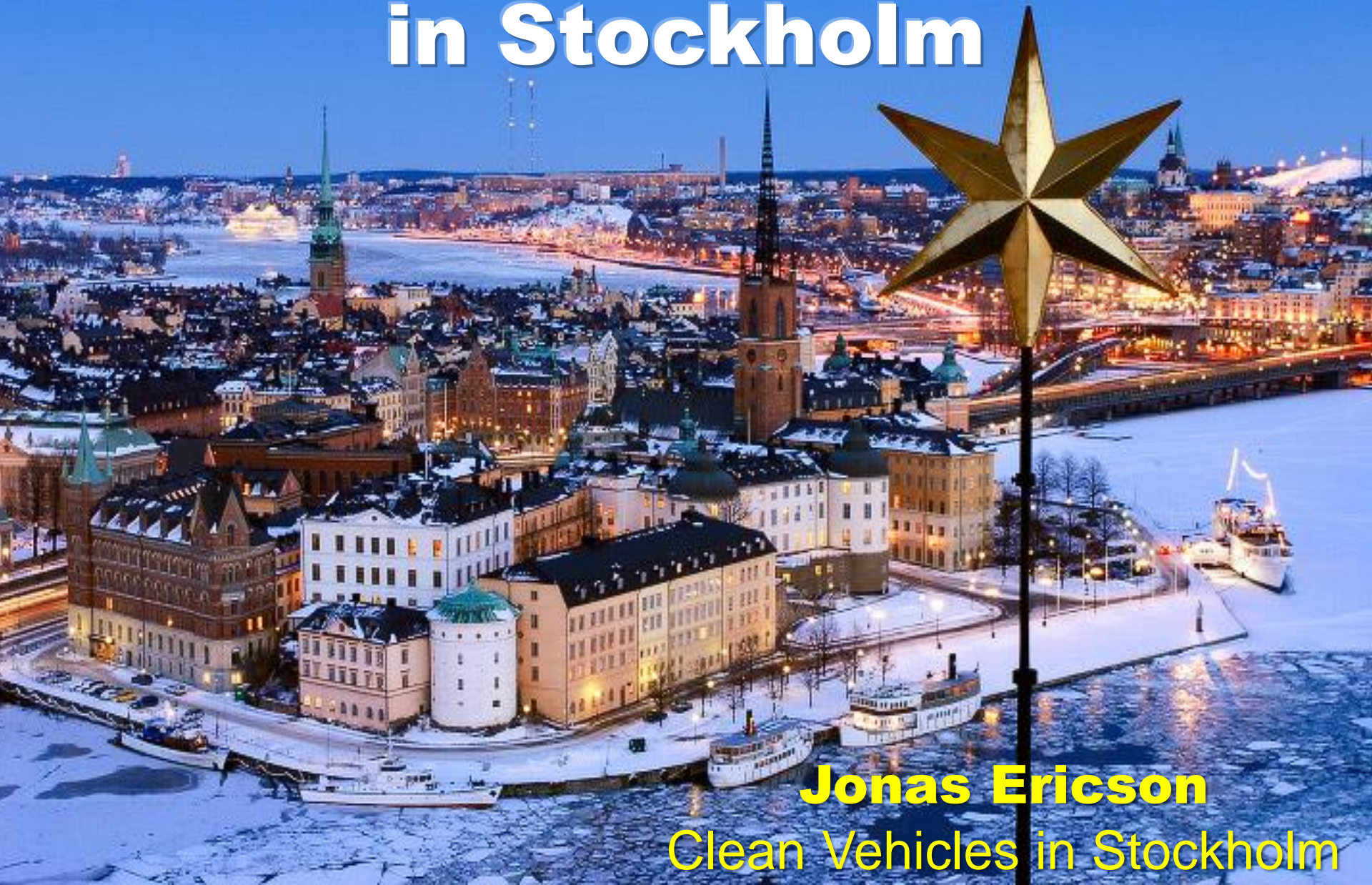


Clean vehicles & Fuels in Stockholm



Jonas Ericson

Clean Vehicles in Stockholm



170.000 clean vehicles
20 %!



200.000 ton CO₂/year



How?



Start with Municipal fleet heavy duty vehicles

- limited n° of fuelling stations
- large environmental impact





Start with Municipal fleet light duty vehicles

Stockholm City Council decision 2010:

By 2015:

- 100 % Clean Vehicles in municipal fleet
- 50 % of all new vehicles in Stockholm
- 16 % renewable fuel sold
- 10 % of all new trucks sold

Fuels

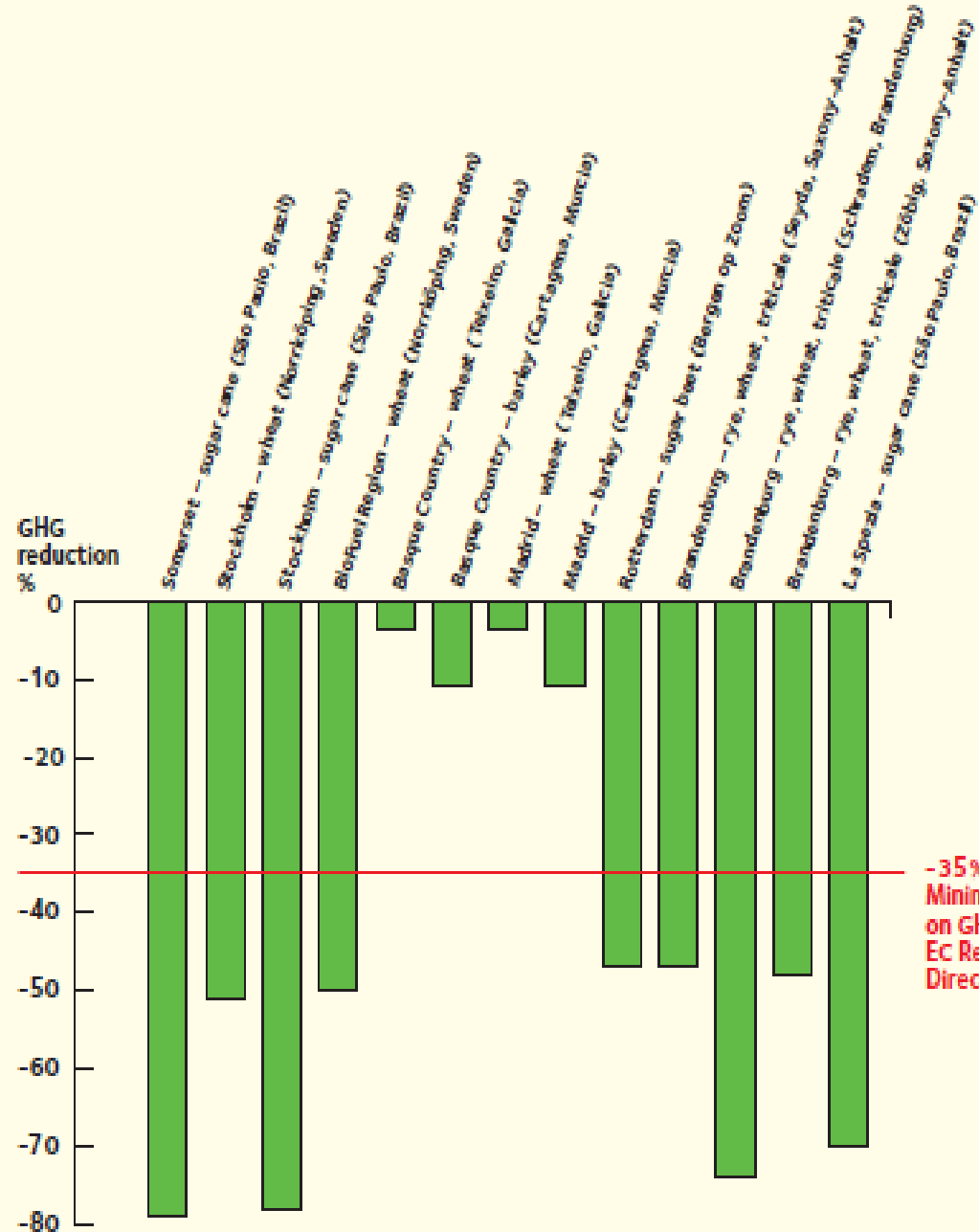
Biogas

- Produce biogas
- Find a distribution system

Ethanol

- Find good producer
- Promote fuelling stations

Greenhouse gas savings by bioethanol used in BEST 2006



Make cost even

Mayors of Stockholm, Göteborg, Malmö met with ministers over and over again - for more than 10 years

Result:

- Long term tax discount for biofuels/vehicles
- Special discount for Company cars
- Mandatory clean fuels at fuel stations
- Government procure clean vehicles
- Definition of clean vehicles
 - Free parking and other local incentives
 - Grants for Clean Vehicles



Buses

Goals for buses

By 2016

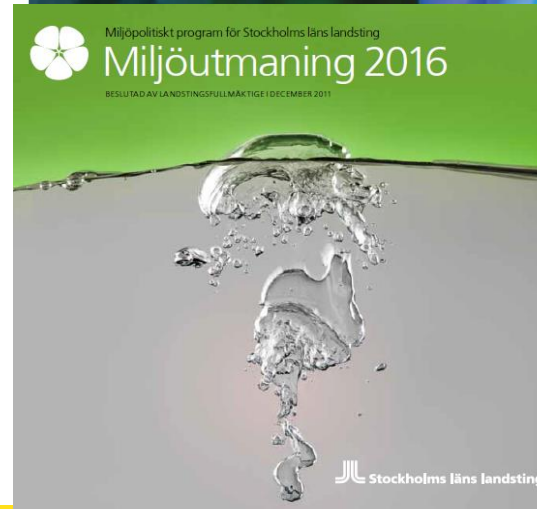
- $\geq 75\%$ of buses operate on renewables
- 10 % energy reduction from 2011

By 2020

- $\geq 90\%$ of buses operate on renewables
- 25 % energy reduction from 2011

By 2030

- 100 % of buses operate on renewables
- 35 % energy reduction from 2011



Stockholm's Philosophy

- Use best available commercial technology – NOW!!
- Support and engage in projects for future technology (hybrids, electric, fuel cell etc)



Commercial options today (CO₂, NO_x, PM, noise)

- Ethanol ED95
- Biogas
- RME
- HVO
- Hybrid-Electric
- (Electric)



Ethanol (ED95) buses

- Scania
- 12 m & 18 m
- Diesel technology = same energy efficiency as diesel
- EEV, Euro VI in 2015
- Purchase cost \approx + € 10,000
- Operation cost \approx diesel
- Maintenance: + 2-5 %



Biogas buses

- MAN, Scania, Volvo
- 12 m & 18 m
- Spark plug technology = less energy efficient, but cleaner exhaust
- EEV/Euro VI
- 3-5 dBA less noise
- Purchase \approx + € 30,000
- Operation cost \approx diesel
- Maintenance: + 5 %



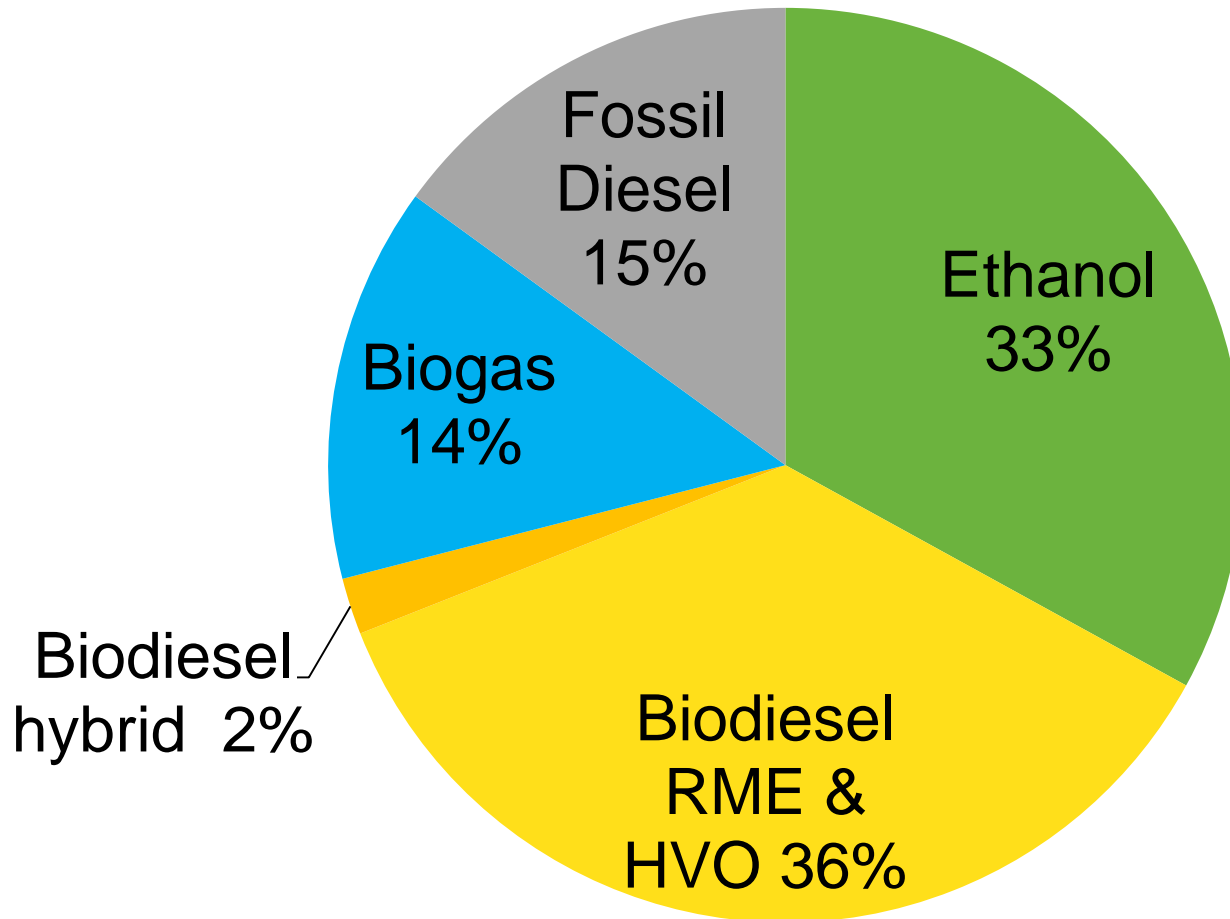
Biodiesel buses

- Scania, Volvo, VDL
- 12 m, 18 m, double-decker
- Euro VI
- Diesel technology = high NO_x
- Purchase = diesel
- Operation cost: - 20 %
- Maintenance: + 2-5 %



Busslink 6037 vid Norrtälje busstn den 22 juli 2010. Foto: Mikael T Nilsson

Distribution of bus technologies,



**Address the
market**



Greening transport through procurement

Companies working for the city

- Public transport
- Waste collection
- Taxis
- Courier service
- Disabled transport
- School transports
- Sick transports
- Security guards
- Moving
- Internal mail service

The Coca-Cola logo in its classic red script font.The Scandic logo, featuring the word "Scandic" in a red sans-serif font on a light beige rectangular background.The DN.se logo, with "DN" in a large, bold, black sans-serif font and ".se" in a smaller, black sans-serif font.The SVT logo, with "SVT" in a blue, outlined sans-serif font and a blue flower-like graphic to the right.The IKEA logo, with the word "IKEA" in a bold, yellow, sans-serif font and a registered trademark symbol (®) to the right.The DHL logo, with the letters "DHL" in a bold, red, italicized sans-serif font on a yellow background, flanked by red horizontal bars.

**Analyse the market –
find potential adopters**

- Coca-Cola
- Scandic Hotels
- Dagens Nyheter
- Swedish television
- IKEA
- Danzas

”At least one clean vehicle”

Information

- Campaigns
- Demonstration events
- Advertising
- Newspapers, TV
- Web
- Telephone advise



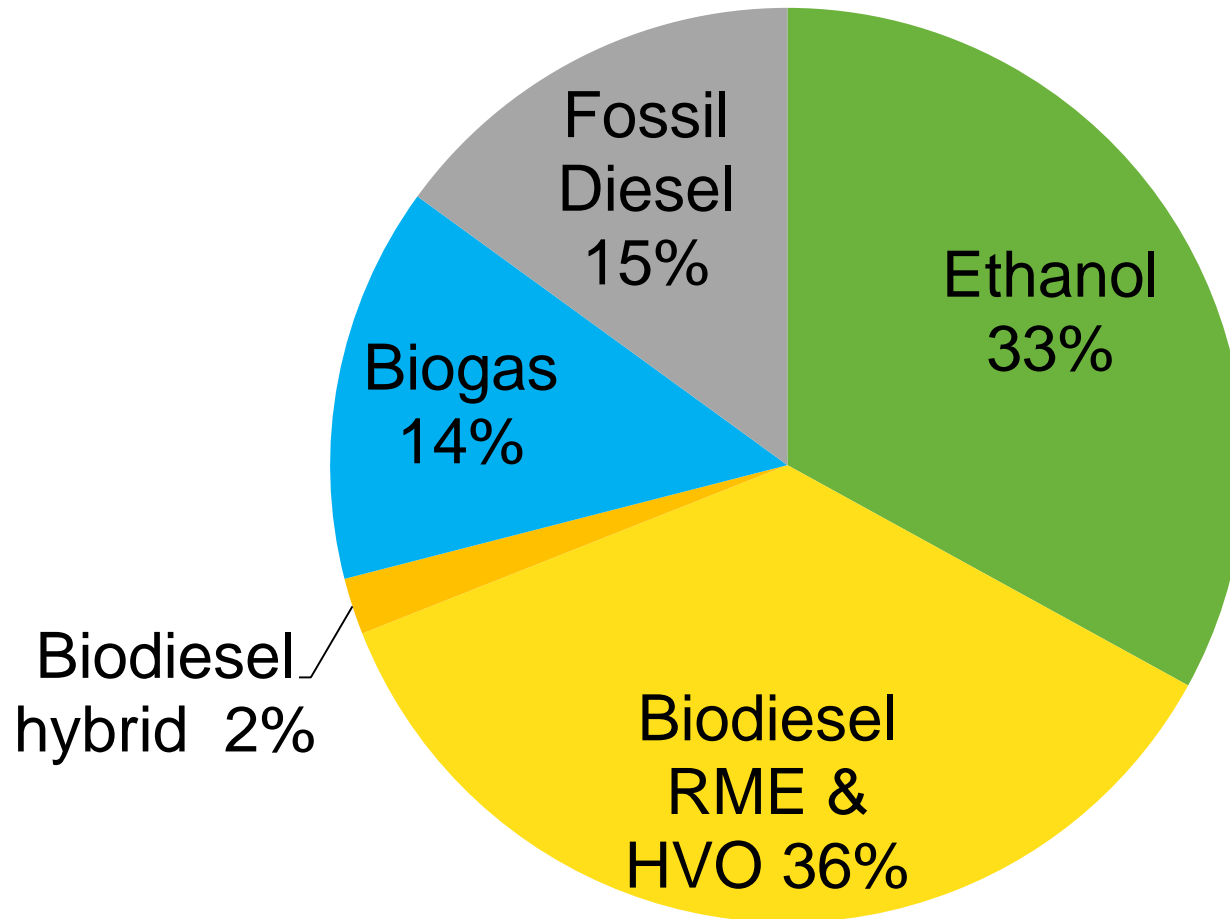
The Results



170.000 vehicles
20 %!



Distribution of bus technologies,



Clean Vehicles in Stockholm

What is next?

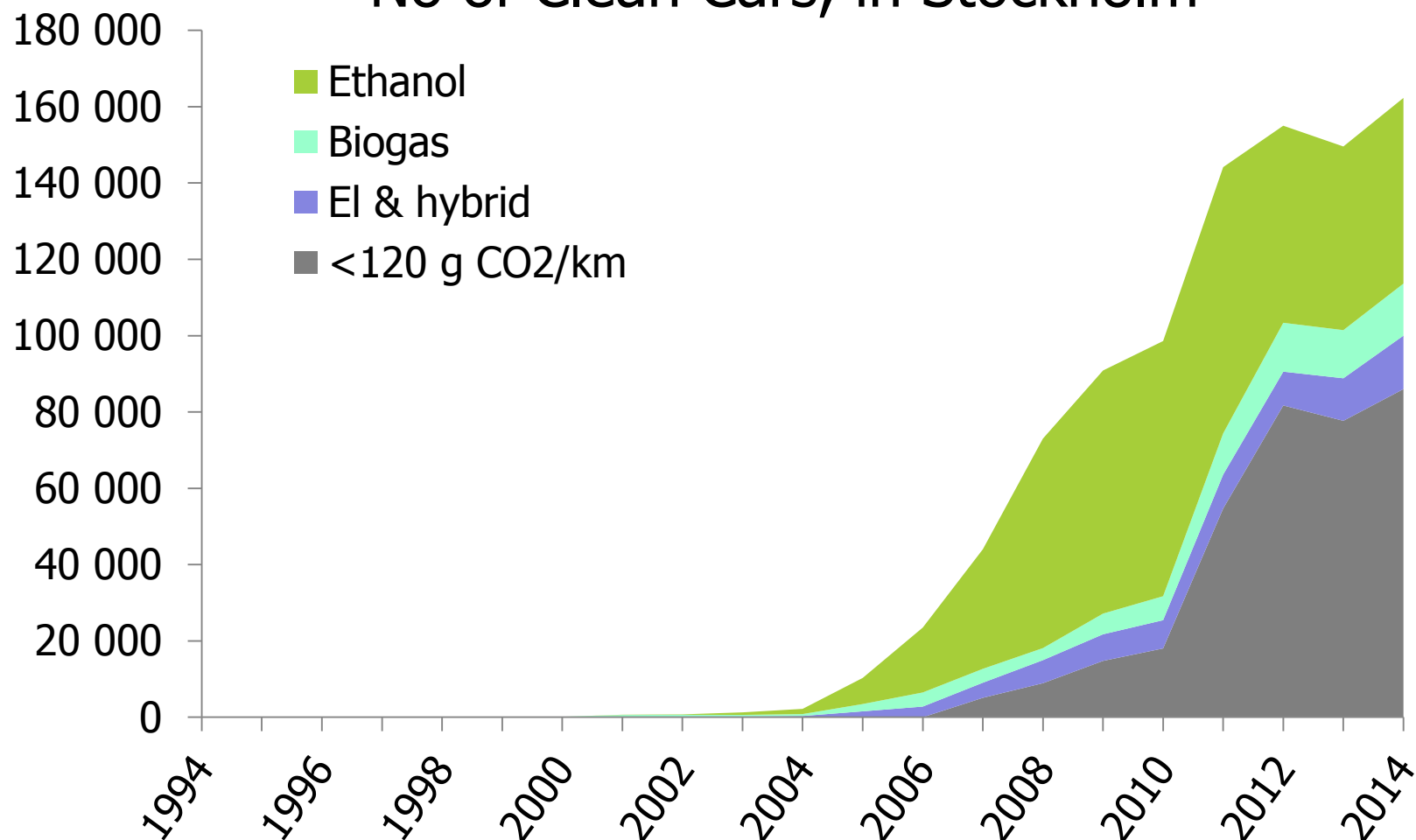
- Heavy Vehicles & Hybrids running on biofuels
- Electric and PHEV





Conclusions

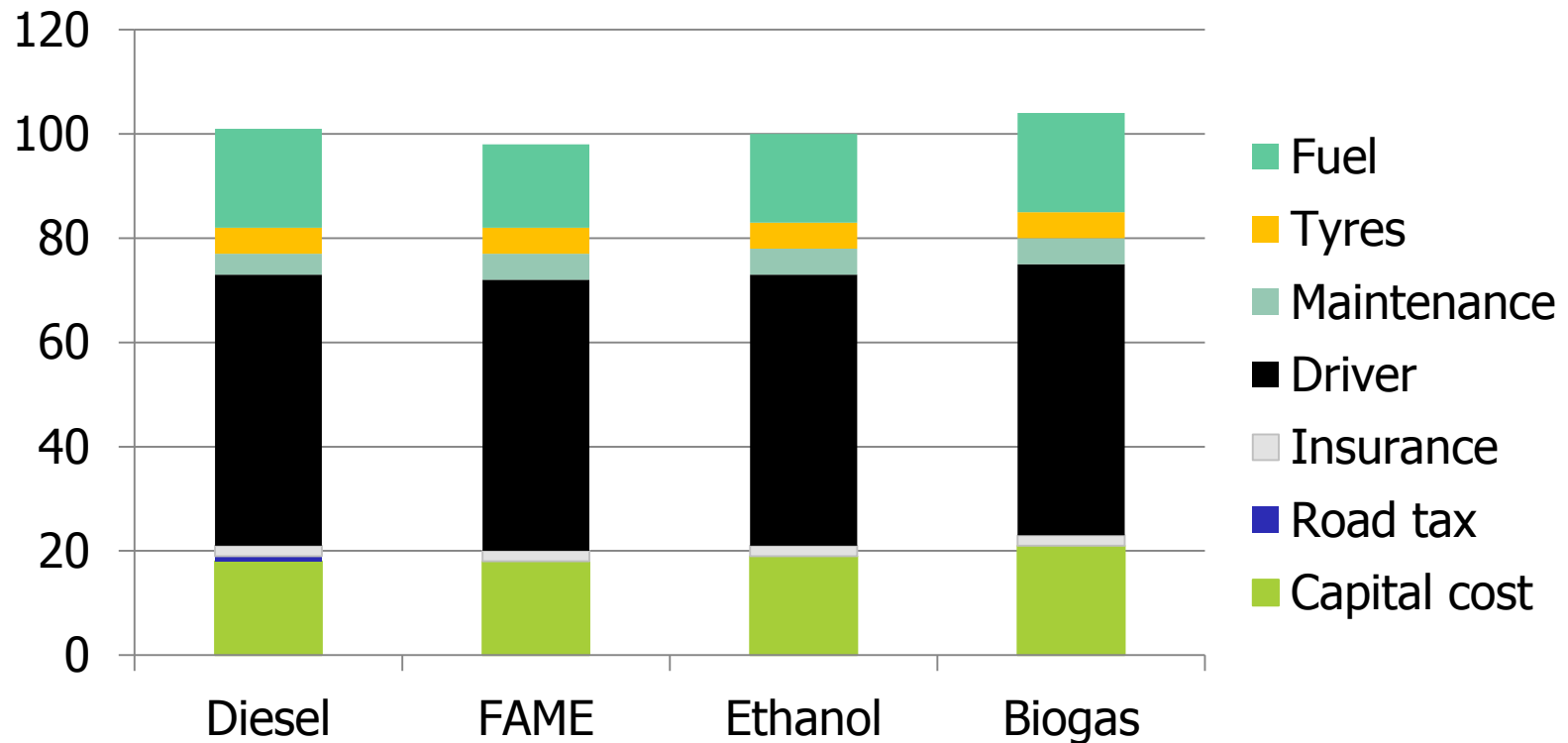
No of Clean Cars, in Stockholm



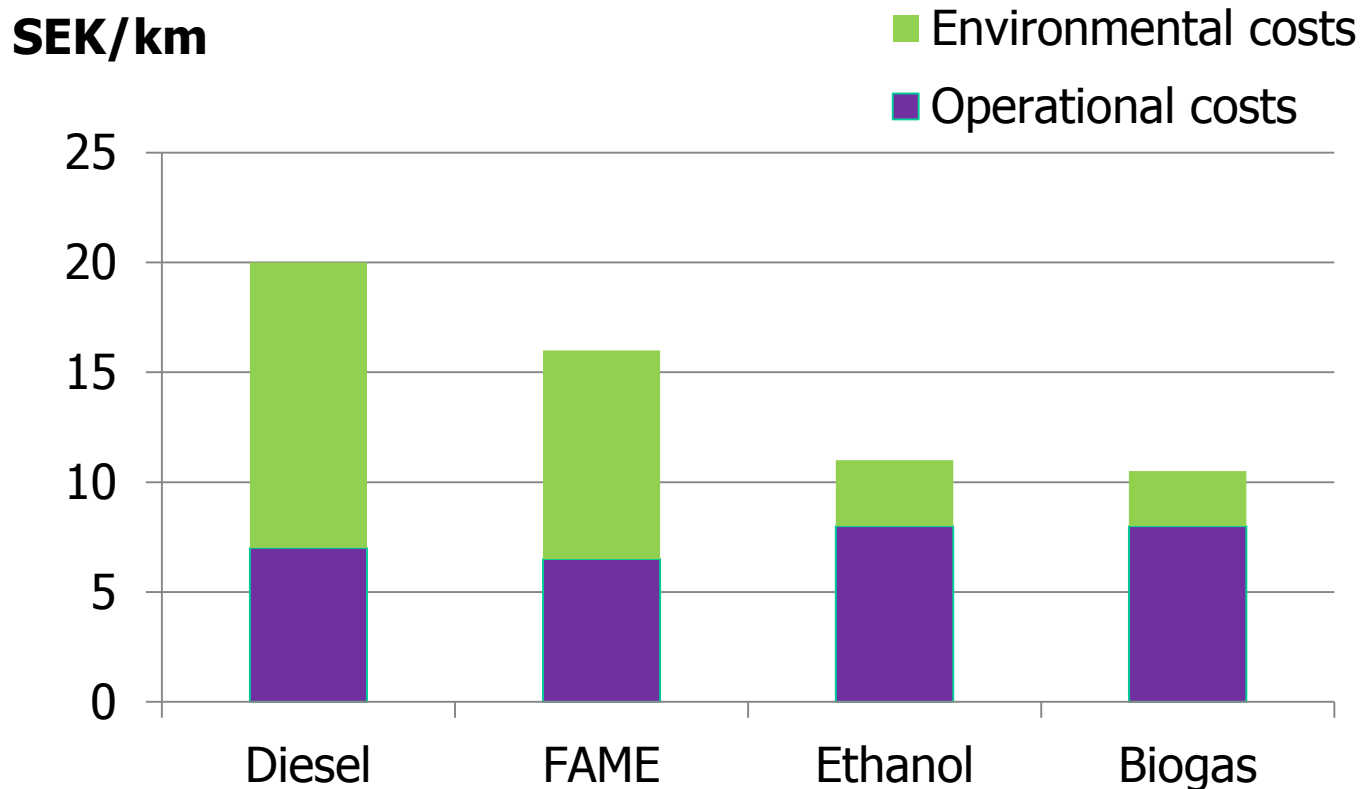
Clean Vehicles in Stockholm



Economics for buses in Stockholm



Total economics for buses in Stockholm



CITIES are Key players

Big local fleet owner

Fuel producer

Fuel infrastructure

Tax incentives

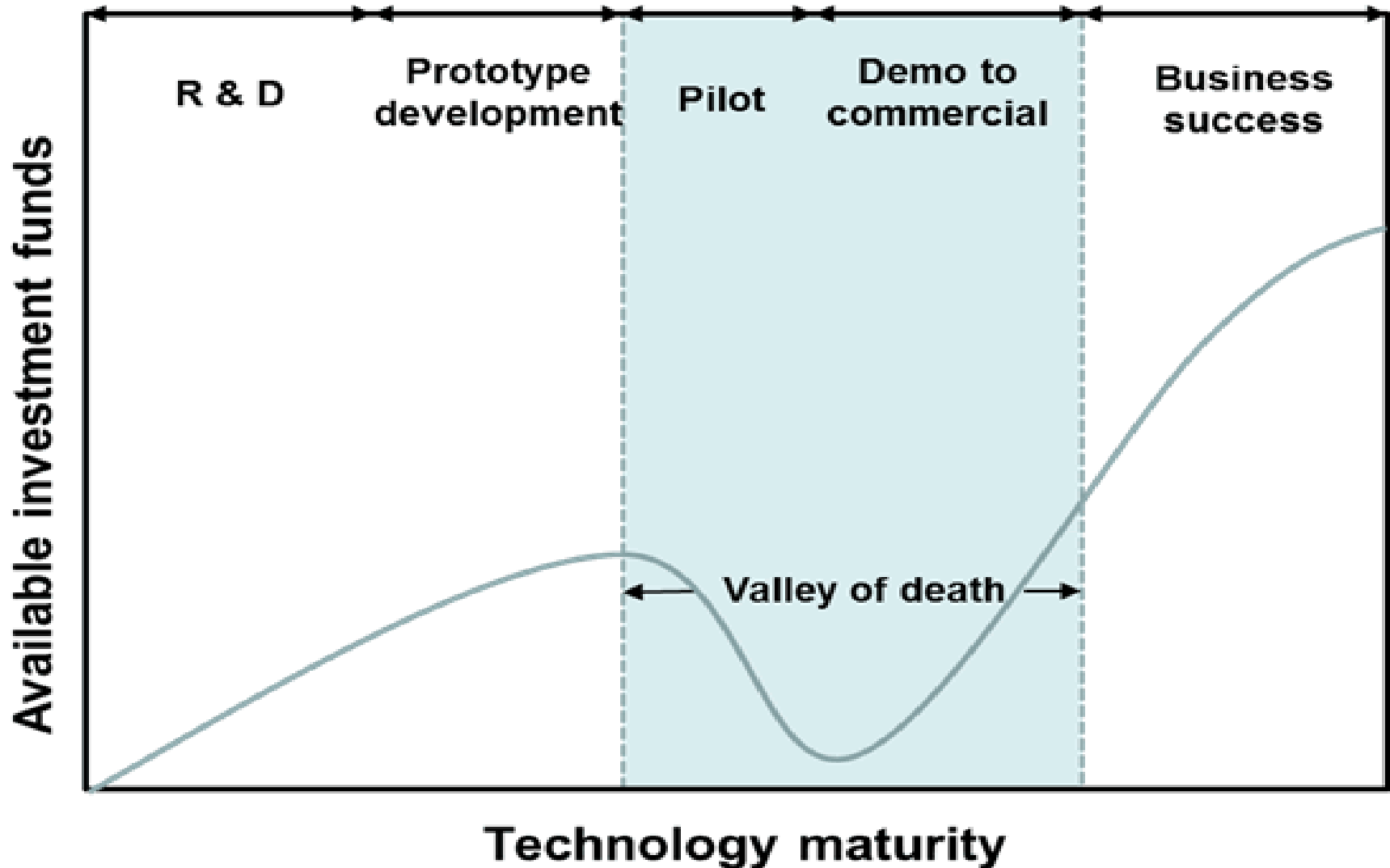
Local Incentives

Transport buyer

Independent info

City	Central gov	Industry
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Valley of death



Maintenance
Spare parts Fuel producers
Fueling station Fuel distributor Taxes
Car manufacturer Health Safety
Car Dealer

National
Local
politics



Driver









Thank you!

Jonas Ericson

Jonas.Ericson@stockholm.se

Tel +46 850 828 946