

Policy instruments in the Swedish climate policy

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Policy instruments in the Swedish climate policy

- Overview of current policies
- Recent report on roadmap to 2050
- Role of regional level – county councils
- More on economic policy instruments:
 - CO2 and energy tax
 - EU emission trading system
- More on sector specific policy instruments

The Swedish climate strategy are dominated by economic instruments

- ... Economic and market based policy instruments are costefficient according to economic theory
- Policy instruments shall be cross-sectoral and equally applied in all sectors of society.....
- ...but criteria other than eco-efficiency and cost-effectiveness are of great importance in political decisions
 - legitimacy (acceptance)
 - regional development,
 - international competitiveness

Policies and measures since 1990

Cross-sectorial

- **Energy-and CO2 tax**
- **EU ETS**
- (Grants to local climate action programs)

Industry processes incl. F-gases

- **The environmental code**
- **EU F-gas regulation**

Energy

- **Energy-and CO2 tax**
- Investment grants
- **Electricity certificates**
- **Vol. agreem. with industry**
- Energy efficiency in household sector

Waste-management

- **Landfill tax**
- **Landfill ban on combustible and organic waste**

Transport

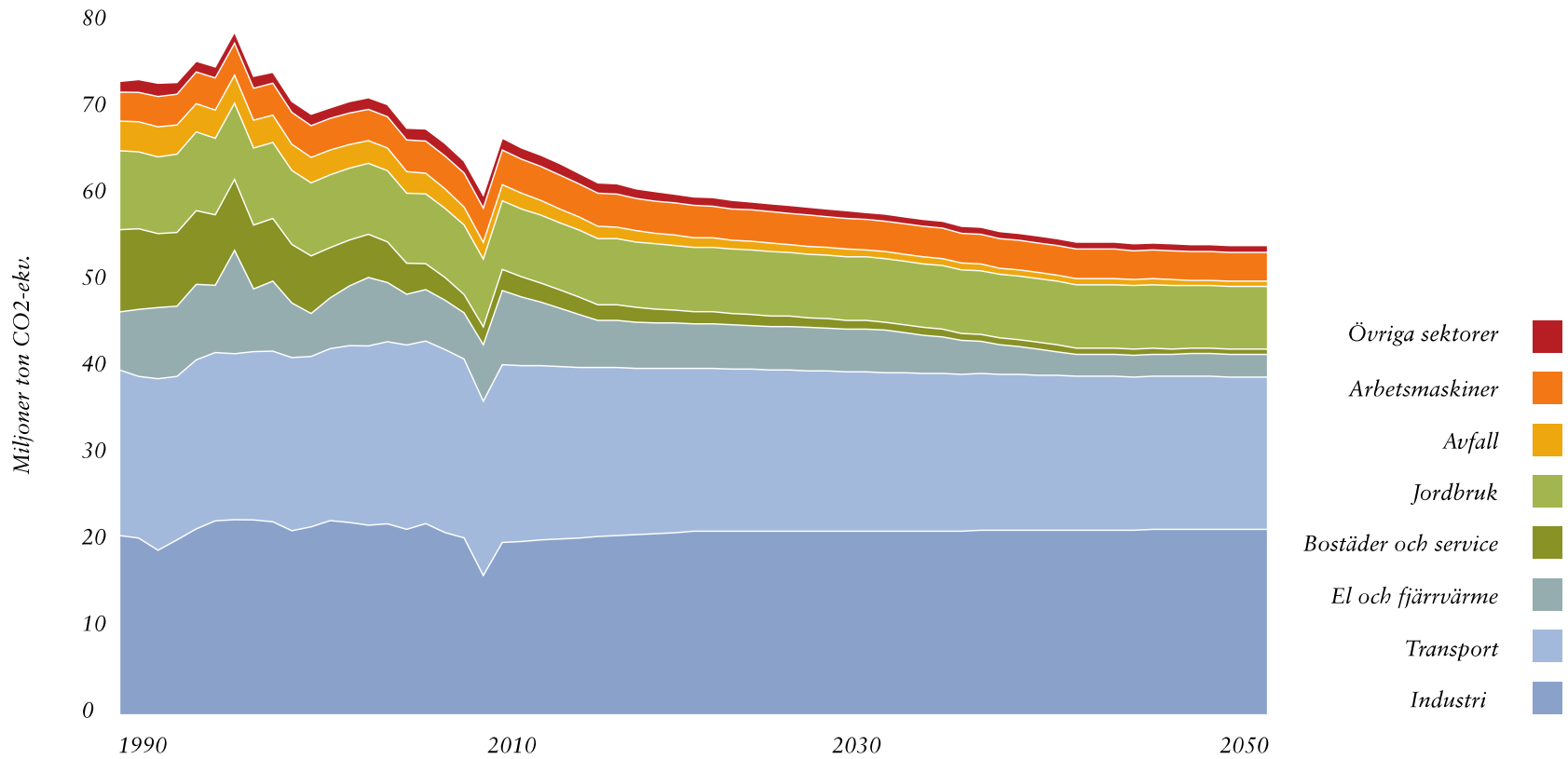
- **Motor fuel taxes**
- **”Green” cars are required in public procurement**
- **CO2 differentiated vehicle tax**
- **5 year exemption from annual vehicle tax for green cars**
- **investment grant for ”very green” cars (50 gram CO2 per km)**

Report to the Environment ministry

Dec. 2012 – roadmap 2050

- Background: Cancun meeting 2010 and EU roadmap for climate 2050
- Government assignment to the Swedish Environment Protection Agency:
 - Describe scenarios and analyze policy measures (cost effective reduction to zero net emissions 2050)

Reference scenario with current policies



Some policy recommendations

- Set mid term targets, e.g. 2030, 2040
- Importance of energy efficiency to cut costs
- Increase funding for research, development, market introduction, e.g. transport and industrial processes
- Strengthen EU ETS to give incentives for measures
- CO2 tax increases when targets 2030, 2040
- Municipal planning should include climate in a better manner
- EU regulation on cars and lorries, ecodesign, Swedish implementation of energy efficiency in building regulation.

Regional and local level

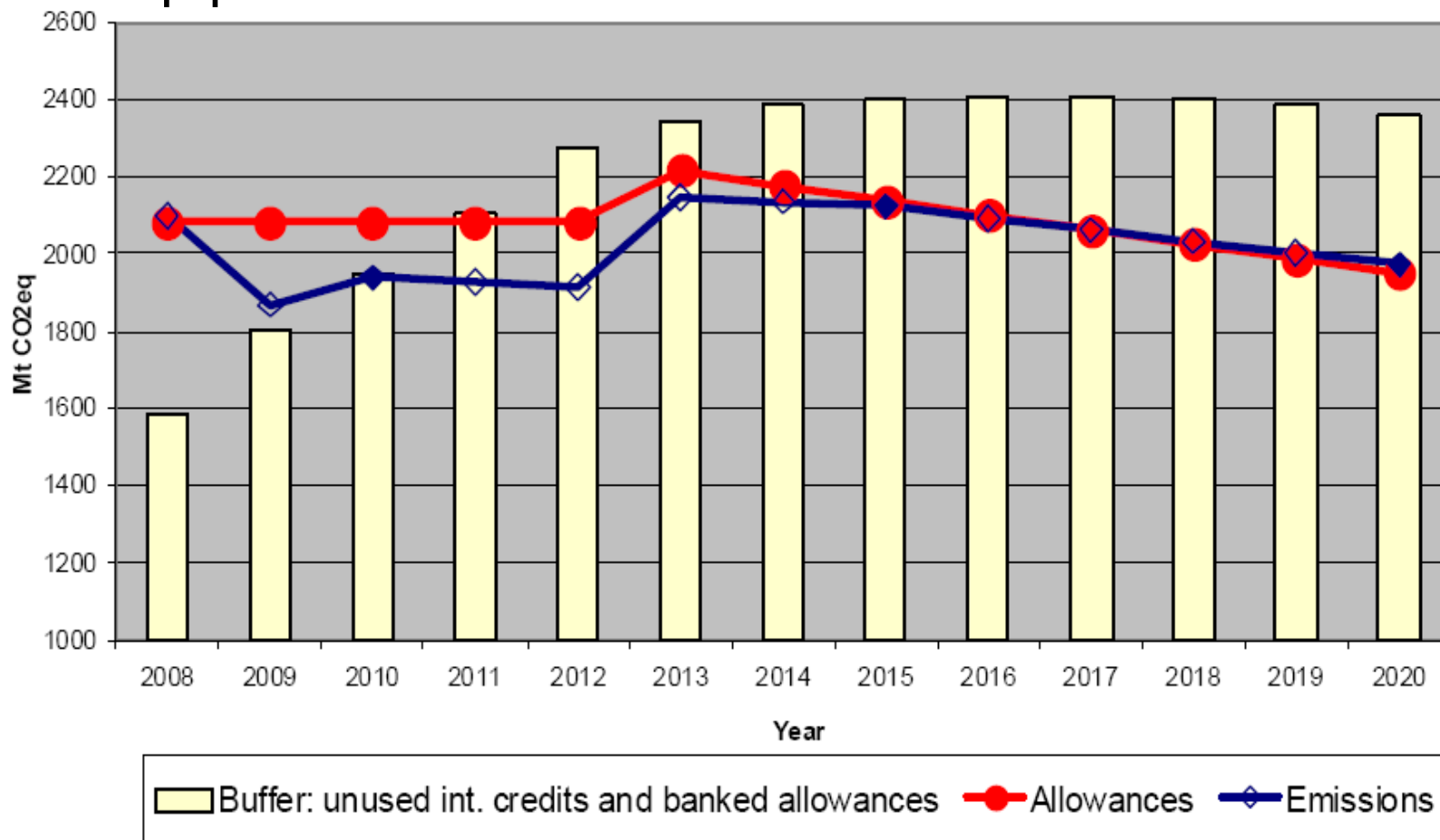
- Since 2008 county councils has government assignment to should work with energy and climate strategies
 - Strategic analysis
 - Support municipalities and business
 - Wind energy
- KLIMP investment programme ended – climate strategies still in place
- Municipal energy efficiency strategies supported by national level (Energy Agency)
- Voluntary initiatives in many municipalities

Emissions trading scheme

- Introduced in 2005
- The emission allowance price is the force driving emission reduction
- The price depends on the amount of emissions that have to be reduced to meet the ETS ceiling + allow use of CDM + banking of emission allowances
- The price instrument has the prerequisites of emission reductions at lowest cost of measure

EU ETS 2013-2020 – New baseline 2011

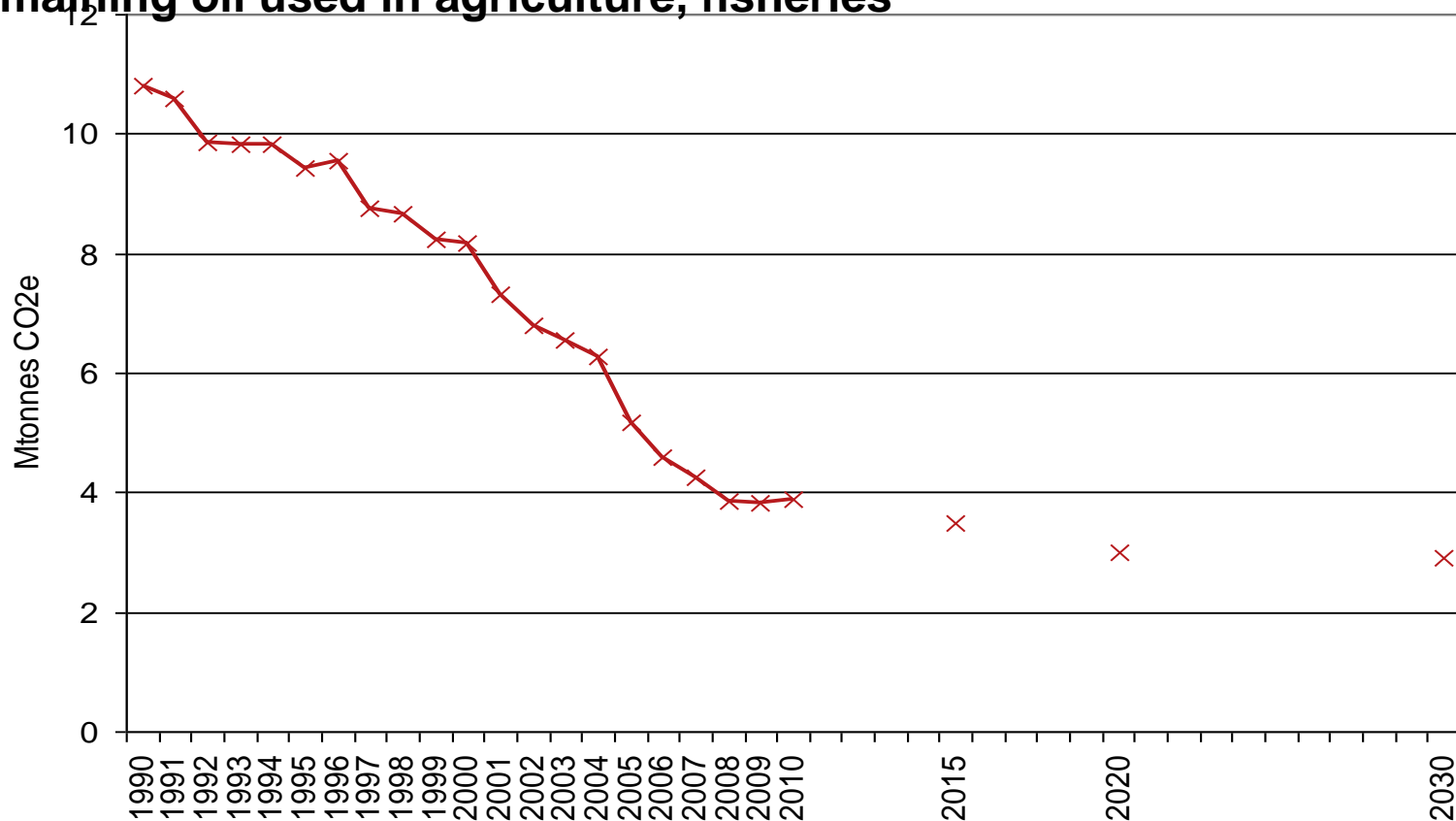
A buffer of unused credits from second period will keep prices low



Household and services almost fossil fuel free

Earlier investments in district heating and higher energy and CO2 taxes have forced conversion from fossil energy to district heating and heat pumps

Remaining oil used in agriculture, fisheries



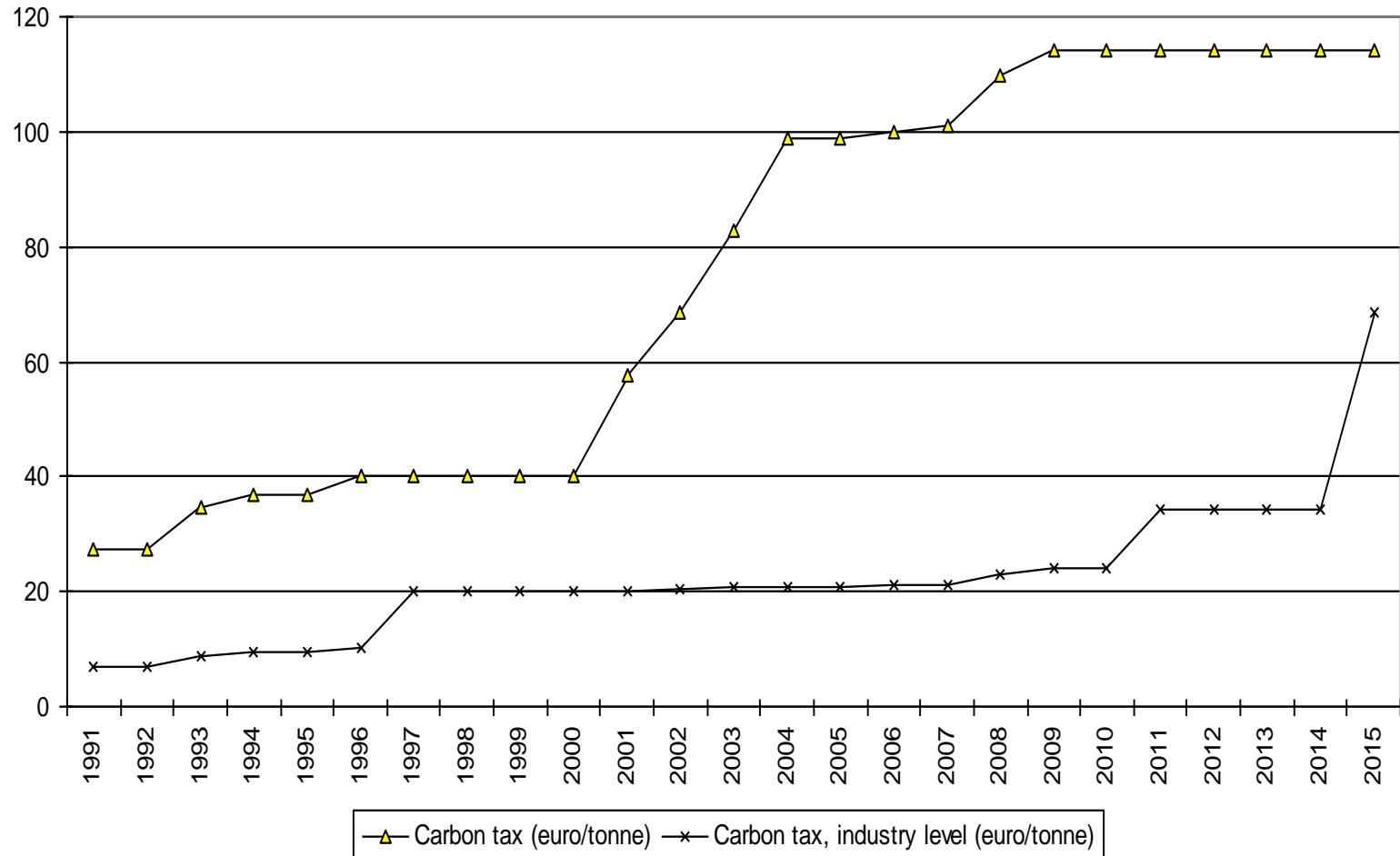
Energy- and CO2 tax

- *Tax on energy* since the 1950s (on petrol since 1920s).
 - Household, services and heating plants (85 €/MWh)
 - biomass fuels are exempted from energy tax,
 - manufacturing industry, CHP plants, agriculture, forestry and aquaculture pay reduced tax (25 €/MWh).
- *Carbon dioxide tax* on fuels was introduced in 1991.
 - general level raised from 20 €/ton CO₂ to 110 €/ton in 2010.
 - heating plants pay lower rate (100 €/ton)
 - manufacturing industry outside ETS, agriculture, forestry and aquaculture pay reduced tax (33 €/ton). The level will be raised in 2015 (66 €/ton)
 - Industry in ETS are exempted
- Tax on electricity consumption 0,03 €/kwh, industry only EU minimum tax
- Fuels for production of electricity are exempt from both energy and carbon dioxide tax.

Development of the Swedish CO₂ tax

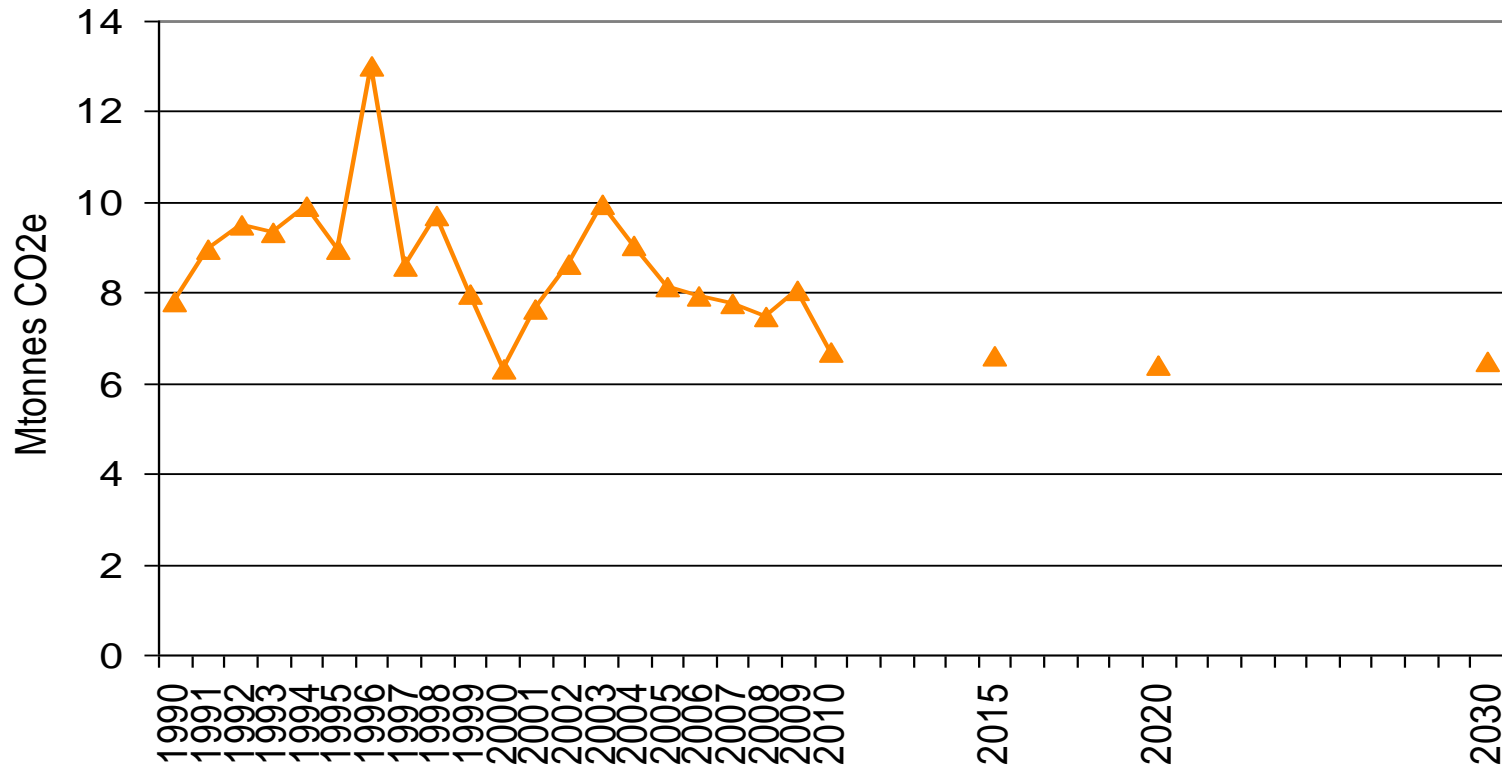
Tax shift 2001-2010

Environmental tax increases for households and firms compensated by cuts in taxes on labour

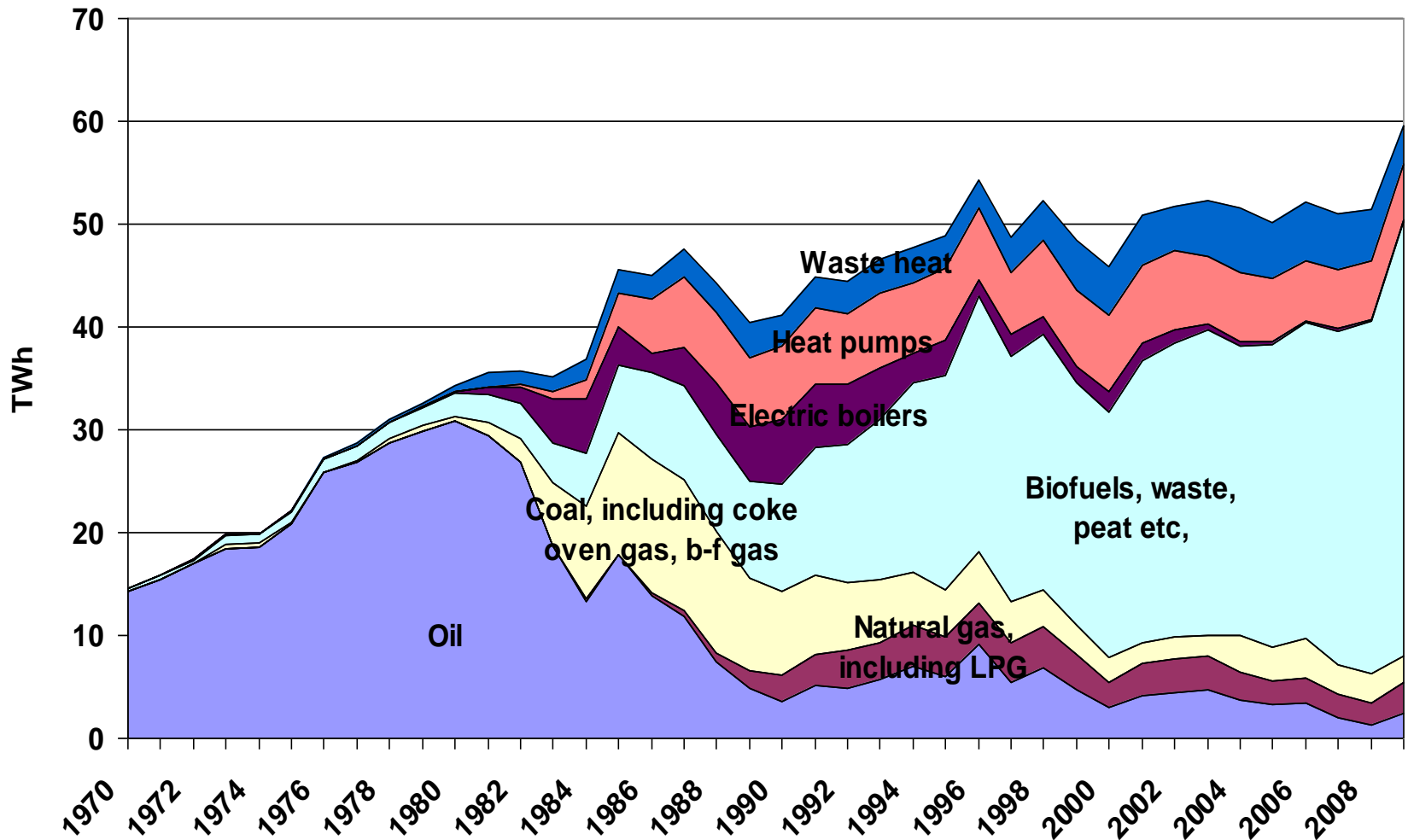


Decreasing emissions in power and district heating in spite of expanded energy supply

Expansion through increased use of bioenergy forced by energy/CO2 taxes, electricity certificate scheme and higher fossil fuel prices



Energy for district heating



Climate Investment programmes

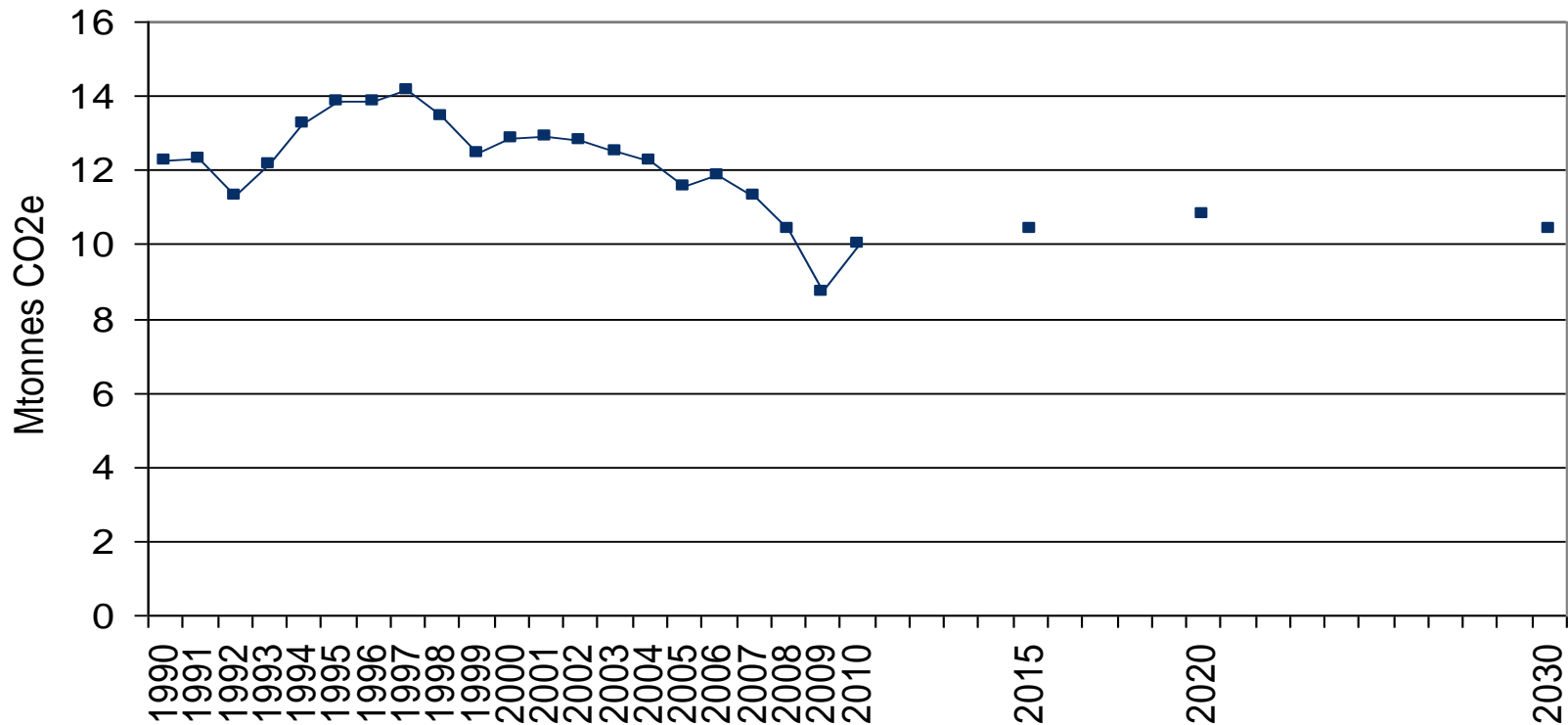
- 2 billion SEK 2003-08
- Grants mainly to municipalities
- Support for emission reduction and energy savings unprofitable without the support – priority should be given for cost efficient measures
- Majority of the support to biogas production, district heating expansion, energy efficiency and transport measures
- Driver for municipalities to develop climate and energy plans
- Difficult to ex-post evaluate if the measures would not have been performed without the support, considering the green tax shift and higher fossil fuel prices
- Have the measures just been performed earlier?

Electricity certificates – incentives for renewable electricity

- Quota obligation: The electricity suppliers are obliged to have electricity certificates in proportion of its electricity sale. The Quota increases every year.
- The electricity producer receives one certificate per MWh produced renewable electricity (large scale hydro are not entitled to certificates)
- Target - increase renewable electricity by 17 TWh/yr by 2016 and by 25 TWh by 2025. Total electricity production 150 TWh/yr.
- An expansion of both biomass CHP and wind power in recent years
- Other instruments needed for technology development

Emissions in industrial combustion dominated by a few energy intensive industries (iron and steel, paper and pulp and chemistry)

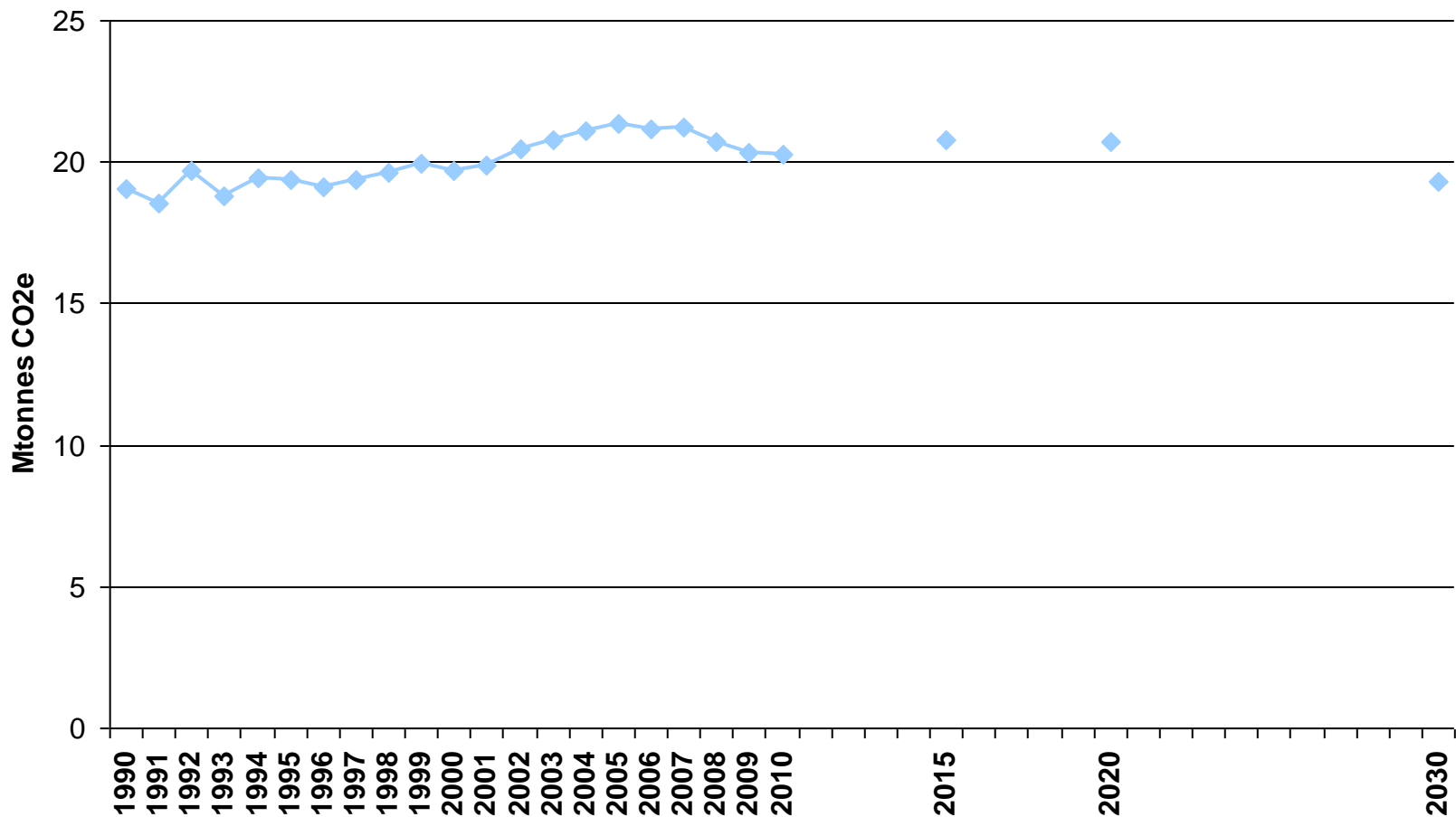
Change over from fossil to bioenergy in pulp and paper probably due to higher fossil fuel prices and EU ETS



Transport

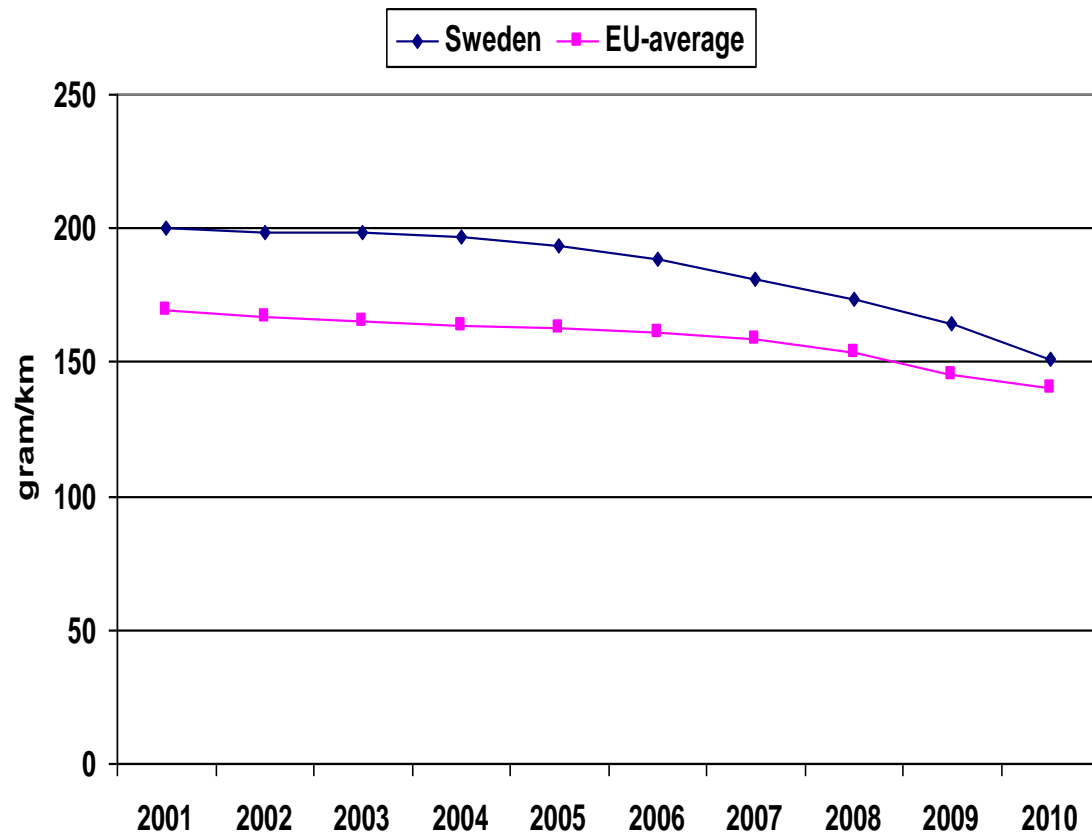
- Great demand for transport activities in society
 - Globalisation of production and consumption
 - Increased welfare increases demand for travelling
- Improved energy efficiency in vehicles used for increase in car weight/engine power instead of lower fuel consumption
- High willingness to pay for car trips and leisure travel
- Aviation and shipping internationally regulated which hamper the introduction of national measures

Emission development Transport



Climate policy and transport - Instruments for improved fuel efficiency

CO2 emissions from new car

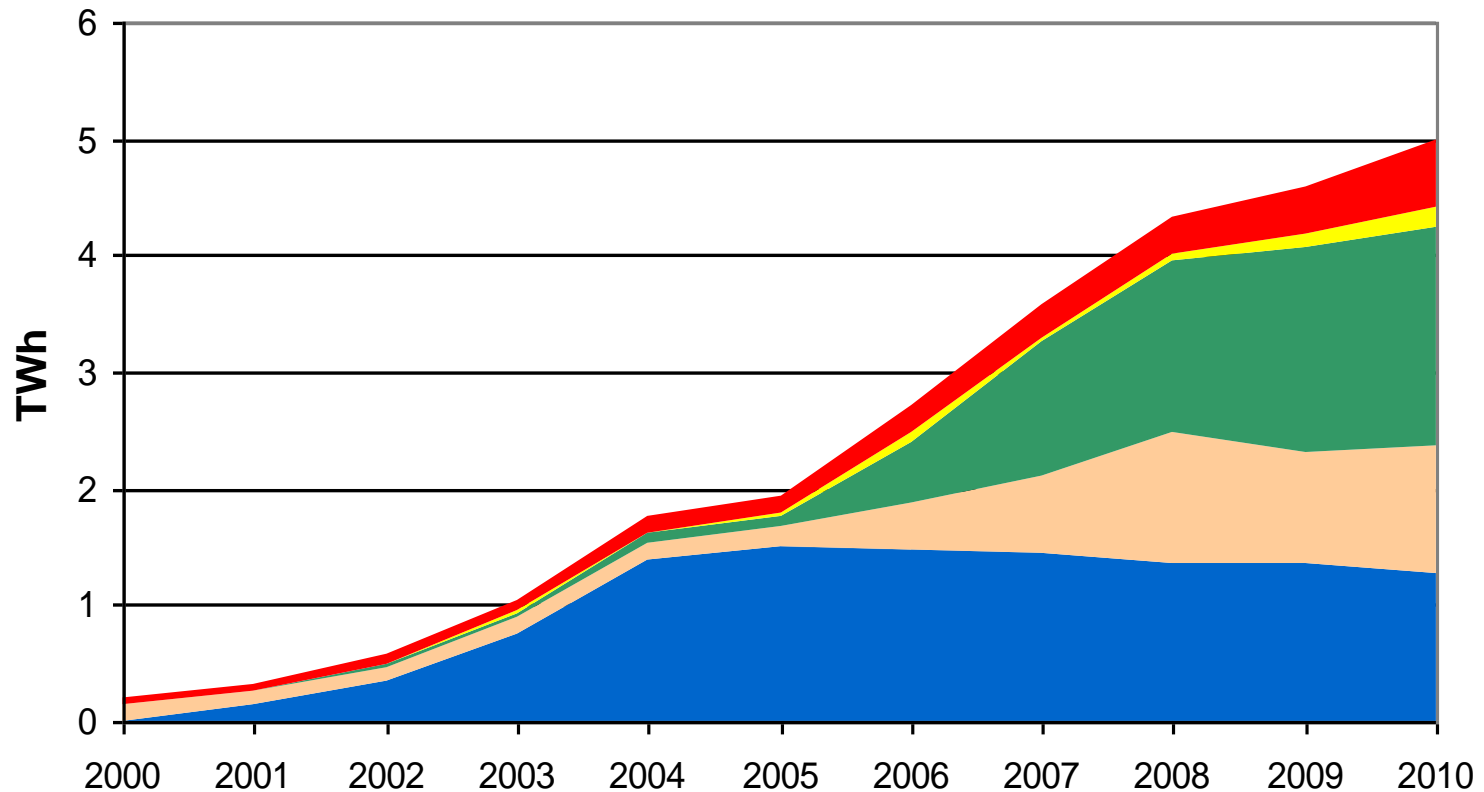
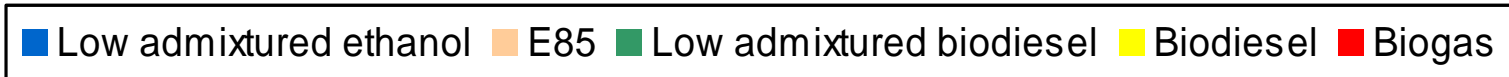


- Increased fuel taxation limit fuel consumption and emission increase
.....strengthened with CO2 differentiated vehicle tax
- European wide voluntary agreement with car manufacturers on CO2 emissions from new cars
- Joint EU regulation on CO2 emissions from new cars from 2012
- "Very green" car bonus

Biofuels for transport – a mix of policy instruments

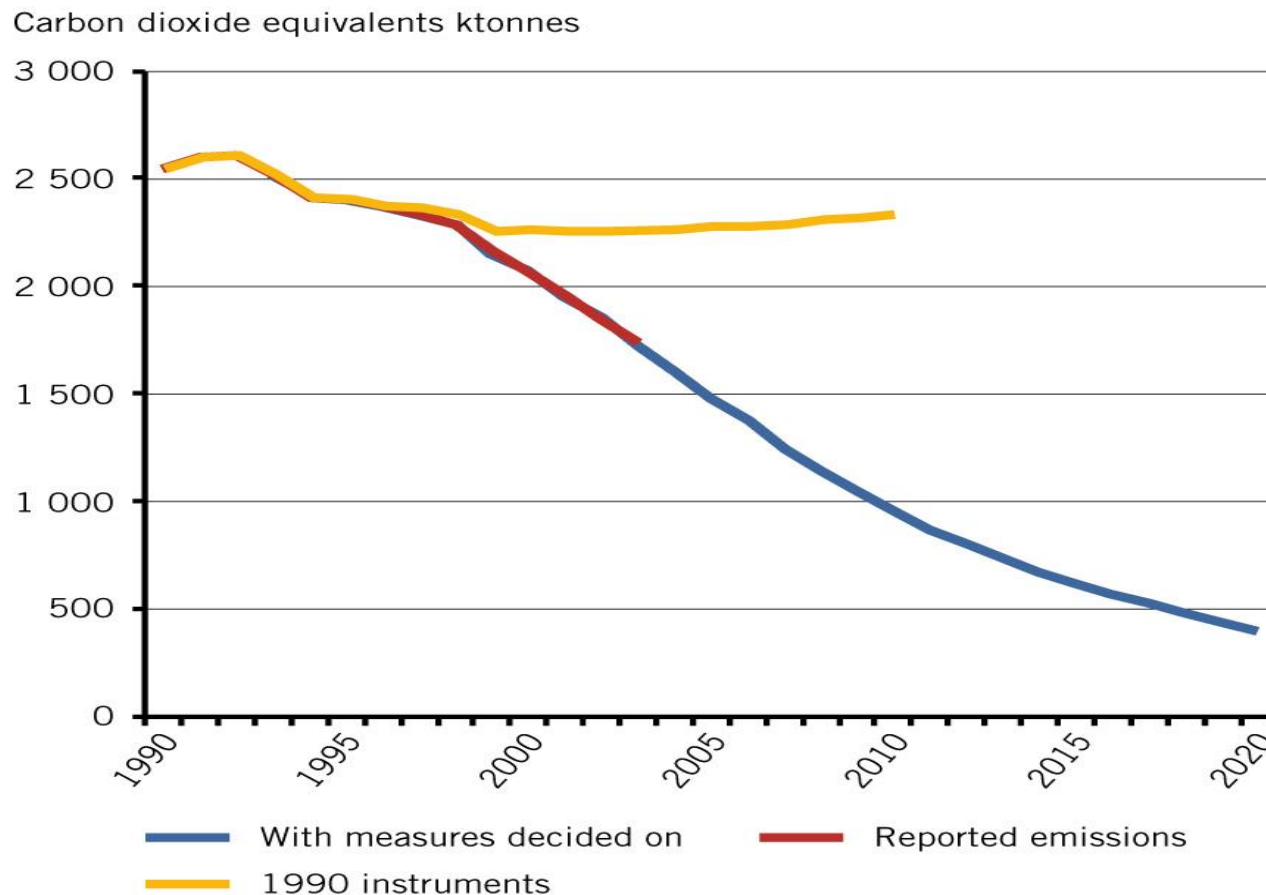
- Fuel tax exemption a strong incentive for biofuels
 - in the short term low cost efficiency (1-2 SEK/kg CO₂)
 - second generation of biofuels needed
- Obligation for filling stations to provide alternative fuels
- Investment grants for biogas production and distribution
- Lower vehicle taxation for FFV vehicles

Transport biofuels – rapid increase



Emissions from landfills – affected by taxes and regulations

- Producer responsibility, municipality waste plans, tax on landfilling, ban on landfilling of combustible waste (2002) expanded to organic material (2005)



Total effects of policies and measures

Million tonnes carbon dioxide equivalent

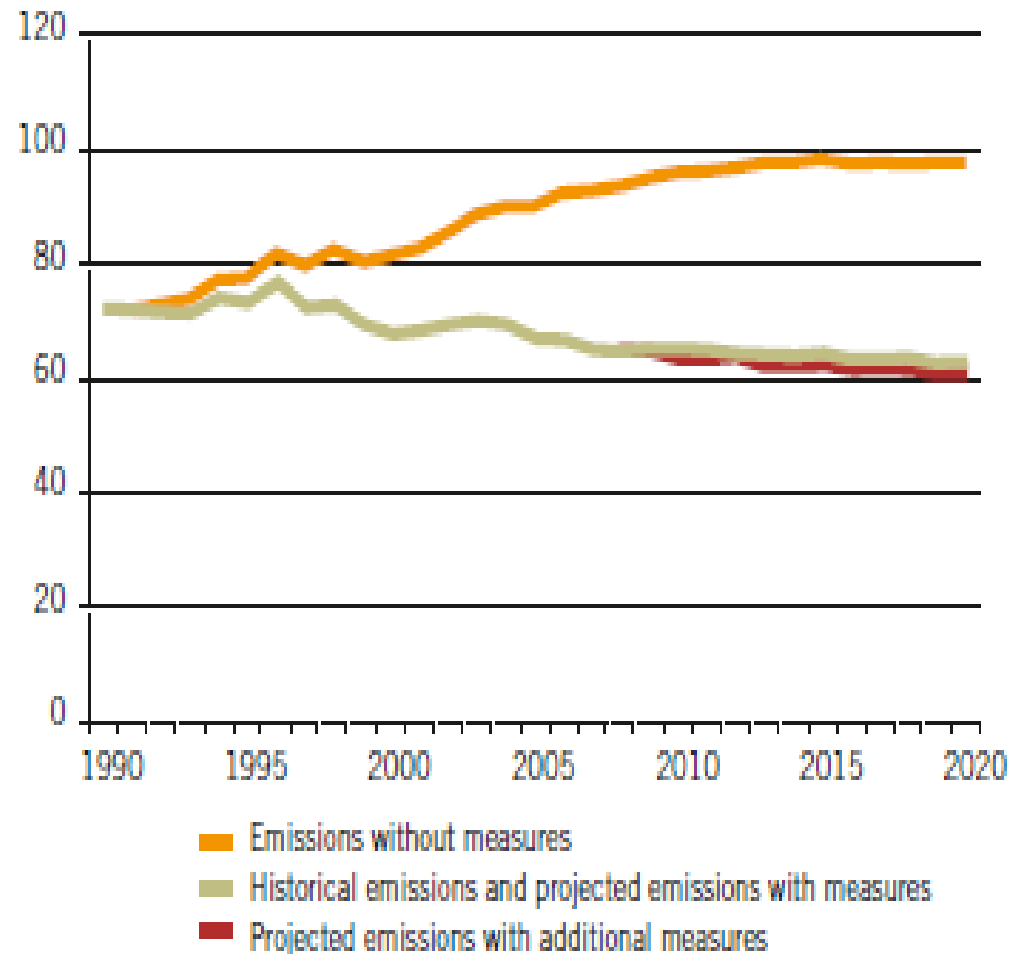


Table 5.26 Estimated effects of implemented instruments broken down by sector (millions of tonnes of carbon dioxide equivalent) (summary of presentation in Chapter 4.2)

Sector /Year	2010	2020
Cross-sectoral (local investment programmes LIP/Klimp)	Up to 1.8	Up to 2
Electricity and district heating	16	16
Residential and service	Up to 8	Up to 9
Industry	0.2	0.7
Transport	3.7	5.4
Waste	1.4	1.9
Total	Up to 31	Up to 35

Summing up

- Persistent policy has supported bioenergy
- District heating system – enables fast expansion of biomass in an environmentally benign way
- CO₂ tax has been, and ETS will be, important to reduce GHG emissions
- Renewable electricity certificate system has increased CHP-biomass and wind power
- In transport, focus on incentives for FFV and biofuels
- CO₂ differentiated vehicle tax and regulations have improved energy efficiency of new cars