

Directorate-General
for Energy
and Transport

Energy Efficiency – DHC/CHP potentials

District Heating Futures Seminar
Tuusula, 31 August 2009



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DG TREN

AGENDA

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- Energy efficiency – challenges
 - Main energy savings policy areas
 - CHP/DHC potentials
 - New policy developments
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Energy challenges

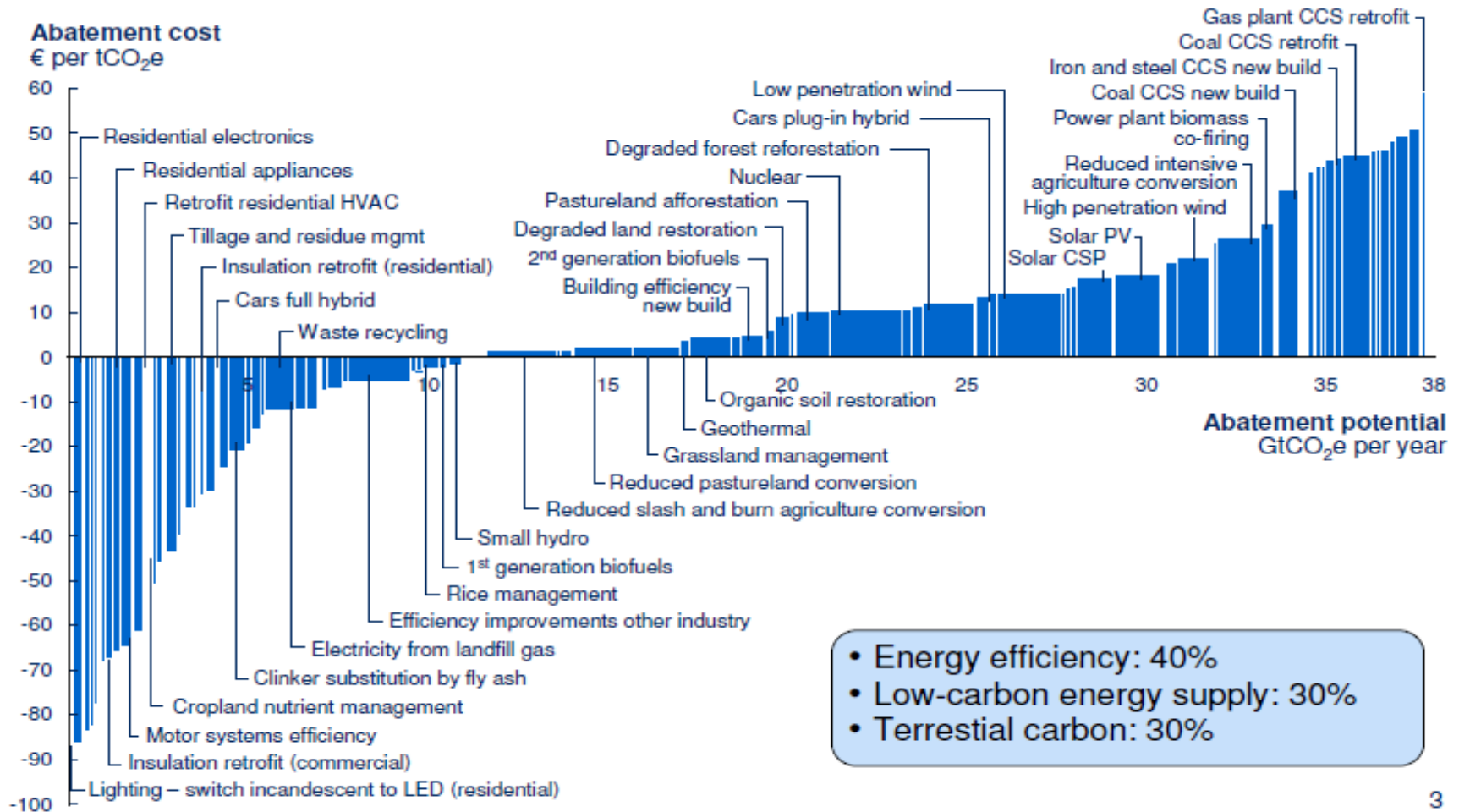
- ▶ **Limit temperature rise**
- ▶ **Reduce CO₂ by 20% or 30% by 2020 - by 80% in 2050**
- ▶ **Increase renewables to 20%**
- ▶ **Increase biofuels to 10%**
- ▶ **Increase energy efficiency to save 20% energy by 2020**

Energy saving

- ▶ **Energy saving is an optimal way to reach the targets of reduction of carbon emissions**
- ▶ **They cannot realistically be achieved from only ETS scheme, renewables, carbon capture or nuclear**
- ▶ **Energy saving is the most cost-effective way for achieving extra reductions of carbon**

Investments in energy efficiency pay off

2030 - Global GHG abatement cost curve beyond business-as-usual

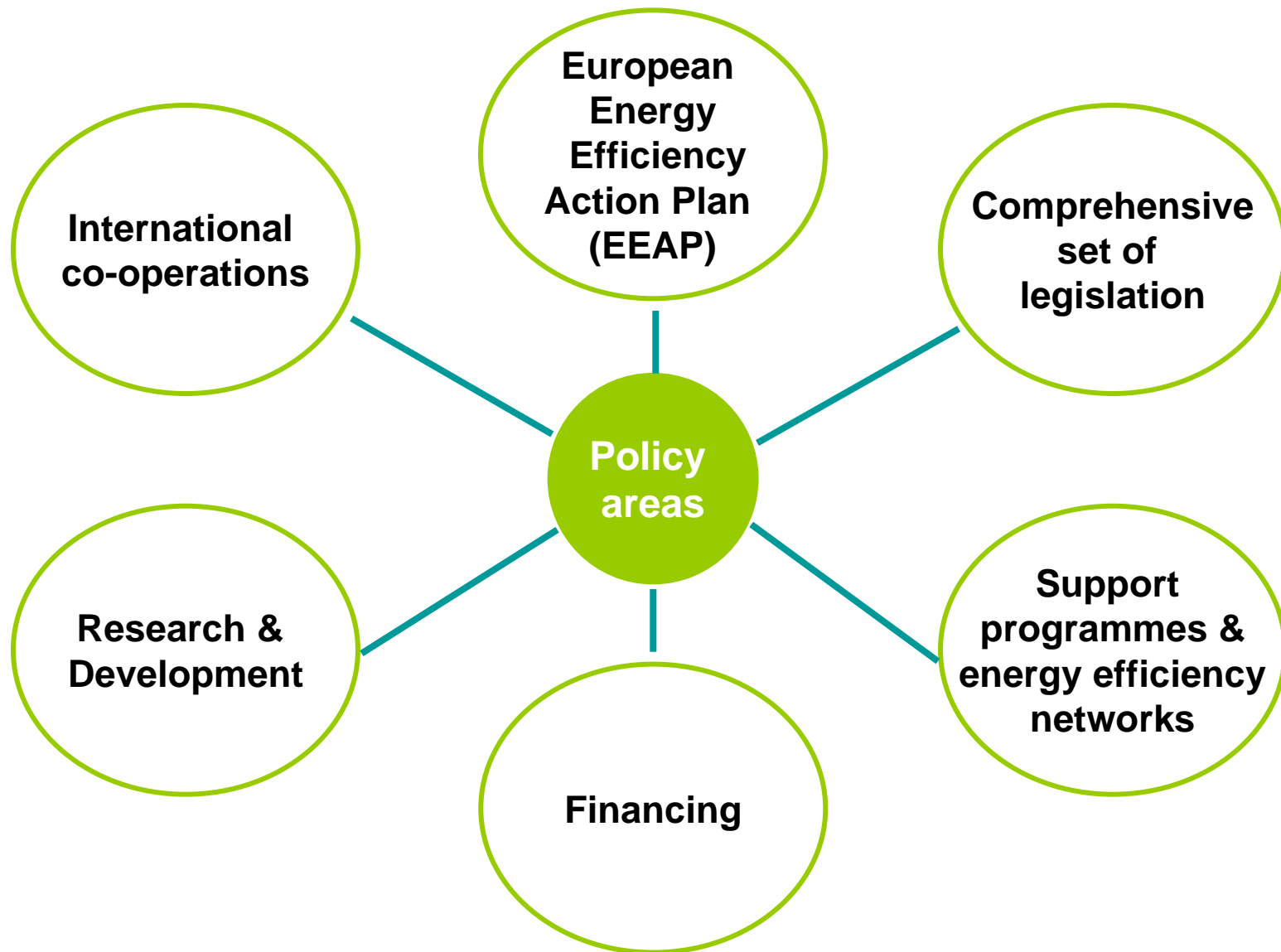


Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60/tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.

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Main policy areas to achieve energy savings



European Energy Efficiency Action Plan

OBJECTIVE

Mobilisation of the

- general public
- policy-makers
- market actors

to achieve the

20% primary energy savings objective

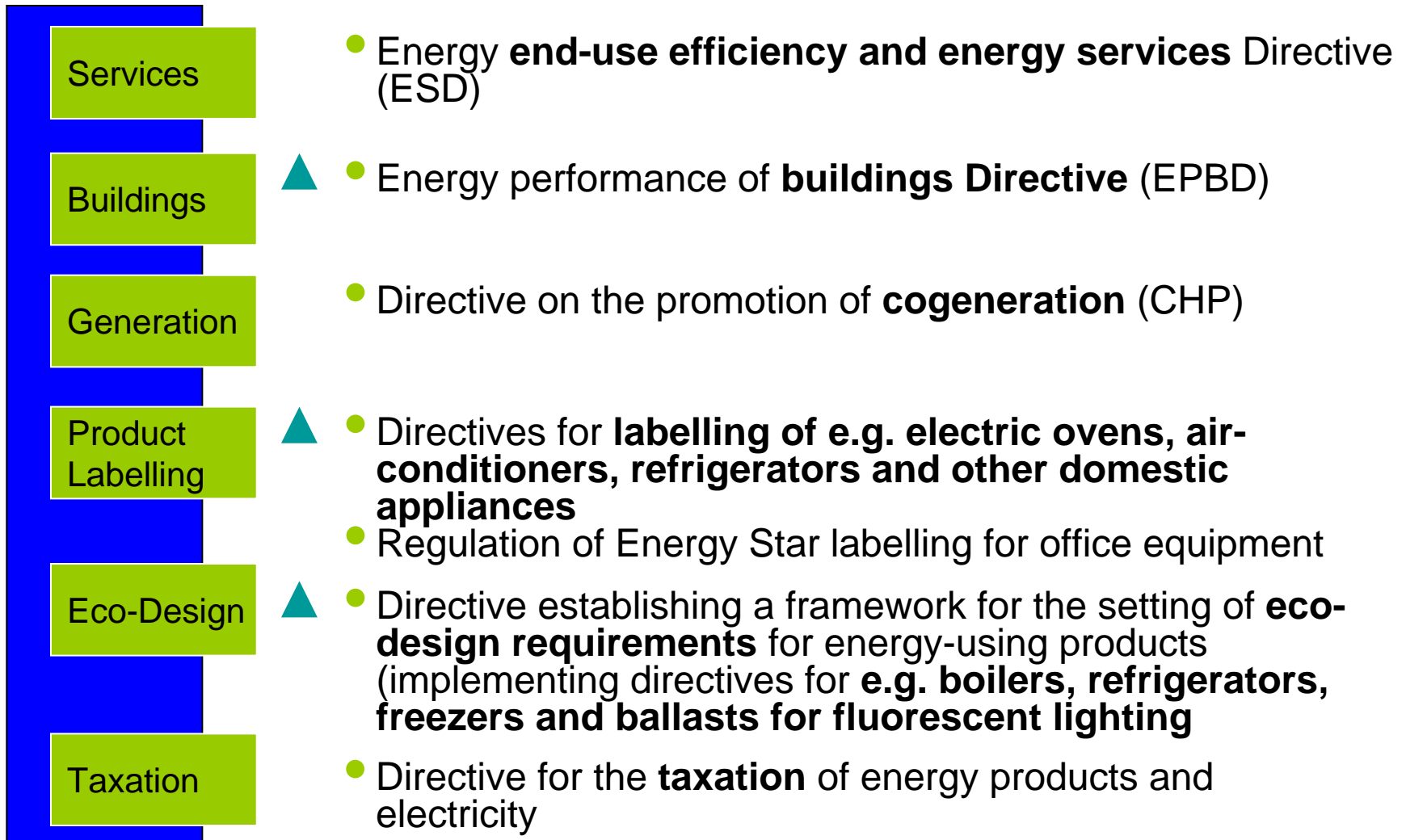
ACTION PLAN

2007 - 2012: Implementation period for **85** measures in **6** priority areas:

- Dynamic energy performance requirements for energy-using products, buildings and energy services
- Improving energy transformation
- Moving on transport
- Financing energy efficiency, economic incentives and energy pricing
- Changing energy behaviour
- International partnerships

Comprehensive set of legislation to enhance energy efficiency

▲ Proposal for revision in 2008



Support measures and networks on energy efficiency

Networks

Covenant of
Mayors

Sustainable
Energy
Europe
Campaign

ManagEnergy
Network

Measures & programmes

EACI
project funding
(IEE)

EMAS
Scheme

Projects in FP 7
incl.
Civitas,
Concerto

Legislative implementation support

Concerted
actions

Buildings
Platform
Build-up

Financing energy efficiency

EU Structural & Cohesion Funds

- 2007-13 about 9 billion € for RES & energy efficiency projects originally foreseen
- New possibilities arriving

Collaboration

EIB and EBRD

International co-operations on energy efficiency

International Organisations

- **International Partnership on Energy Efficiency Collaboration (IPEEC):** G8 + China, India, Korea
- **Heiligendamm Dialogue Process:** G8 + Brazil, China, India, Mexico and South Africa.
- **Energy Charter Protocol on Energy Efficiency** (> 50 member countries)

Regional

- **Energy Community Efficiency Task Force**
- **Baltic Sea Region Energy Cooperation (BASREC)**

Bilateral

- **Russia**
- **Brazil**
- **China**
- **India**
- **Norway**
- **USA**

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● Combined Heat and Power (CHP)

Adopted in 2004

- Purpose – to increase energy efficiency and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power based in useful heat demand and primary energy savings in the internal energy market, taking into account the specific national circumstances especially concerning climatic and economic conditions.
- No direct relation to DHC
- For DHC, no statistics – difficulty to evaluate potentials

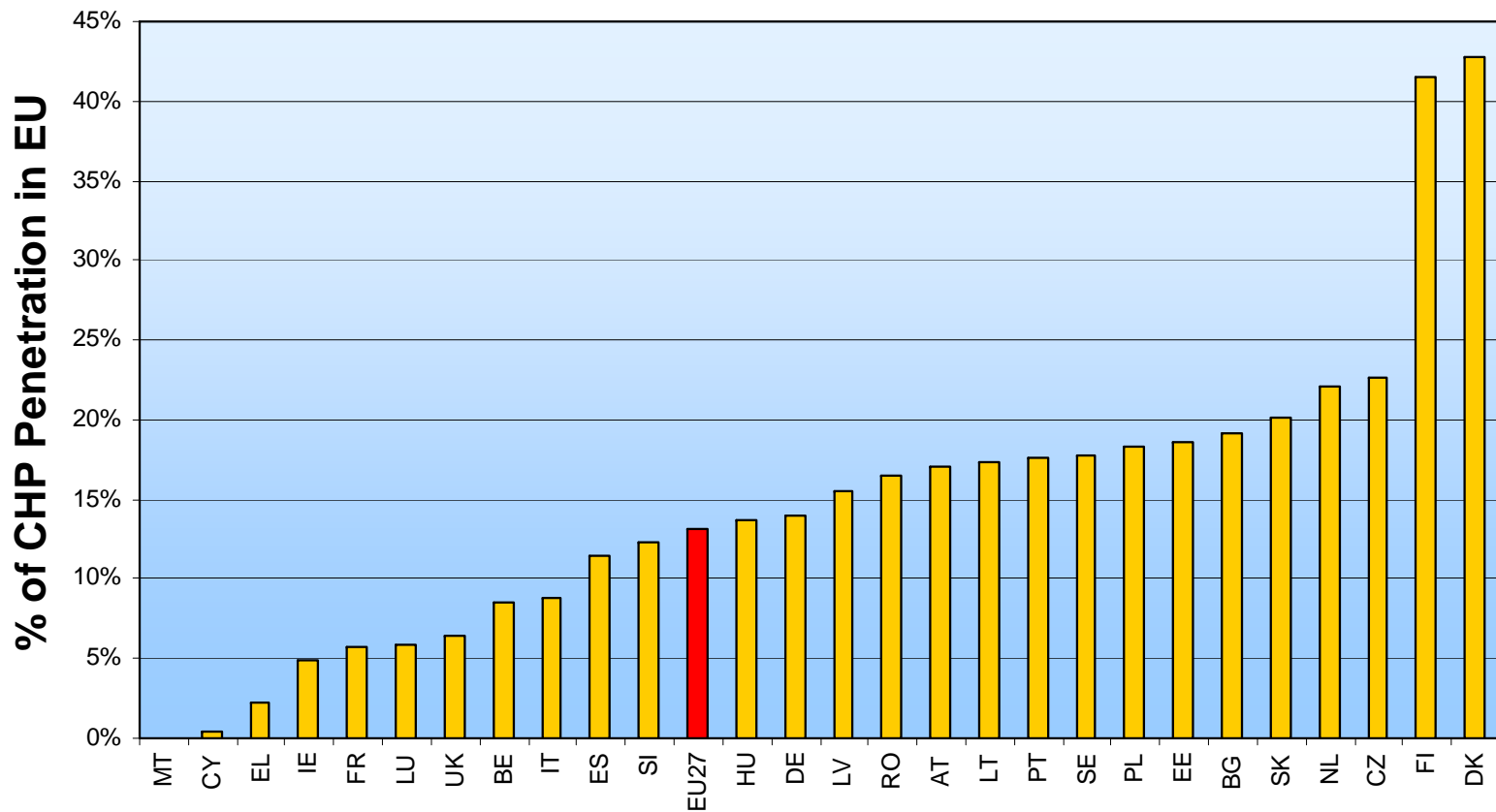
● Combined Heat and Power (CHP)

Of the EU final energy consumption (FEC) in 2006, CHP represented 13.1%, a level that has not shown significant improvement.

The variation between countries is significant from nearly zero to more than 40% in Finland.

● CHP Implementation

Share of CHP energy in relation to FEC (2006)

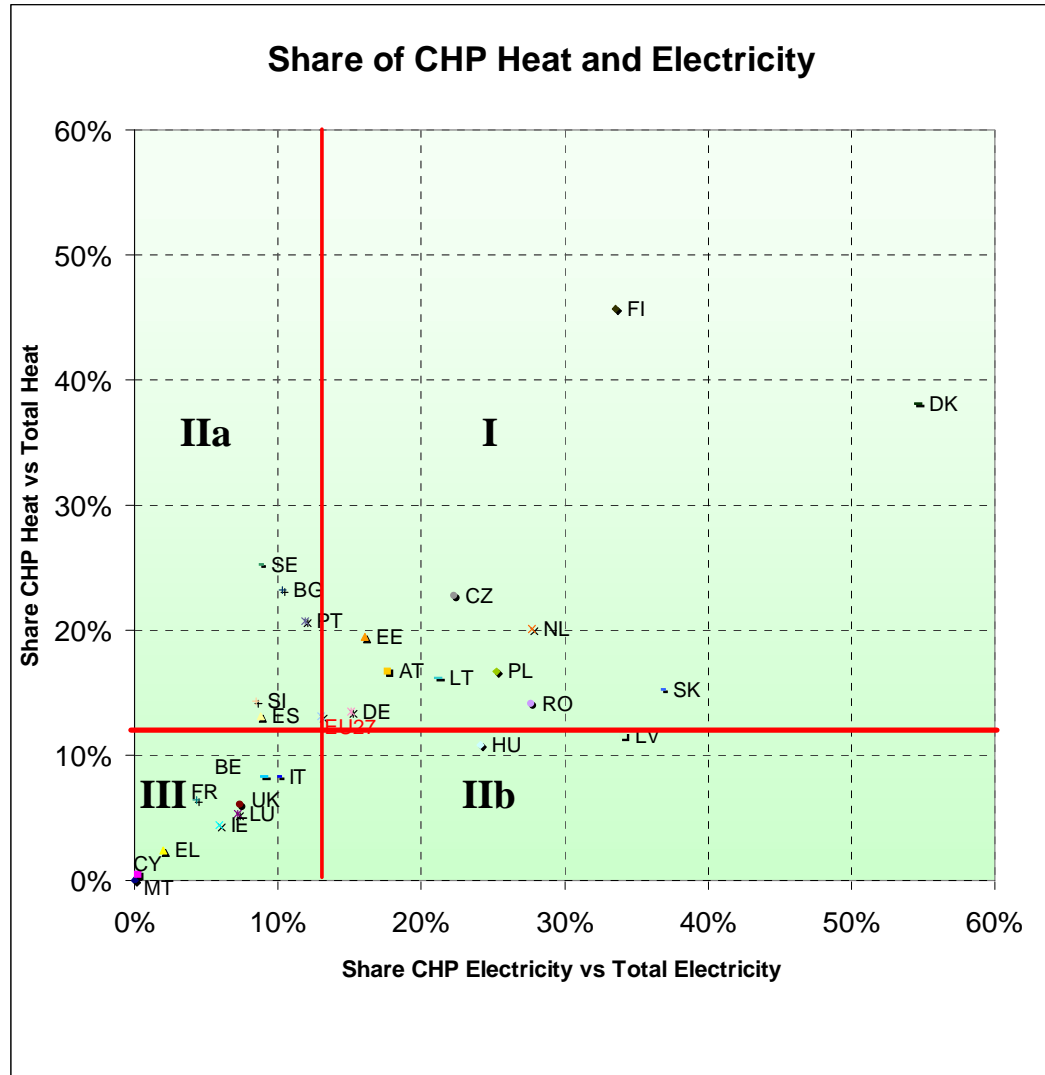


● Combined Heat and Power (CHP)

The CHP electricity capacity in EU27 is about 100 GW, representing 13.6% of the total EU27 electricity capacity.

The production of CHP electricity in EU27 amounts to 366 TWh, i.e. 10.9% of the total electricity generation in 2006. The level of production varies very much between Member States.

● CHP Implementation



● Combined Heat and Power (CHP)

The benefits in terms of energy saving from cogeneration are today estimated to be around 35 Mtoe per annum in EU27.

The CO₂ savings are about 100 Mt per annum. CHP is an energy saving technology which today contributes about 2% towards the 20% annual primary energy savings objective for 2020.

● CHP Implementation

Some difficulties

- CHP requires an appropriate useful heat demand nearby
- High investments and fixed costs
 - ↳ low profitability and long pay-back period
- Decreasing heat demand in buildings
 - ↳ affects the use of CHP in district heating
- Unclear long-term prospects of government support
- Complex national legal frameworks
- Electricity grid access

How to make CHP more effective?

... Via **regulation**? Via voluntary agreements?

... Via recognition of saved energy and emissions (for energy savings and for optimisation of transport losses) and application of **market-orientated tools** such as **white certificates**?

... **Waiting for the influence of ETS**? Or also introducing savings targets for non-ETS generation and transmission

... Introducing (compulsory?) **tariff schemes** to stimulate savings?

... Introducing (compulsory?) **funding schemes** to foster efficiency investments in clients' premises in an open liberalised market?

... Fostering **investments on decentralised power generation** systems? Including related grid connections?

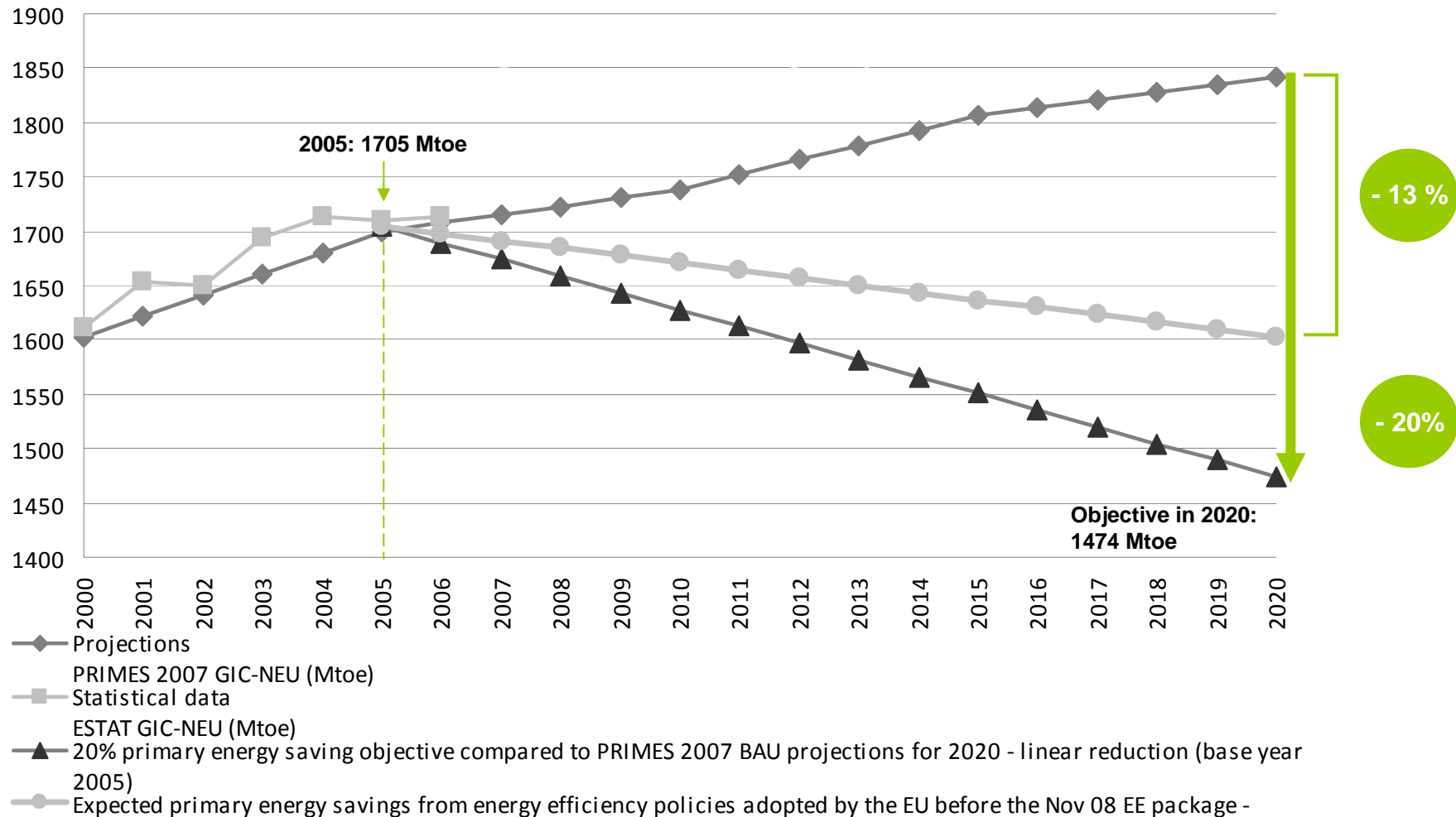
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Energy efficiency is placed at the heart of EU energy policy

- ▶ However, current policy measures **insufficient** to achieve 20% saving objective in 2020

EU objective: 20% EU primary energy savings in 2020



Energy efficiency is placed at the heart of EU energy policy



Assessment of the EEAP in 2009 as basis for a new Energy Savings Action Plan - including activities on energy supply, transmission, grids, smart metering, energy companies' consumer relation, decentralised power generation systems

Tackling the challenges: New policy guidelines

- Sincere reevaluation of policies
- Decision of targets and related verification methods
- All sectors covered: households, services, transport, industry, energy supply and transmission

Many remaining challenges...

...Long decision making chain

from Brussels to final consumers.

...**27 Member States**: different climate, economy, consumers' habits.

...Many energy saving actions are not in the scope of internal market, demanding special attention to **subsidiarity**.

...Slow implementation

speed of the existing legislation.

...**Complexity of financing**: small scale actions and missing organisational and administrative structures.

...**Mixing up of energy efficiency and actual energy savings** in the policy debate, ignoring the difficulties of measuring energy savings.

...Lack of incentives for energy companies

to take savings measures for their clients despite their key position

...**Reluctance from political decision makers** to touch upon delicate **behaviour-related issues**.

...**Lack of consumer awareness** on the benefits of energy savings.

... and so on

Possible suggestions for CHP/DHC

- ▶ To set objectives for CHP electricity with link to DHC
- ▶ To fine-tune the role of GO and develop EU support mechanisms (white certificates)
- ▶ To promote decentralised energy production (preferential guaranteed grid connection and tariffs)
- ▶ To extend the scope by setting regulatory framework for high efficient DHC : recognition of DHC as an optimised system
- ▶ To develop a more integrated heat policy with use of heat from power generation and industries (waste heat)

To be followed...

Thank you for attention

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