



CITY OF STOCKHOLM

Sustainable transport Stockholm, Sweden

Gustaf Landahl

City of Stockholm



Urban Mobility

- Increasing traffic, especially goods
- Air quality does not meet directives
- Noise is a problem for many inhabitants
- Heavy metals
- Barriers
- High dependency on oil for transport



Sustainable transport by Carrots & Sticks!

Sticks

- Parking fees
- Congestion taxation
- Low emission zone for lorries

Carrots

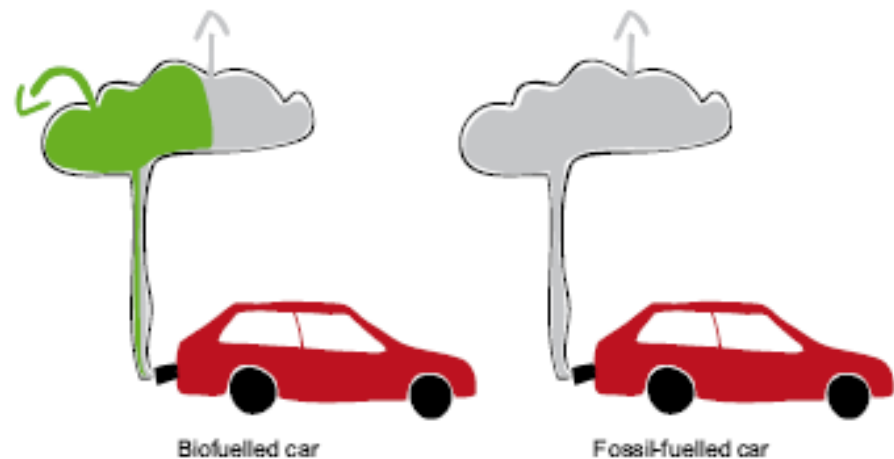
- Improved cycle lanes
- Increased public transport use
- New ways of transport
 - Car-sharing clubs
 - Better information
 - Adaptive traffic signals
- Goods logistics
- Clean vehicles



What is a clean vehicle?

Net CO₂ emissions from different vehicle fuels

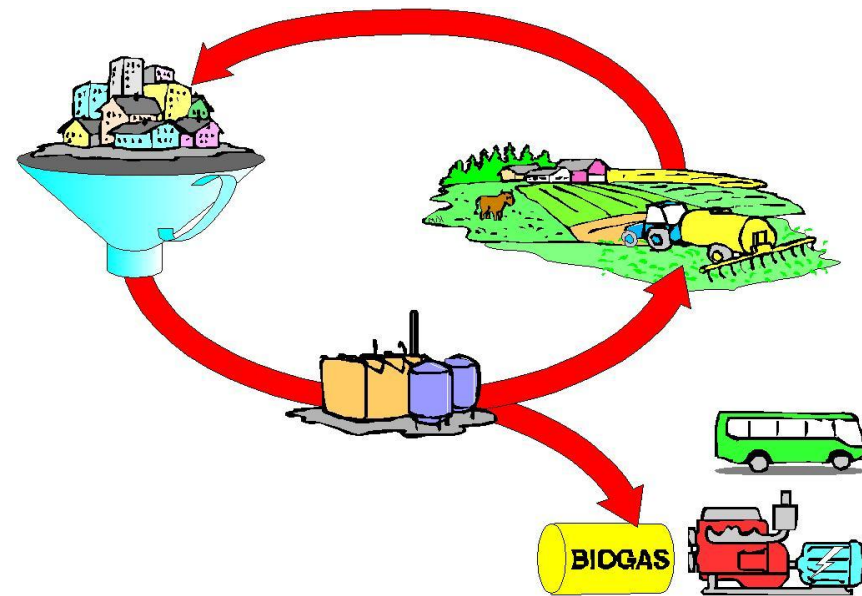
Petrol:	160 gCO ₂ e/km
Bioethanol	25-40 g CO ₂ e/km
Biogas	20 g CO ₂ e/km
Natural gas	135 g CO ₂ e/km
Diesel	160 g CO ₂ e/km
RME	70-80 g CO ₂ e/km





Biogas

- Methane = CH_4
- Rest-product from sewerage works
- >10 MNm³/year in Stockholm & import from other areas

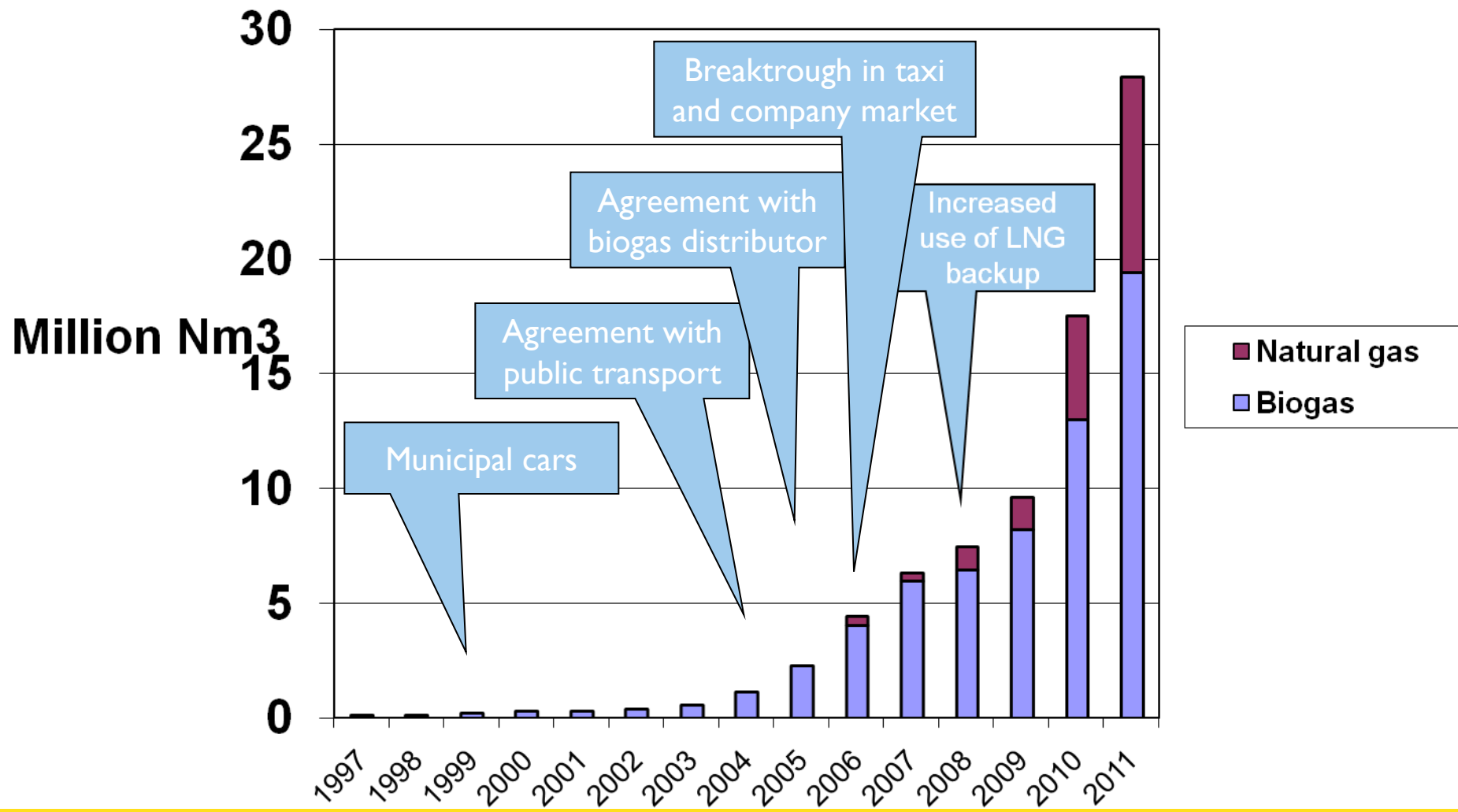


Biogas fuel use

- **Commercial CNG vehicles used, not converted**
- **230 city buses**
- **10.500 cars**
 - **2.000 taxis**
- **2.000 vans and lorries**
 - **All 80 waste collection veh.**
- **20 filling stations**



Sales of biogas fuel in Stockholm



EVs



Swedish National EV Procurement:

296 participating org. (public & private) | 250 EVs/year

Passenger cars

- **Chevrolet Volt (PHEV)**
- **Citroën C Zero**
- **Mitsubishi iMiEV**
- **Renault Fluence**
- **Vantage SUV**



Transport vehicles

- **Renault Kangoo Express ZE**
- **Vantage Minivan**
- **Vantage Pick-up**

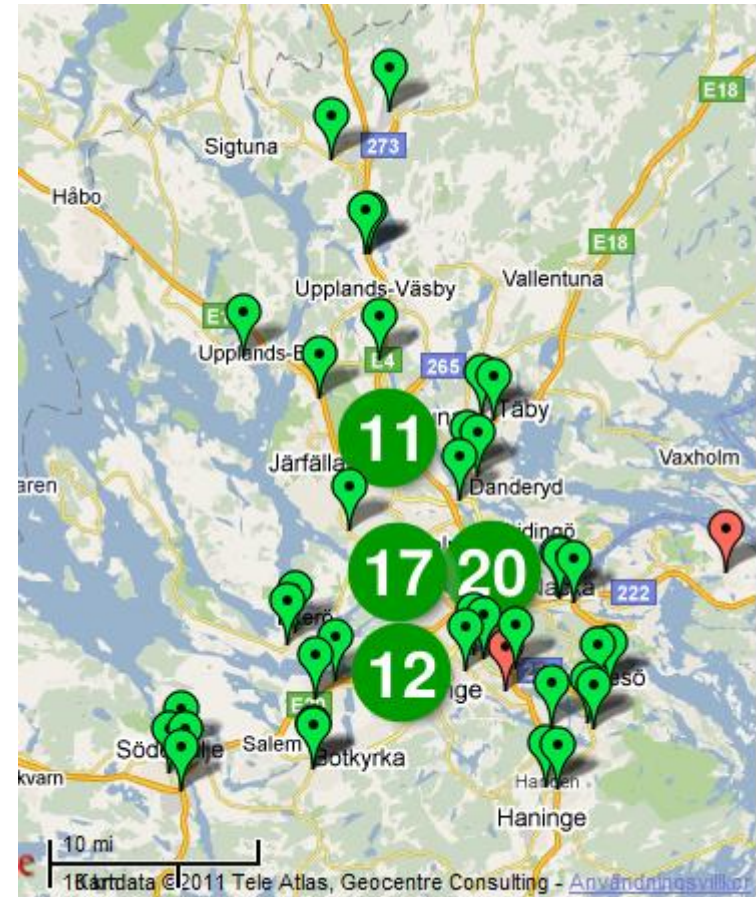


The suppliers may include new models later on

5 000 € funding for the first 1 000 EVs bought from the framework agreements

Charging infrastructure, Stockholm (Dec. 2011)

- 100 locations offering 140 charging points for electric vehicles:
 - 52 are 230V 16A
 - 80 are 400V 16A
 - 6 are 230V 10A G
- More charging points located in neighbouring towns, e.g. Uppsala, Södertälje, and along major routes such as the TEN-T Nordic Triangle (E4,E18,E20)
- Countless (>200.000) block heaters, located in parking garages and private residences



Ethanol



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BIOETHANOL FOR SUSTAINABLE TRANSPORT



Vehicle manufacturers
- Ford, Saab, BSR, Scania

Ethanol fuel producers
- SEKAB, Sweden, Nedalco, Netherlands, Wessex Grain, Uk, Abengoa, Spain

Universities
- Umeå University, Sweden, Tishingua University, China, Imperial College, UK and University of Sao Paulo, Brazil

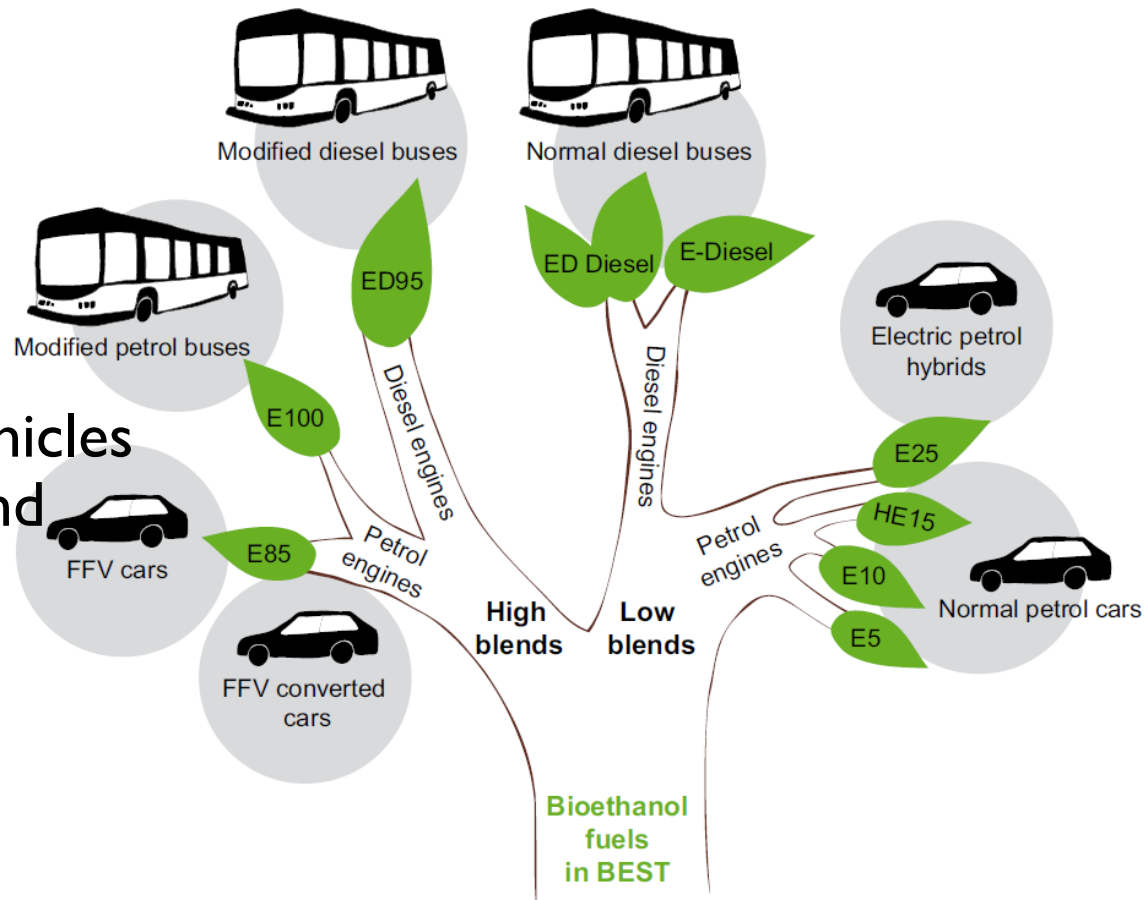


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www.best-europe.org

Extensive demonstrations

77.000 FFV cars
310 E85 pumps
190 ED95 buses
2 E100 buses
12 ED95 pumps
4 conversions
3 hybrid electric E25 vehicles
Low blends of petrol and diesel



Cars

- Positive experiences with regard to vehicle cost, drivers satisfaction
- Slightly higher maintenance (oil filter changes)
- Conversions can be done
- 1-26 % higher energy efficiency when running on E85 vs. Petrol
- Fuel economy can be even further developed by:
 - using the higher octane in ethanol fuels
 - Ethanol-electric hybrids
 - ED95 in diesel engines

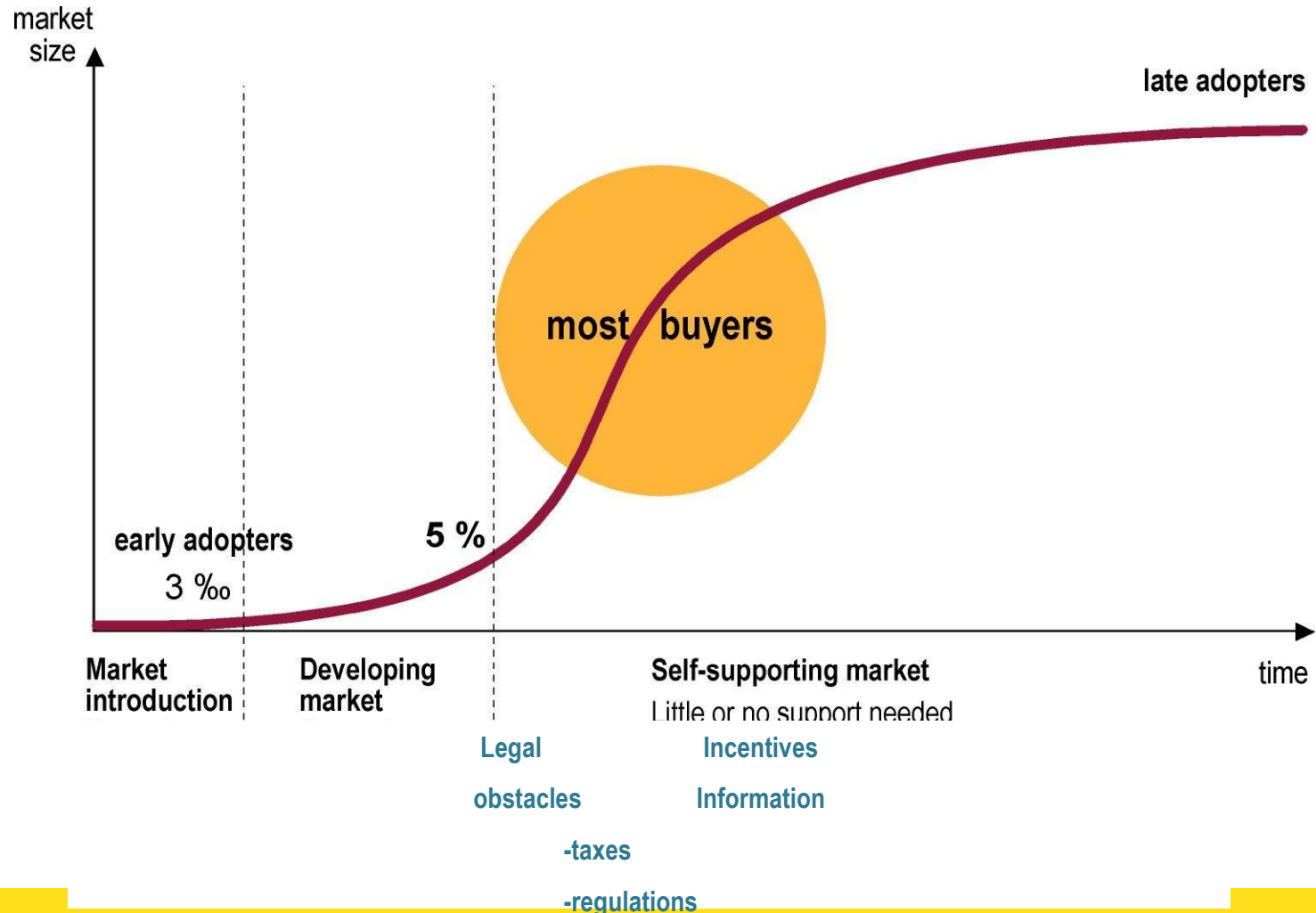


Buses

- Higher reliability
- More scheduled maintenance
- 10 % higher prices
- Pros and cons for users
- Need for more manufactures
- Positive CO2 reduction and reduced particulate matters



Market development



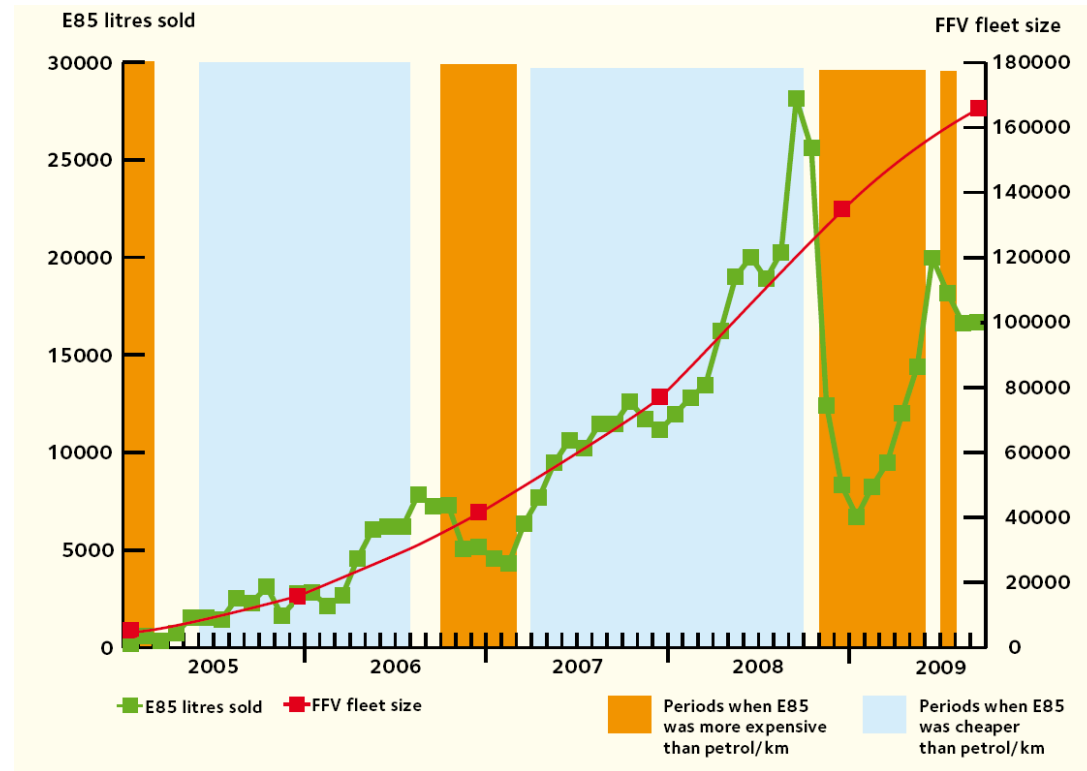
The two phases

- Pre market phase
 - vehicle supply
 - fuel distribution
 - identify and remove legal barriers & tax disadvantages.
 - Legalizing local incentives
- Developing market phase
 - monetary incentives for end users
 - reliable information
 - Satisfied drivers

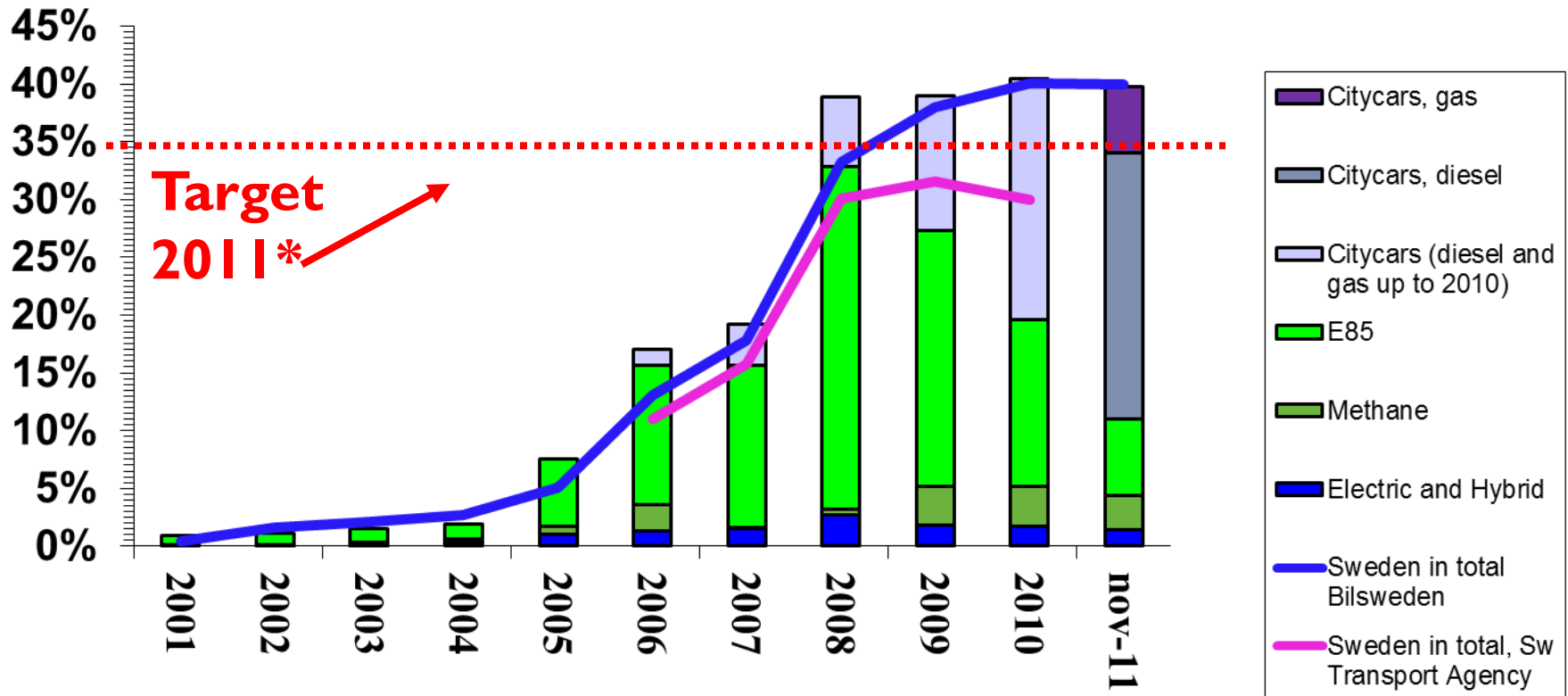


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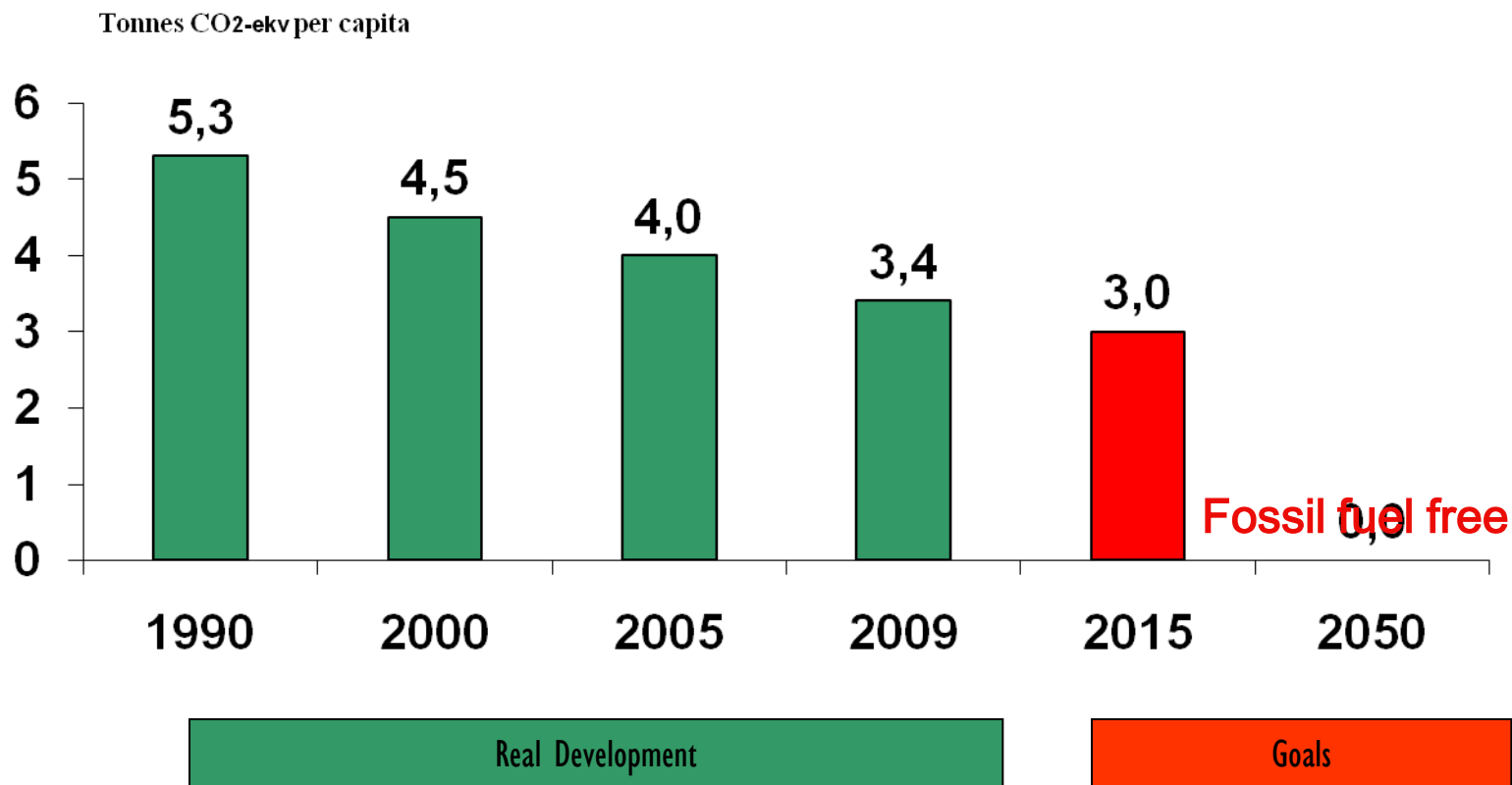


Market share of brand new passenger cars in Stockholm County



City of Stockholm 41 percent November 2011

Stockholm: Climate Goals and achievements



Recommendations

- Both carrots and sticks needed to achieve sustainable transport
- Put more focus on goods logistics
- Define clean vehicles and put in supportive incentives
- Certification of all transport fuels needed



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Tack!/Thank you!



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Gustaf Landahl
gustaf.landahl@stockholm.se
+ 46 8 508 28 916

www.stockholm.se
www.trendsetter-europe.org