

Presentation 3.7: Pulp and paper industry combined heat and power (CHP) in Europe

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Abstract

CHP, Combined Heat and Power, or cogeneration is the simultaneous production of heat and electricity. This proven technology produces around 10% of Europe's electricity and heat requirements and has a significant growth potential, which will lead to an improved environment and greater economic competitiveness. It is a highly efficient energy solution that delivers substantial reductions in greenhouse gases and other pollutants and is the single largest solution to meeting the Kyoto Protocol on climate change for Europe.

CHP is a major technology used by the pulp and paper industries in Europe and worldwide. It is backed by the EU and its Member States and it is supported by a European Directive, which aims to promote and thus increase its use across Europe.

The Pulp and Paper industry in Europe has over 7 GWe of CHP capacity, approximately 10% of all CHP in Europe and is the third largest industrial sector after oil refining and chemicals. COGEN Europe estimates that the CHP capacity to grow to more than 18 GWe, generating 90TWh per year.

The key challenges for industry is to find mechanisms that maximise the use of CHP

Cogeneration
Clean – Clever – Competitive – Compelling



Pulp and Paper Industry
CHP in Europe



International Seminar on Energy & Forest Products Industry
Rome, 30 – 31 October 2006

Dr Simon Minett, Managing Director, COGEN Europe – Presented by Marco Mensink CEPI

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COGEN Europe



**European Trade Association for the
Promotion of Cogeneration**

- Representing the cogeneration sector
- Setting the agenda
- Resource and information source for policy makers



Vision

- COGEN Europe working towards the wider use of cogeneration in Europe for a sustainable energy future



Structure

- National Members
 - National Promotional Organisations - 21
- Company Members - 130
 - Gas and Electricity Utilities
 - Equipment Manufacturers and Suppliers
 - Consultancies
 - Banks, Insurance and End Users



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Contents



- European Energy Context
- CHP worldwide and in Europe
- CHP in European Pulp and Paper
- Challenges for the Pulp and Paper industry in using CHP
- European Policy to help

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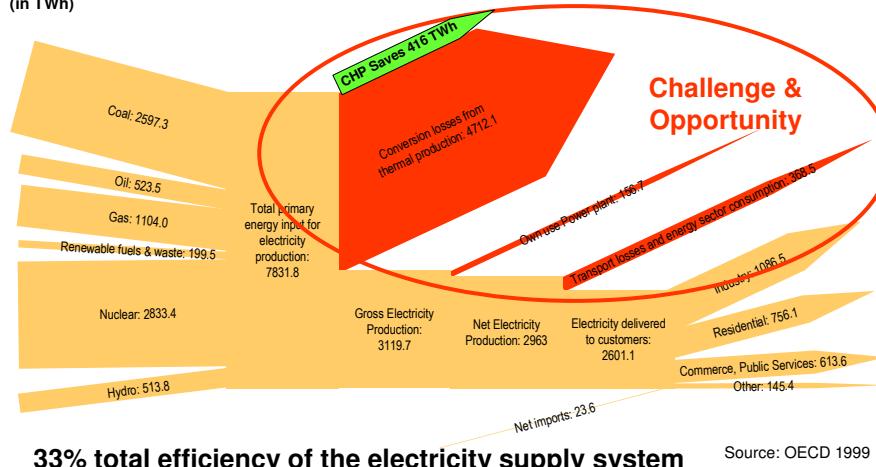
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Electricity Supply in Europe: Is this sustainable?



Electricity Generation in European OECD countries (in TWh)



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Investing in the Future



OECD Investment in Alternative and Reference Scenarios



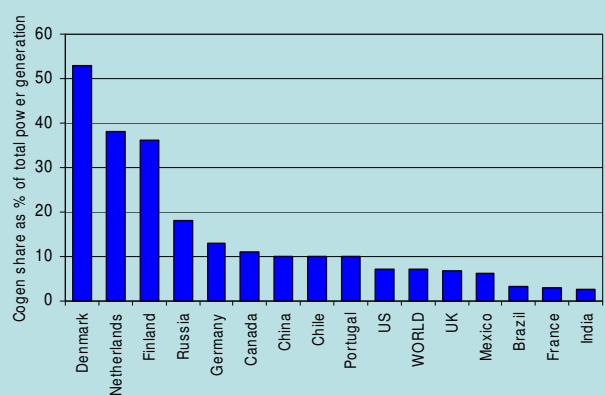
- Decentralisation of electricity supply is 25% Cheaper
- Reduces CO2 emissions by more than 30%
- Reduces energy demand by at least 25%
- Delivers a more secure, more reactive and more stable system

Why is there not more Cogeneration?



- History, Planning, Government Desire, Opposition
- No restriction on building condensing power
- Easier not to think about heat
- Supply – Demand dilemma

International CHP



- Three countries in Europe have substantial cogen shares
- World average share – 7%
- Market growth has been flat for 5 years
- Cogen is marginal in most other countries
- This hides some good examples of progress

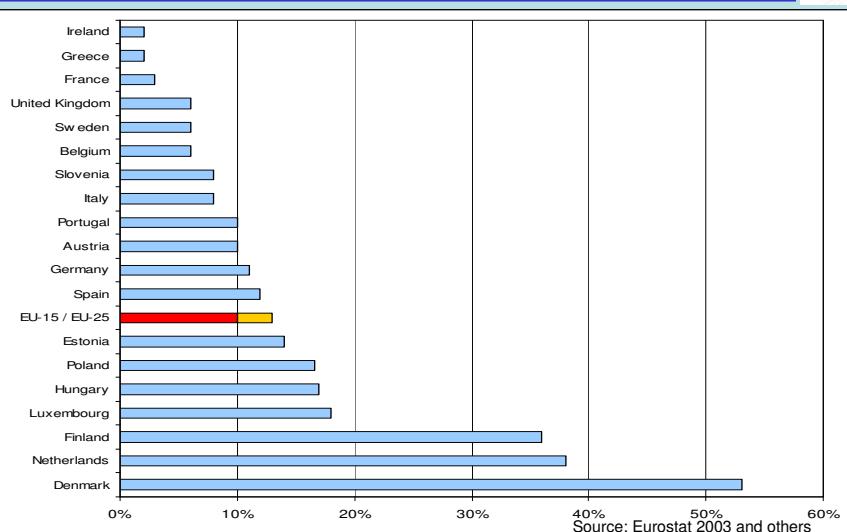
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The current reality

The share of cogenerated electricity in EU Member States



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CHP in Pulp and Paper



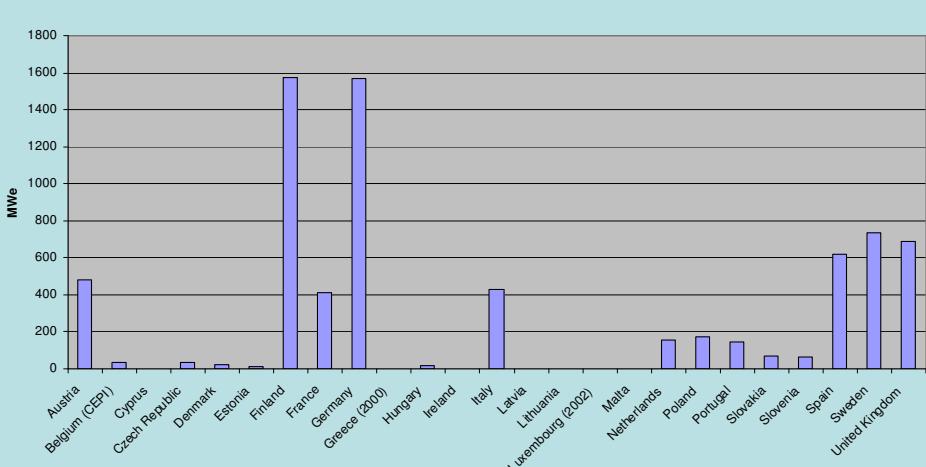
- CHP is a natural partner of the Pulp and Paper Industry
- Continuous operation, high and consistent heat demand, bio-energy fuels available
- CHP has developed where energy has been an issue
- Europe leads the world in CHP use in Pulp and Paper

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CHP Capacity in the Paper Industry



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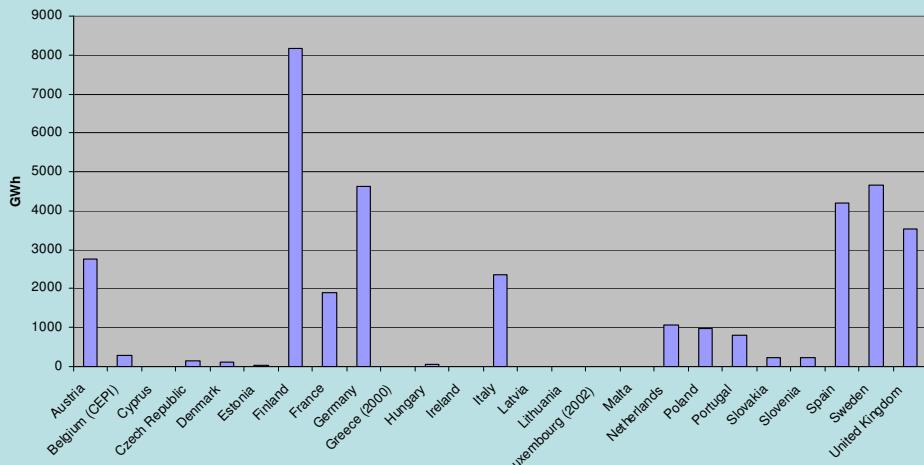
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CHP Generation in the Paper Industry



Existing CHP Generation



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Challenges



- CHP is high capital cost, though this can be overcome
- CHP using natural gas can be non-competitive when the electricity price is set by coal/nuclear/hydro generators
- CHP is the best use of fuels in Pulp and Paper and so is a priority for policymakers
- Need incentives/rewards for environmental benefits to develop projects
- Industry is suspicious of subsidy schemes as they can be withdrawn – need long term stability
- European energy sector is still in turmoil

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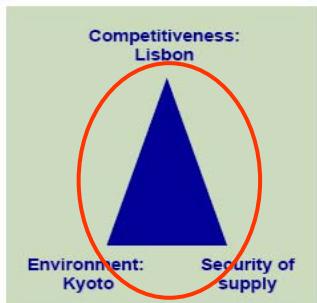
Cogeneration helps all three goals



COMMON ENERGY POLICY GOALS



Current position



- **Competitiveness:** internal market, competition, interconnections (TEN-T), European electricity grid, research & innovation (clean coal, carbon sequestration, alternative fuels, energy efficiency, nuclear)
- **Environment:** renewable energy, energy efficiency, nuclear, innovation & research, emission trading
- **Security of Supply:** international dialogue, European stock management (oil/gas), refining capacity and storage of energy, protection against terrorism



Direktorat-General for Energy and Transport

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A framework to promote the development of cogeneration





- Legal basis for cogeneration in Europe
- Definition of “high-efficiency cogeneration”
- Analysis of cogeneration potentials and removal of administrative barriers
- Focus support on best schemes
- Guarantee of origin for electricity from high-efficiency cogeneration
- Hard measures – Grid access and Authorisations
- If no progress then further measures are possible
- Adopted in *February 2004*
- Implementation deadline *Feb 2006 (still ongoing)*
- Article 1: “Creating a framework for promotion and development of high efficiency cogeneration”

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Major European Drivers



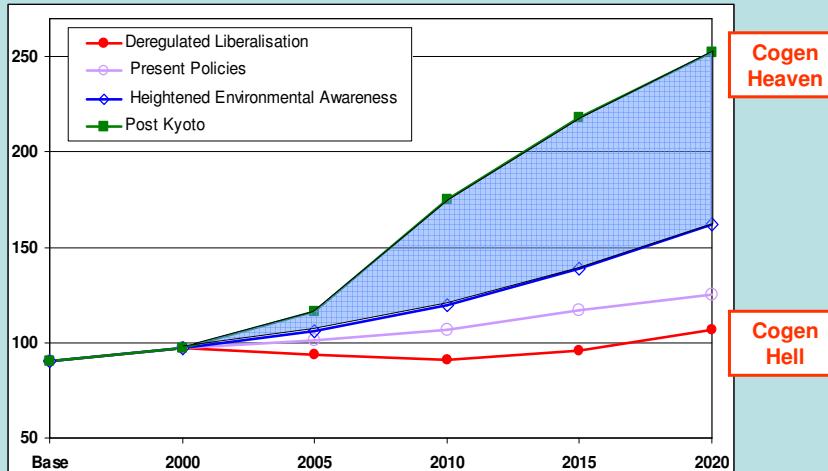
- Legislation
 - CHP Directive
 - Buildings Directive
 - Liberalised Energy Markets
 - Energy Services
- Environment
 - Meeting Kyoto and Post Kyoto Targets
 - Emissions Trading
 - LCP Directive phase out of old power plants
- Capacity Needs
 - LCPD short fall
 - Aging Stock
 - Growing Demand
 - 2007 + demand growth
- Reality Check
 - Enormous focus on Renewables, some progress, but long-term solution
 - Fossil fuels will remain very important for next 20-50 years
 - End use energy efficiency is difficult to deliver
 - Nuclear power is very controversial and only tackles the power side
 - Heat demand is 40% of the problem
 - Need to integrate solutions
 - The EASY hit may be CHP

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What is the outlook?

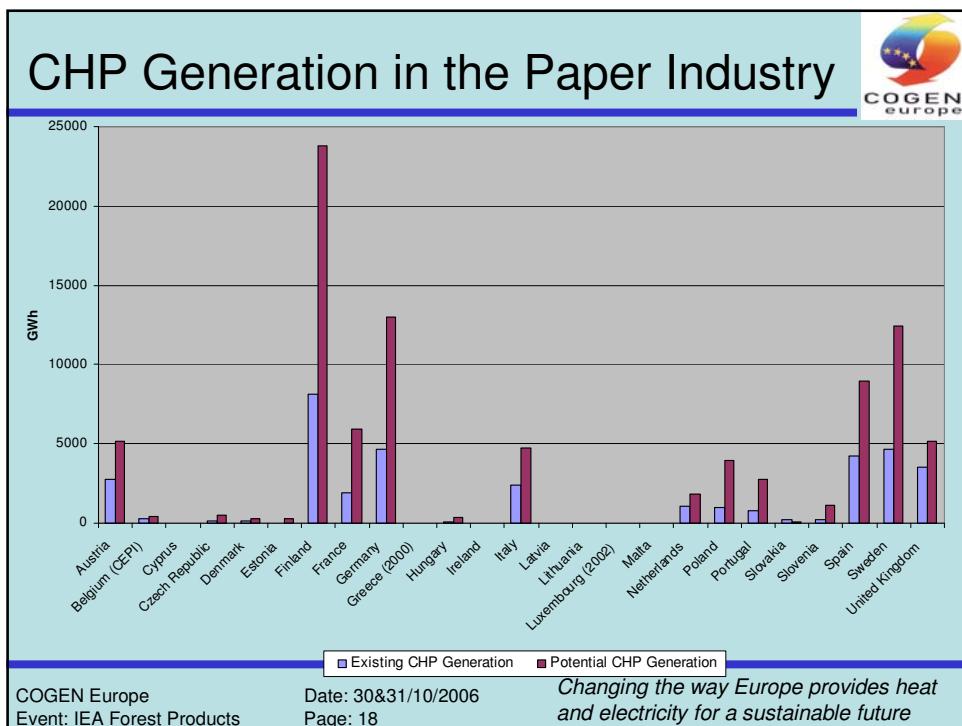
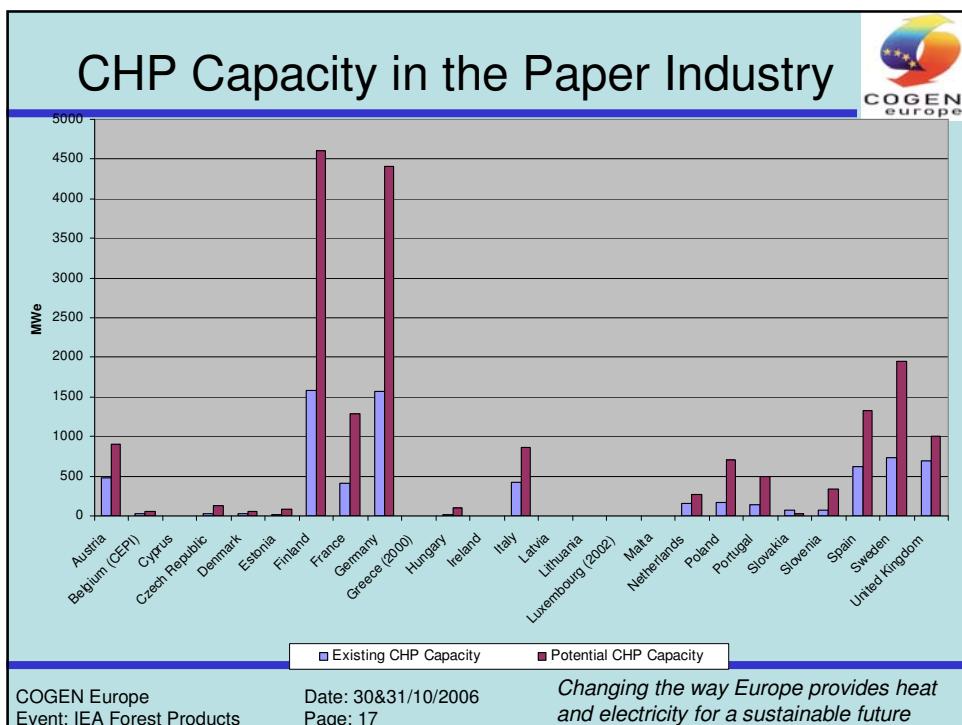


Future Cogen: Four Scenarios for the development of cogeneration in Europe to 2020
(in GW_e installed cogeneration capacity)

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Thank you for your attention!

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The European Association for the
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GAS TURBINES

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