



# Welcome to the ÅF Group



**Gunnar Bark**  
**ÅF Industry AB**  
Senior Consultant Heat & Power  
February 23<sup>rd</sup> 2012



# Services for..

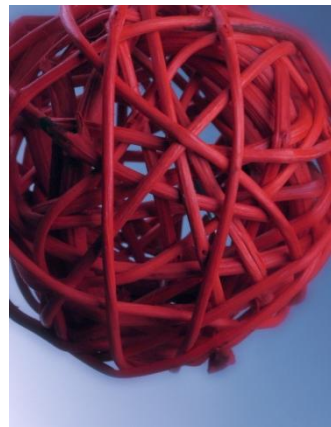
the energy  
sector



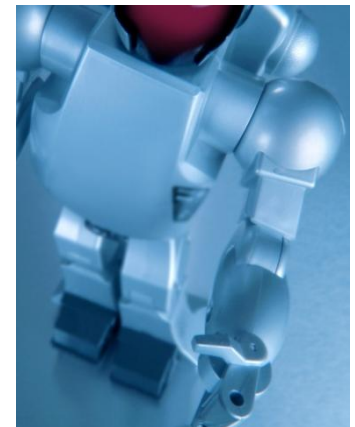
processes  
of the  
Industry



infrastructural  
projects



Development of  
Products and  
IT-systems



# ÅF in a Global World

Co-workers; 4 600

Represented at more than 100 cities

Offices in about 23 countries

Founded in 1895



■ Own offices / Subsidiaries / Branch Offices



# Today's Energy Sources



Innovation by experience





# Renewable Energy Sources

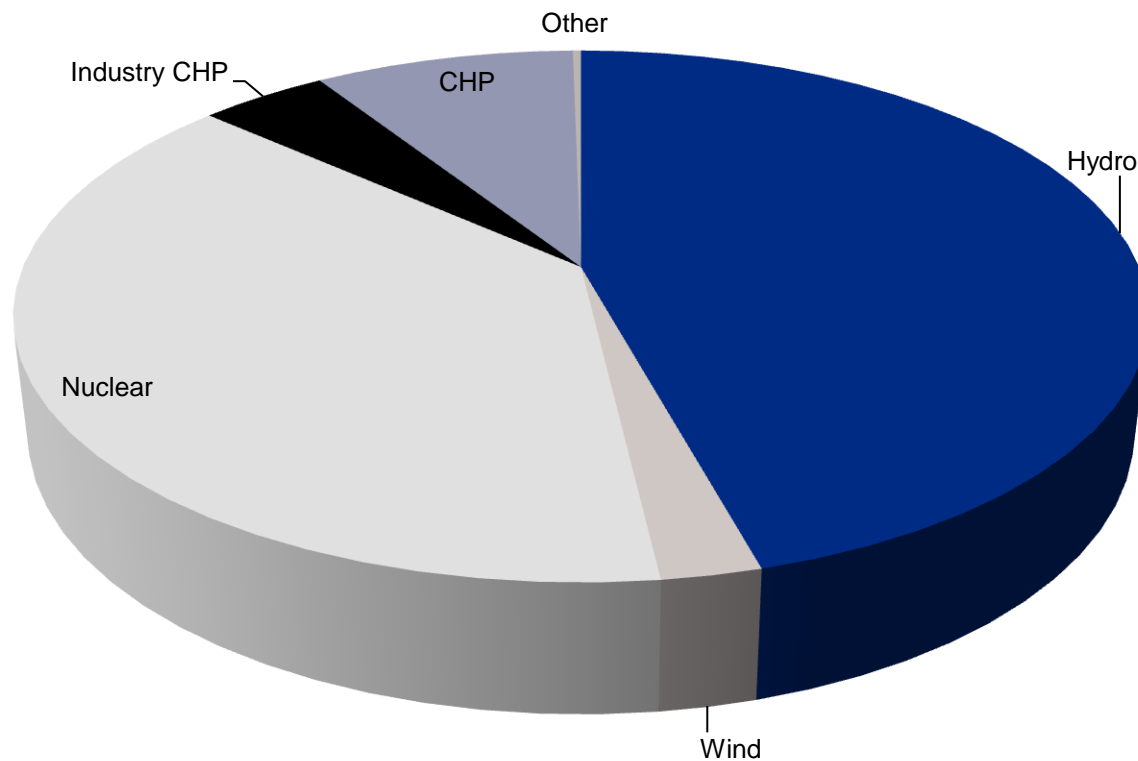


Innovation by experience



# Swedish Electricity Production 2010

144,8 TWh <5% fossil

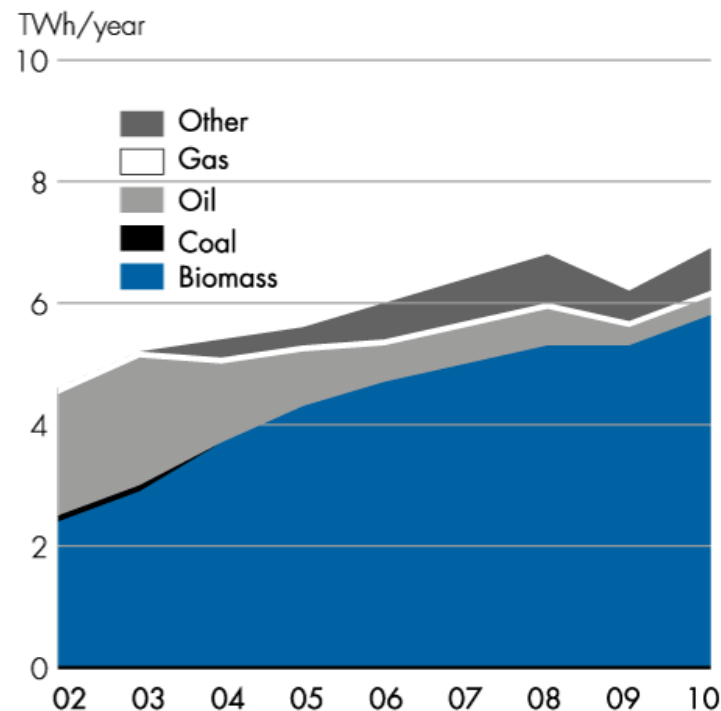
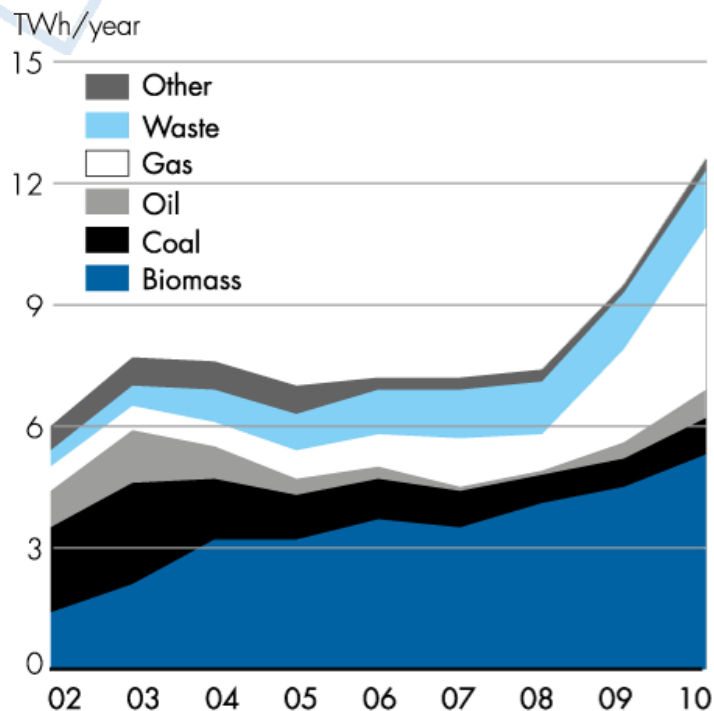


Källa: Energimyndigheten

Innovation by experience



# Power production by fuel type in cogeneration district heating and industrial back-pressure plants 2002–2010



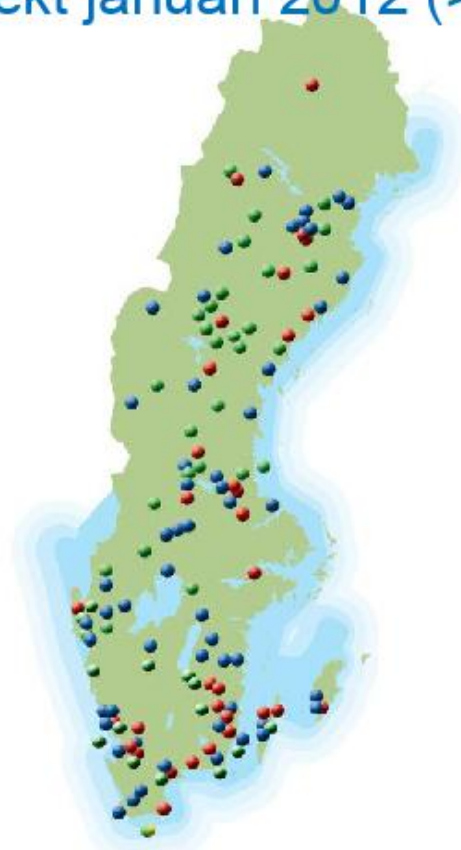
Source: Swedenergy



# Wind power projects >10 MW

Stora vindkraftsprojekt januari 2012 (>10 MW)

- I drift
- Under byggnation
- Med alla tillstånd

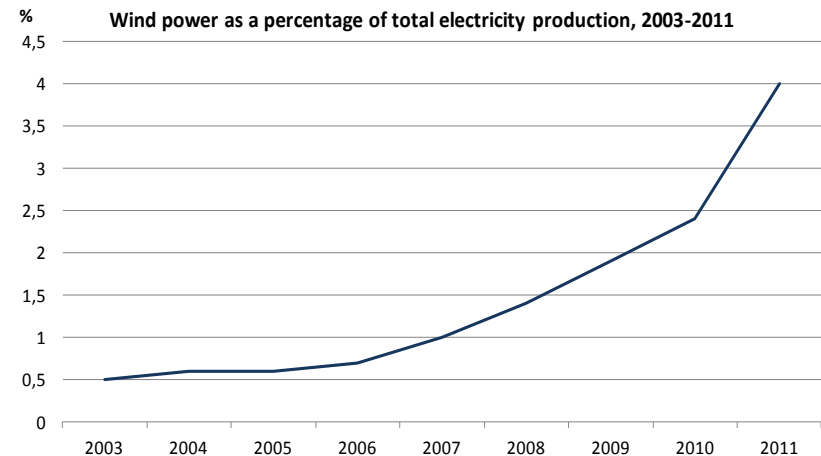


Svensk Vindenergi





# Wind power in Sweden as percentage of total electricity production 2003-2011





# Main Waste EU directives

- The Directive 2008/98/EC on Waste
- Directive 2000/76/EC on the Incineration of Waste
- Directive 1999/31/EC on the Landfill of Waste
- Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators
- Directive 2002/96/EC on waste electrical and electronic equipment
- Directive 94/62/EC on packaging and packaging waste





# Driving forces in Sweden

- Producer responsibility for packaging waste was introduced during the beginning of the 90's
- Tax on landfill from 1st January 2000
- Ban on landfill of separated combustible waste from 2002
- Ban on landfill of organic waste from 2005
- Tax on incineration from 1st January 2007
- From 2010 50% of all MSW should be material recovered or recovered through biological treatment
- From 2010 should at least 35% of all food based waste from household, restaurants etc be recovered through biological treatment





# Municipal Solid Waste

## The role of the municipalities

- The Swedish municipalities "owns" all household waste and are responsible for collection and treatment.
- Municipalities are also responsible for all "household like" waste as for example from kitchens in hospitals, from restaurants etc.
- Municipality owned waste management companies are common as well as energy companies
- Packaging's are handled separately by a privately owned organisation (REPA).



# The Waste Hierarchy

Directive 2008/98/EC

## Prevention:

Economic instruments

Legislation

Information

Preparing for re-  
use

## Recycling:

Metals

Paper

Glass

Plastics

## Other recovery:

Energy recovery

Incineration

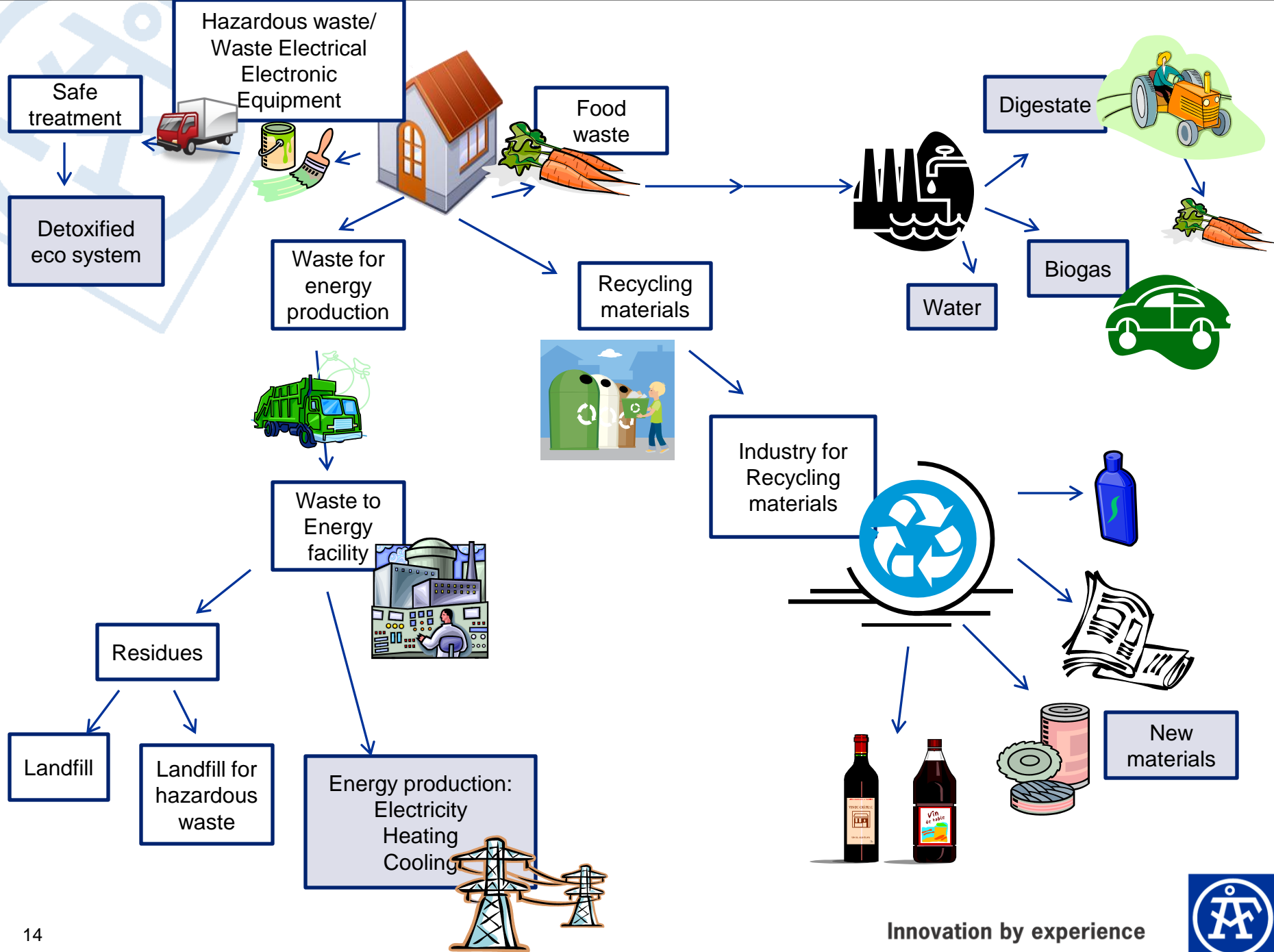
Biogas

## Disposal:

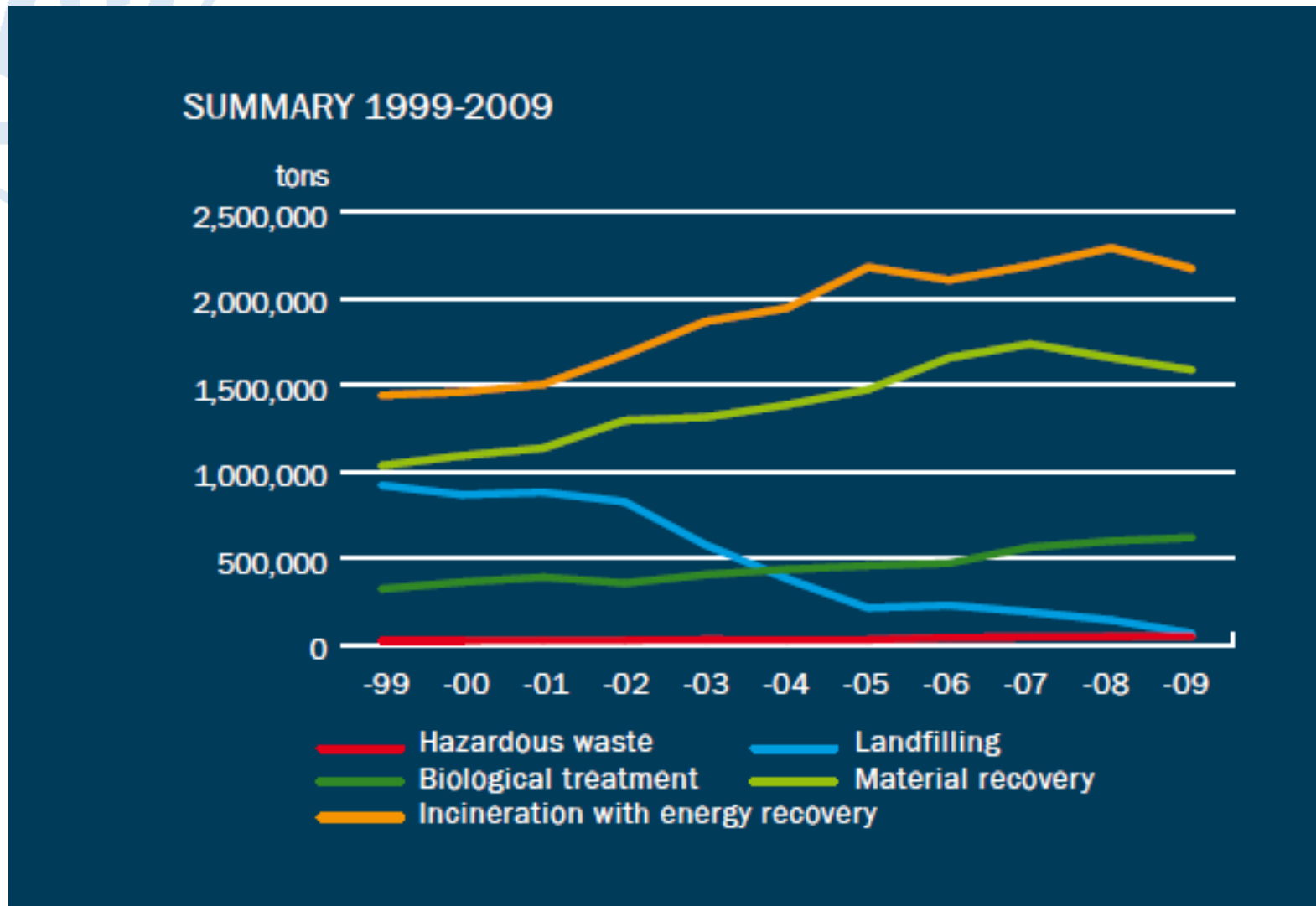
Landfill







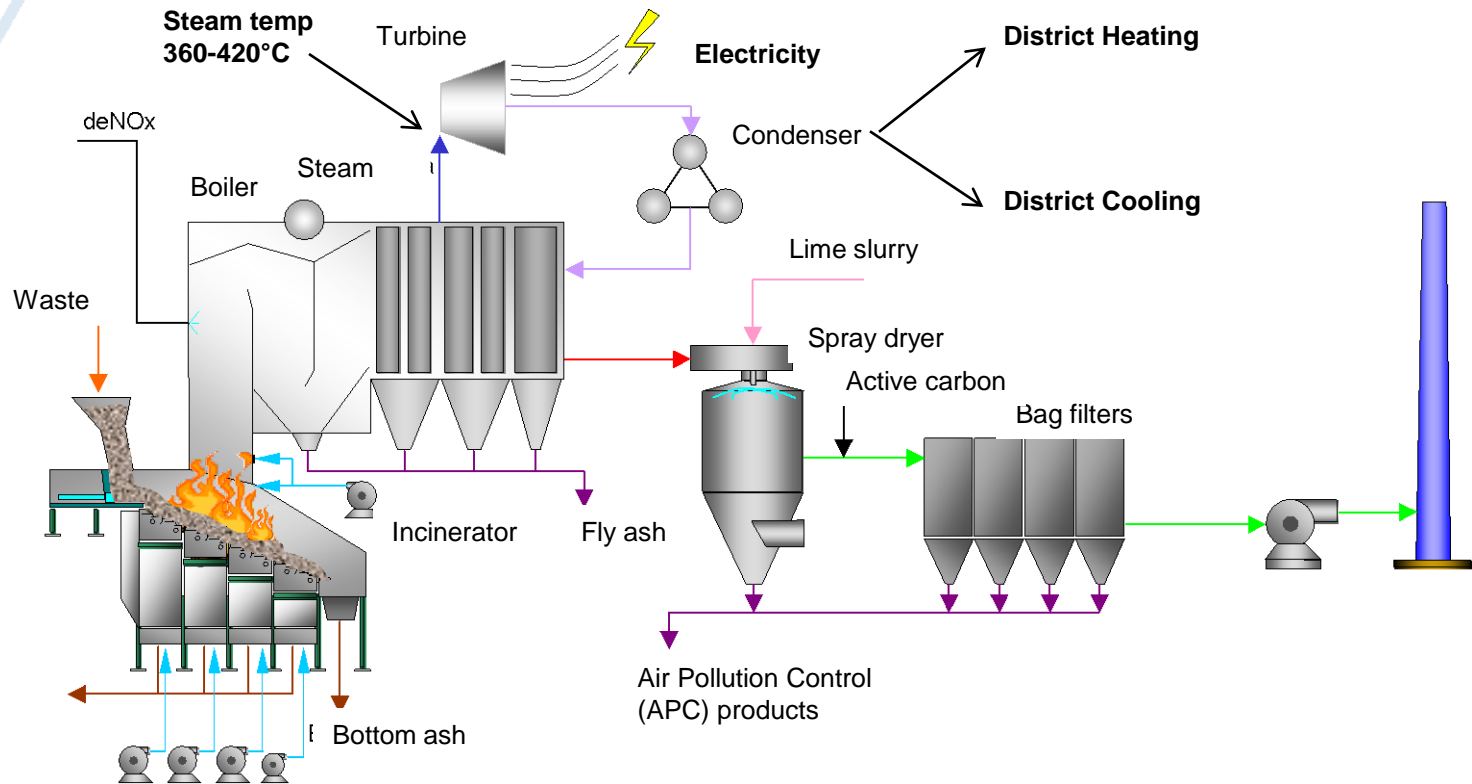
# Waste treatment MSW, Sweden



Source: Avfall Sverige



# Layout incineration



Layout SEGHERS

Over all efficiency ~90%-100% with flue gas condensing  
Electrical efficiency 20%-30%



Stockholm Högdalen,  
5 km from the City  
Centre in an area for  
light industry, private  
homes & recreation.





# Stockholm Högdalen plant (Fortum)





# USE OF WASTE AS FUEL HÖGDALEN STOCKHOLM

Year	Amount of waste t / year
1970	150 000
1980	180 000
1998	270 000
1999	560 000
2004 -	700 000

This means > 450 GWh/year electricity  
> 2000 GWh/year heat



# Reduced emissions in Stockholm since 1980

>70 % of CO<sub>2</sub>

>95 % of SO<sub>2</sub>

>80 % of NO<sub>x</sub>



# Changzhou, China

## Waste to Energy Facility

- WtE facility for a district in Changzhou, about 350000 ton MSW/year
- Production of electricity 20 MW
- Feasibility study
- Environmental Impact Assessment
- Swedish company: Build Own Operate





# Waste-to-Energy Consulting

- Solutions for waste-to-energy, biogas, sludge and biomass applications
- Studies for various combustion technologies for waste incineration
- Feasibility studies for waste-to-energy plants
- Project management and engineering services for design and constructing a waste-to-energy plant all the way to take over

***We manage different plant solutions as well as combustion and flue gas cleaning technologies.***





# Thank You!

For more information please don't hesitate to  
contact:

Gunnar Bark

+46105051240

[gunnar.bark@afconsult.com](mailto:gunnar.bark@afconsult.com)

Innovation by experience

