Växjö kommun
The Greenest City in Europe

Pär Wallin: Climate Protection Engineer

Emissions of fossil CO_2 (kg/inh)

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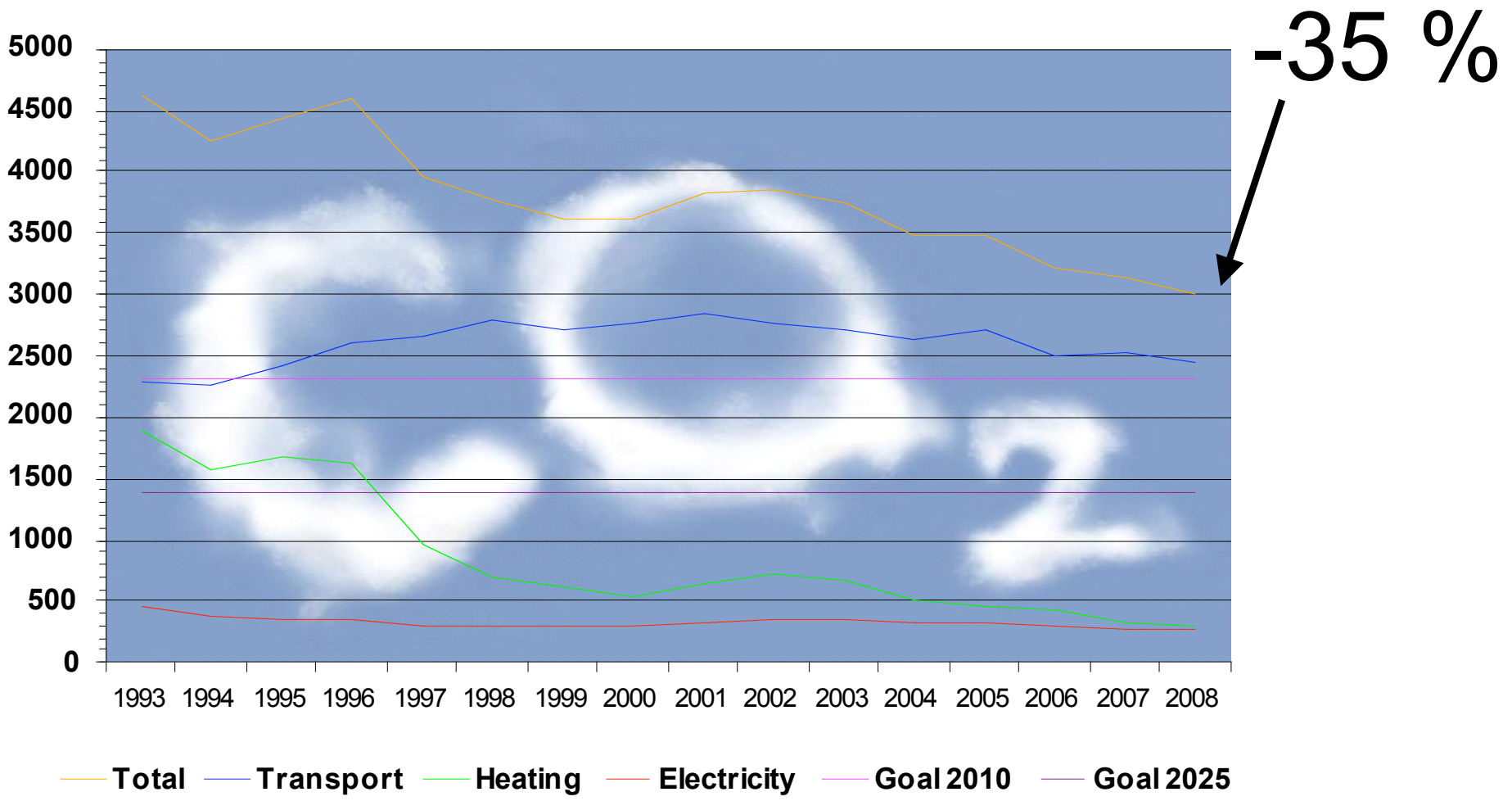

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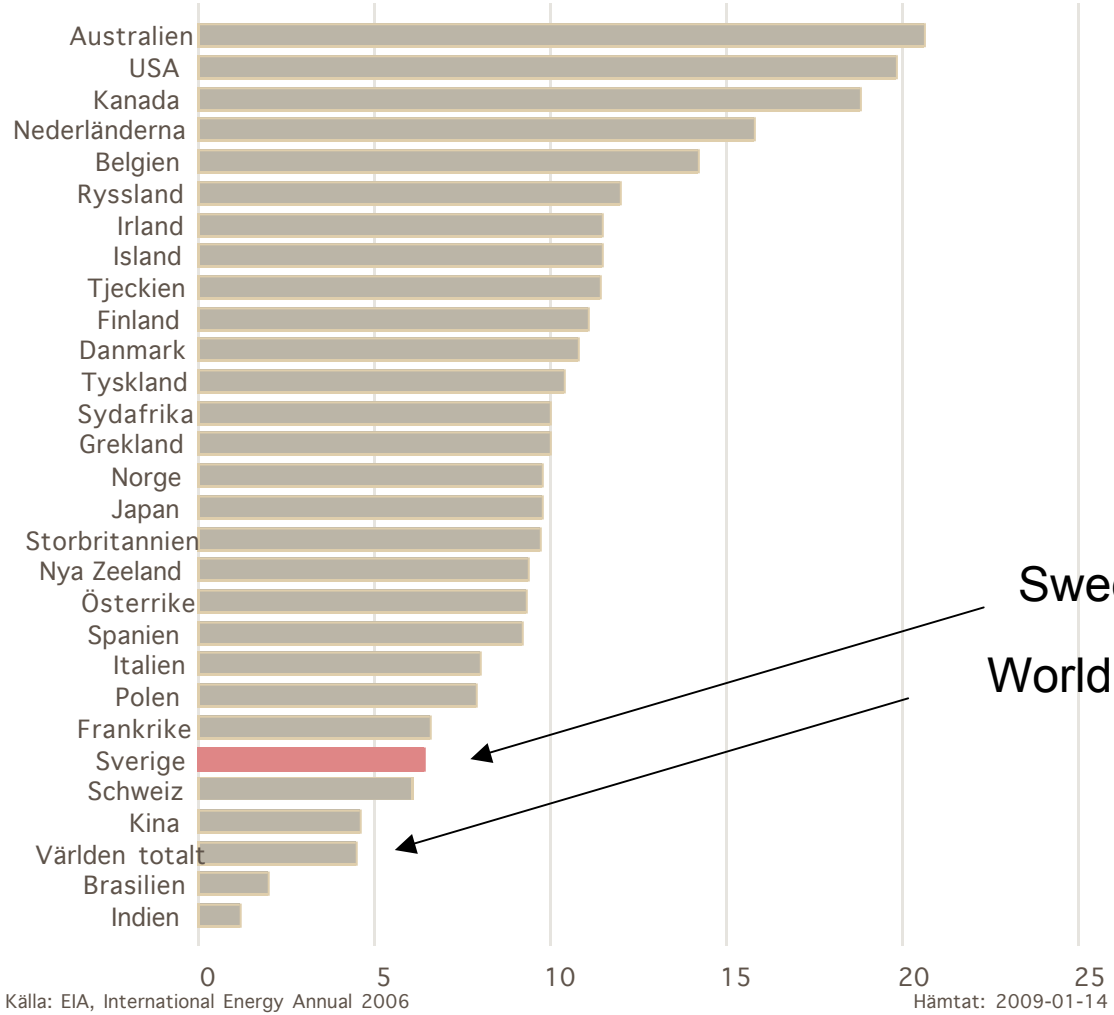
Olika länders utsläpp av koldioxid

Ton per capita, 2006



Källa: EIA, International Energy Annual 2006

Hämtat: 2009-01-14

ekonomifakta

Fossil carbon dioxide emissions in the world, per capita

CO_2

FOSSIL FUEL FREE VÄXJÖ

Part of Environmental Programme for the City of Växjö

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In Europe's greenest city,

even its power plant smells more like a sauna

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BusinessWeek

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This is Växjö, Sweden

Municipal profile

- Population ~81 500 (March 2009)
- Forests and 200 lakes
- Centre of glas, furniture, SMEs, bio energy and education
- 8 000 SME-companies
- City budget 300 million Euro
- 6000 employees in administration
- Political majority, right wing:

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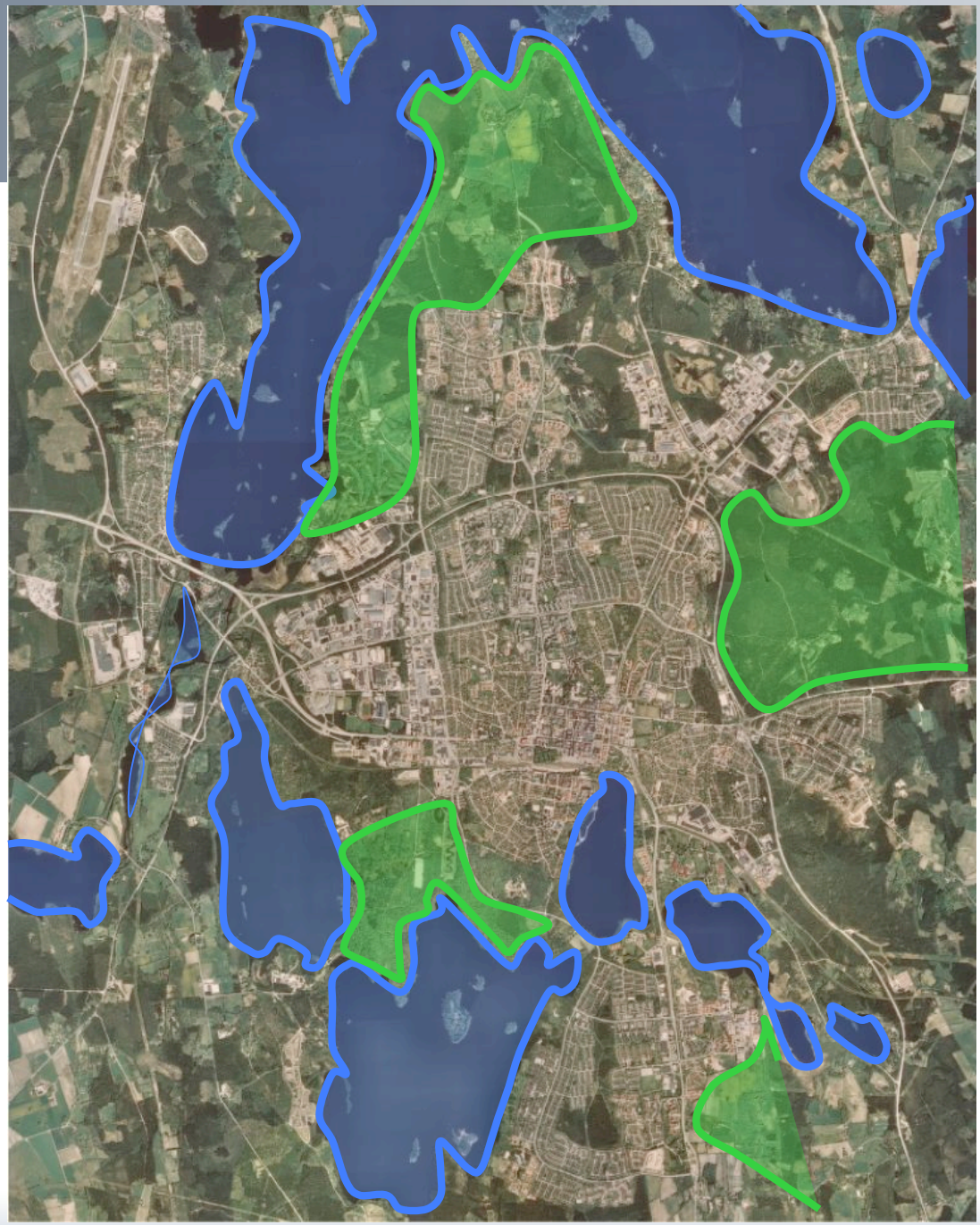

- **City parks and nature reservs**
- **Recovered central lakes to enjoy**

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4 questions?

1. What has Växjö done …
2. Legislation and policies to support leadership
3. What are the challenges now?
4. The lessons to gain?

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Why success

- Political consensus – decisions
- Broad collaboration and networks
- Resources - financial support

Municipal commissioners in the City of Växjö: Bo Frank (m), Charlotta Svanberg (s), Gunnar Elm (c)

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4 questions?

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Environmental history

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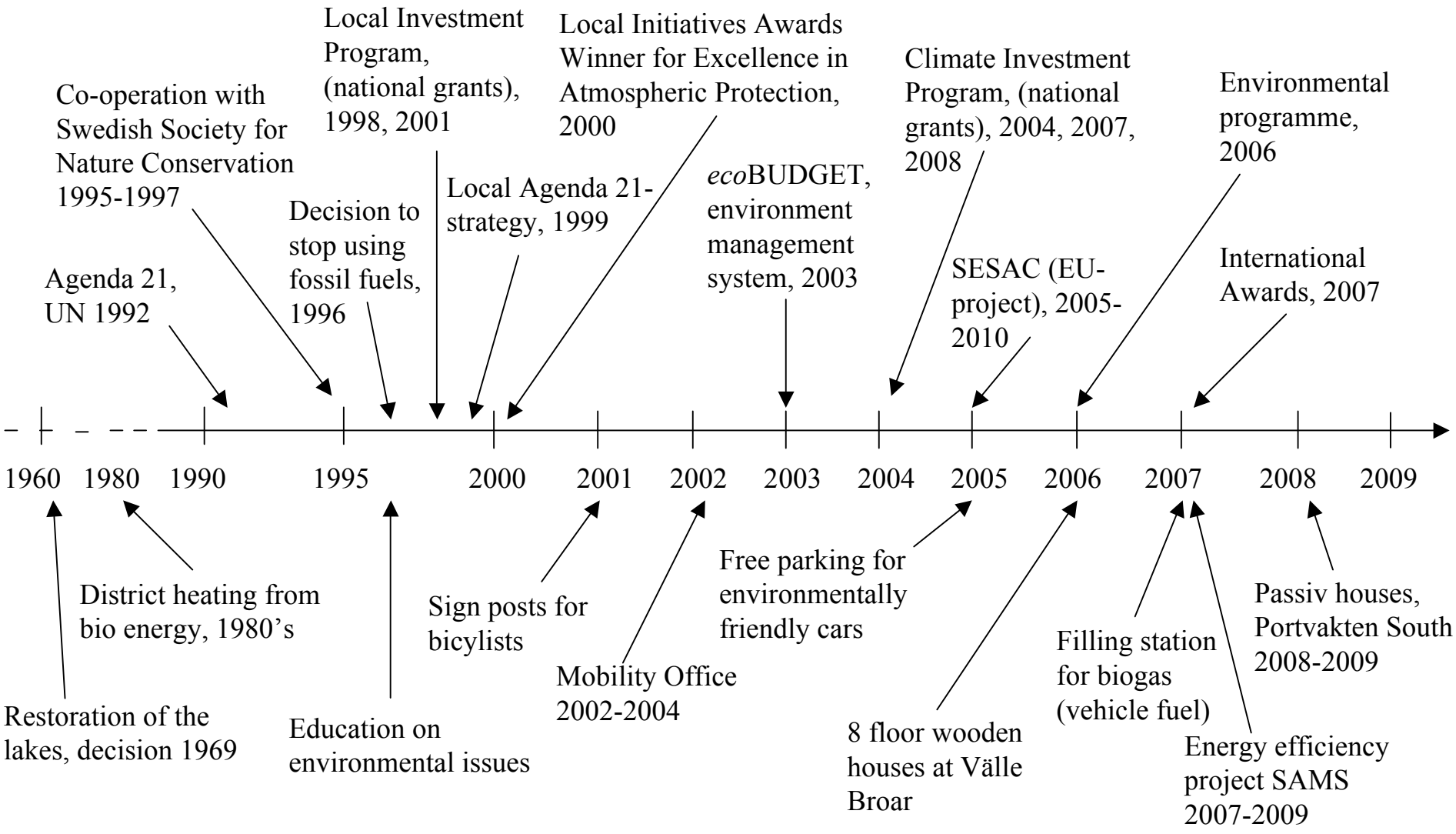

Local Alarm bell

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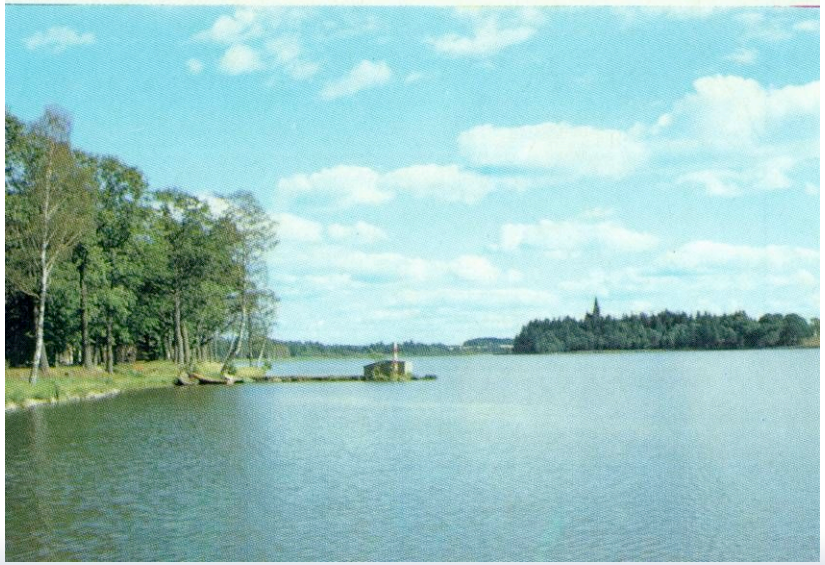

Lake Trummen
(restoration 1970-1971)

Before restoration

After restoration

More history

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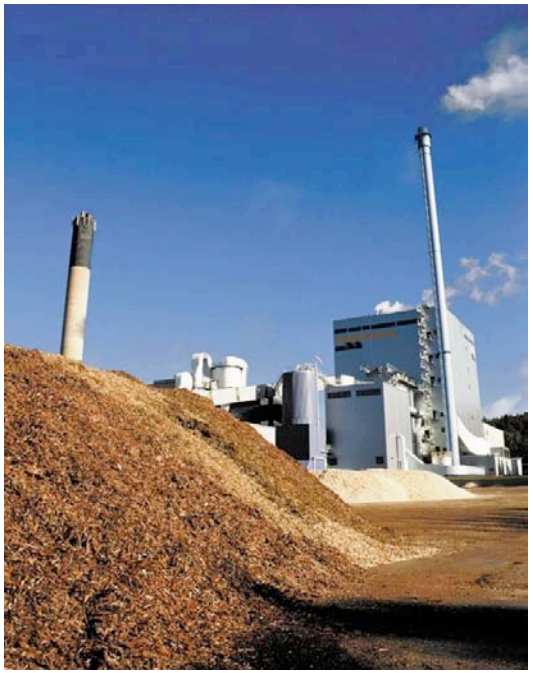
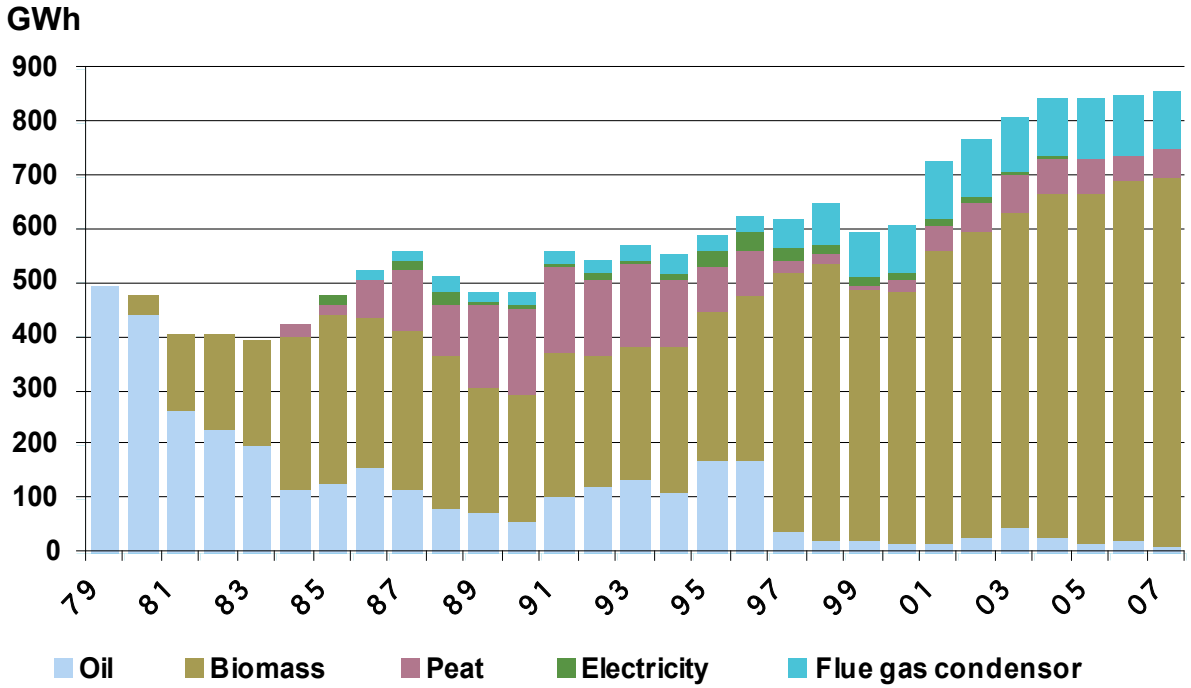
1980 district heating from bio energy, 20 years later more than 90 % of the energy is renewable.





Växjö Energy Ltd

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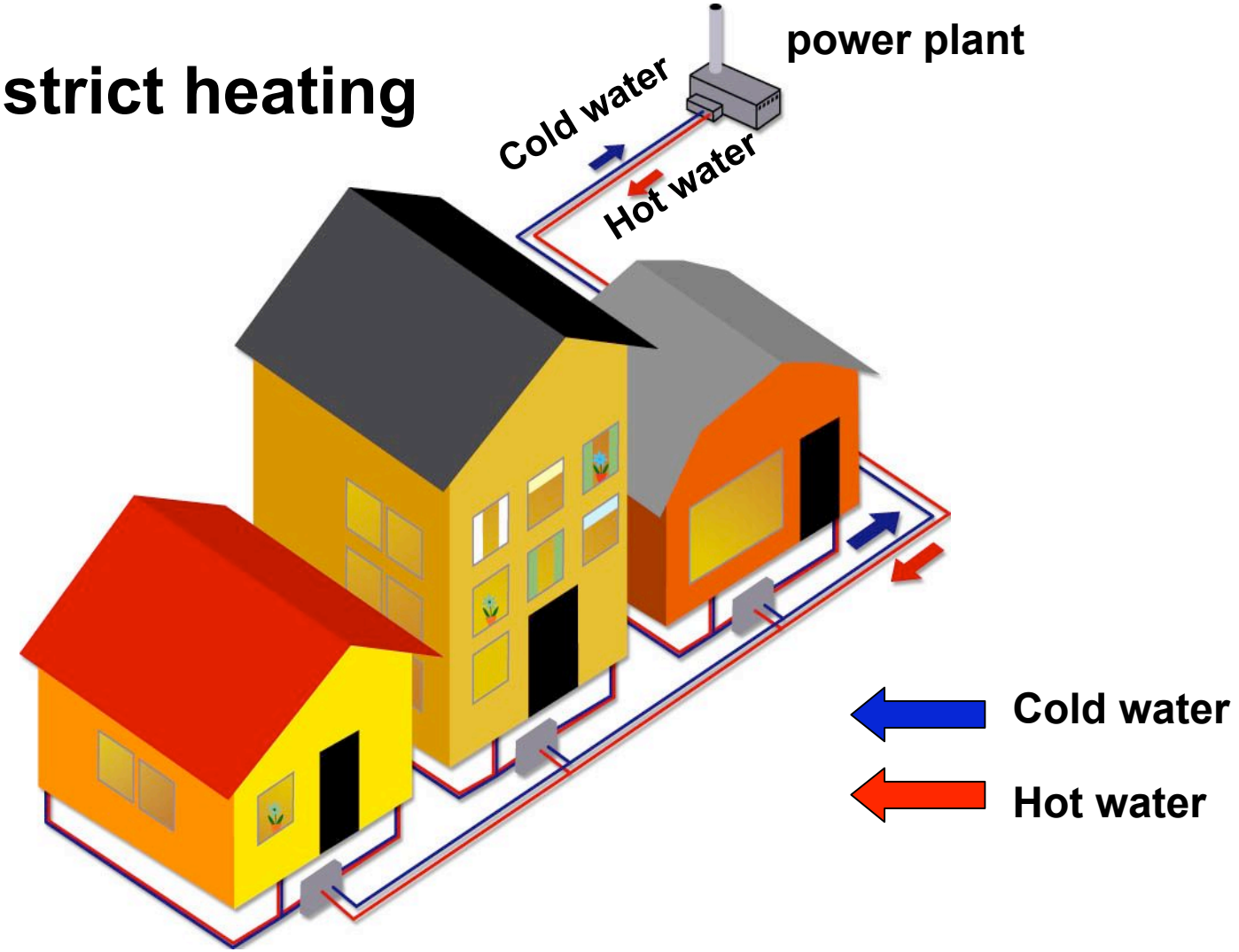
This is district heating



CO_2
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Part of Environmental Programme
for the City of Växjö

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Main reasons for introducing bioenergy in the 80´s

- oil crisis – very expensive energy for inhabitants
- renewable fuel
- local and reliable supply
- local jobs
- income to local forest owners, saw mills and contractors
- tax income to the municipality
- transparency and democratic control of the energy system

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Electricity and energy efficiency – actions

- Free energy advice to the citizens.
- Biogas used for electricity production at the sewage treatment plant.
- Municipal demands on low energy use in a new housing area.
- Installation of more efficient light bulbs in the street lightning.
- Construction of energy efficient houses.
- Individual metering of energy in apartments.

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Photo voltaic plants on the roof of Kungsmadskolan, upper secondary school in Växjö

- from autumn 2008
- roof were isolated and windows exchanged
- estimated energy saving about 110 MWh / year about 6% of total energy consumption (2008 = 1 836 MWh / year)
- gives CO_2 savings

One display at housewall and one display in café

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SAMS

- Goal to make energy issues more interesting, 5 % electricity in households
- December 2007 – May 2010
- Good examples Portvakten and Young Energy 2
- Energikollen, a webtool
- A project within the EU-project Sesac
- www.sams.se

VEAB VÄXJÖ ENERGI AB

Växjöhem

HYRESBOSTÄDER I VÄXJÖ AB

Växjö kommun
Europas grönaste stad

sesac

Passive wood houses, Portvakten

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- 96 apartments in 2 buildings
- Eight storeyed house, wooden shell
- No heating system
- Energy use 50% below national regulation
- District heating from biomass for warm water
- Air tightness, energy efficient windows, much insulation, heat recovery from waste water, individual metering
- Low CO_2 in production, carbon sink

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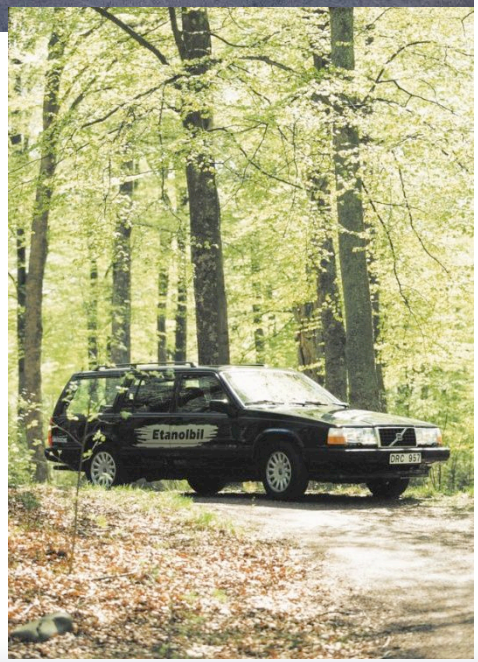

Transport – actions

- Municipal car-sharing with environmentally adapted cars.
- Good network of cycle paths. Sign posts for easier navigation on the cycle paths.
- Education in eco-driving.
- Positioning systems at local forwarding and taxi companies.
- Free parking for environmentally adapted cars.
- Major travel habit survey
- Development of a transport strategy
- Increased biogas production, to be used for vehicles.

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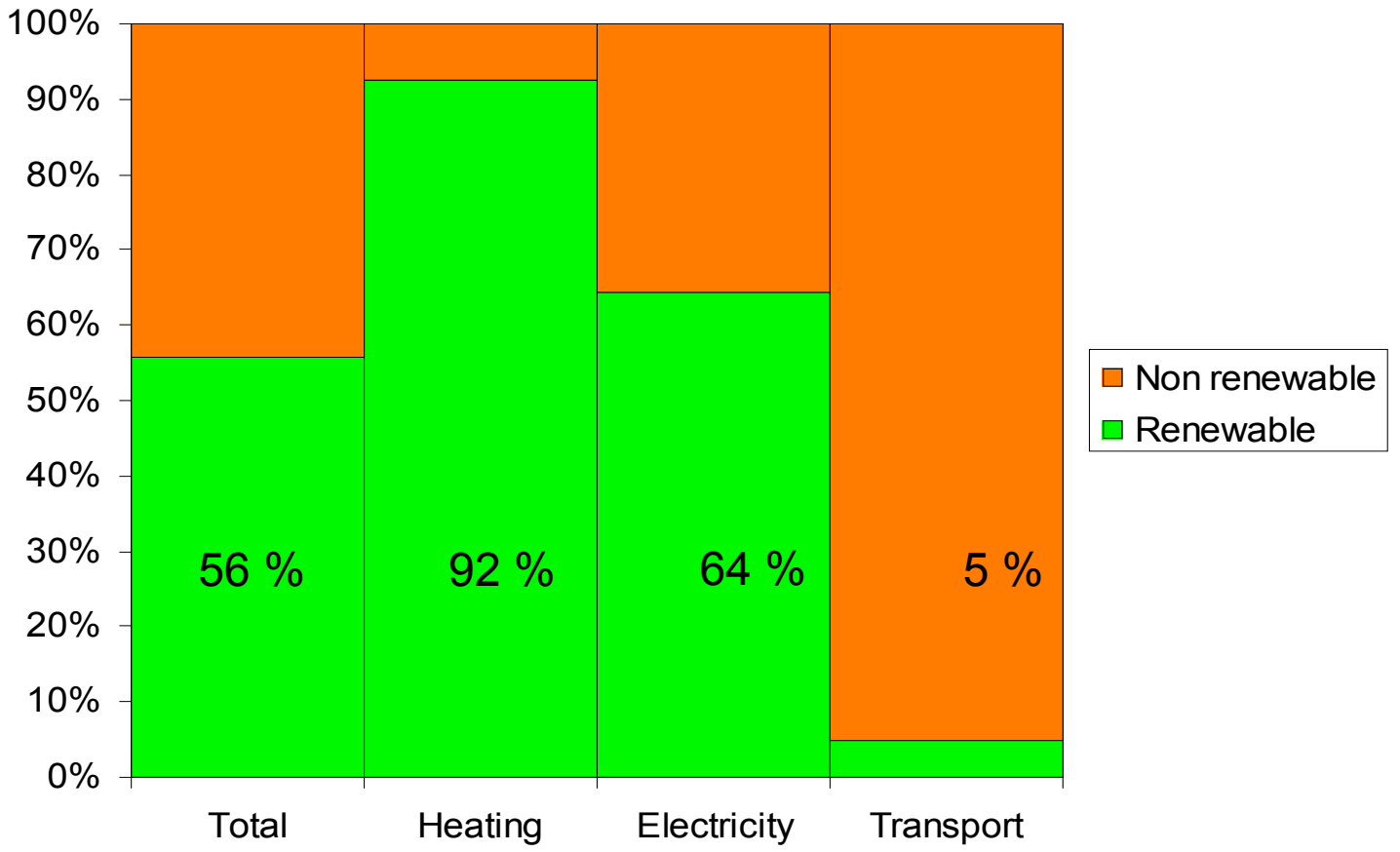
Share of renewable energy supply 2008



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4 questions?

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United Nations Conferences
Stockholm 1972 – Rio de Janeiro 1992 – Johannesburg 2002

AGENDA 21 VÄXJÖ KOMMUN

CO_2 – taxes:
1,01 sek/kg CO_2

- **Environmental policy** 1993
- Yearly **Environmental report** since 1994
- **Decision** to be Fossil Fuel Free Växjö, 1996
- **Environmental programme** local goals adopted by unanimous City Council in 2006

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Environmental programme

- An environmental policy and three profile areas

Living LIFE
Part of Environmental Programme for the City of Växjö

OUR NATURE
Part of Environmental Programme for the City of Växjö

CO_2
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- Vision, long term goals and measurable goals
- The boards and municipal companies as well as the whole geographical area
- Steer and follow-up by *eco*BUDGET
- Revised every mandate period

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Fossil Fuel Free Växjö

Energy and transport issues

FOSSIL FUEL FREE VÄXJÖ
Part of Environmental Programme for the City of Växjö

Vision

We have the vision of a fossil fuel free Växjö, where our energy consumption does not lead to any climate change.

The City of Växjö strives:

- to use renewable energy .
- to use energy efficiently.
- to go over to a fossil fuel free transport system.

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Why this vision?

- The global climate change – we take our responsibility
- To show that it is possible to achieve results on local level
- To show that you don't have to wait for international agreements
- Sustainable growth and development of regional business
- Good experience of using bioenergy

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Fossil Fuel Free Växjö

Energy and transport issues

Some goals to achieve

- Reduce the fossil CO_2 emissions by 50% per capita until 2010 and 70% per capita until 2025 compared to 1993.
- Reduce the use of electricity by 20% per capita until 2015 compared to 1993.
- Increase cycle traffic by 20 % by the year 2015 compared to 2004.
- Increase the use of public city transport by 20 % and regional public transport by 12 % compared to 2002.

CO_2
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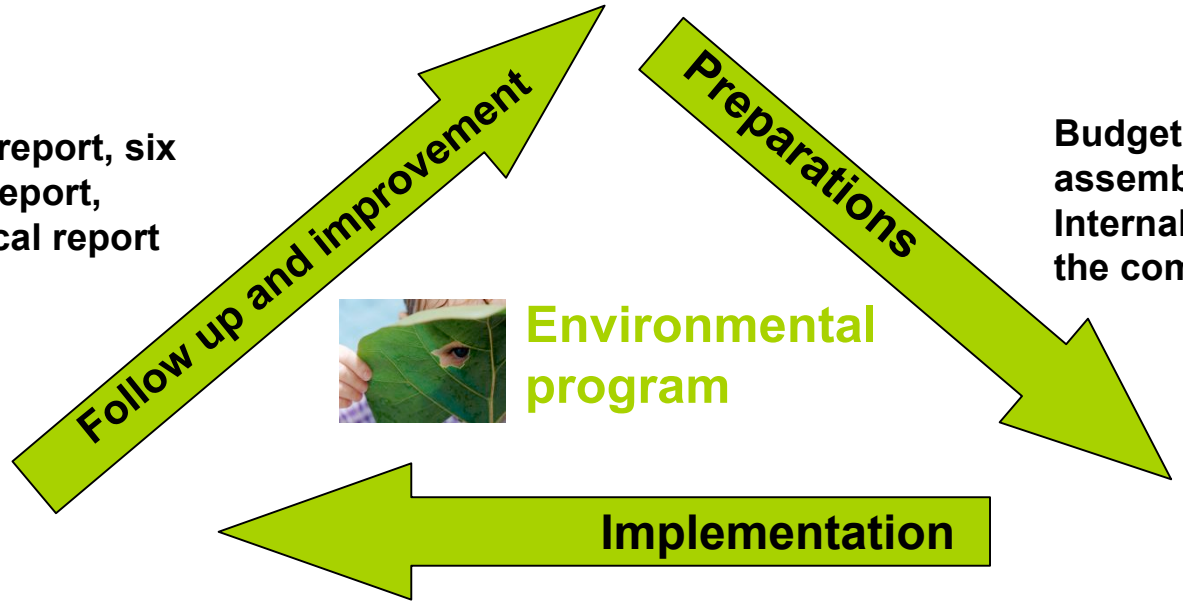
ecoBUDGET

- ICLEI – Local Governments for Sustainability
- Approved by UN in Johannesburg 2002
- Växjö a pilot municipality/city



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4 questions?

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3. **What are the challenges now?**
4. The lessons that others can gain?

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Future projects

- Major improvement of public transport
- Major improvement of bicycle lanes (cycle highways)
- Biogas from biological household waste and sludge in city buses 2011
- 2nd generation biofuels from gasification of biomass waste, DME, FT-diesel etc.
- Joint venture with industry to sell know-how and products, climate protection
- Coordination of municipality's good transport and in central Växjö (business/shopping centre)
- Competition in schools to reduce the climate impact by taking bicycle and walk and use school transport instead of get lift with private cars

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Why success

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- Broad collaboration and networks
- Resources - financial support

Municipal commissioners in the City of Växjö: Bo Frank (m), Charlotta Svanberg (s), Gunnar Elm (c)

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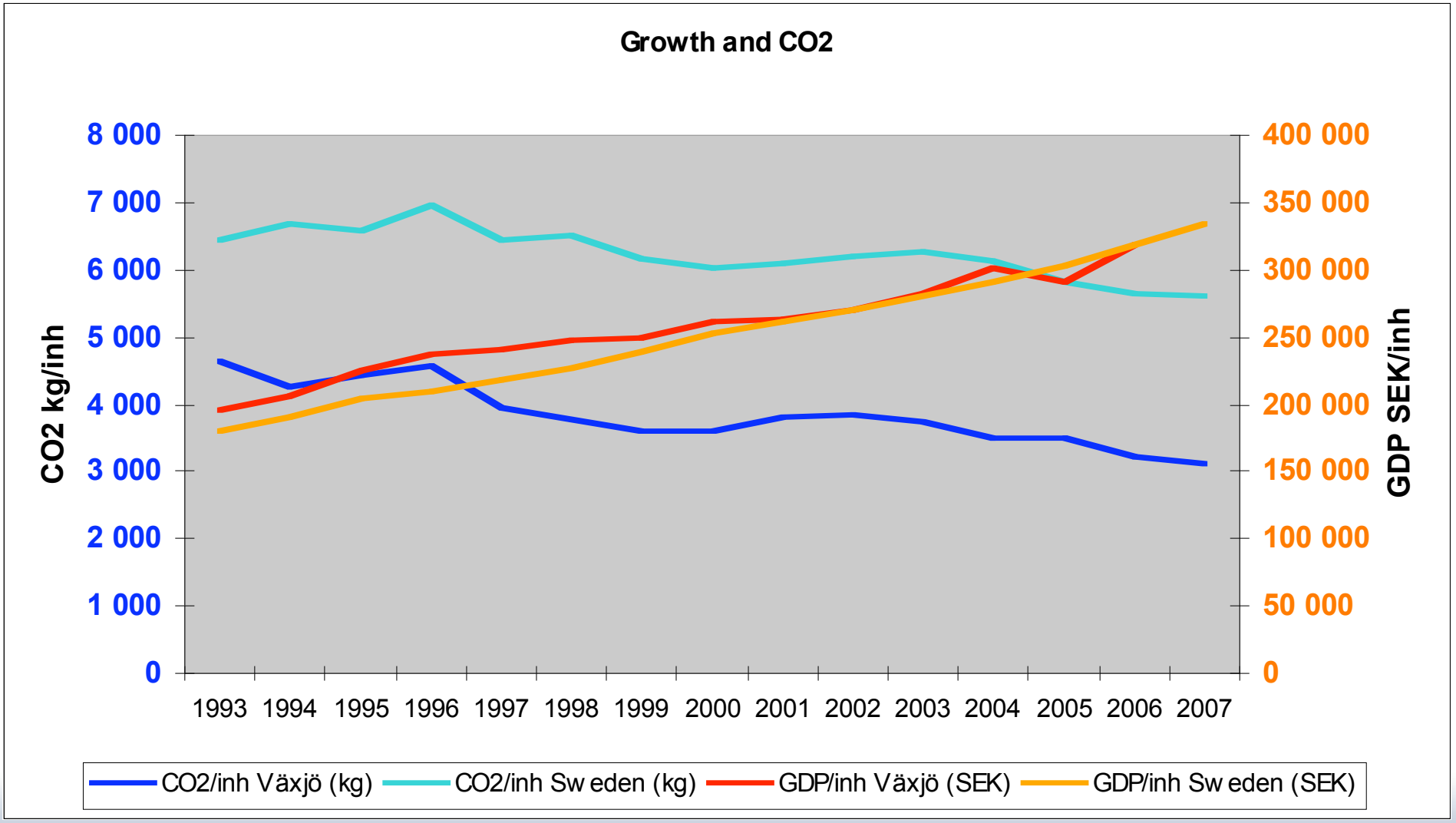
Growth and CO_2 – Växjö and Sweden



Other benefits than environmental

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- New jobs in the whole bio-energy chain
- Domestic fuel makes us less vulnerable
- People get comfortable heat and fuel for low price
- Companies develop on a fast growing market
- The university's bio-energy centre
- PR - environmental tourism and technical visits
- Society prepared to leave the fossil based economy for the bio based economy

www.vaxjo.se
www.vaxjo.se/english
Thank you for listening!