

# Vattenfall's internationella miljöstrategi

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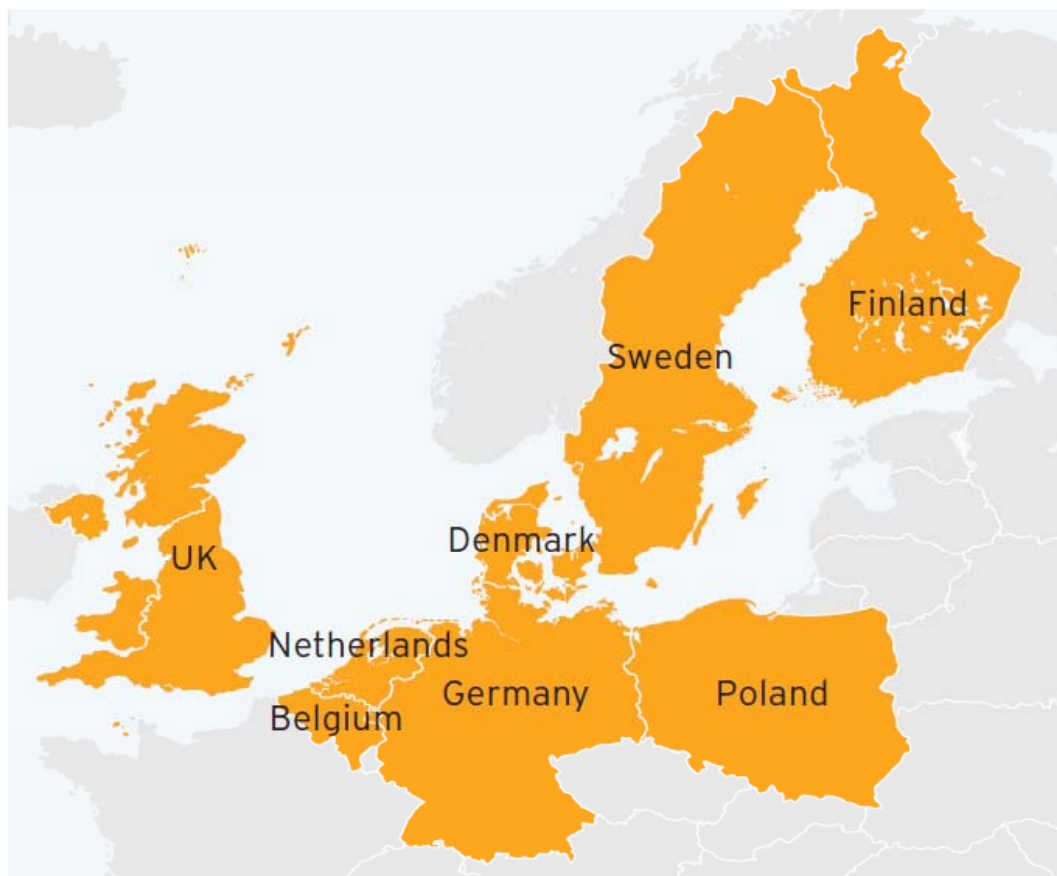
Presentation Sveriges ingenjörer, 28 oktober 2010

# Innehåll

- Vattenfall's verksamhet och miljöpåverkan
- Vattenfall's strategi
- Miljöstrategi Vattenfall Norden

Övriga bilder är på engelska.

# Vattenfall today – A European energy company



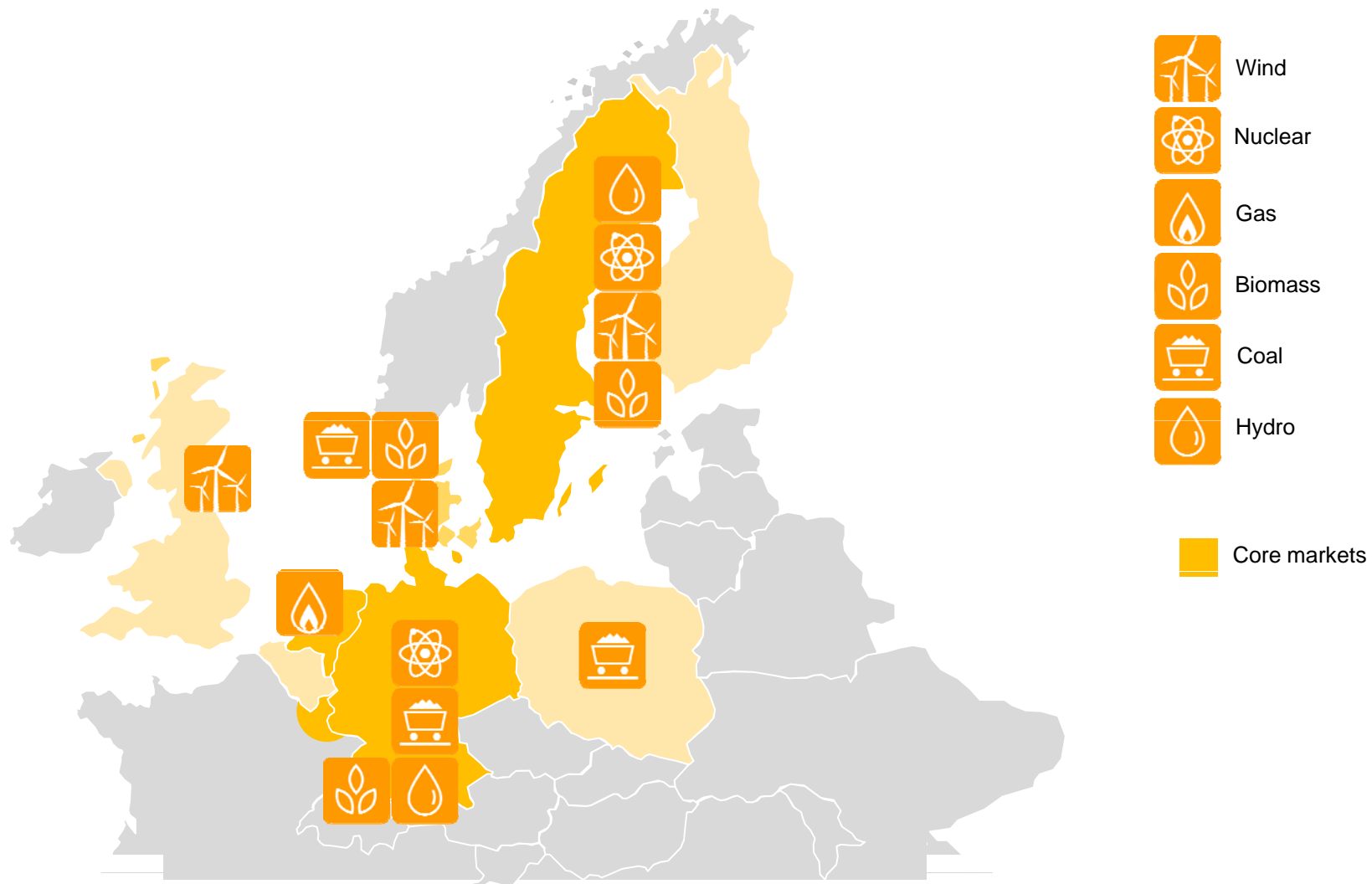
## Facts of today

Number of employees:	40,026
Net sales:	205,407 M SEK
Operating profit:	27,938 M SEK
Electricity generation:	158.7 TWh
Heat generation:	37.9 TWh
Number of customers:	7,5 million electricity 2 million gas

## Vattenfall is a leading European energy company

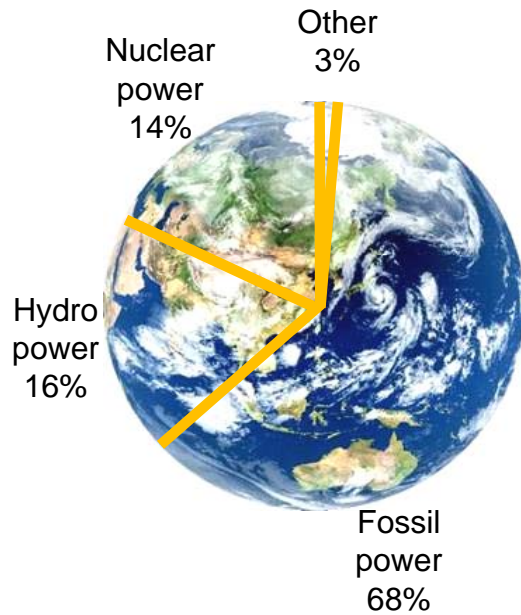
- Operations in eight markets
- Number 5 in electricity generation
- Number 1 in heat production

# Vattenfall's main energy sources



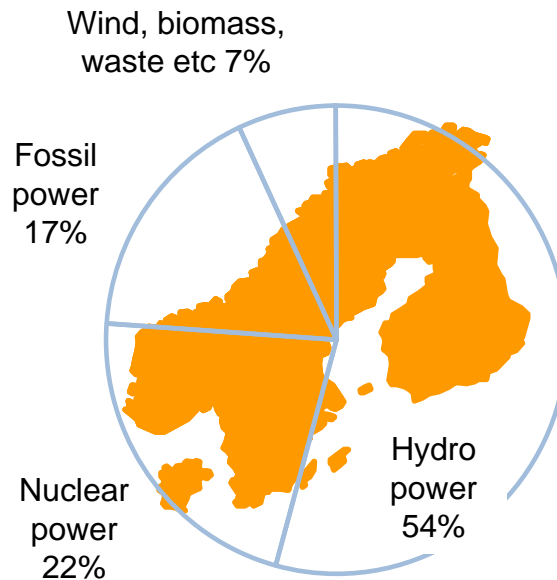
# Electricity generation in a perspective

**Global: 19 771 TWh**



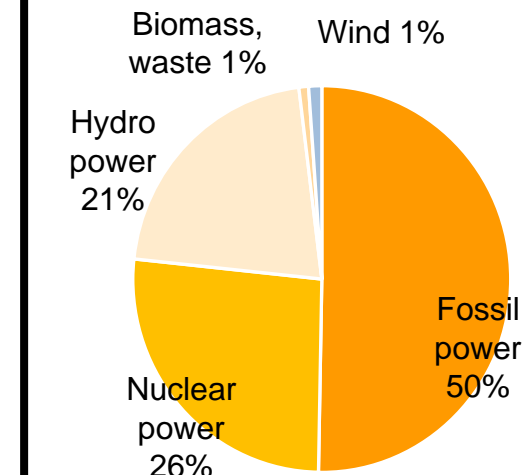
29381 Mt CO<sub>2</sub>

**Nordic: 397 TWh**



189 Mt CO<sub>2</sub>

**Vattenfall: 159 TWh**



90 Mt CO<sub>2</sub>

# The electricity and heat system and direct environmental impact

**Wind power**



- Landscape
- Ecosystems
- Noise

*Intermittent power*

**Hydro power**



- Landscape
- Ecosystems
- Dam safety

*Base load, regulating power*

**Nuclear power**



- Uranium mining
- Fuel production
- Nuclear safety
- Waste

*Base load power*

**Combustion of coal, biomass, gas and oil**



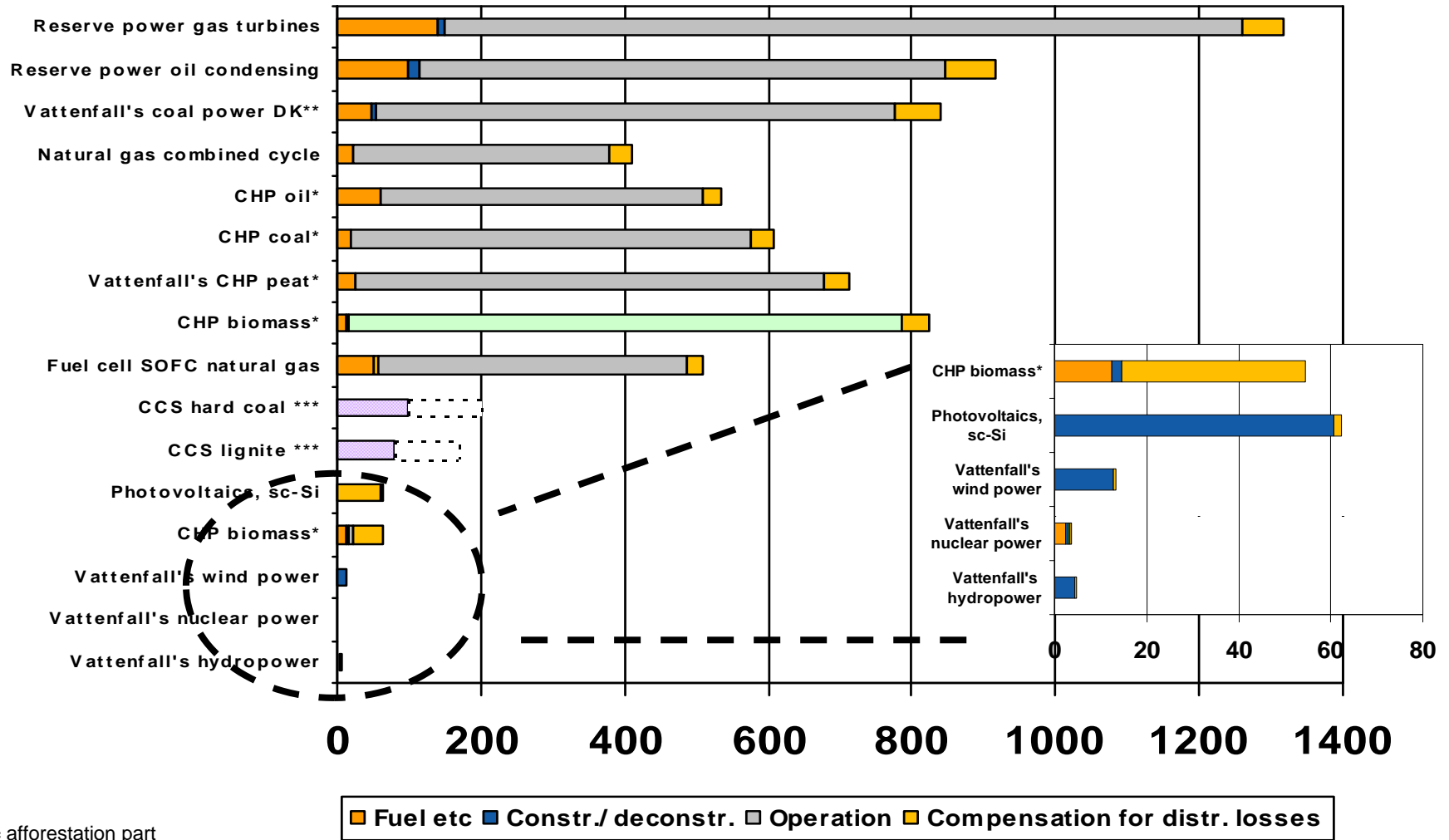
- Climate (CO<sub>2</sub>)
- Other emissions (SO<sub>2</sub>, NO<sub>x</sub>, particles)
- Fuel extraction, transport etc.
- Ashes and by-prod.

*Base & peak load, regulating power and/or heat*



Construction impact (resource, emissions) apply to all

# Emissions of fossil CO<sub>2</sub>, g/kWh electricity delivered to household customer



\*) Part of the emissions have been allocated to produced heat by means of the alternative generation allocation method. 99% of operation part for biomass is renewable  
 \*\*) The Danish coal plants are condensing plants with part time extraction of heat and emissions have been allocated to produced heat by means of the alternative generation allocation method.  
 \*\*\*) CCS have a span depending on technical solution, efficiency etc

# Vattenfall's strategy

## New vision and strategic direction

Vattenfall will create a strong and diversified European energy portfolio with sustainable and increased profits, significant growth options and will be among the leaders in developing environmentally sustainable energy production.



- Profit and value creation
- Focus on core markets
- Reduce CO<sub>2</sub> exposure and grow in low CO<sub>2</sub> emitting energy production and gas
- Three products – electricity, heat and gas



## The bridging energy system is needed

### The Future Energy System

- New affordable energy sources
- A significant role for electricity as an efficient carrier of energy.

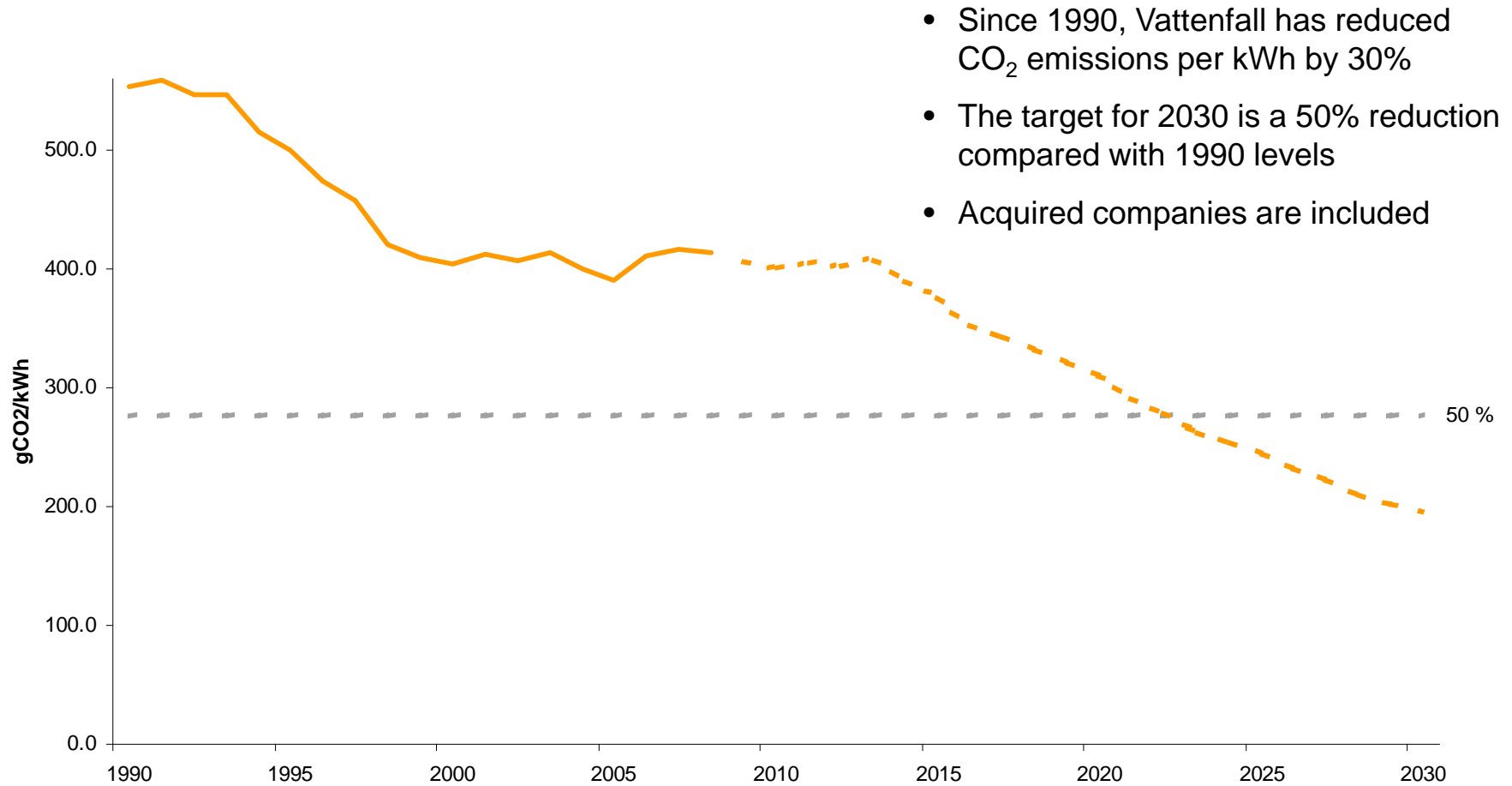
### The Bridging Energy System

- Meets the environmental requirements of tomorrow
- Built of low-emitting energy generation :
  - Renewable energy
  - Nuclear power
  - Gas, and coal with carbon capture and storage (CCS)
- Reinforced by energy and resource efficiency.

### The Current Energy System

- Efficient use of current energy sources
- Meets today's environmental requirements.

## Vattenfall's CO<sub>2</sub> emission reduction – electricity and heat

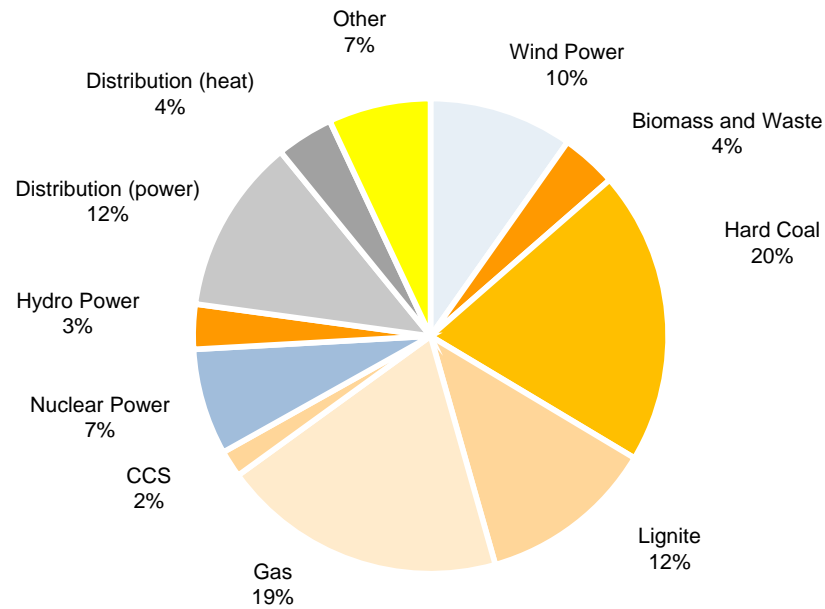


- Since 1990, Vattenfall has reduced CO<sub>2</sub> emissions per kWh by 30%
- The target for 2030 is a 50% reduction compared with 1990 levels
- Acquired companies are included

# Vattenfall investment plan and R&D

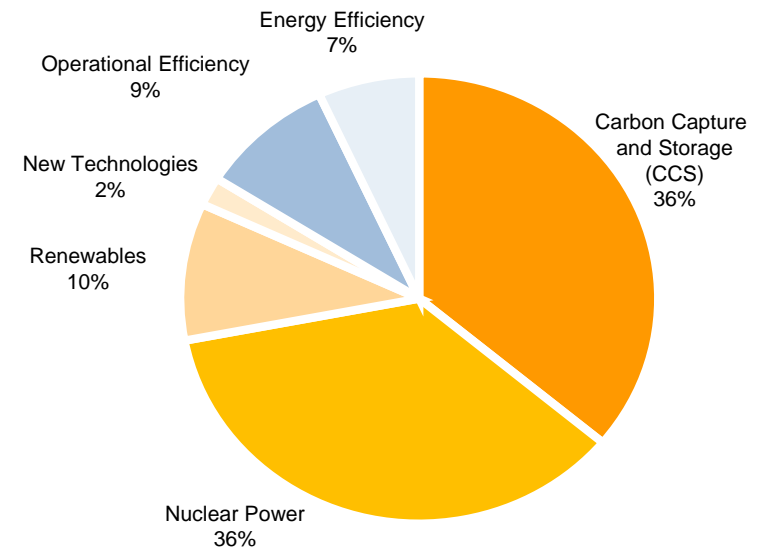
## Planned investments 2010-2014

SEK billion



Five year investment programme SEK 201 billion

## Research and development 2009



Total R&D 2009 SEK 1,3 billion

# Examples of development activities



- Ocean energy
- Biomass
- Smart grids
- Carbon capture and storage (CCS)
- Sustainable cities
- E-mobility

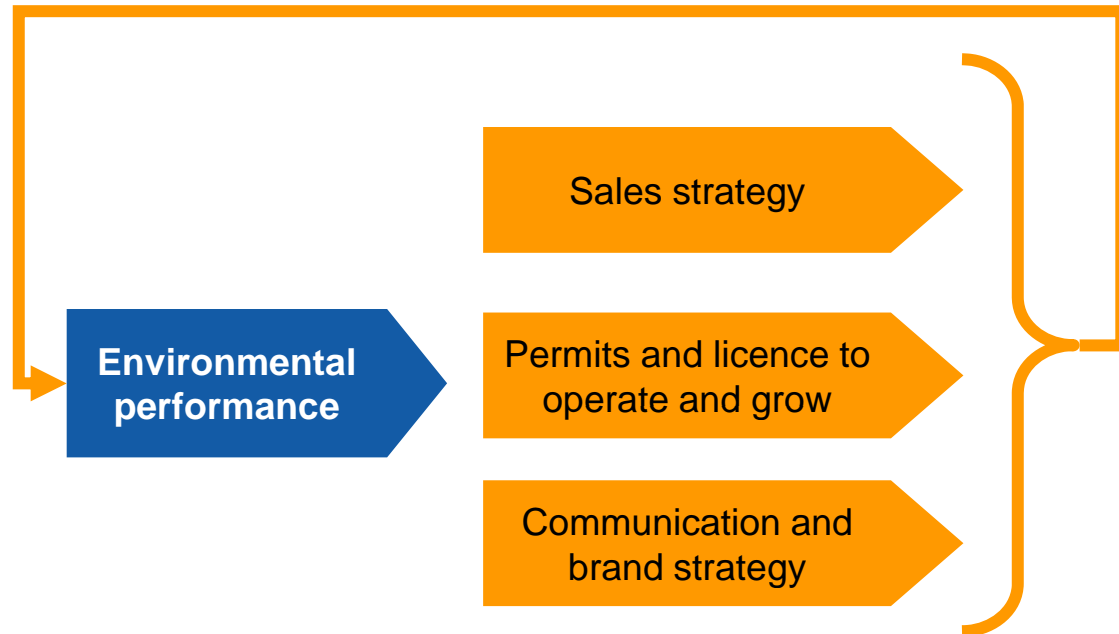


# Environmental strategy Vattenfall Nordic

# Environmental performance in a context

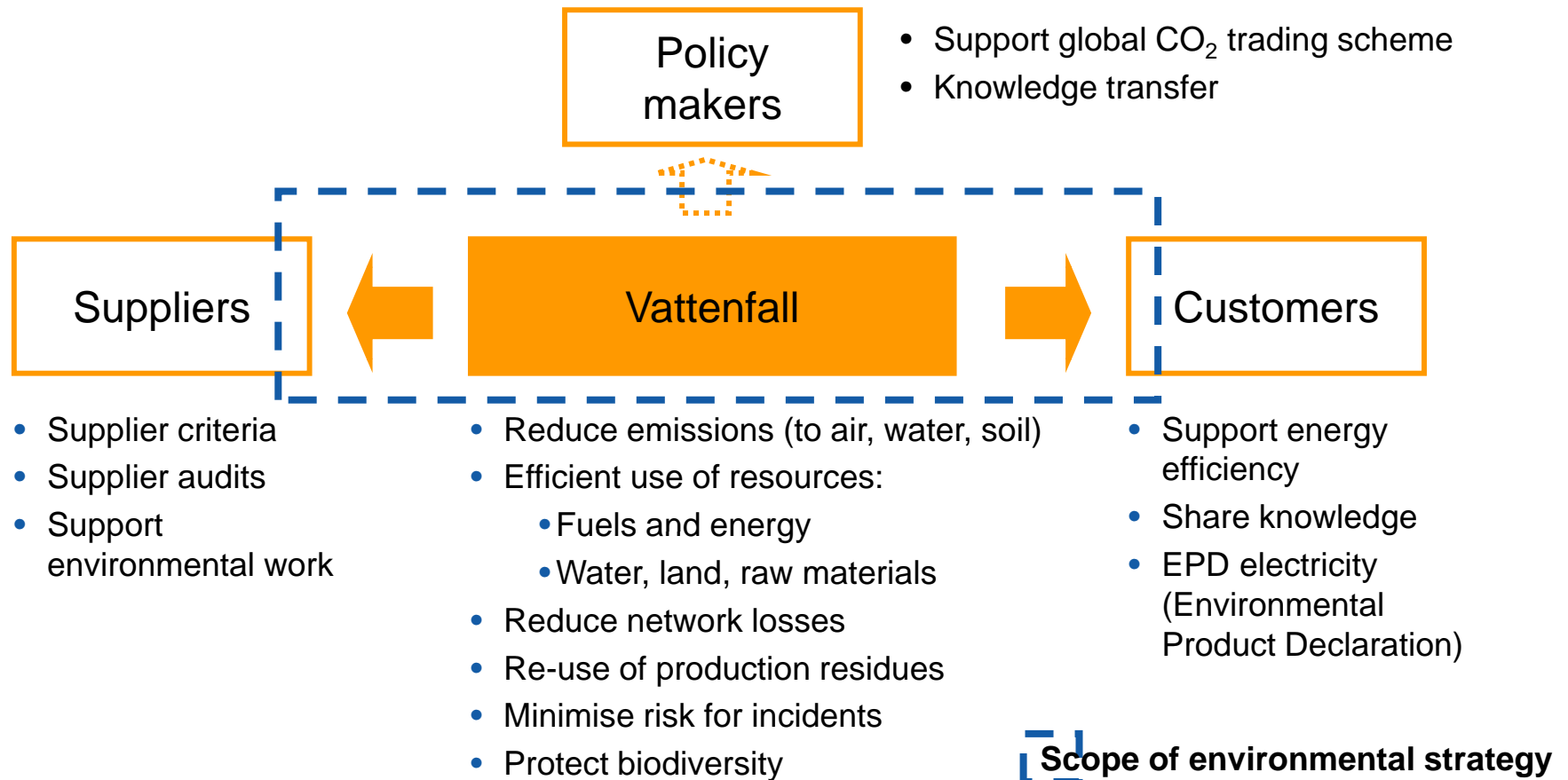
## Stakeholder expectations:

- Responsibly manage environmental issues
- Continuously reduce environmental impact
- Increase use of renewable energy
- Offer environmentally adapted products



- Environmental performance refers to actual environmental aspects
  - Other processes benefit from high environmental performance
- The environmental strategy aims to improve environmental performance

# Vattenfall actions to improve environmental performance involves ourselves and others



# BG Nordic Environmental strategy 2010

