

Sustainable energy  
new technologies for energy and the  
construction business

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# Energy efficiency in the built environment

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Project - *Green Markets and Cleaner Technologies. Leading Nordic Innovation and Technological Potential for Future Markets* financed by the Nordic Council of Ministers

# Why increased energy efficiency?

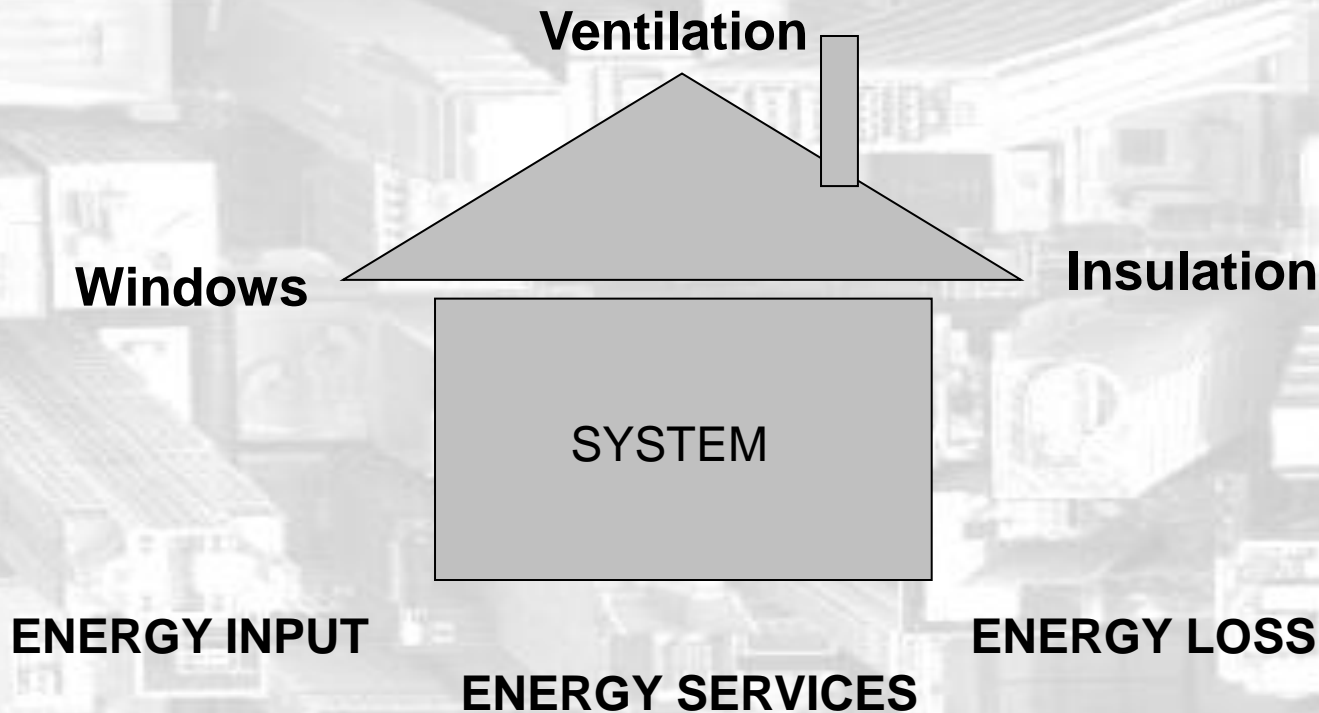
- Counteract global warming
- Attainment of Kyoto targets
- Increased safety of supply
- Promoting transition to renewable sources
- Decreased costs
- New product development and service opportunities
- New work opportunities

# Energy in buildings

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- Energy use in buildings constitutes between 30-40% of the total energy consumption
- Gives rise to 40% of greenhouse gas emissions
- Cost effective savings potentials are estimated at 20-30%

# Energy efficiency in buildings



# Technological opportunities to improve the energy performance of buildings

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## Technologies

Insulation

Glazing

Ventilation

## Concepts

Passive houses

Solar houses

Adaptive buildings

Smart houses

# The current situation

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- Technologies are available
- Cost effective solutions exist
- Further technological developments are possible

What is needed to promote energy efficiency?

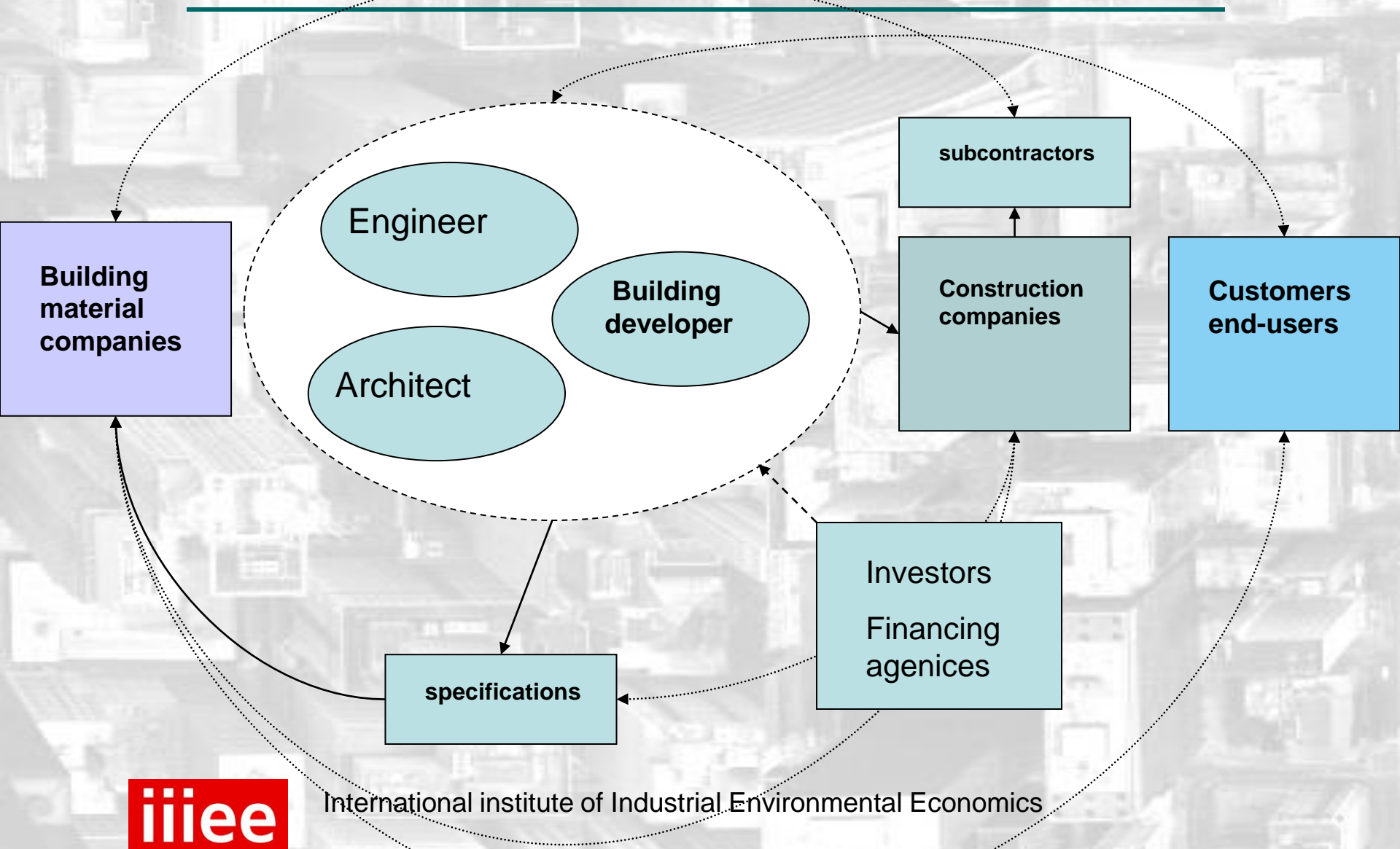
There are numerous constraints/barriers that need to be overcome

# Challenges

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- Vast number of decision-makers
- Organisational barriers - investments/savings
- Fragmented sector and value chain
- Short-term thinking, focus on lowest price
- Lack of awareness, knowledge
- Lack of upfront financial resources
- Lack of incentives
- Relatively low energy prices
- Taxation policies

# The building sector





# What is needed?

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- Long-term programmes
- Coordination with other policy areas
- Incentives
- Research and knowledge management
- Demonstration
- Tools to stimulate life-cycle thinking
- Systems for managing investments
- New cooperation forms

# EU initiatives

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**Energy performance in Buildings Directive**

**Energy Services Directive**

**Energy Efficiency Action Plan**

→ **Constitute a framework but**

**actual results depend on national  
implementation and support measures**

An aerial, grayscale photograph of a city grid, showing a dense pattern of buildings and streets. The perspective is from a high angle, looking down on the city.

# Examples from the Nordic countries

# Demostration projects

## Viiki Eco-Neighbourhood Finland



## City of tomorrow, Bo 01 Malmö, Sweden



# Demonstration projects

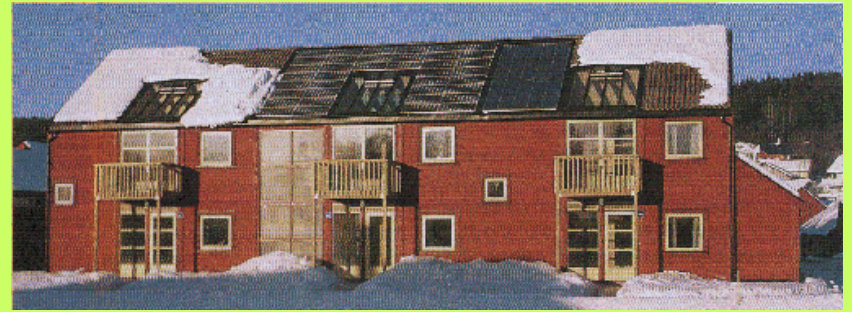
## Houses for the future – Køge Denmark



## Sustainable schools - Norway



## Low energy buildings



# **Cooperation and support**

**Sector initiatives**

**Municipal initiatives**

**State – sector cooperation**

**Sector – research cooperation**

**Policies – support programmes**

# Concluding remarks

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Energy efficiency in buildings is receiving increasing attention

New policies and support programmes are being developed

By integrating existing technologies energy consumption can be radically decreased

It is of importance to find ways to promote energy performance enhancing renovation and retrofiting

Experience exchange is crucial

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# Thank you

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