

## AN ANALYSIS OF THE LEGAL AND MARKET FRAMEWORK FOR THE COGENERATION IN KOSOVO

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### ABSTRACT

*Cogeneration, or combined heat and power (CHP) production, attracts increased attention throughout the world as one of the most appropriate concepts for achieving the goals of energy efficiency and energy conservation. However, a share of cogeneration in global power generation is still relatively small and amounts to approximately 9%. Kosovo is signatory of Energy Community Treaty of South East Europe (ECTSEE) and one of the obligations is implementation of the "Acquis Communautaire" on Renewable and Combined heat and power production; this implies effective and efficient policy support measures whereas especially efficiency is determined by the real generation costs of renewable energy technologies and CHP. The aim of the paper is to give an overview of CHP policy and to address support mechanisms for CHP in the existing market environment in Kosovo.*

**Keywords:** Combined heat production, policy and support mechanisms.

### 1. INTRODUCTION

Combined heat and power production or cogeneration is the energy production process involving simultaneous generation of electric and thermal energy by using a single primary energy source. Most fundamental principle of cogeneration is that the heat produced in the process of generating electricity, which is normally wasted, is utilized to meet the heat demand by a town served by district heating/cooling, an industrial facility or an individual building, which increases the efficiency of energy conversion and consequently saving compared to conventional separate energy generation. use. Typical Cogeneration System (Plant) consists of four basic elements: prime mover; electricity generator; heat recovery system; and control system.

A share of cogeneration in global power generation is still relatively small and amounts to approximately 9% [1]. For this reason, the European Commission of The European Union (EU) adopted Directive 2004/8/EC for the promotion of cogeneration based on the demand for useful heat on the internal energy market, for the purpose of increasing energy efficiency, reducing greenhouse emissions and assuring reliable energy supply. Kosovo is located in south east Europe, land-locked to

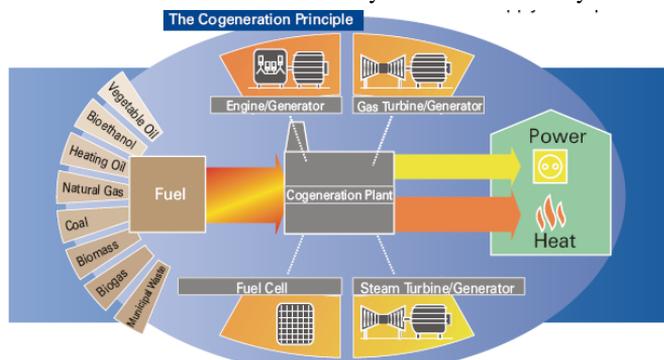


Figure 2. Cogeneration principle

a little over 10,887 km<sup>2</sup> and with a population estimated up to 2.4 million [2]. Kosovo was a federative element of former Yugoslav federation, which have been disintegrated after bloody wars. Since the NATO (North Atlantic Treaty Organization) intervention in 1999 the Kosovo was administrated by the United Nations under Security Council Resolution 1244 (United Nation Interim Administration Mission in Kosovo-UNMIK). Following the conclusions of the political process, in 2008, Kosovo has declared independency but still is not member of United Nations, EU, and other international organizations and mechanisms. However Kosovo is signatory party of Energy Community Treaty of South East Europe (ECSEE) [3], Fig.1. Membership in the European Union is the goal of Kosovo's Government and in the last years has made progress in aligning its legislative and institutional framework to the EU



Figure 1. Signatory parties of ECSEE: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Former Yugoslavian Republic of Macedonia, Montenegro, Serbia, Romania, and Kosovo (as UNMIK); 8th Region - comprising all ECSEE parties and Bulgaria, Greece, Hungary, Romania, Slovenia, Italy.

requirements. The Kosovo power electricity system is in transition from vertical monopoly system to a market-driven commercial environment with well defined development goals agreed in the Energy Community Treaty of South East Europe (ECSEE) [2]. Kosovo does not have legislation for CO<sub>2</sub> emissions, either action plan for climate change, but is committed to become a member of Nations Framework Convention on Climate Change and to ratify the Kyoto Protocol and post-Kyoto engagements. Kosovo is in phase of adoption of secondary legislation for CHP and currently is ongoing study for construction of CHP near Prishtina. Further development of the cogeneration sector in Kosovo relies on the establishment and the successful implementation of a favourable legislative framework. The paper gives a review of current stage of development of heat sector in Kosovo and especially support mechanisms for CHP, and is divided into 3 chapters.

## 2. CURRENT STAGE OF DEVELOPMENT OF ELECTRICITY AND HEATING SECTOR

Electricity market in Kosovo consists of limited generation capacities – mainly TPP “Kosovo A and B”, transmission, and distribution and supply, which are regulated activities performed as public services. Responsibilities are shared amongst number stakeholders such are: independent regulatory body - Energy Regulatory Office (ERO), Electricity Market Operator (MO), Transmission System Operator (TSO) and Distribution System Operator (DSO), and the Ministry of Economic Development. Kosovo's district heating sector is quite underdeveloped thus meeting only 5% of total

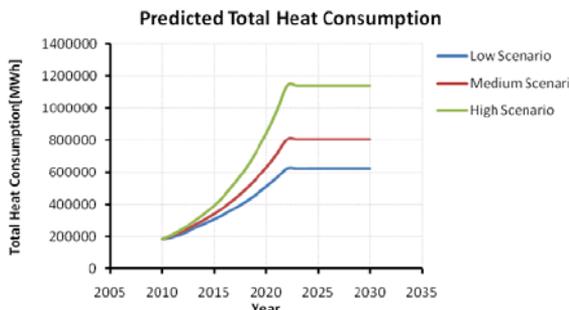


Figure 3. Based on historic heat production data from DH Prishtina, a number of scenarios for the future heat are presented.

heat demand in the country. There are four district heating systems supplying mainly district heating in urban areas of the municipalities: Prishtina, Gjakova, Mitrovica and Zvecan. The Prishtina DH system accounts for over 80% of the total DH capacity in Kosovo. The district heating system in Prishtina is supplied by two heavy fuel oil boilers installed in the boiler station. The heat supply is insufficient due to a bad condition of the existing district heating system. The table below shows the installed capacities and fraction of rehabilitated facilities of the three larger DH systems. The peak load

for Prishtina could be estimated to amount to 90-100 MW and for Gjakova it would be 15-16 MW. DH companies have the following license: district heating generation, district heating distribution, district heating public supply. The district heating sector in Kosovo is considered to be a natural monopoly concerning heat transportation and distribution, while there is no competition as yet in heat generation and heat supply. Therefore the district heating tariffs are subject to approval by ERO. Billing is carried out based on the pre-assessed heating area of each customer due to a lack of metering of supplied thermal heat. The average collection rate for the entire district heating sector in 2009/2010 was about 57% which represents a serious problem for district heating companies in Kosovo. The current DH production system is not technically or financially sustainable. In 2005 was prepared a detailed Feasibility Study for supplying heat from the lignite fired power plant near Prishtina „Kosovo B“ and updated in 2010, primarily with the objective of supplying heat to the DH in Prishtina. The study demonstrated the viability of such investment measure. The objectives of the study are as follows: Reducing overall harmful emissions and CO<sub>2</sub>, improving heating supply in Prishtina, Reducing the need for electricity imports as increased heating availability will reduce electricity demand for space heating of existing DH customers, as well as reducing the heat tariffs to final customers and determining the effect of increased heating penetration on the reduction of electricity demand, Improving the air quality for the inhabitants of the city of Prishtina e.g. by replacing heavy fuel oil consumption at DH company with district heating from thermo power plant „Kosovo B“. Prishtina has a district extension of 572 km<sup>2</sup> and an uncertain population estimate of 400.000 in 2009 is expected to grow approximately to 800,000 in 2020. Heat consumption load must be considered due to the predicted major expansion of the city. The primary legal and institutional framework for the restructuring and development of the Kosovo electricity market and district heating sector has been put into force [5]. In addition to two basic laws of the energy sector: the Law on Energy and the Law on Energy Regulator, the legal framework related to the district heating sector in Kosovo has also been completed with the Law on District Heating (DH). The laws define who is responsible for various functions, which activities will be monopolies and which ones competitive as well as its regulation. Kosovo's primary legislation is quite progressive in promoting the co-generation and energy efficiency together with Renewable Energy Sources (RES). Actually the legislation basically requires incentives for the encouragement of energy efficiency and development of co-generation, and introduces two main aspects of such a promotion or support that can be generally classified as “price-based” and “quantity-based” instruments.

## 2. CHP POLICY CONTEXT AND SUPPORT MECHANISMS

There are no common rules or guidelines which exactly settle manner and types of regulation or exactly specify the regulatory framework for the energy sector in general as well as for cogeneration of electricity and heat in particular. Cogeneration in Kosovo isn't developed; the only cogeneration project that is in the initial study stage is the cogeneration project – extraction of heat from “Kosovo B” TPP for Termokos District Heating Company of Prishtina. Also low level of industrial and economic development of Kosovo is unfavourable conditions, particularly for development of industrial cogeneration. EU Directive 2004/008/EC requests Member States to identify their respective potentials for high-efficiency CHP, to remove barriers to its expansion and to establish promotional schemes. The Directive, like other efforts in most countries, focuses on electricity output, while little

*Table 1. Indicative targets for energy consumption produced from cogeneration in % of total consumed energy.*

Source of Energy	Indicative targets for thermal energy consumption produced from renewable and cogeneration, as % of total thermal energy produced from renewable and cogeneration									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Solar	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07
Biomass	99.95	99.91	99.88	99.90	99.89	99.88	99.86	99.83	99.77	99.74
Cogeneration	0.00	0.03	0.04	0.04	0.05	0.06	0.07	0.10	0.15	0.19
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

attention is given to the need to incentivize the establishment of district heating infrastructures to ensure access to and exploitation of larger heat loads. When looking at the type of policy measures used to promote CHP and at the similarities between electricity from renewable and heating (including district heating support schemes) following should be stressed: Ministry of Energy and Mining - has determined indicative quantitative targets for electricity and heat from cogeneration for the next 10 years period, Tab.1, the targets are designated as “indicative” due to the fact that currently Kosovo has

