

# Energy Policy of Sweden: A Pathway to a Carbon Neutral Society

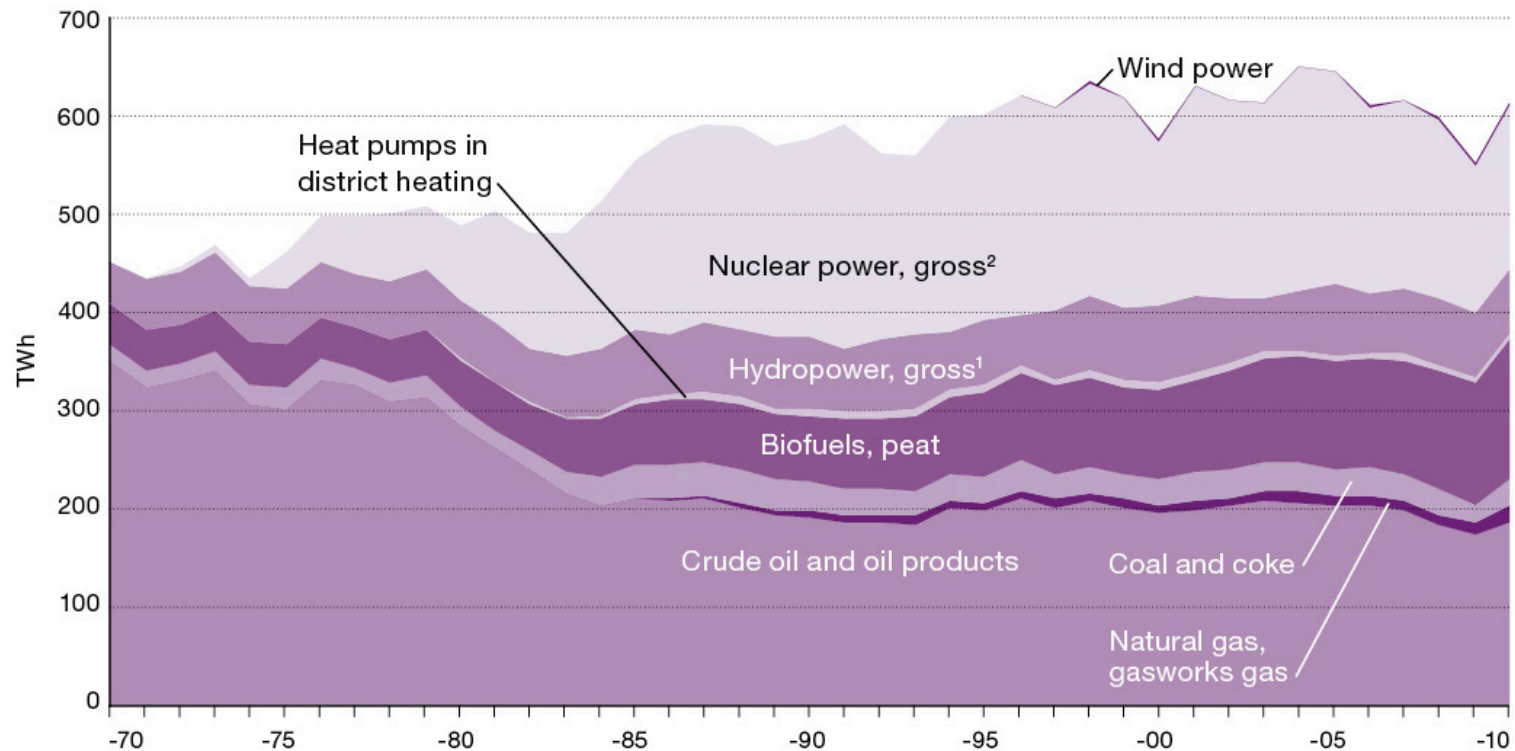
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# The Swedish Energy System

**Figure 8** Total energy supply in Sweden, excluding net electricity exports, 1970–2010, in TWh



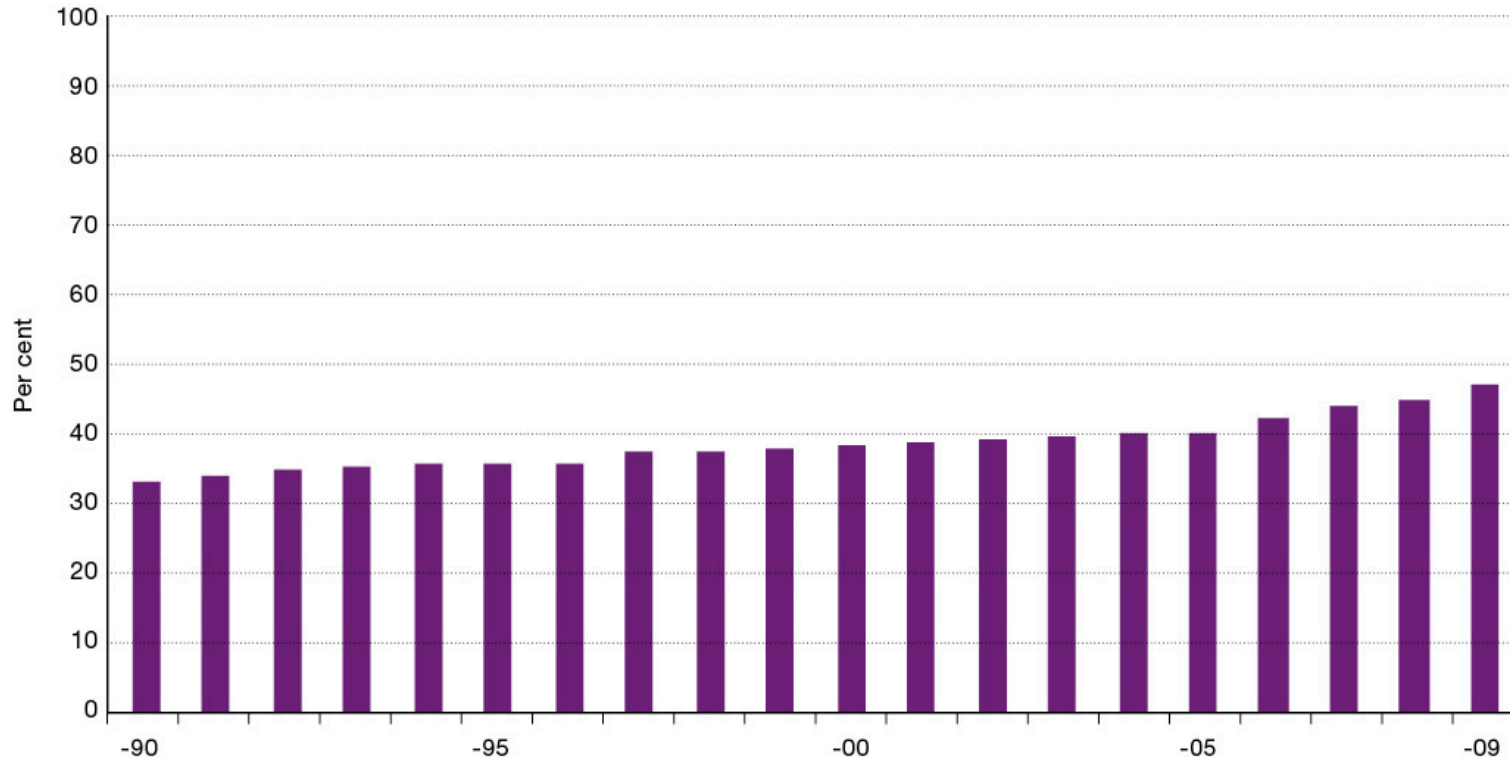
Source: Swedish Energy Agency and Statistics Sweden.

Note: 1. Including wind power up to and including 1996.

2. In accordance with the method used by UNECE to calculate the nuclear fuel energy input.

# The Swedish Energy system

**Figure 10** Share of renewable energy in Sweden, 1990-2009, in per cent



Source: Swedish Energy Agency and Eurostat.

Note: Calculations according to the RES directive. Data for 2005–2009 differ from the previous years.

# Electricity

Electricity supply	TWh (2012)
Hydro power	78
Bioenergy	15
Wind power	7
Nuclear	61
Export	20
<b>Total</b>	<b>161</b>

# How did we get here?

## Market-based and mainly technology neutral instruments

- **General policy instruments**
  - Taxes
  - Emission trading
  - Research, development and demonstration
- **Electricity certificate system:**
  - Target for certificate system for renewable electricity: + 25 TWh to 2020
  - Common system with Norway
- **Targeted instruments**
  - A planning framework for wind power of 30 TWh to 2020 – of which 10 TWh off shore
  - Investment subsidies (primarily to biogas and photovoltaic)

# Future challenges – Energy Bill of 2009

Climate change

Competitiveness

Security of supply

2050 vision no net GHG emissions

2030 priority for the vehicle fleet

Energy efficiency 2020

Increased R&D efforts

Third pillar in the electricity supply

Electricity market for active consumers

# Swedish energy policy for challenges ahead

- **Objectives for 2020**
  - at least 50 % RE of total energy use (already achieved)
  - at least 10 % RE in transport (already 12%)
  - 20 % more efficient energy use (compared to 2008)
  - 40 % reduction in greenhouse gas emissions (non-ETS, compared to 1990)
- **Vision ...**
  - By 2020, fossil fuels for heating will be phased out
  - By 2030, Sweden should have a vehicle stock that is independent of fossil fuels
  - By 2050, a sustainable and resource-efficient energy system and no net emissions of green house gases

# Nuclear energy

- **2010 – new nuclear power legislation:**
    - The prohibition against new reactors was lifted
    - A legal framework makes it possible for industry to invest in new reactors
    - Nuclear liability legislation updated – reactor owners forced to take full economic responsibility for accidents
  - **New reactors**
    - Can only replace closed reactors
    - No more than today's ten reactors
    - Have to be located at existing sites
  - **No direct or indirect subsidies to nuclear power**
- ⇒ **Will old reactors be replaced by new ones?**

It is up to the power producers themselves to decide on their production mix, i.e. to judge if new nuclear will be more profitable than the alternatives



# Thank you!

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