

Energy plan for City of Växjö, draft 2011.

Hans Gulliksson
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Energy plan for Växjö

- Mandatory in Sweden to have this
- Link to CoM
- Working process during one year with over 10 meetings with municipality and stakeholders
- Based on strategy plan and support, EE, RES and security of supply

Subjects

- Existing buildings
- New buildings
- RES fuels for vehicle
- RES for heating
- Business and industrial sector
- Procurement
- Transports
- Safe and cheap supply of energy

Structure

- Renewable Energy Sources, RES
- Energy efficiency, EE
- RES fuels and EE vehicles
- Security of supply
- Other energy and climate aspects

Every part split into

- Vision
- Current situation strategies and concrete implementation with timetable

Targets overall

- Stop using fossile fuel in 2030
(the municipality itself in 2020)
- All energy shall be used in an energy efficient way
- Link to CoM
- Strong focus on education and attitudes
- Work in networks

Detailed targets

- Energy supply decreased with 15 % from 2008 to 2015 per inhabitant
- Decrease of electricity use with 20 % from 1993 to 2015
- Decrease of CO₂ with 55 % from 1993 to 2015
- Decrease of energy used in own buildings with 17 % from 2004 to 2015
- Decrease of CO₂ emissions from "own" transport with 30 % from 1999 to 2015

Energy Agency for Southeast Sweden



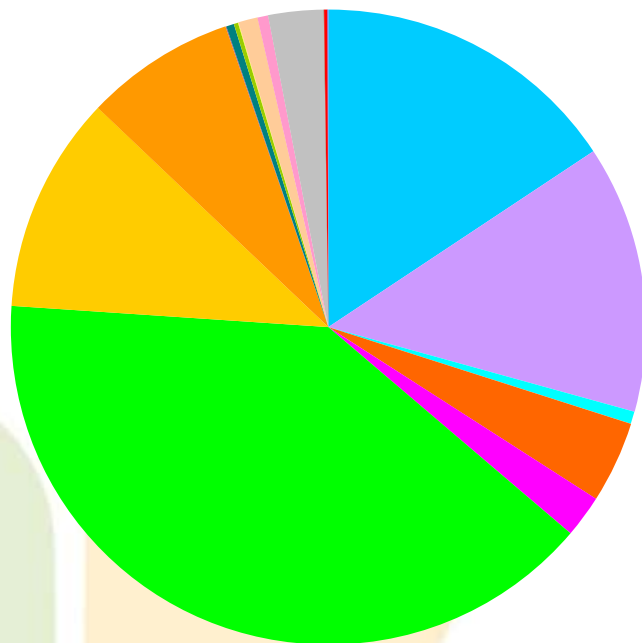
Networks

- BiG- the bioenergy group in Vaxjo Ltd
- Bioenergycluster Smaland-Expo Vaxjo
- TransportEko Southeast Sweden
- Energy efficiency in buildings in southeast
- Biogas southeast
- Solar in southeast
- Energy advisors in southeast
- Sustainable municipalities in southeast

Energy balance in Växjö 2009

- Energy supply is 2 447 GWh/year with RES in total is 56 % (40 % biomass, 12 RESe, 2% RES fuels, others 3 %)
- Fossile fuels are 44 % and here is transport 30 %, oil 4 %, electricity 8 % and peat 2%
- 32 % is used for transport, 32 % is buildings and 31 % is industry, 5 5 are losses

Energy supply in Växjö 2009

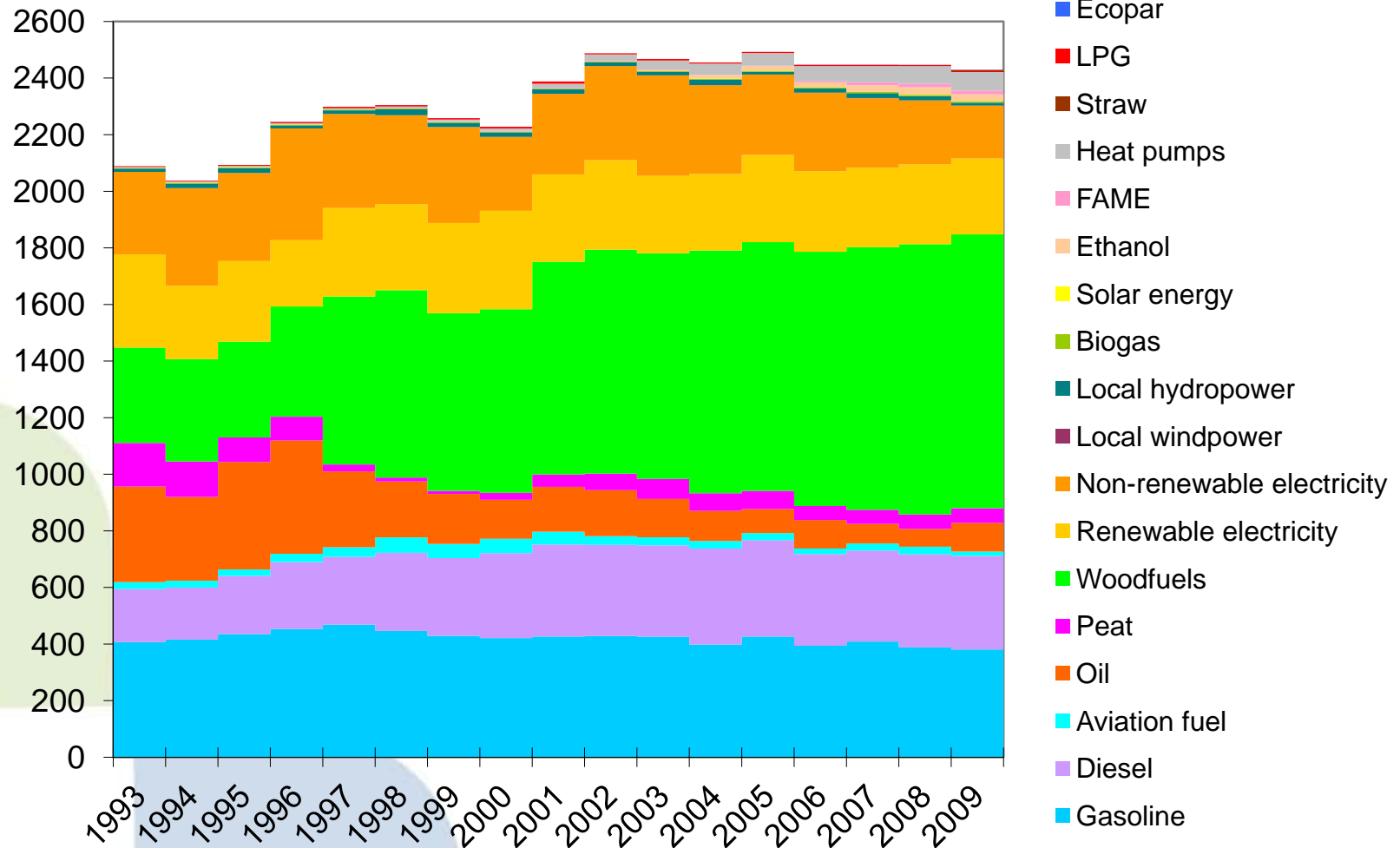


- Gasoline
- Diesel
- Aviation fuel
- Oil
- Peat
- Woodfuels
- Renewable electricity
- Non-renewable electricity
- Local windpower
- Local hydropower
- Biogas
- Solar energy
- Ethanol
- FAME
- Heat pumps
- Straw
- LPG
- Ecopar

Energy supply in Växjö 2009 (GWh) *Regions* 202020

Gasoline	380,96	15,7%
Diesel	330,77	13,6%
Aviation fuel	15,30	0,6%
Oil	100,86	4,2%
Peat	52,23	2,2%
Woodfuels	967,76	39,9%
Renewable electricity	268,29	11,1%
Non-renewable electricity	186,06	7,7%
Local windpower	0,82	0,0%
Local hydropower	9,60	0,4%
Biogas	5,28	0,2%
Solar energy	0,65	0,0%
Ethanol	23,77	1,0%
FAME	13,39	0,6%
Heat pumps	68,20	2,8%
Straw	0,40	0,0%
LPG	4,19	0,2%
Ecopar	1,02	0,0%

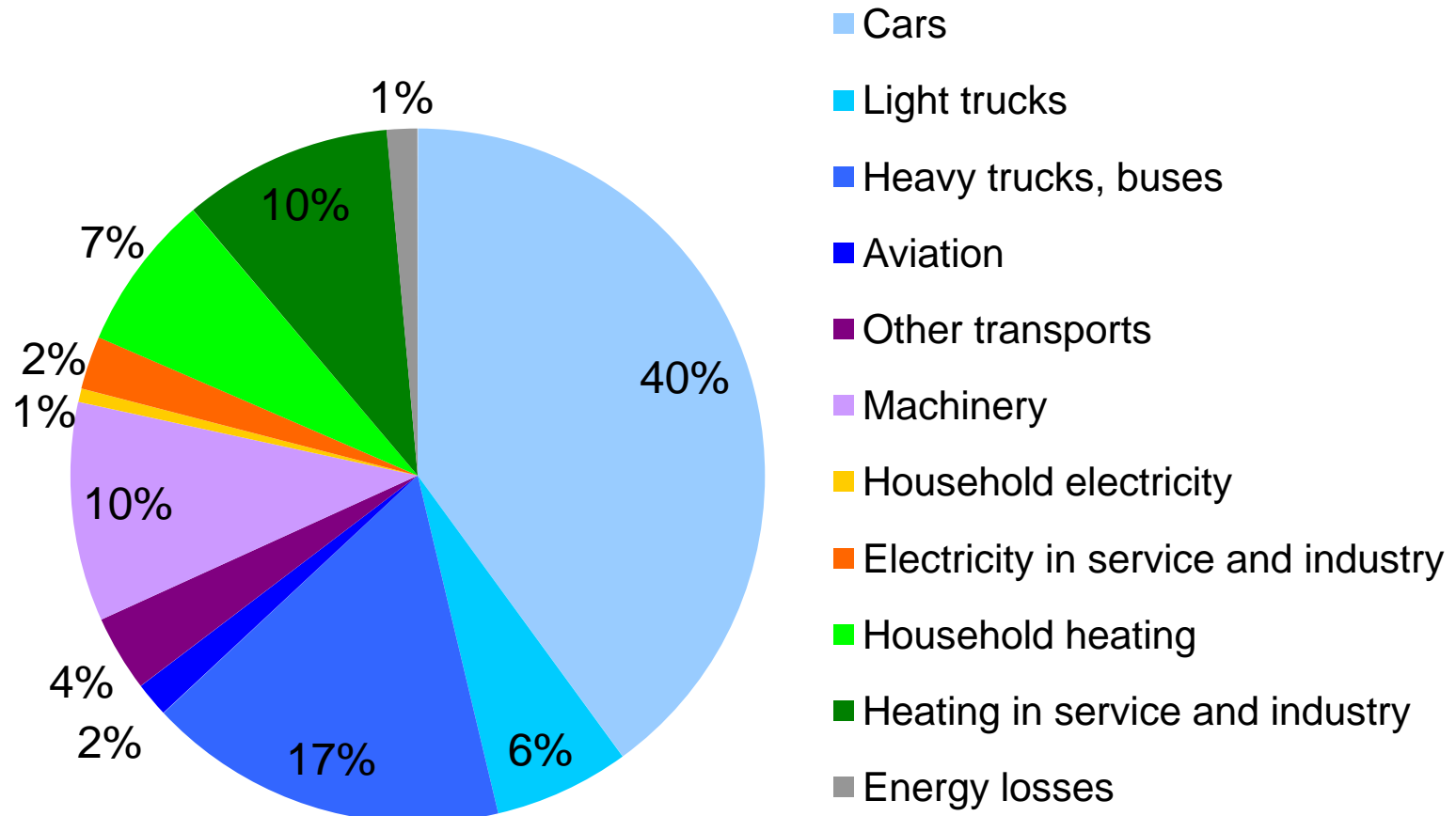
Energy supply in Växjö



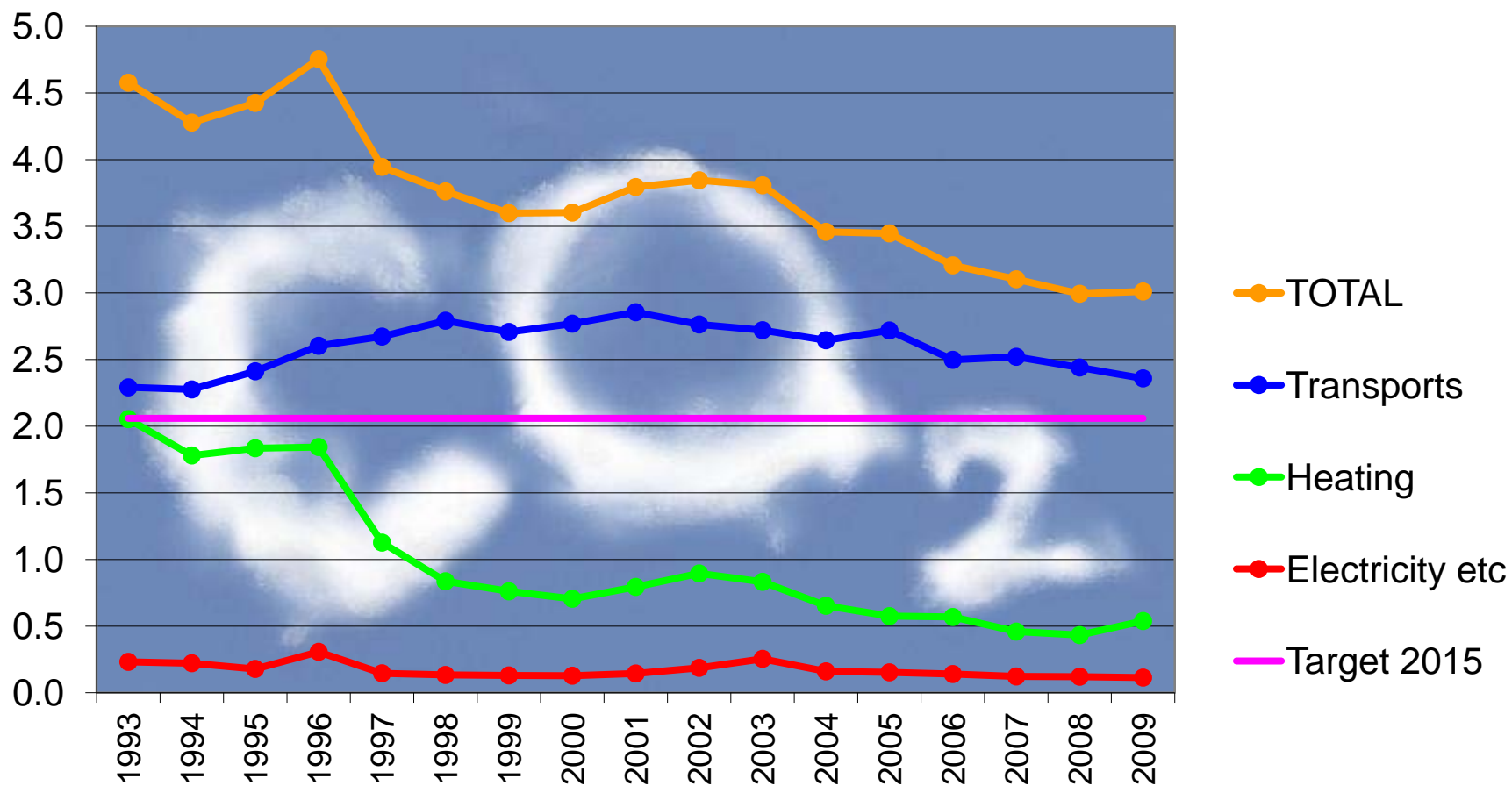
Emissions

- In 2009 CO₂ emissions are 3.1 t/person x year, will increase in 2010 to around 3.5
- Emissions from CHP plant are very low, less than 10 % of accepted levels

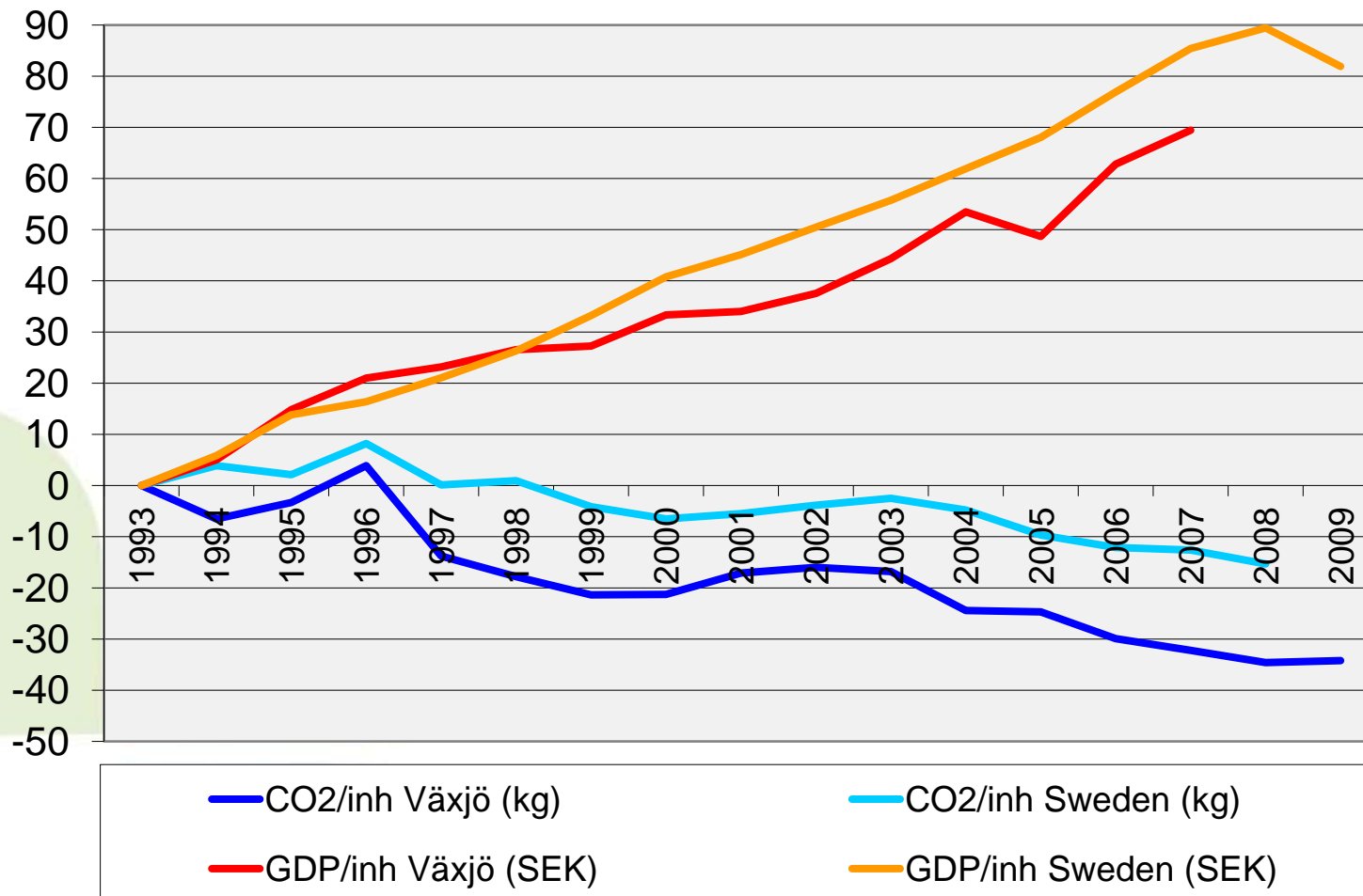
CO₂ emissions in Växjö 2009



Fossil CO₂ emissions in Växiö, tonnes

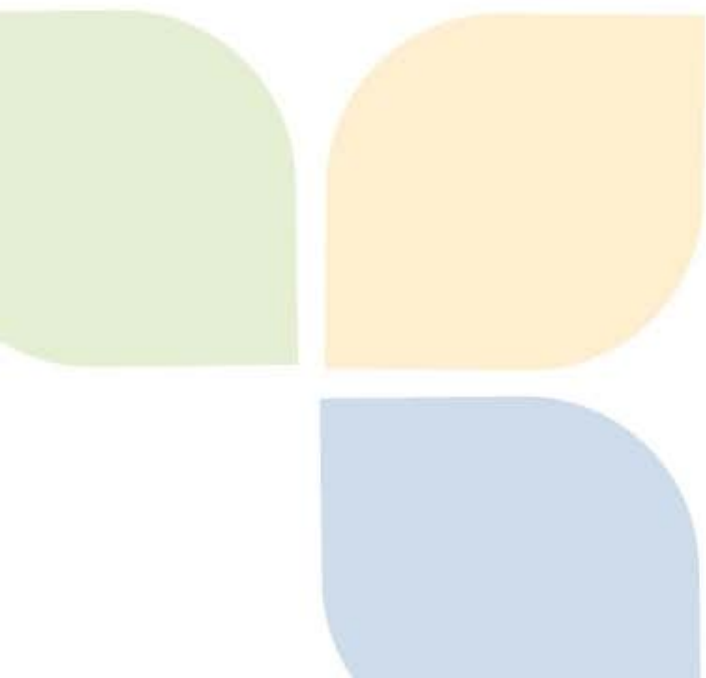


Economic growth and climate change, development (%)

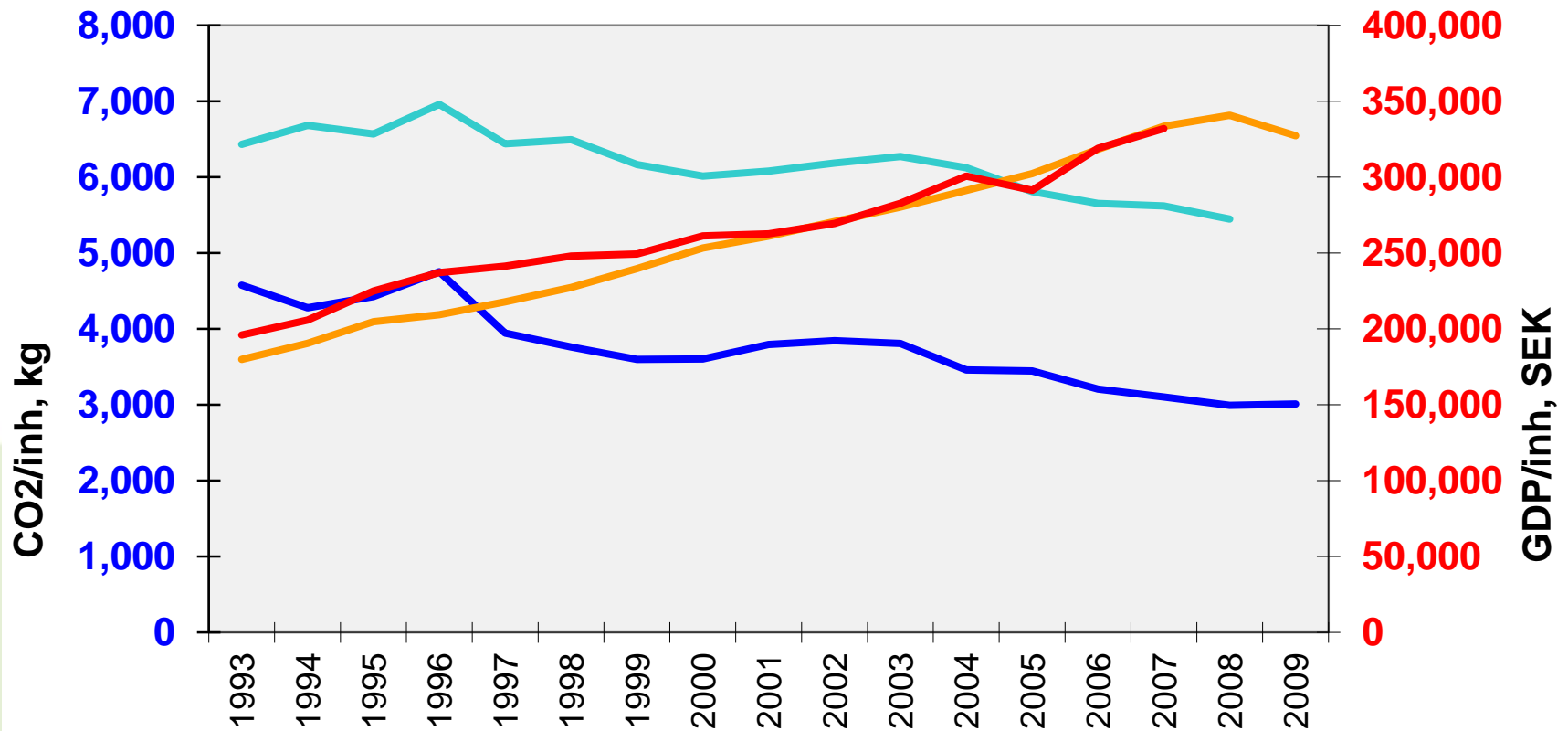


Future

- Continue RES with biomass, wind and hydro will come much more
- Biofuels for vehicles increase



Economic growth and CO₂



— CO2/inh Växjö (kg)

— CO2/inh Sweden (kg)

— GDP/inh Sweden (SEK)

— GDP/inh Växjö (SEK)

Focus area RES

- Växjö is a netto producer of heat and electricity from RES
- Both large and small scale
- Biomass district heating and cooling
- All electricity is RES
- Biomass, solar, wind, hydro, biogas, biooil, "heatpumps"
- Plus energy houses is a used technology

Focus on EE

- Done i cooperation with inhabitants for active choices
- Coopertion with business and industry
- Greenest city in all sectors
- Refurbishment is prioritized
- Behaviour
- Optimized energy use

Focus RES fuels and EE vehicles

- Use just EE vehicles and RES fuels
- Production of RES fuels in the city, as DME, Methane, biogas and electricity
- Targets is
- no transport if not needed,
- walk or bike, public transport,
- environmental vehicles and at last use other vehicles

Focus security of supply

- Just use RES regional produced and distributed in a safe way
- Heat and electricity has been set under study for risks
- RES fuels safe for needed transport on security and health

Focus other energy aspects

- The municipality has a responsibility to work as the good example
- Support other actors as private and business sector
- Strong energy education
- Yearly inventory on CO₂ emissions

Thank you



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