

Experiences and conclusions from  
Ecoheat4EU, IEE project 2009-2011



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# DHC Legislation and best practise support measures

Sven Werner

Halmstad University

# Outline

- DHC benefits
- DHC legislation
- DHC support measures identified
- 12 best practise support measures
- Recommended legislative actions
- Major conclusions

# DHC Benefits 1

- Synergy exploitation through heat recycling from combined heat and power, waste-to-energy, and industrial processes.
- Renewable energy supply by solar, biomass, and geothermal heat
- Both these actions give lower primary energy supply from fossil fuels for the same heat and cold demands

# DHC Benefits 2

## Secondary Energy Supply:

Heat recycled from combined heat and power, waste incineration, fuel refineries and industrial excess heat

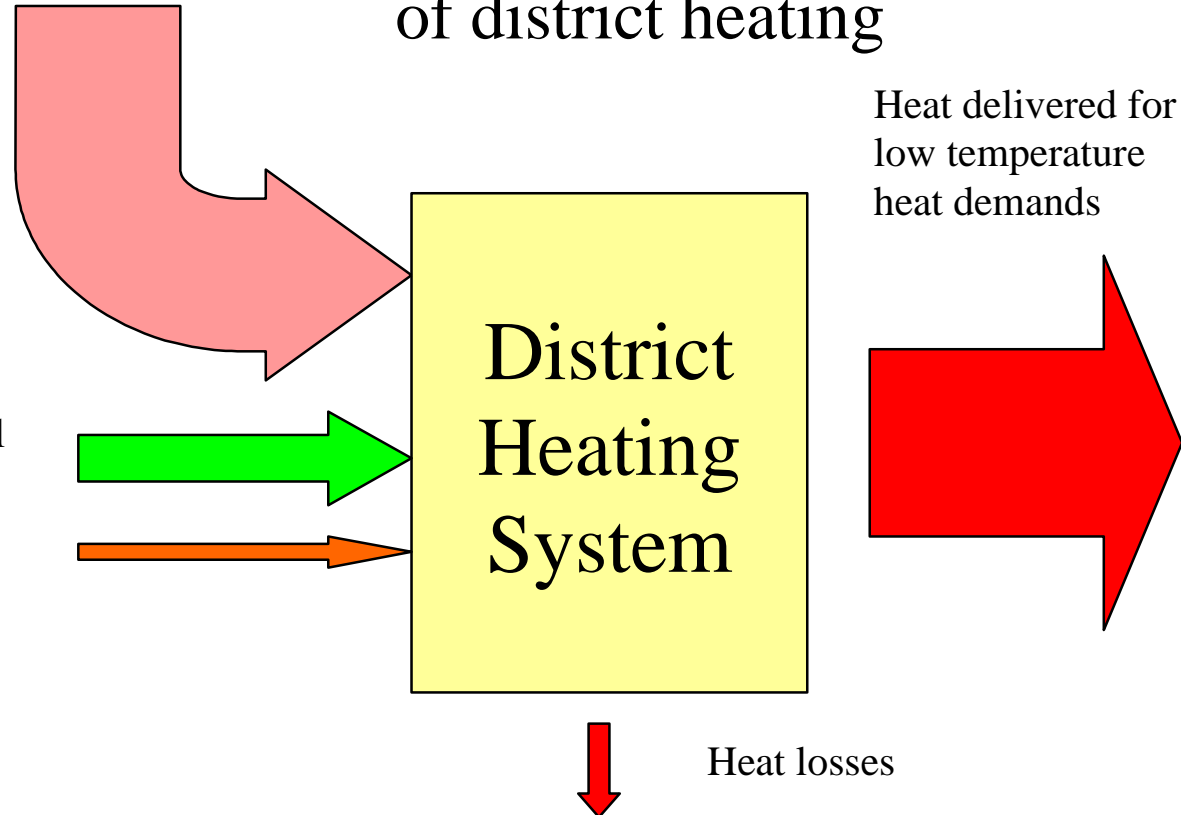
## Primary Energy Supply:

Renewables as geothermal heat and biomass

## Primary Energy Supply:

Fossil fuels for peak and back-up demands

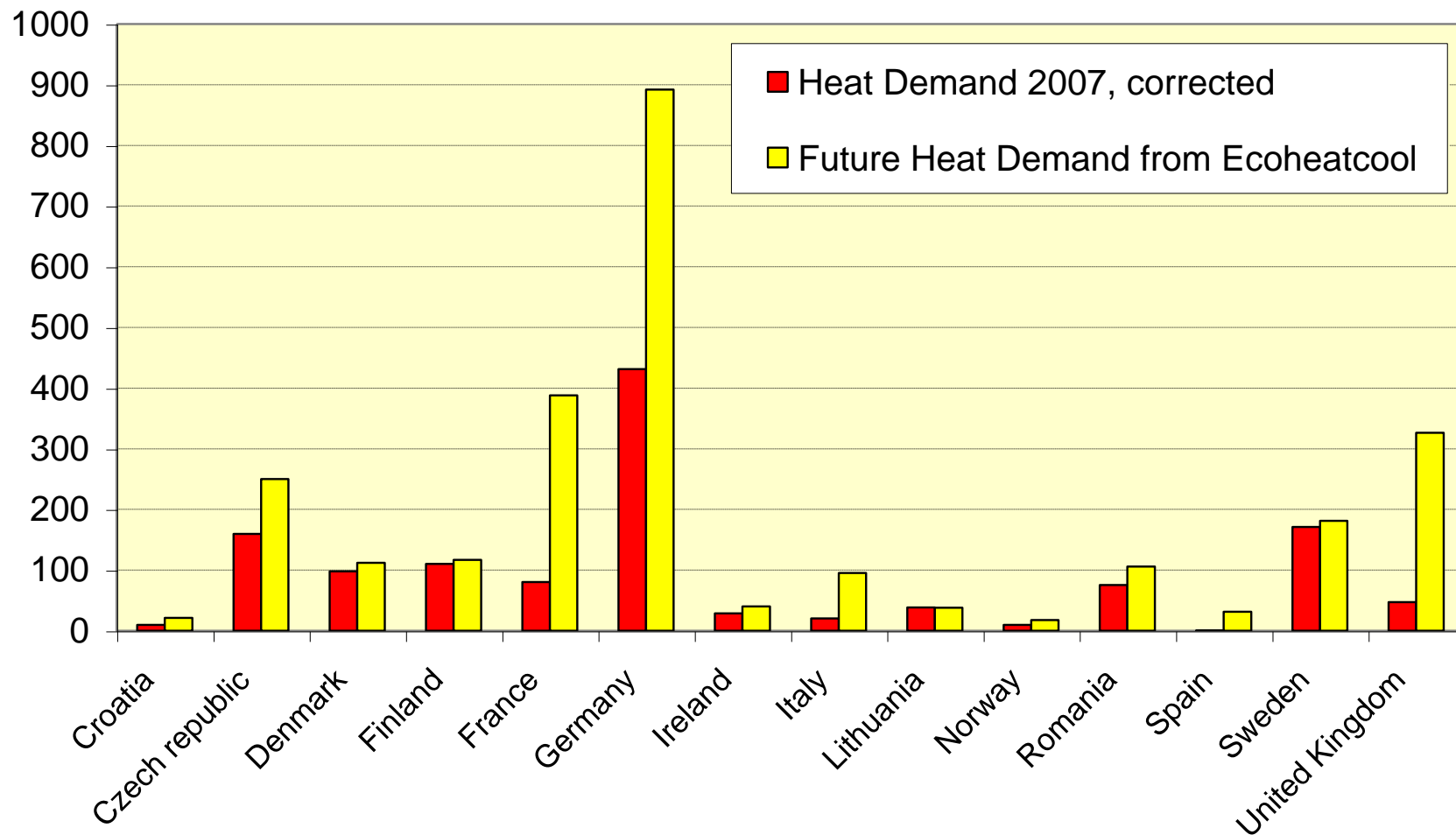
The fundamental idea of district heating



# DHC Benefits 3

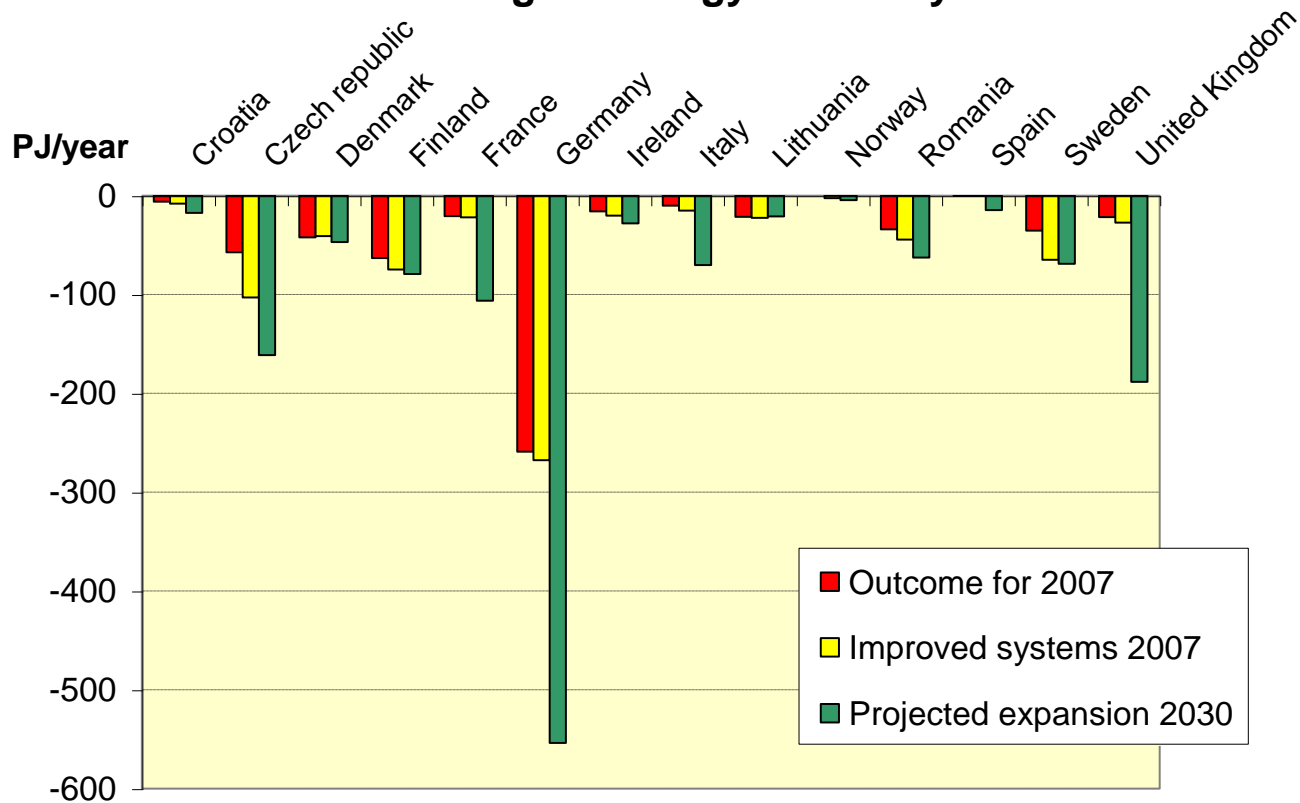
PJ/year

14 EU Countries: 2007 and future (2030) district heat demands



# DHC Benefits 4

DH Benefits: Reduction of primary energy supply, from higher energy efficiency



# Ecoheat4EU: 14 countries divided into 4 country groups

- **Consolidation** Denmark, Finland, Sweden
- **Refurbishment** Croatia, Czech Republic, Lithuania, Romania
- **Expansion** France, Germany, Italy, Norway
- **New development** Ireland, Spain, United Kingdom

# DHC Legislation

Number of relevant legislative frameworks by country group and legislative group.

Count of Legislative group	Country group				Grand Total
	Consolidation	Refurbishment	Expansion	New development	
01 Energy act	1	3	1		5
02 District heating act	2	5	1		8
03 Heat price regulation		8	2		10
04 No legislative framework			1	2	3
05 Energy efficiency act		3	5	1	9
06 Renewable act		1	2		3
07 Environmental act		5	3		8
08 Taxation act	1	1	3		5
09 Planning act	1		4		5
10 Competition act	1				1
11 Public utility act		1	4		5
12 National policies		2		4	6
13 Municipal & regional policies			1		1
Grand Total	6	29	27	7	69



# Support measures identified 1

4 main groups with 23 subgroups for DHC+CHP

- 3 Burden measures (carbon tax, emission trading system, energy tax)
- 11 Financial support measures (favourable loans, operation support incl FIT, investment grants, tax deductions, social support for poor customers)
- 3 Market control measures (customer complaints board, price regulation, third party access)
- 6 Planning measures (national energy policy, building regulations, and waste, heat, CHP, and renewable planning)

# Support measures identified 2

Support measures within subgroups according to country groups.

Count of Support subgroup	Country group				Grand Total
	Consolidation	Refurbishment	Expansion	New development	
1 Burden - Carbon tax	2		1		3
1 Burden - Emission trading system			2		2
1 Burden - Energy tax	1		1		2
2 Support - Favourable loans		1	1		2
2 Support - Feed-in tariff, renewable electricity		1	1	1	3
2 Support - Investment grant, CHP			1	2	3
2 Support - Investment grant, DH connection	3		1		4
2 Support - Investment grant, DH distribution		3	5	2	10
2 Support - Investment grant, renewables	1	1	3	1	6
2 Support - Operation support, CHP incl FIT		4	1		5
2 Support - Operation support, renewables			1		1
2 Support - Social support for poor customers		1			1
2 Support - Tax deduction, CHP				2	2
2 Support - Tax deduction, DH	1	1	3		5
3 Market control - Consumer complaints board	1	1	1		3
3 Market control - Price regulation	1				1
3 Market control - Third party access		1			1
4 Planning - Building regulations			1	2	3
4 Planning - CHP planning	1			1	2
4 Planning - Heat planning & zoning, DH	2	1	5	2	10
4 Planning - National energy policy	1	16	3		20
4 Planning - Renewable planning			3	3	6
4 Planning - Waste planning & landfill bans	1		1		2
<b>Grand Total</b>	<b>15</b>	<b>31</b>	<b>35</b>	<b>16</b>	<b>97</b>

# Burden measure example

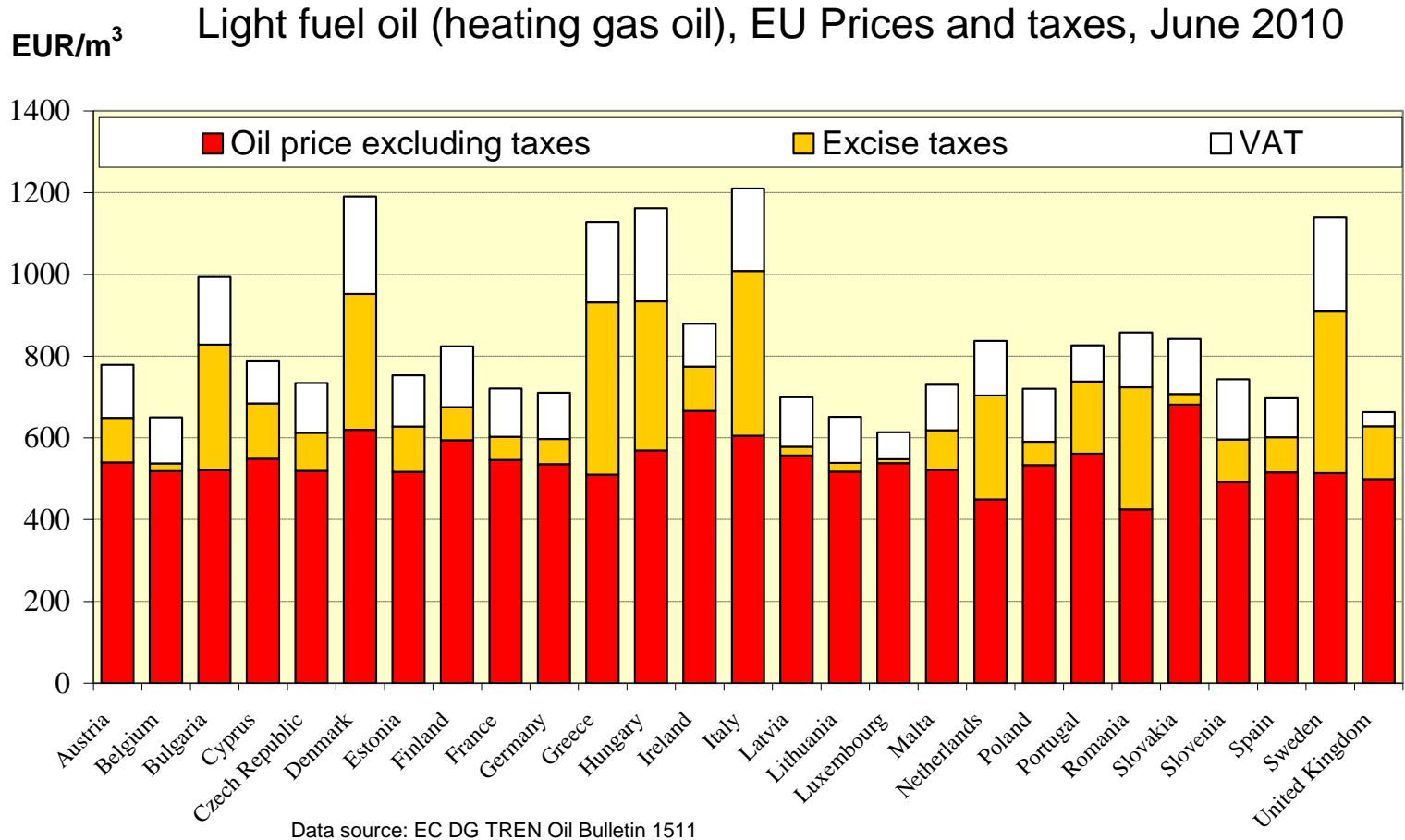


Figure. Overview of total retail oil prices in the EU27 countries divided into three components: Without taxes, excise taxes, and VAT. Excise taxes include mostly energy and carbon taxes.

# Best support measures 1-3

Rank	Top 12 support measures	Short description of the support measure	Sector dimension
1	Planning – Heat planning and/or zoning	Strategic energy planning, probably at municipality level. May include encouraging or even enforcing particular energy solutions (zoning). Currently applied in Germany, Denmark, Spain, France, Italy, <i>Lithuania</i> , Norway, and United Kingdom.	Distribution
2	Support – Investment grant, DH distribution	Financial support for district heating pipes through provision of grant, probably from government, but other sources also possible. Currently applied in Germany, Spain, France, Italy, Lithuania, Norway, Romania, and the United Kingdom.	Distribution
3	Planning – National energy policy	The framework, within which relevant legislation, possibly including measures on this list, may be framed. Currently applied in the Czech Republic, Germany, Denmark, Croatia, <i>Lithuania</i> , and Norway.	Planning

# Best support measures 4-6

Rank	Top 12 support measures	Short description of the support measure	Sector dimension
4	Support – Operation support, CHP including feed-in tariff	Supporting CHP through regulatory means, one prominent example being by means of a Feed In Tariff or a CHP bonus. Currently applied in the Czech Republic, <i>France</i> , Italy, Lithuania, and Romania.	Generation
5	Support – Investment grant, DH connection	Financial support for connecting customers to existing mains network through provision of grant, probably from government, but other sources also possible. Currently applied in Germany, <i>France</i> , Denmark, Finland, and Sweden.	Demand
6	Burden – Carbon tax	Implementing a tax penalty on fossil fuels proportional to its fossil carbon emissions. Applicable to all energy systems (energy efficient approaches like district heating would prosper). Currently applied in Denmark, Norway, and Sweden.	Generation

# Best support measures 7-9

Rank	Top 12 support measures	Short description of the support measure	Sector dimension
7	Support – Favourable loans	Providing low interest loans to finance the capital cost of establishing, extending or refurbishing district heating. Currently applied in Germany and Croatia.	All
8	Support – Investment grant, CHP	Financial support for CHP through provision of grant, probably from government, but other sources also possible. Currently applied in Germany and Ireland.	Generation
9	Support – Tax deduction, DH	Implementing a tax benefit for district heating schemes. Currently applied in Finland, France, Italy, Lithuania, and Norway.	Distribution

# Best support measures 10-12

Rank	Top 12 support measures	Short description of the support measure	Sector dimension
10	Planning – Building regulations	Using existing regulatory framework to encourage deployment, and in to ensure unnecessary barriers are removed. Currently applied in Ireland, <i>France</i> , Norway, and United Kingdom.	Demand
11	Support – Investment grant, renewables	Financial support for renewables through provision of grant, probably from government, but other sources also possible. Currently applied in Germany, <i>France</i> , Croatia, Ireland, Norway, and Sweden.	Generation
12	Planning – Waste planning & landfill bans	Promoting in a strategic way disposal of waste, so that the energy can be recovered and put to use in district heating schemes. Currently applied in Denmark and Norway.	Generation

# 12 Best support measures - conclusions

- No objective selection procedure for finding best practise support measures was identified. Instead, a subjective selection procedure based on country voting was applied.
- The voting results gave a general preference to planning and financial support measures reducing the financial risks when expanding distribution networks.
- All three distribution support measures were elected to the 12 priority list and two of them top the list. This is a strong contrast to the total number of support measures, dominated by generation support measures.



# Recommended legislative actions

Number of relevant legislative frameworks by country group and legislative group.

Count of Recommendation group	Country group				Grand Total
	Consolidated	Refurbishment	Expansion	New development	
Recommendation group					
Apply investment grants	1	5	4	3	13
Recognise DHC benefits in National Energy Policies	1	3	4	3	11
Avoid building code distortion	3	2	1		6
Apply heat planning	1	2		2	5
Avoid policy incoherences	1	2	1	1	5
Avoid ETS distortion problem	1	2	1		4
Facilitate DHC financing	1			2	3
Apply DHC action plan			2		2
Apply DHC legislation			1	1	2
Apply tax deduction		1		1	2
Avoid price regulation distortion		2			2
Revise energy taxation	1		1		2
Support DHC research	1		1		2
Apply best practise support measures			1		1
Apply DHC dissemination			1		1
Avoid allocation distortion			1		1
Avoid ownership distortion			1		1
Facilitate CHP electricity distribution				1	1
Facilitate investment grants			1		1
<b>Grand Total</b>	<b>11</b>	<b>19</b>	<b>21</b>	<b>14</b>	<b>65</b>

# Recommendations: Consolidation Countries

- Primary energy focus for building energy consumption
- Use system resource efficiency for proper recognition of DH
- Avoid double taxation on DH (CO2 taxes *and* EUETS)
- Similar support for emergence of district cooling as there has been for district heating
- Taxation to support fossil to renewable transition
- Review heat planning decisions – DH growth hampered by defined natural gas zones
- Financial support for long-distance transmission lines
- Caution regarding interaction of support measures when new measures introduced.

# Recommendations: Refurbishment Countries

- Importance of national energy strategy that has clarity, is based on long-term strategic planning
- Recognition of DH benefits and renewables integration potential
- Investment support especially for network modernisation and integration of renewables
- Improvement of heat tariff system, to enable modernisation
- Avoid double taxation on DH (CO2 taxes *and* EUETS)

# Recommendations: Expansion Countries

- Full recognition of DHC through system resource efficiency
- Primary energy focus for building energy consumption
- Acknowledgement of DH as utility service: establish a legal framework for DH analogous to that of gas and electricity
- Reduce complexity of admin burdens and authorisations for DH
- Target for DH as catalyst for renewables
- Investment support: network modernisation, renewables, connections, conversion from electrical heating
- Avoid double taxation on DH (CO2 taxes *and* EUETS)

# Recommendations: New Development Countries

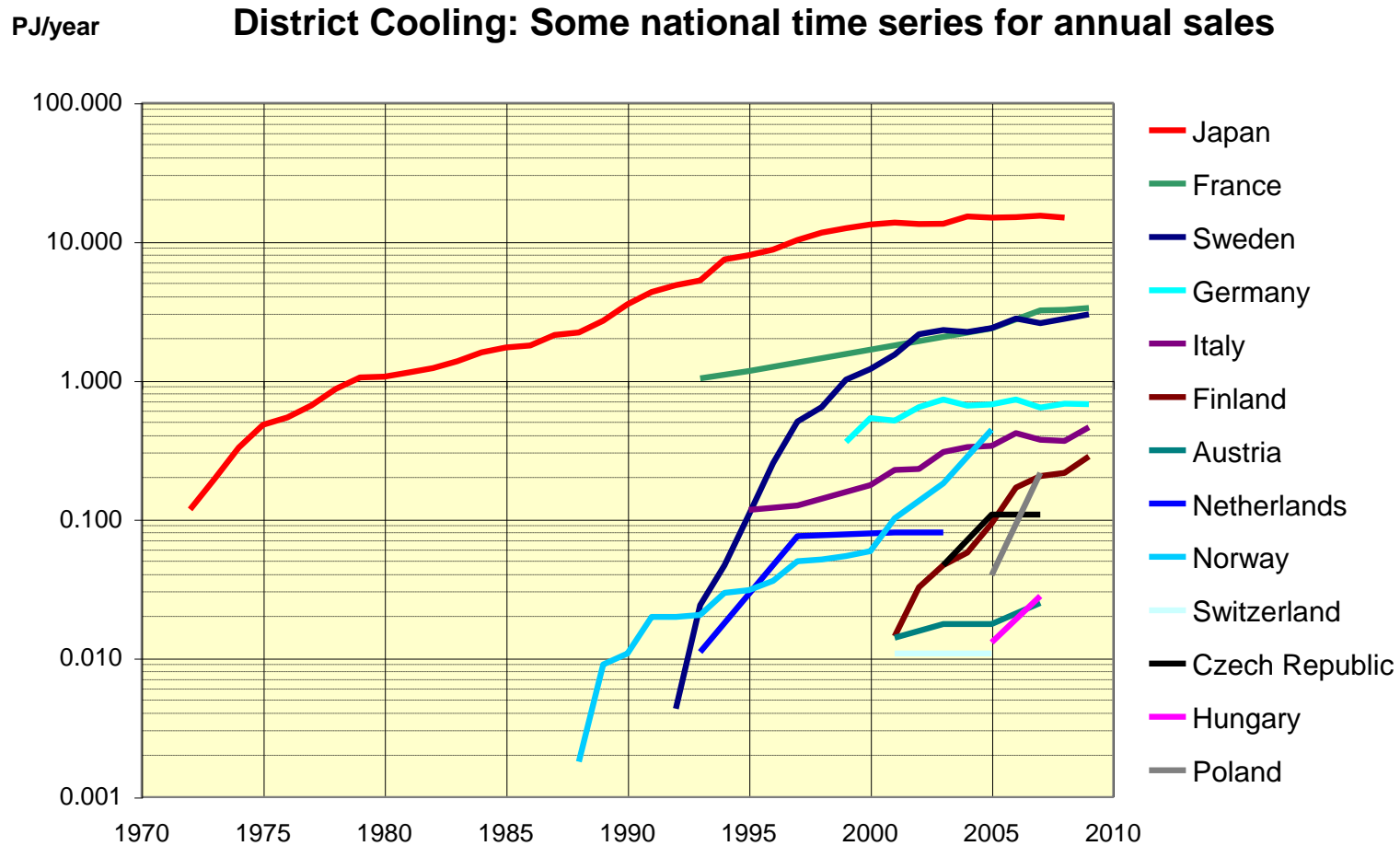
- Programme to establish where DHC viable
- Recognition of heat, including importance of CHP
- Establish targets eg in terms of CHP potential
- Importance of strategic support at national level and coherence between energy and waste strategies
- Investment support for pipes, connection, and/or favourable loans when direct finance impossible
- Issue of whether to regulate the heat market or not.

# Major Ecoheat4EU conclusions 1

- Legislation is a moving target: Many changes during the Ecoheat 4EU project period.
- Significant learning effect among project partners about the nature of DHC support measures from intensive discussions.
- Highly unharmonised legislative frameworks for DHC in Europe. Specific national measures dominate compared to generic measures.

# Major Ecoheat4EU conclusions 2

- Very little legislation about district cooling since low market shares.



# The End

Thank you for your attention