

Energy R&D

Swedish Priorities and Activities

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Swedish Energy Agency

Swedish Energy Policy

Objectives:

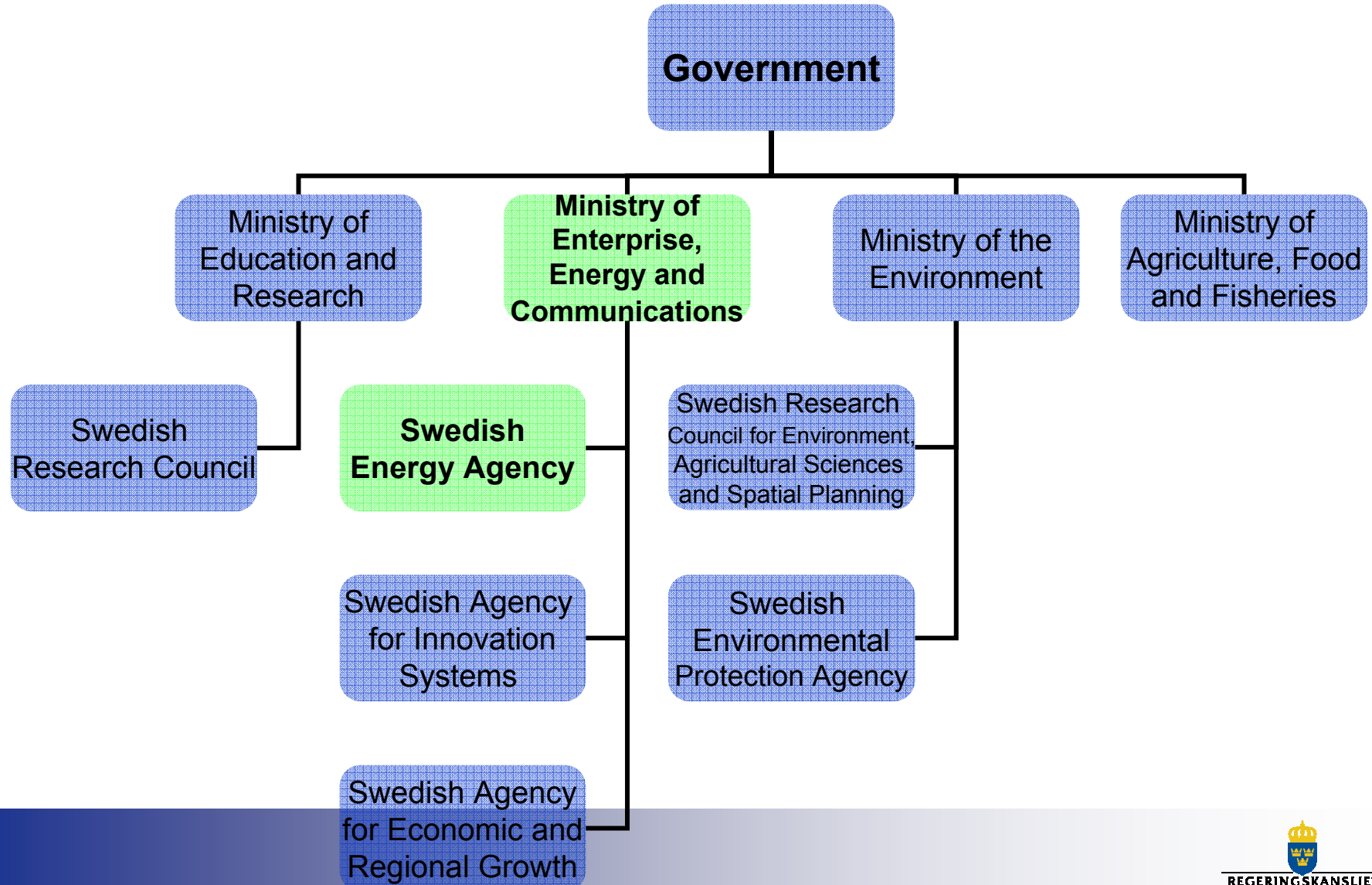
- Secure the supply of electricity and other forms of energy at internationally competitive prices, both for the short and the long terms
- Create conditions for efficient and sustainable energy use and cost-effective energy supply with minimum negative impact on health, environment and climate

International co-operation is an important part of the strategy: Nordic region, EU, IEA, bilateral collaboration agreements

Policy instruments

- Carbon tax
- Investment subsidies (energy-efficiency, renewable energy)
- Renewable electricity certificates
- Emissions trading
- Programme for energy-efficiency in industry (PFE)
- Information and education
- Research, technological development and demonstration

Main public players in Energy RD&D



The Swedish Energy Agency

- The Government's funding agency for energy RD&D
- Third largest public research fund in Sweden
- 1% of world energy research
- Covers the entire “innovation chain” from basic energy-related research to business development and implementation
- 90 Million € per year for energy RD&D
- 50 programmes and 700 single projects are running
- Six focus areas

Government Energy RD&D Bill (2006)

Swedish Energy Research should:

1. Build the scientific and technological knowledge and competence that is needed to realise a transition to a sustainable energy system in Sweden (research)
2. Support the development and commercialisation of new energy technologies and services (innovation)

The bill calls for

- Increased focus of the efforts
- Increased efforts to facilitate the commercialisation of results
- Increased involvement of stakeholders in the strategic planning of the energy research programme

Government Energy RD&D Bill (cont.)

- Continuous funding (not time-limited programme)
- Evaluations every 4th year
- Emphasis on commercialisation and deployment of results
- Focus on *needs* (society's, consumers', industry's)
- Six prioritized areas are lifted forward
- Visions and specific goals
- Technology platforms for strategic planning
- Systematic process:

Goals and Budget (Gov) – Criteria (A) – Priority setting (A+P) – Programmes/Calls (A) – Efforts (R) – Evaluation/Indicators (A) – Feedback (A/Gov) – Goals and Budget (Gov)

Swedish Energy Research

Focus areas:

- Energy system studies
- Buildings as energy systems
- Energy intensive industry
- Transport sector
- Electricity generation and distribution
- Bioenergy including CHP

Energy System Studies

- **Cross cutting research area**
- **Analysis of energy policy measures and their consequences**
- **Analysis of the functions of the energy markets**



The Building Sector

- **Startup of Center for Energy- and Resource Efficient Construction and Maintenance (CERBOF)**
- **Research on the interaction between technical systems, IT, information and behavior**



Passive house demo programme

-one of many programs on buildings



Transport Sector

- Second generation of fuels, mainly ethanol from forest industry and gasification of biomass
- Hybrid vehicles and energy-efficient combustion engines, adapted to alternative fuels



Pilot plants for production of biofuels



Synthetic gas from biomass,
Värnamo



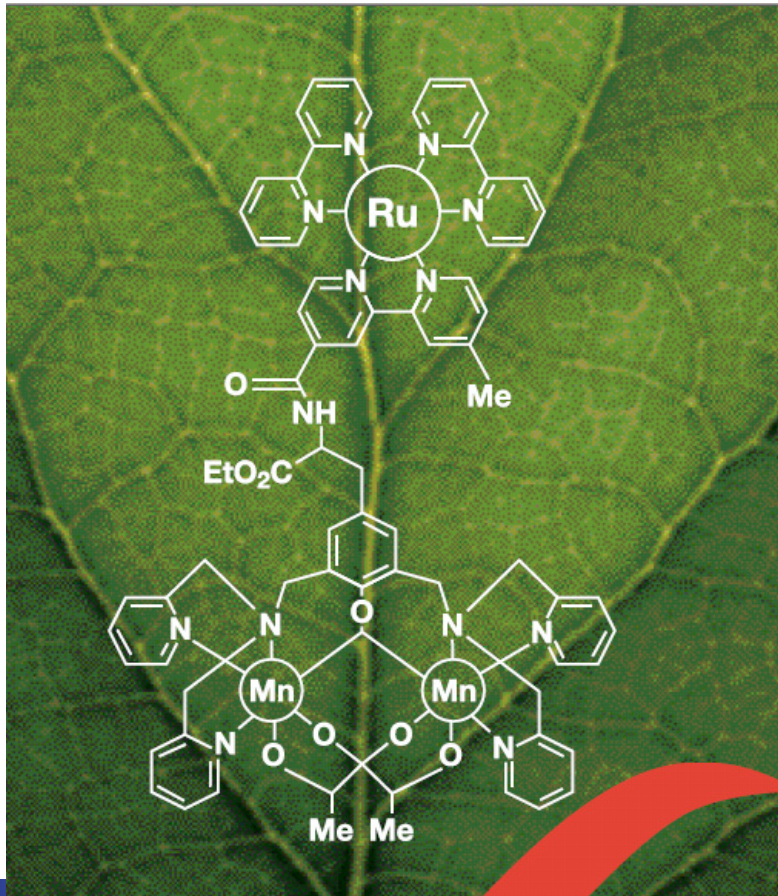
Ethanol from cellulose,
Örnsköldsvik



Synthetic gas from black liquor,
Piteå

Artificial photosynthesis

Energy out of sun-light and water



Industry

- **Efforts to further reduce energy losses and to utilize biofuels more efficiently in energy-intensive industry**



Process integration

- Overall energy analyses
- Mapping energy flows in factories
- Identifies potentials for structuring and modifying industrial processes in order to make more efficient use of energy and reduce environmental impact.



Bioenergy

Including Combined Heat and Power Production

- Strengthen the resource base for a sustainable production of bioenergy
- Efforts to increase energy efficiency through effective processes, mainly from climate neutral fuels

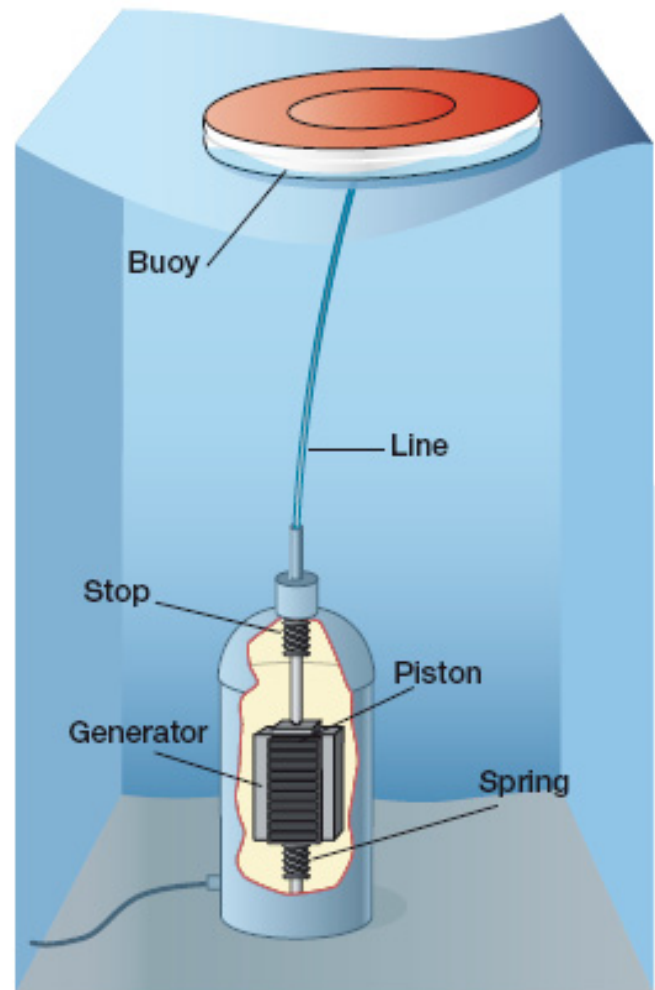


The Power System

- Robust and more efficient power systems
- Energy production from flowing energy sources, mainly hydro- and wind power
- Create conditions for a Swedish solar cell industry



Wave energy in Sweden



The Lysekil project

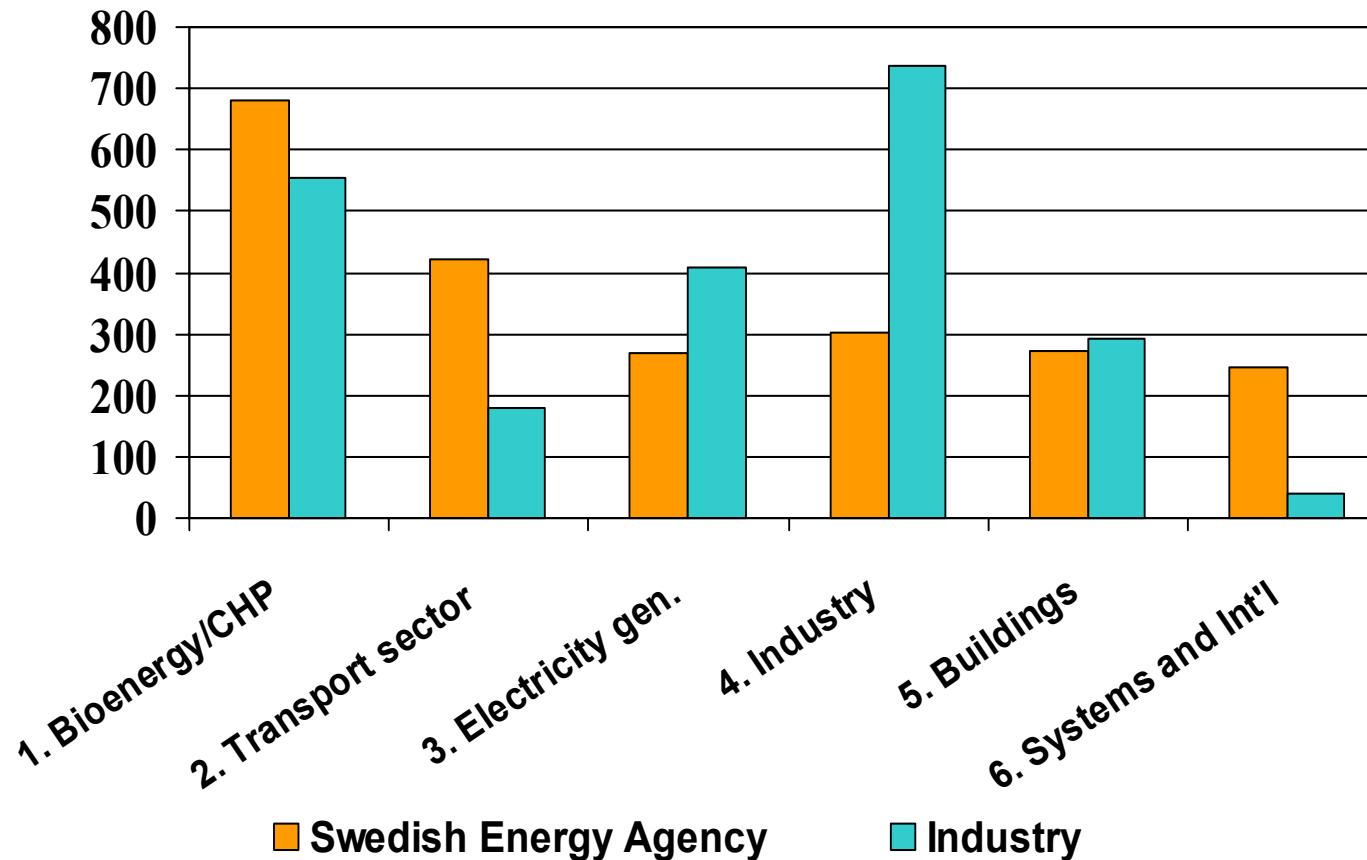


Energy Technology Platforms

- Six platforms, one for each thematic area
- Around 15 persons, both in-house staff and experts from key stakeholders mainly representing the “need” for results
- Strategic Energy RTD planning within their thematic area
- Scenarios, road maps, energy outlook and analysis etc.

Co-financing by thematic areas

Energy R&D funding 2002–2004: Swedish Energy Agency and Private sector/Industry, in total 4400 MSEK (public 50%, private 50%)



Recipients of funding

