ERRA
EU Integration Working Group

Combined Heat & Power in ERRA Countries

Comparative Survey

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Introduction

The ERRA EU Accession Working Group was created in 2002 in response to the special requirements that certain ERRA members faced as they were about to enter into the European Union. In May 2004, seven ERRA members acceded to the European Union. The ERRA EU Accession Working Group was expanded to ensure ERRA members and border countries and others interested a forum to discuss development of their markets and compliance with the EU Directives on Electricity and Gas. The continuation of the EU Integration Working Group has helped ensure the integrity of ERRA while addressing certain needs of the EU New Member States.

The purpose of the EU Integration Working Group is to (a) increase the flow of information on EU accession issues to regulators from New Member States to other ERRA members, (b) strengthen links to CEER and EU officials, (c) keep non-accession country regulators informed, and (d) provide a mechanism for participation by future candidate countries' regulators.

We are proud to present you with the third Comparative Survey of the Working Group prepared on ***Combined Heat & Power (CHP) in ERRA Member Countries***. The Survey looks at support schemes for CHP, CHP capacities, efficiency, fuels used and emission. It covers the following ERRA member countries: Bulgaria, Bosnia & Herzegovina, Hungary, Latvia, Lithuania, Moldova, Romania and Turkey. The comparative survey was made reuniting the answers received at the questionnaire sent to the regulatory authorities from all ERRA countries. The data presented are relevant for the end of 2004.

In establishing the content of the questionnaire it was taken into account that all the countries, sooner or later, will have to implement the provisions of the Directive 2004/8/EC of the European Parliament and of the European Council and basic information upon the level of development of CHP in each country and the relevant legislation in this field are useful for the regulators involved in this activity

We would like to thank the following ERRA regulators for their contributions to the present Survey: Mr. Nikola Pejic (State Energy Regulatory Commission of Bosnia & Herzegovina), Mr. Mihail Dimitrov (State Energy and Water Regulatory Commission of Bulgaria), Mr. Pal Langfy (Hungarian Energy Office), Mr. Raitis Rezais (Public Utilities Commission of Latvia), Ms. Dace Bite (Public Utility Commission of Latvia), Ms. Zita Adomaitiene (National Control Commission for Prices and Energy of Lithuania), Mrs. Georgeta Stanciulescu (Romanian Electricity and Heat Regulatory Authority), Mr. Andrei Sula (National Energy Regulatory Agency of Moldova), Mr. Seckin Ulgen (Energy Market Regulatory Authority of Turkey).

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1. MAIN INSTRUMENTS IN PROMOTING COMBINED HEAT & POWER (CHP)

	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY
1.1. LEGAL FRAMEWORK:								
a. List of laws and of secondary legislation, including documents of Energy regulators (for example, methodologies), main features of legislation on CHP	- Energy Strategy of Bulgaria, - Energy Act, - Ordinances on regulation of electricity and heat prices, - Ordinance on defining a quantity of electricity from cogeneration	- Electric power law - Federation B&H ("Official Gazete of Federation B&H" No. 41/02); - Electric Power law - Serbian Republic ("official Gazete of Republika Srpska" No. 66/02) - secondary laws not yet	-Act CX of 2001 on Electric Energy, GKM Dec. 56/2002. (XII. 29.) on Regulation of Taking-Over and Definition of Prices for Electric Energy Coming under the Feed-in Obligation	- Energy law, - Regulations of Cabinet of Ministers No. 9 and No. 29 - Tariff Calculation Methodology for heat energy generated in CHP plants and for electricity generated by CHP plants with capacity above 4 MW, approved by PUC Board decision no 58/2003	Law on electricity, Governmental Resolution No. 1474 on the Approval of the Legal Acts Necessary for the Implementation of the Law of the Republic of Lithuania on Electricity, Regulations on providing Public service obligations no. 380, NCC resolution no. O3-84 Regulations on setting the prices for CHP	Electricity law stipulates that distribution companies are obliged to buy all electricity produced by CHPs at amounts and tariffs established by the regulatory agency (large CHPs)	Electricity law; Commercial Code (chapter 13); Tariff calculation methodology for electricity and heat produced in CHP; Regulation for qualifying priority electricity	Electricity Market Law, Electricity Market Licensing Regulation, Grid Code, Distribution Code, Balancing and Settlement Regulation and Eligible Consumers Regulation. These have provisions for electricity generation and trade. There are no imposed rules on heat generation and trade.
b. Main conditions of legislation regarding CHP		An electric power company that, in an economically adequate manner and in accordance with enviromental protection measures, in an individual generation facility generates a combination of thermal and electric power, may be granted the status of eligible producer, pursuant to conditions determined by the Regulatory Commission	Obligatory system for taking over electric power, guaranteed and the additional financial compensation	The system operator is obliged to purchases surplus electricity from the combined heat and power plants (CHPP), which utilises the co-generation cycle with such efficiency of fuel utilisation as is expressed by an efficiency coefficient			The draft for the new Electricity law has provisions regarding cogeneration and high efficiency cogeneration accordingly to the Directive 2004/8/EC.	Autoproducers have some exemptions for establishing the legal person who can receive license. CHP's operating as autoproducer have more incentives, such as longer licensing term, purchasing energy for its own needs (generators cannot purchase) and exemption to act as a balancing unit.

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	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA*	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY
1.2. COMBINED HEAT & POWER SUPPORT SCHEMES:								
Detailed description of specific support to different CHP, including tariffs (feed in), quotas, green certificates, guarantee of origin, conditions that should be fulfilled by system operators (dispatch and access priorities)	It is sold at negotiated prices, but not less than a minimum established value, electricity from: - new high efficiency cogeneration plants, becoming operational after 31.12.2003 and having guarantees of origin accordingly to the criteria set out in the Directive 2004/8/EC - CHP plants becoming operational before 31.12.2004, which has this support till 31.12.2009. The system will be changed during 2005, a special ordinance for promoting a system with green certificates being drafted.	Not yet defined	For the facilities with generation capacity between 0.1-50 MW and with more than 65% efficiency per year the taking over of power has been guaranteed and the additional financial compensation covering the difference between the public utility wholesale price and the taking over price has been given to the buyer	Feed in tariffs Priority of dispatch Priority in access to the grid. **See Page 5.**	Feed in tariffs applied to each CHP accordingly to their category of capacity for the amount of electricity which should be purchased in accordance with the quotas for each CHP set by Ministry of Economy	Mandatory quotas according to Electricity law but only for large CHP	The efficient electricity is qualified by ANRE as priority production and is sold with priority on the electricity market. The fixed costs of efficient electrical capacity (qualified by ANRE) are covered by contracts for systems services at tariffs regulated by ANRE	Non of the support schemes is applicable, however, the below listed incentives are given; Tax reduction up to 100 percent, Exemption from custom tax and levies. Selling possibilities to the 3rd parties up to 25% No threshold in installed unit capacities No discrimination of foreign capital share in the cogen investments. Foreign capital share can be up to 100%

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* LATVIA – COMBINED HEAT & POWER SUPPORT SCHEMES

2.1 Feed in tariffs

Electricity purchase price from combined heat and power plants (CHPP)	
CHPP using fossil fuel	
Installed electricity capacity less than 0,5 MW	90% from the average sales tariff ~43,99 EUR/MWh
Installed electricity capacity more than 0,5 MW and less than 4MW	75% from the average sales tariff ~36,66 EUR/MWh
Installed electricity capacity more than 4MW	Regulator approved the price
CHPP using renewable resource and peat	
Installed electricity capacity less than 0,5 MW	120% from the average sales tariff ~54,74 EUR/MWh
Installed electricity capacity more than 0,5 MW and less than 4MW	95% from the average sales tariff ~ 46,43 EUR/MWh
Installed electricity capacity more than 4MW	Regulator approved the price

2.2 Mandatory quotas - no
2.3 Priority of dispatch - yes
2.4 Priority in Access - yes
2.5 Financial incentives - no
2.6 Others - no

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2. COMBINED HEAT & POWER CAPACITIES

	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY[1]
2.1. NATIONAL CAPACITY TARGET IN CHP:								
% In total amount of generated energy	No data	Not yet defined	No data	No target	Target set in National Energy Strategy -35 % in 2010 in total amount of generated energy	No target	No target	Currently, there is no National Target in CHP. However, Turkish Cogeneration Association targets additional cogeneration capacity of as much as 10,000 MWe by 2020, with the share of cogenerated electricity in Turkey reaching 30%.
2.2. CHP CAPACITY IN 2004:								
In MW	1800	530	1635	Electrical-582, Heat – 1235	578.05	380	4068	4500
2.3. STRUCTURE OF CHP CAPACITY BY TYPE OF UNITS:								
- % combined cycle gas turbine with heat recovery	0	0	26.54 %	0	0	0	0	25 %
- % steam backpressure turbine	22.81%	0	32.72 %	6.5 %	8.31 %	31 %	16.04 %	13 %
- % steam condensing extraction turbine	63,5%	100%	4.83%	89.18%	91.69%	69%	83.67%	10%
- % gas turbine with heat recovery	0	0	21.22%	0.17%	0	0	0.1%	23%
- % internal combustion engine	0.06%	0	14.69%	4.12%	0	0	0.19%	19%
- % others	0	0	0	0	0	0	0	0
2.4. MARKET SHARE OF CHP:								
In %	18.92%	13.41 %	25.7%	27.20%	9.6%	25%	23.7%	12%

[1]

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Cogeneration in Turkey has developed fast due to favourable legislation and Government support. In 1992 there was only 4 MWe of installed capacity while in 2004 this number has reached around 4500 MWe and the share of CHP in total electricity production as capacity was about 12%. Almost all CHP plants in Turkey are to be found in the industrial sector since district heating is not developed mostly because of the mild average temperature of the Country.

3. ENERGY GENERATION IN CHP

	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY
3.1. GENERATED ELECTRICITY BY CHP:								
In MWh	5 311 165	2 197 391	6 382 000	1 442 281	1 723 880	800 000	15 580 836	26 000 000
3.2. GENERATED HEAT BY CHP:								
In GJ	63 076 673	1 037 563	447 022 000	13 431000	15 307369,2	6 170	76928693	23 400 000
3.3. SHARE OF CHP ELECTRICITY IN GROSS ELECTRICITY PRODUCTION:								
In %	12.77%	17.30%	18.92%	25%	10.05%	25%	27.9%	17.6%
3.4. SHARE OF PROMOTED ELECTRICITY GENERATED BY CHP - % FROM ELECTRICITY GENERATED BY CHP:								
In %	No data	0	No data	14%	49.4%	25%	0	100% Promotion covers all CHP's. However, the draft of High Efficiency Cogeneration Law is under discussion now.

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4. EFFICIENCY

	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY
4.1. TOTAL EFFICIENCY OF CHP:								
In %	No data	26.8-58.5	No data	79.5	86.33	67	64	60
4.2. ELECTRICAL EFFICIENCY OF CHP:								
In %	No data	26.8-31.3	No data	24.2	25.81	22	27	40

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5. FUEL USED IN CHP

	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY
5.1. AMOUNT OF FUEL USED IN CHP:								
In %	No data	1150-2128 GJ/h	No data	24 295 000	27 736 160,4	13 500	207 824 856	93 600 000
5.2. STRUCTURE OF FUEL USED IN CHP:								
- **% fuel oil**	No data	0	No data	5 %	3%	1%	12,7%	23 %
- **% natural gas**	No data	0	No data	90.8%	97 %	99 %	43.2 %	60 %
- **% coal**	No data	100%	No data	0	0	0	44.1%	13%
- **% others**	No data	0	No data	4.2%	0	0	0	4%

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6. EMISSIONS

	BULGARIA	BOSNIA & HERZEGOVINA	HUNGARY	LATVIA	LITHUANIA	MOLDAVIA	ROMANIA	TURKEY
6.1. POLLUTANT / LEVEL EMISSIONS :								
In Tones	No data	17.296-54.76	No data	No data	Not applicable	No data	No data	Cogeneration units in Turkey helped shave USD 700 million off the country's energy import bill, which is corresponding to 2.2 million TOE, while avoiding emissions of approximately 10 million tonnes of CO2 equivalent.
6.2. ELECTRICAL EFFICIENCY OF CHP:								
In Euro/Tones	No data	Not yet	No data	No data	Not applicable	No data	- 0.01 RON / tone CO2; - 20 RON / tone Nox; - 20 RON / tone SO2	Not yet

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