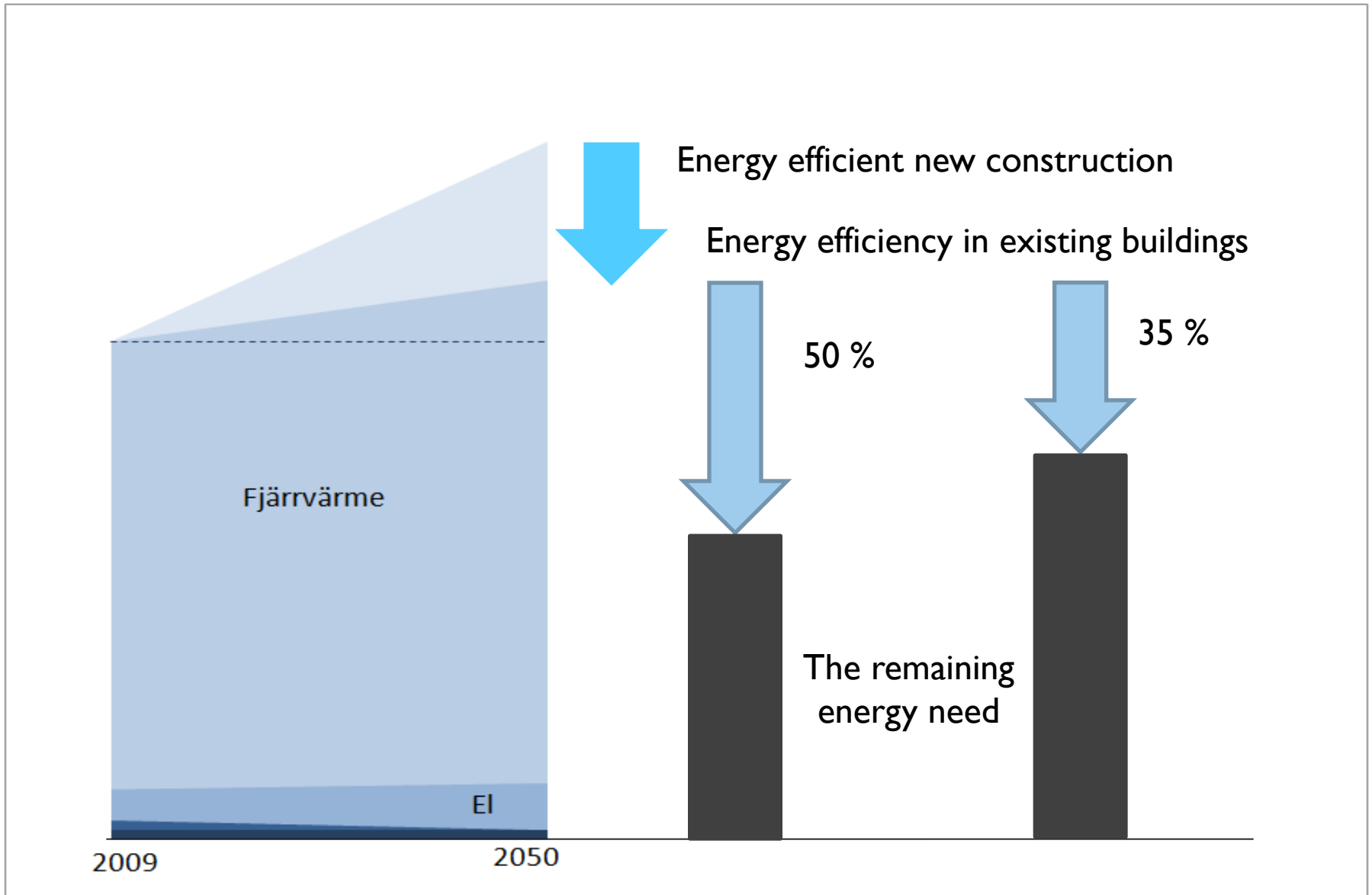
Energy for all transports within Stockholm

Other electricity use and gas use

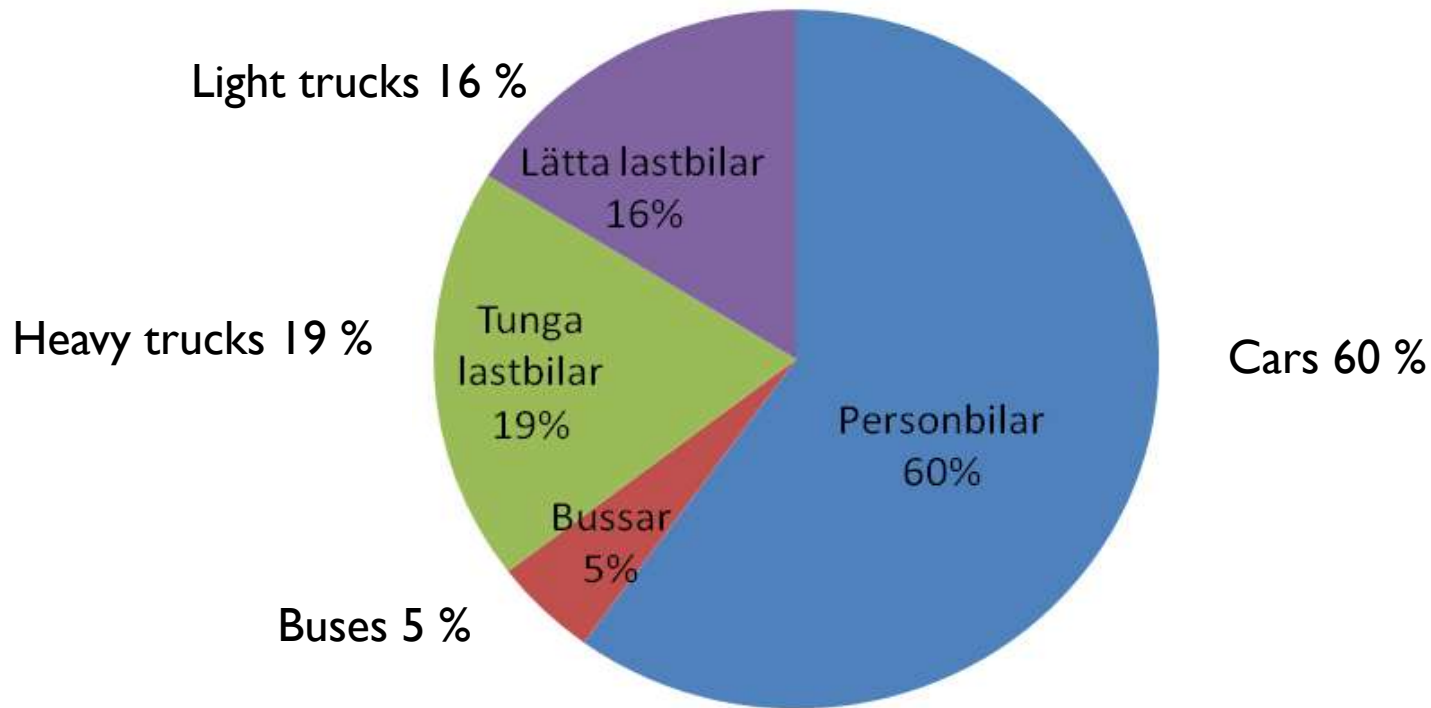


Energy efficiency in buildings

- Improving energy efficiency by an average of 35%
- New buildings use on average 42 kWh/m²
- 190 000 new apartments = 19 000 000 m² + 8,000,000 m² offices, shops, schools, hospitals etc.



Road transport greenhouse gas emissions in 2010

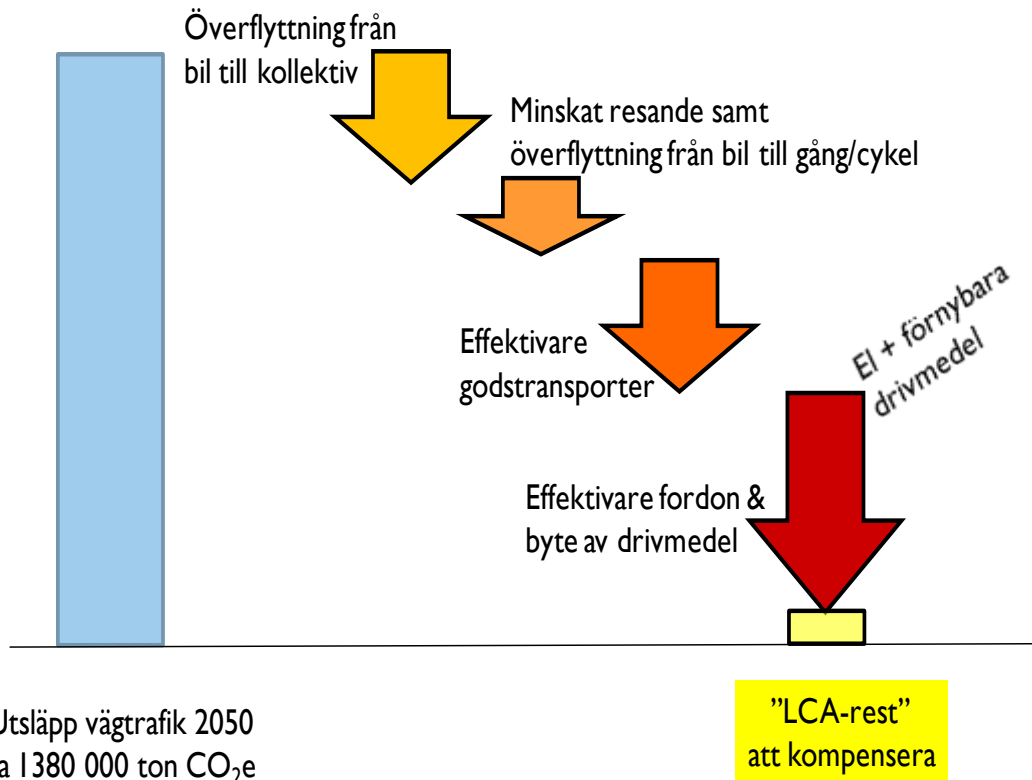


Three alternatives analysed

- Only clean vehicles
- Increased public transports
- Restrictions for cars
- Combination of above

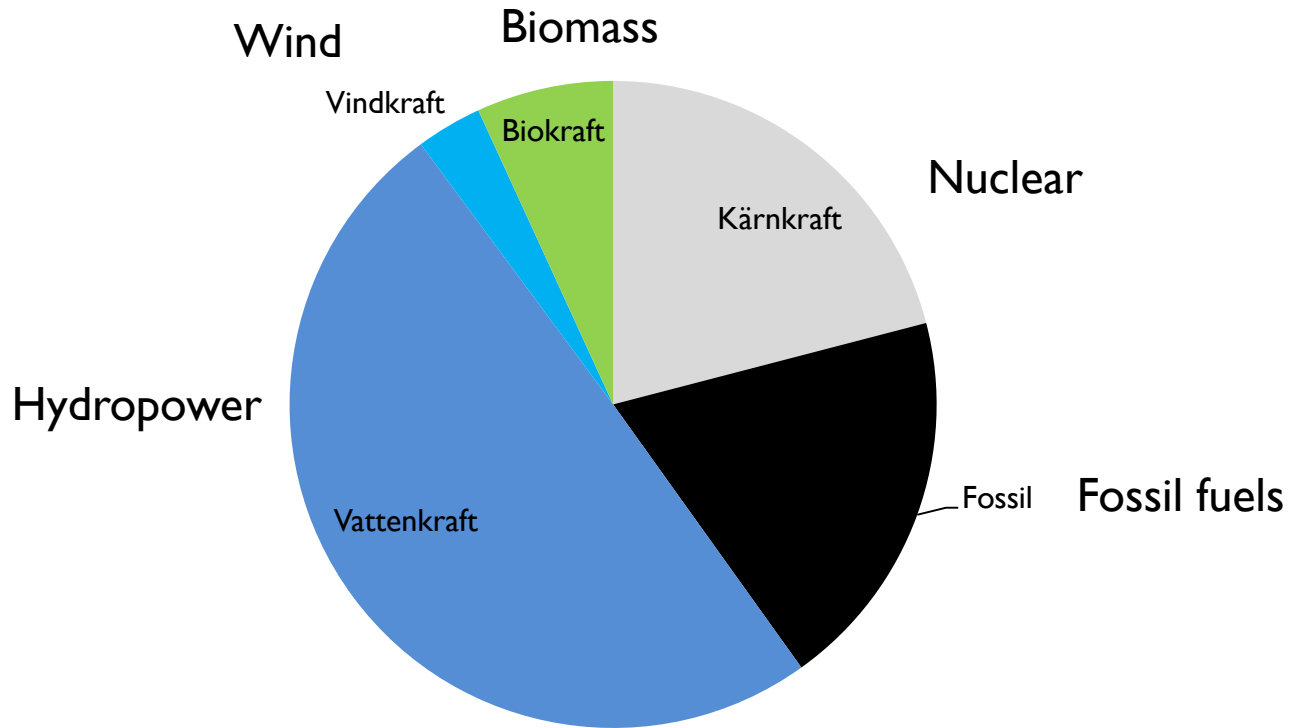


Measures for efficient transports



- Transfer from car to public transport
- Reduced travel + transfer from car to walking and cycling
- Efficient cargo transportation
- Efficient vehicles + replacement of fuels (electricity and renewable fuels)

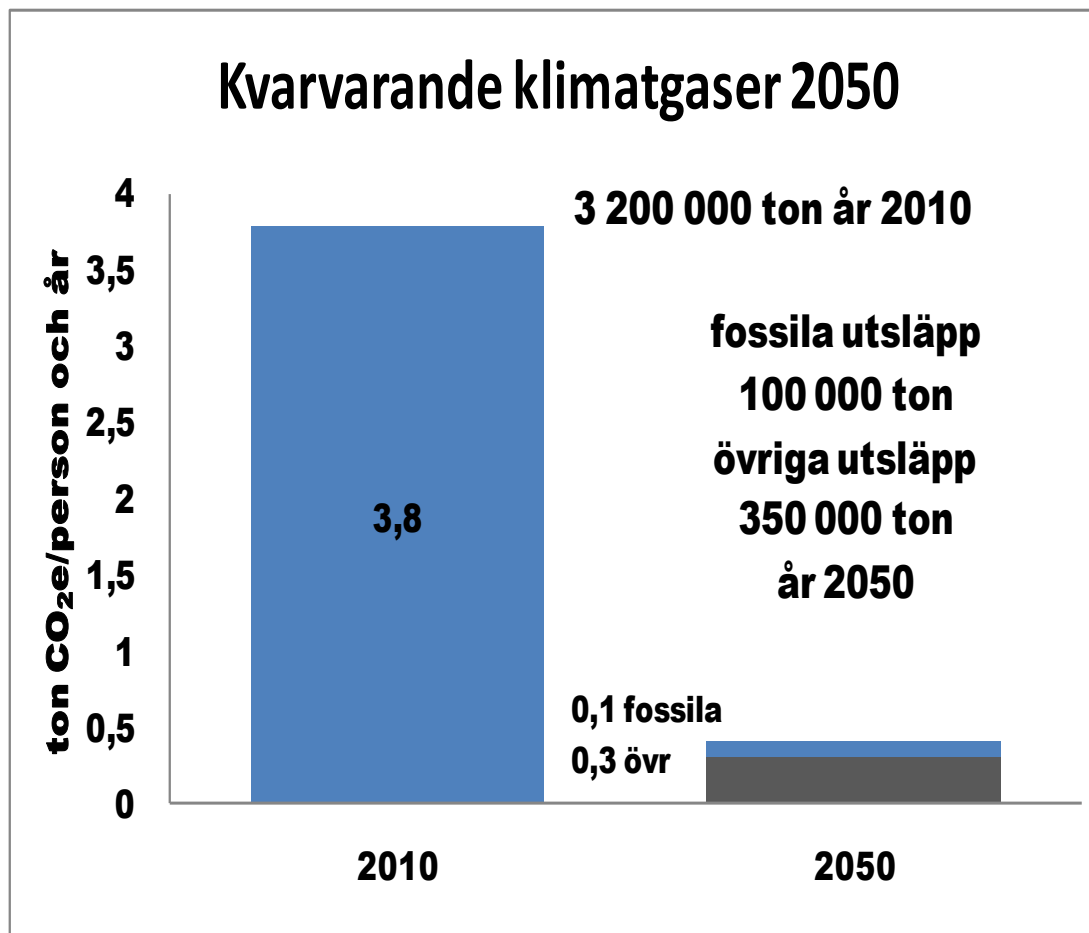
Electricity in the Nordic countries



Energy for heating, hot water and cooling in buildings

- The coal in KVV6 Värtan (district heating)
- Oil in peak heating systems and buildings
- Plastics in the combustion (district heating)
- Natural gas in the city gas network

Remaining greenhouse gases in 2050



On-going work with Roadmap 2050

- 2013-03-12 First political approval
- Broad submission for consideration spring/summer
- Processing of comments received during autumn
- Decision in City Council autumn/winter 2013





Communication



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Climate Pact

An Agreement Stockholm City – Business Community

Ett samarbete mellan staden och näringslivet

STOCKHOLMS KLIMATPAKT





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Discover Stockholm



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Low carbon activities - good examples in the city



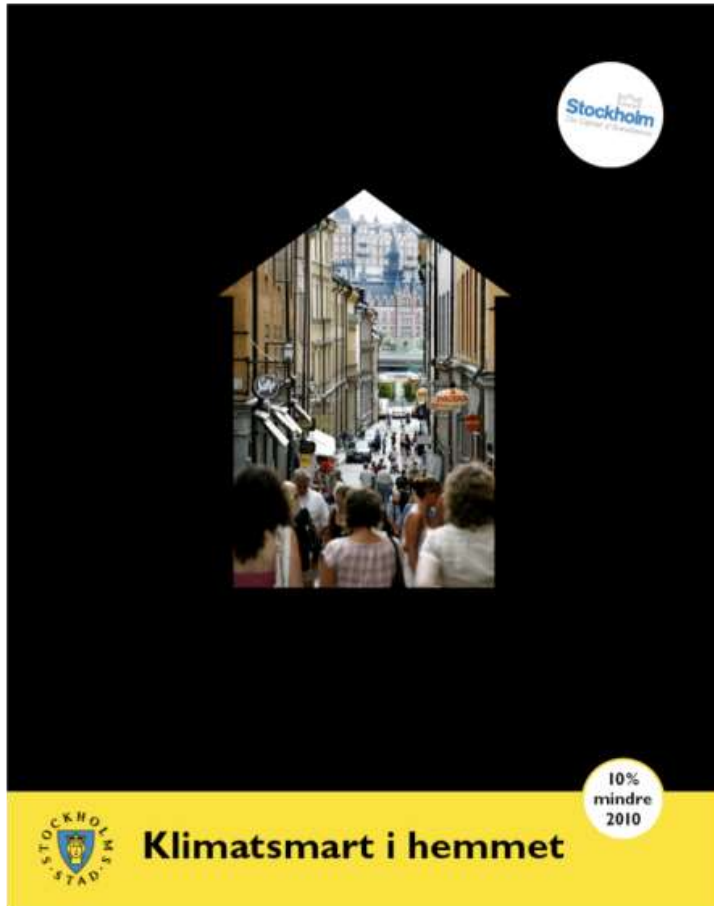
Foto Anders Broberg



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Climate Smart – At home & in office



Climate Scale

- Festivals
- Seminars and conferences
- Upon request



THANK YOU!

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