Climate change in Stockholm

- Background on climate change
- Action plan for climate protection
- District heating
- Sustainable transport
- Congestion charging
- Results

Gustaf Landahl,
City of Stockholm

Atmospheric CO₂ - future increases

Source: IPCC
European average temperatures

Oil and gas production

Source: Colin Campbell 2004
Energy

Surprise
Geoth.
Solar
Biomass
Wind
Nuclear
Hydro
Gas
Oil & NGL
Coal
Trad Bio.

2% p.a.

Emissions of carbon-dioxide

USA
The Climate Action Plan

Second generation plan 2000-2005
1. Baseline emissions inventory
2. Emission reduction targets
3. The plan
4. Implementation
5. Monitoring and reporting

Goals and achievements

<table>
<thead>
<tr>
<th>Year</th>
<th>Ton CO₂-eqv per inh. &amp; year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>5.3</td>
</tr>
<tr>
<td>2000</td>
<td>4.5</td>
</tr>
<tr>
<td>2005</td>
<td>4.0</td>
</tr>
<tr>
<td>2050</td>
<td>Fossil fuel free</td>
</tr>
</tbody>
</table>

- Real development
- Goals
Emissions of carbon dioxide year 2000 in the City of Stockholm

Sum: 3 406 thousand tonnes of CO₂

District heating & Co-generation

- Co-generation, biofuels, waste
- Heat pumps from sewage water
- Market share 75 %
- Fossil fuel 21 %
- District cooling
Energy efficiency in buildings

Existing buildings:

Educating owners multi-family houses how to preserve energy and how to comply with the environmental code.

[www.miljo.stockholm.se]

New buildings:

- The city owns 65% of all land within its jurisdiction
- Energy requirements for leaseholds
- For example within district heated buildings a maximum of: 125 kWh/square meter whereof 60 kWh electricity

[www.stockholm.se/miljobygg]

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Sustainable transport by **Carrots & Sticks**!

**Sticks**
- Environmental zones for lorries and busses
- Congestion taxation

**Carrots**
- Improved cycle lanes
- Increased public transport use
  - smart cards & ticketing
  - travel guarantee
- New ways of transport
  - Car-sharing clubs
  - Better information
  - Adaptive traffic signals
- Goods logistics
- Clean vehicles

[www.stockholm.se/miljobygg]
Trip planning

- Real-time information in buses and at bus-stops
- www.trafiken.nu - plan for the best trip

Attractive public-transport

Marketing
- free tickets for special groups i.e. new citizens
- Mobility planning Surveillance
- trip-garantees
- smart-cards
Goods distribution
O-central old town

win-win-win
- Better accessibility
- Better city environment
- Better for the customers
Goods distribution

- Logistic centre building material
  - Less transport, better environment, lower costs
  - Require an active partner
  - Can be supported by incentives
Environmental zones

- Diesel powered, heavy trucks and busses weighing more than 3.5 tonnes are banned from defined inner city area, unless they comply with certain environmental regulations (environmental classes).

Marking vehicles

- Visible sticker on windscreen
- Enforcement by the Police
- Cities are entitled to charge applications
Primary objectives of congestion charging

- Reduced congestion
- Increased accessibility
- Better environment

Secondary objectives of congestion charging

- To reduce traffic volume by 10-15% on the most-heavily-used routes during morning and afternoon/evening peak periods.
- To improve accessibility for buses and cars in the inner city.
- Revenue back to Stockholm
4 Steps

- Improved public transport
  22 Aug 2005

- New park-and-ride sites
  Autumn 2005

- Congestion charging
  3 Jan-31 July 2006

- Referendum 17 Sept 2006

Congestion-charging zone
## Congestion charges

<table>
<thead>
<tr>
<th>Category</th>
<th>Time Period</th>
<th>SEK</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEAK PERIODS</td>
<td>7.30-8.30 a.m., 4-5.30 p.m.</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>SEMI PEAK PERIODS</td>
<td>7.-7.30 a.m., 8.30-9 a.m.</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3.30-4 p.m., 5.30-6 p.m.</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>MEDIUM-VOLUME PERIODS</td>
<td>6.30-7 a.m., 9 a.m.-3.30 p.m.</td>
<td>10</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>6-6.30 p.m.</td>
<td>10</td>
<td>1.5</td>
</tr>
<tr>
<td>MAXIMUM CHARGE:</td>
<td>SEK 60/day</td>
<td>60</td>
<td>9</td>
</tr>
</tbody>
</table>

Evenings, Saturdays, Sundays, holidays: **NO CHARGE**

### These traffic categories are exempt about 30% of passages

- Emergency vehicles
- Vehicles with disability permits
- Foreign vehicles
- Transport services for the disabled
- Taxis
- Motorcycles
- Buses over 14 tons
- Vehicles using alternative fuel
Passages entering/departing the congestion-charging zone 06:00 – 19:00
30-50% less time in queues

![ delayed time, AM peak chart covering Inner main roads, inbound, Inner main roads, outbound, Inner streets, Inner main roads, northbound and Inner main roads, southbound in 2005 and 2006.]

Less emissions improve health

- Emissions are reduced in the "right" area
- According to new findings, as much as 30 premature deaths can be saved (app. 300 living years)
- Climate effects large for a single measure
- One step towards national climate target
Reduction in exhaust particles

Which car trips disappeared?

- Work/school: -22%
- Shopping: -27%
- Service: -30%
- Spare time: -23%
- Other: -33%
High incommers most affected – middleincomers changed most

*Cartrips during congestion tim in and out from the inner city*

- High -15%
- Low -6%
- Average low -25%
- Average high -9%
- Average -30%

Is the Stockholm trial a good idea

- Good idea
- Bad idea
The result of the referendum

<table>
<thead>
<tr>
<th>City of Stockholm</th>
<th>County of Stockholm</th>
<th>Together</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td>60%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Why was the trial a success?

- It worked technically very well
- People have known what to do
- The traffic effects have exceeded the expectations
- People have seen the benefits by themselves
- Continuously measuring didn't give room for rumours
- People have been prepared to change their minds
Continuation from 1 July 2007

- No transponders needed
- Improved customer services
- Better reports to business companies
- Better routines when new owner
- Everybody can pay by direct dept
- The car owner does not need to be the one who pay the tax
- July a free month
- In the future 30 days to pay
- The tax will be deductible
- In the long run a local charge instead of a national tax

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