# District Heating/CHP Opportunities and Challenges in Russia and CIS

**Funded by IEA DHC Annex IX** 

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The report will be publically available in 2011 at http://www.iea-dhc.org/



#### Content

- Introduction to the IEA Implementing Agreement 'District heating & Cooling' – sponsors of the project (below) and this presentation
- 2. Summary of the project 'Identify and review barriers and best practices for sustainable development of DHC in order to facilitate expansion of DHC systems outside the EU countries'
- 3. Focus on the relevant issues for district heating in Russia.

# District Heating & Cooling (DHC) implementing agreement (IA): who we are

- One of the implementing agreements operating under the auspices of the IEA
- 2. Carries out a programme of internationally based research & development...
- 3. ... and has a policy voice through its links to the IEA Secretariat
- 4. It is also one of 7 building-related implementing agreements that regularly communicate.

#### Benefits of participating in the DHC IA

- Value for money: each country benefits from the total research value for a small fraction of the cost
- 2. Part of the IEA 'family' of building related research programmes
- 3. Sharing knowledge with participant countries where
  - 1. The DHC market is mature and systems are modernised
  - 2. DHC is established but refurbishment is the key priority
  - 3. DHC penetration is small but development of DHC is regarded as a key way to achieve carbon emission reduction targets
- 4. Links with policy community via IEA Secretariat.

Objectives of the project: *Identify and review barriers and best practices for sustainable development of DHC in order to facilitate expansion of DHC systems outside the EU countries* 

- 1. Increase the global energy efficiency,
- 2. Mitigate climate change through reduced carbon dioxide emissions, and
- 3. Increase national security of supply.

#### **Countries included**

The selected countries cover more than

- 70% of all DH in the world, and
- 95% of DH outside the EU
- Note a 'companion' project financed by EU has been carried out covering EU countries
- Bosnia & Herzegovina (BiH)
- Canada (CAN)
- China (CHI)
- Croatia (CRO)
- Kazakhstan (KAZ)
- Kosovo (KOS)

- Macedonia FYR (MAC)
- Russia (RUS)
- Serbia (SER)
- South Korea (KOR)
- Ukraine (UKR)
- USA (USA)
- Uzbekistan (UZB)

# **Summary of Project Findings**

	BiH	CAN	CHI	CRO	KAZ	KOS	KOR	MAC	RUS	SER	UKR	USA	UZB
Building regulations with EE	у	у	у	у	у	у	У	У	у	у	у	у	n
DH prices regulated	у	n	у	у	У	у	у	у	у	у	у	n	у
Main competitor	Gas	Gas	none	Gas	El/gas	El	LNG	EL	none	El	Gas	Gas	none
Feed-in tariff scheme for RES and/or CHP	у	n	у	у	n	n	n	n	n	у	у	n	n
Emission trading scheme	n	n	n	n	n	n	n	n	n	у	n	n	n
Carbon tax in use	n	n	n	n	n	n	n	n	n	n	n	n	n
Investment grants for DH/CHP	n	n	n	n	n	n	n	n	n	n	n	n	n
DH customer rights (Weak/Strong)	W	S	W	S	W	W	S	W	W	W	W	S	W
DH service quality (Good/Poor)	Р	G	Р	G	Р	Р	G	G	Р	Р	Р	G	Р
Billing based on consumption	n	у	n	у	n	у	у	у	n	n	n	у	n
Municipal role (Weak/Strong)	W	W	W	W		W		W	W	S	W	W	W
Private sector involvement	n	у	у	n	У	n	n	у	n	n	n	у	у
Synergy allocations: CHP/Res													
Integrated resource planning	n	n	у	у	n	n	у	у	n	n	n	n	n
Heat planning and zoning	n	n	у	n	n	n	у	у	у	n	n	n	у
Technical standards	New	New	New	New	Old	New	New	New	Old	New	Old	New	Old
Refurbishing strategy in use	у	n.a.	у	у	у	у	n.a.	у	n	у	n	n.a.	n
DHW supplied with DH	n	у	n	n	у	n	у	n	у	n	у	у	У
Evolunations: n=no v=ves El =Electricity	14/-14/0	ak S-	Strong										

Explanations: n=no, y=yes, EL=Electricity, W=Weak, S=Strong

# Focus on findings for Russia: 1) No Competition on Heating Market

#### Problem

- With current poor technical service quality and cost covering tariffs DH would not be commercially competitive to individual gas heating.
- Missing competition is one more reason to keep the DH sector passive towards any reforms. High heat tariffs for commercial consumers due to cross-subsidies are making DH even more non-competitive.

#### Recommendation

- Municipalities should consequently implement their local heat plans
- Price distortions between DH and electricity created by subsidies have to be eliminated

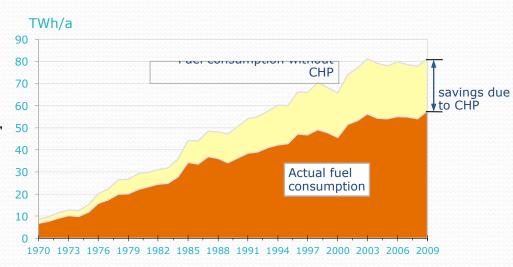
#### Best practise

• In several European countries the DH sector became active to reforms and refurbishment as the heating market opened for competition.

## **Russia and CIS**

## 2) CHP Potential Unused

- Problem
  - Heat-only-boilers and power-only plants are built instead of CHP
  - The efficiency of existing and old CHP is very low
- Recommendation
  - Both heat and electricity have to benefit from CHP in order to have both parties motivated to CHP
- Best practise
  - In Finland in year 2009, for instance, thanks to efficient CHP, some 600 kg of hard coal equivalent and 1400 kg of CO2 emissions per inhabitant were saved compared to the situation without any CHP at all.



**Russia and CIS** 

## 3) Worst Technical Problem: CTP

- Problem
  - The lifetime of the secondary piping of CTPs is less than 20 years
  - With the CTP it is difficult to control the heat load of individual buildings
- Recommendation
  - Conversion of CTPs to ITPs would provide lower life-cycle costs
  - ITP approach at demand side would provide multiple savings in production side
- Best practice
  - In all European countries either the ITPs prevail already or there is the trend to convert CTPs to ITPs in order to reduce overall costs and emissions.

# 4) Poor Investment Capacity

#### Problem

- Municipalities as owners of DH systems do not have financial capabilities for the time being.
- DH Companies are usually financially too weak to finance larger investments by themselves or even by normal bank loans. With current poor technical service quality and cost covering tariffs DH would not be commercially competitive to individual gas heating.
- Other investors have hesitated to participate due to subsidies, arrears,...

#### Recommendation

• Long term contracts are needed with municipalities, heat customers and heat suppliers in order to create a solid basis for commercial borrowing.

#### Best practice

• Several DH rehabilitation programs already under way in Russia (Moscow, St Petersburg, Taganrog, Chelyabinsk,...)

## **Russia and CIS**

# 5) Complicated and Outdated Technical Standards

- Problem
  - The existing standards do not recognize reliability and good performance of modern equipment
  - The existing standards require multiple pumps, valves and heat exchangers that add costs but not value.
- Recommendation
  - The standards should be modernized and simplified according to international DH and CHP practise
- Best practice
  - In most European countries the DH/CHP regulation has been modernized.

# **New Member Countries**

- An invitation...
- ... to join us...
- Sponsorship scheme for new countries to provide lower cost membership for the duration of one three-year Annex
- Contact the Chairman (Robin Wiltshire) at: wiltshirer@bre.co.uk