

# Energy and sustainable development – the government contribution

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# Agenda

1. The tasks of Swedish Energy Agency
2. Swedish energy supply and -challenges
3. Policies and measures
4. Conclusions

# The Swedish Energy Agency

## Our tasks

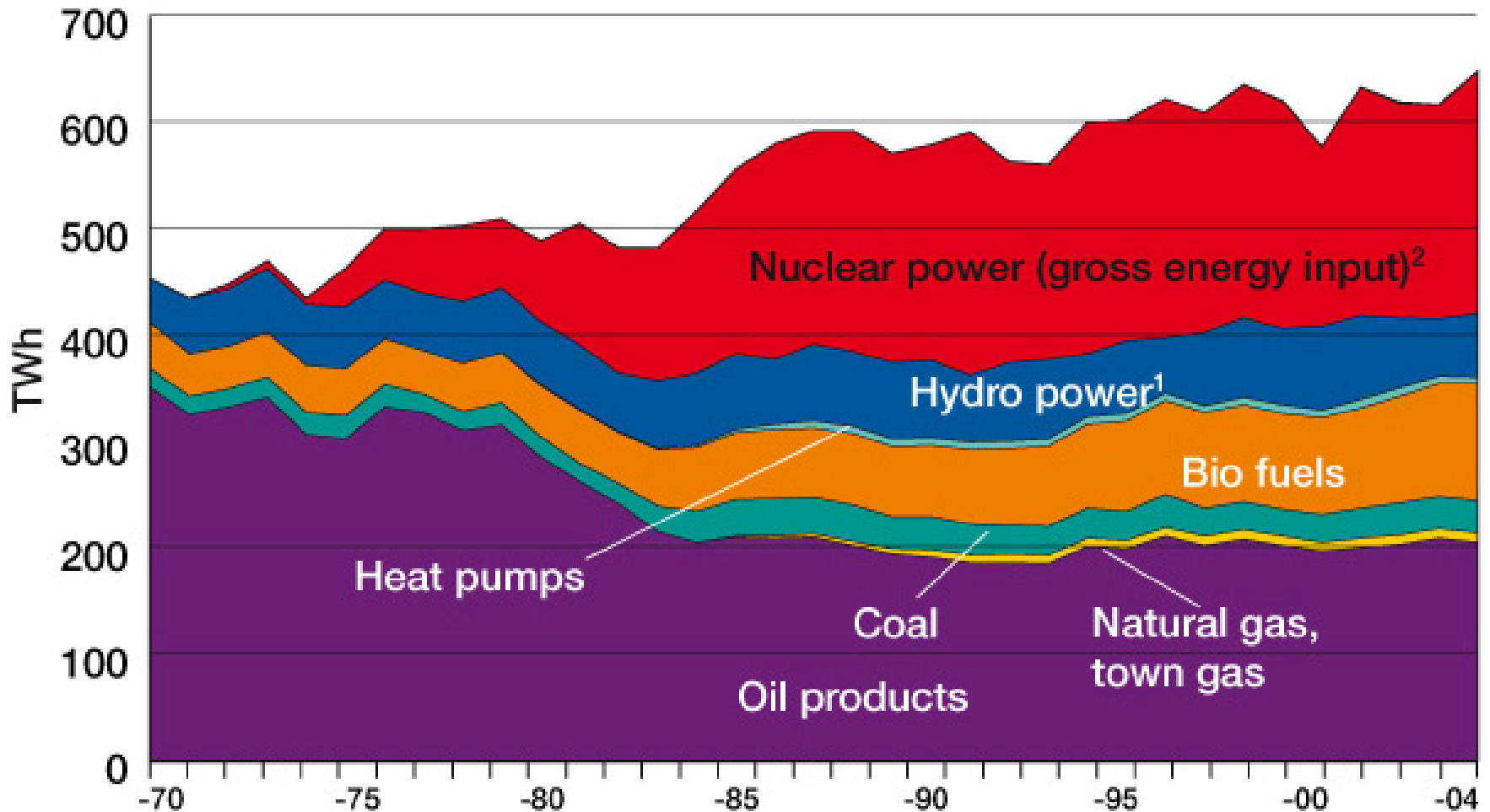
- Execute national energy policy and implement major part of energy policy programmes
- Perform regulatory tasks
- Serve as principal staff organisation of the Government
- Enhance knowledge, skills and competence in the energy field

# The Swedish Energy Agency

## Our tasks (cont'd)

- Monitor and analyse the performance and development of energy markets and the energy system
- Support introduction of renewable energy sources
- Promote efficient energy use and energy supply
- Contingency emergency planning
- International collaboration
- Climate change policy measures

# Current energy supply



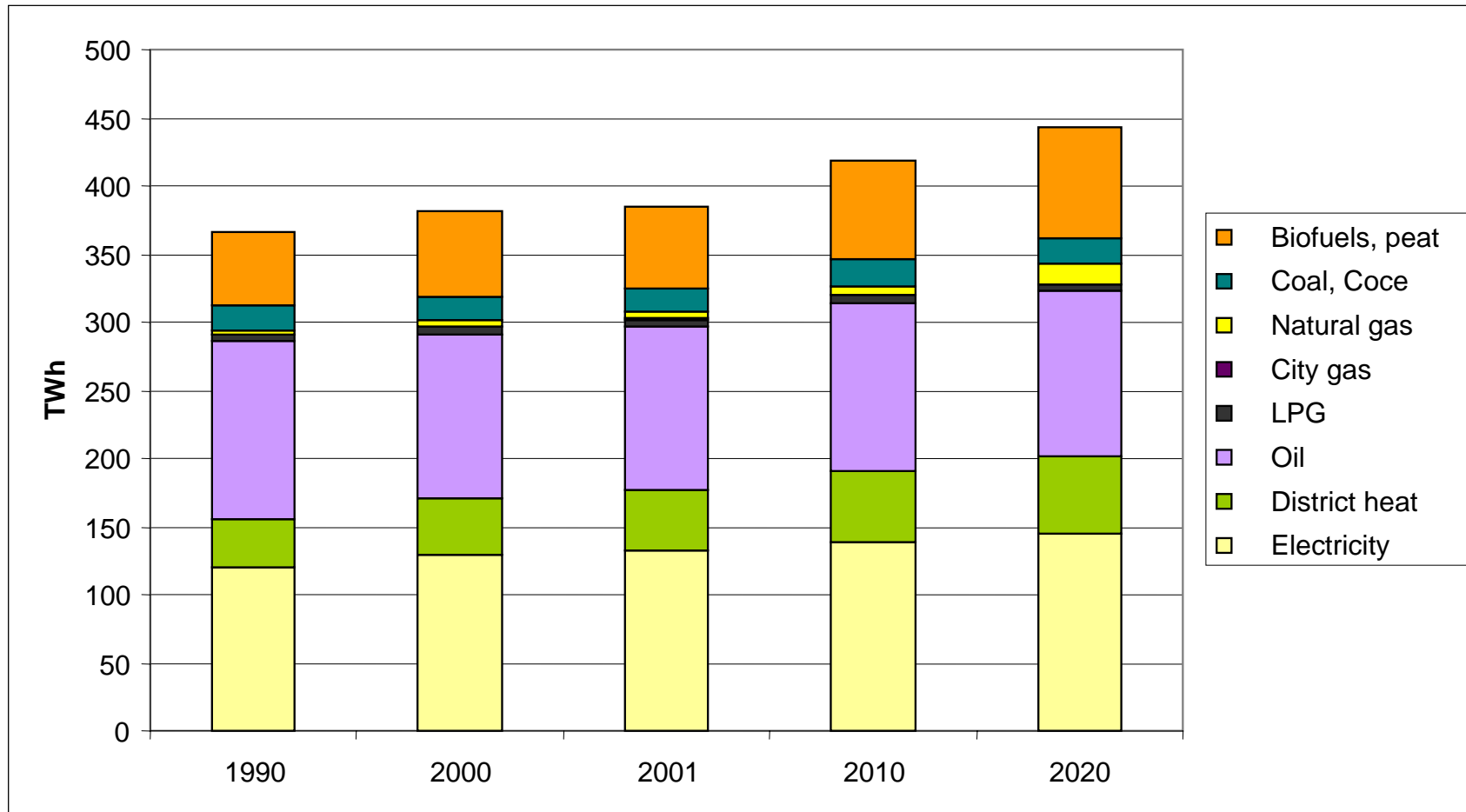
# The future - some challenges

- Increased competition for energy resources
- Climate impact from energy sector
- Internationalisation of energy policy

# The major challenges

## Energy demand, forecast 2020

(Business as usual)



# Target: a sustainable energy system

## Energy policy act (2002):

- Ensure the proper functioning of the competitive electricity and gas markets
- Market-oriented incentives
  - for the promotion of new (renewable) generation capacity, and rational electricity use
- Targeted research and development for developing a sustainable energy system
- Phase out nuclear power
  - without jeopardising security of supply, electricity prices or environment (1980)

# Critical factors

## The road to the future

### Challenges:

- Electricity supply for energy intensive industry
- Sustainable mobility
- Low energy municipal sector

### Critical factors:

- Utilise research results
- Ambitious and realistic programmes for
  - Energy efficiency
  - Renewable energy

Long time perspective  
Holistic perspective  
Co-operation

# Policies and measures - examples

- Economic instruments
  - Taxation, notably Carbon tax
  - Electricity Certificates
  - Emissions trading
  - Program for improving energy efficiency in energy intensive industry (PFE)
- Research, development, demonstration, dissemination
- Information
- International cooperation

# Swedish Energy Research

Budget:

- MSEK 815 p.a. (85 M€)

Focus areas:

- Buildings as energy systems
- Energy intensive industry
- Transport sector
- Electricity generation and distribution
- Bioenergy including CHP (Combined Heat & Power)
- Energy system studies

# Challenges for technological development and commercializing

- **Bottleneck:**
  - Commercialization
- **Some strategic issues:**
  - Renewable energy resources
  - Energy efficient vehicles
  - Motor bio-fuels

# Renewable energy resources

- Reduce costs
- Expand the resource base
  - more biomass
  - make wave power technology commercial
  - make photoelectrical power technology commercial

# Energy efficient vehicles

- Improve energy efficiency of engine and drive train
  - Improve existing designs (Otto, Diesel)
  - New designs
    - variable compression engine,
    - Homogeneous Charge Compression Ignition engine,
    - hybrid drive train

# Motor biofuels: Three strategic development plants



**Synthesis gas from biomass**



**Ethanol from cellulose**



**Synthesis gas from black liquor**

# Conclusions

- It is possible to support the world with sustainable energy
- It is a political issue whether it is worth the cost
- RD&D can certainly help to reduce the costs
- Energy researchers may well be the future heroes

- Thank you for your attention!