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4th International OFEL Conference on Governance, Management and Entrepreneurship

•NEW GOVERNANCE FOR VALUE CREATION•

Towards Stakeholding and Participation

Abstracts of the Proceedings

15th – 16th April 2016, Dubrovnik, Croatia

Edited by
Darko Tipurić and Ivana Kovač

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CIRU

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ABSTRACTS OF THE PROCEEDINGS

April 15th- 16th, 2016, Dubrovnik, Croatia

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All papers are subject to anonymous double-blind peer review.

From the Editors

Corporate governance systems and the role of corporations' governing structures are very important for creating an effective corporate governance framework. Besides, quality of corporate governance represents important constituent in efficient value creation.
The fourth International OFEL Conference on Corporate Governance focuses on relevant issues of modern corporate governance, especially its influence on value creation, role of the stakeholding and question of economic democracy in modern corporate world. The overall objective was to portray some of the challenges, problems and issues faced by companies and to disseminate important experiences from different regions. The conference offers a unique opportunity for scholars and practitioners to share their thinking and latest research findings.
The keynote speaker at the OFEL 2016 Conference is Professor Alessandro Zattoni with keynote lecture 'Corporate governance: to incentive efficient value creation and to promote fair value distribution'.
Contribution of Conference lays in illustrating the corporate governance, management, entrepreneurship and communication practices from 24 countries. The focus of the papers was devoted to interesting questions such as corporate governance quality; institutional and legal aspects of corporate governance; participation and stakeholder management; social responsibility, ethics and corporate governance; gender issues in modern business; corporate risk management, auditing, transparency and disclosure issues in corporate governance; strategy; corporate reputation; communication and corporate governance; entrepreneurial identity and entrepreneurship education; innovation and technology; practices and problems in corporate governance, management, entrepreneurship and communication, etc.
Our collaboration with the Academy of Management (AoM) continues through Organization and Management theory division (OMT) and organization of academic workshop which supports better integration of young scholars into the international academic knowledge exchange. The Division is known for their promotion activities and development of the community of researchers, educators, and practitioners who advance OMT scholarship and practice and its application across domains and topics. In addition, OFEL contributes in organizing LIDER business summit "Future of State-Owned Enterprises" focused on problems and issues in SOE privatization and organizational restructuring in South East Europe.
We hope that conference papers and events are interesting and beneficial for all those engaged in the areas of governance, management, entrepreneurship and communication, from academia and corporate world.
Wishing that the OFEL conference will create interest in those engaged in aforementioned areas and hoping they will experience positive reactions and breakthroughs in challenges ahead.

Professor Darko Tipurić, Ph.D.
Ivana Kovač, Ph.D.

Events hosted by OFEL:

ACADEMY OF MANAGEMENT ORGANIZATION AND MANAGEMENT THEORY DIVISION

ACADEMIC WORKSHOP
Outreach and integration with the South East Europe Area

Together with the OFEL 2016 conference, an academic writing workshop was held by the Academy of Management (AoM) Organization and Management Theory (OMT) division for early career researchers.
The OMT division reaches out to perspective young scholars, with a focus on the South East Europe area, trying to help their integration into the international academic knowledge exchange. The workshop aimed at helping research reach publication in top journals, as researchers within the SEE struggle with adhering to the unspoken academic conventions of top publications.
The goal of the workshop was to support better integration of young scholars from the SEE area into the Academy of Management, particularly in the field of qualitative research. Throughout the workshop senior editors from leading academic journals helped the participants transform their existing research results toward articles publishable in such outlets. We believe that the workshop has been an incredibly useful contribution for the participants as it provided an opportunity to share and develop research ideas in a critical, but supportive environment.

Davide Ravasi, Ph.D.
Executive Committee of the OMT Division,
Journal editor

Allesandro Zattoni, Ph.D.
Journal editor

ACADEMY OF MANAGEMENT

OMT
ORGANIZATION AND MANAGEMENT THEORY

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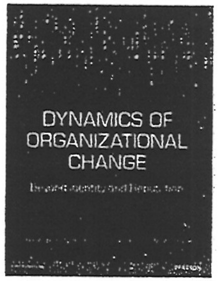
DYNAMICS OF ORGANIZATIONAL CHANGE

BEYOND IDENTITY AND REPUTATION



The book *Dynamics of Organizational Change: Beyond Identity and Reputation* (Pearson Education, UK, ISBN: 978-1-78447-988-6) involves selected papers presented on third international OFEL held in April 2015 in Dubrovnik. Through ten chapters, written by 27 authors from 6 countries (Austria, Bosnia and Herzegovina, Croatia, Italy, Serbia and United Kingdom), academic studies that connect organizational changes with reputation and identity concept, consequently sought to develop a set of categories addressing the construction of a sound corporate governance framework that enables firm development, entrepreneurial activity and competitiveness are integrated and synthesized.

Organizational change initiatives often arise from problems that the firm is faced to. In some cases, however, firms change under the impetus of enlightened leaders who first recognize and then exploit new potentials dormant in the organization or its circumstances. Some observers, more soberly, label this as "performance gap" that competent management should be motivated to close. But organizational change is also resisted and–in the opinion of its promoters–fails. The failure may be due to the manner in which change has been visualized, announced, and implemented or because internal resistance. In other words, employee sabotage those changes that in their opinion are opposing their own interests.

Nevertheless, public distrust of corporations, along with increased regulation and demand for transparency, has heightened the need for organizations to invest in corporate reputation management and changed the role and expectation of senior leaders. First of all, the corporate reputation implies the collective assessments of a corporation's past actions and the ability of the firm to deliver improving business results to multiple shareholders over time. Increasingly, top business leaders understand the importance of corporate reputation. For the second year in a row, reputational risk is ranked as the most important concern by boards of directors. Most organizations unfortunately continue to struggle with identifying reputational risks and developing multiple stakeholder strategies to address them.

Through mass of processed problems, process of identifying people that start and lead organizational changes is analysed in this book. The book also observes managers influence on mergers and acquisitions decisions, discusses about changes in sense making process in private sector and considers relative importance of shareholders and how that importance changes over time.

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The Role of Entrepreneurs in the District Heating Sector

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Abstract
District heating is an activity consisting of production, distribution and supply of thermal energy. Prior to 2013, production, distribution and supply were regulated activities. Law on the Market Thermal Energy (OG 80/13) prescribed that distribution remained regulated activity, while production and supply have become market activities. That enabled entrepreneurs to get involved in one of these two activities. On the production side, this created an opportunity for new producers thus forsing existing ones to be better under the pressure of competition. There is an opportunity for specialization in the production side through using different types of energy, production of thermal energy for base or peak load, whereof the cost of produced electricity depends on. Furthermore, on the supply side, better collection of fees and various options of additional services for end users of thermal energy pose represent challenges for existing suppliers. Because of the potential savings that can be achieved by installation of heat cost allocators, the Law on the Market Thermal Energy prescribed obligatory installation of heat cost allocators, which is also an opportunity for entrepreneurial initiatives.
However, such obligations may be reflected negatively at the current users. The achievements of obligatory installation of heat cost allocators are described in this paper. Liberalization of district heating and unbundling activities avoid the possibility of subsidizing some of the activities which prevents distortion of value chain, while entrepreneurial behavior should lead to more competitive prices for end users. As just opening of the market does not necessarily mean increased entrepreneurial activity, because innovation and entrepreneurship depend on other factors, this paper will show experience of liberalization in the two-year period, advantages and disadvantages, opportunities and threats for this system.

Keywords: *Allocators, District heating, Entrepreneurship, Heat production, Liberalization*

Track: *Management / Entrepreneurship*

Word count: *6.677*

1. Introduction
The process of liberalization of the energy sector began in 1996 with the first directive of the European Union for electricity, which is trying to achieve competitiveness on the production and supply side of electricity. Transmission and distribution systems are regulated activities and the challenge for regulators is that these systems make more competitive as possible. In order to overall price at end consumer was as low as possible it is necessary that all activities in the value chain to be competitive, and to achieve final goal in all activities needed entrepreneurial behaviors. The liberalization of the gas sector began with the first directive for gas two years later. Except these energy activities, liberalization and deregulation of monopolies are also takes place in other sectors such as air transport, rail transport, telecommunications, delivery of packages, and many other activities. District heating is part

of energy sector, which is mainly associated with large cities with developed thermal networks for delivery of steam, hot and warm water needed for heating and domestic hot water supply. European directive for the liberalization of district heating did not give any guidance, because transmission and distribution of steam, hot and warm water is not available for long-distance and that is reason why district heating is left to the legislation of the Member States. The share of final energy consumption for residential and non-residential buildings is about 40% of total energy consumption and out of that ¾ refers to heating and domestic hot water. Therefore, the district heating have an important role in the future development. According to the International Energy Agency (IEA), district heating in EU-27 meets 12% of total heat demand and total revenue of activity is over 30 billion euros. In Croatia, according to the report of the Croatian Energy Regulatory Agency (CERA) for the year 2013, district heating supplies thermal energy 11% of households. According to Heat Roadmap Europe 2050, it is estimated that, due to the migration of people, in urban areas will live about 84% of the population by 2050. Among other things, this is one of the reasons why the is planned growth of district heating from the current 12% to 30% by 2030, and to 50% by 2050, in the total demand for heat. Looking from the aspect of diversification, district heating provides greater security of supply because thermal energy can be produced from various energy sources. End consumers for their needs should heat energy, not energy for heat generation. Heat generation is possible from various sources, and thus is possible competition among energy sources from different manufacturers. Diversification of energy sources for heat generation provides better negotiating power of producers, and thus lower energy prices. Competition itself in the production at the same time means and incentive to be competitive manufacturer. So, allow network access to everyone on a non-discriminatory and transparent conditions is a form of liberalization which can be result in lower prices for the end consumers. Can be assumed that some manufacturers will be specialized in the production of base load that probably mean more investments, but lower costs of energy sources, while others will be specialized in peak power that mean that they will invest less capital in the plant, but also a higher price of energy sources. It opens with an entrepreneurial space for storing the heat energy that in the case of excess energy on the market buy energy at low prices and stored it in the form of heat and were competition and base and peak energy producers. In addition, regulation of activity of supply meant the recognition of unpaid claims by energy companies.

The liberalization of these activities allows the entrepreneurs to run their own billing risk which will be included in the final price of heat energy. Those who have a better billing will be able to have a lower price of thermal energy compared to the competition. However, it is possible to expect different billing models, and that price for risky customers is likely to be higher, and for those less risky to be lower. Furthermore, suppliers who are buying a larger amount of energy will have a better price of acquisition and less fixed costs per unit of energy sold, which further increases the competitiveness. Suppliers of thermal energy may offer additional services to the end customers as well as buildings, of which the most promising are building insulation and reducing power production plant, which would leade to reduction of fixed costs and the total cost of thermal energy. So, manufacturers, vendors and suppliers can work in fair market conditions.

In the opening of the market which is in district heating needed to develop innovative services market, and to prevent overlapping of interests of thermal energy distributors, there are hazards that can occur in the case of lack of education of entrepreneurs as well as end users. This danger and disadvantages are higher in the cases of residential buildings with a same meter of consumption where one end users does not contract by himself, but the majority of end users who live in these buildings. If their representative does not act rationally and doesn`t know the consequences of the subject of contracting, the consequences

bear all end users on a same meter of consumption. Therefore, there is a concern that the liberalization with the price reduction may lead to a reduction in the quality of services. However, liberalization of other energy services in the European Union is not reflected in the lower than the higher quality services.

2. District heating systems in the European Union and transition countries

In the European Union counries, two contradictory district heating systems are in use:

- modern system with cheap production and distribution, with the use of renewable energy sources, where the greatest demand for district heating exists (Denmark, Sweden, Finland)
- outdated system with irrational production and distribution of thermal energy obtained from fossil fuels (post-socialist countries)(Lukosevicius, Wearing, 2011).

According to the results of research Heat Roadmap Europe of the pre-study there are several main conclusions which refer to the European system of district heating:

- Energy costs and import of expensive energy will be decreased due to the use of waste heat and renewable energy sources. Annual savings in the district heating sector by 2050 should be around 14 billion euros, which corresponds to a reduction of costs by 11%;
- Emissions of carbon dioxide will be significantly reduced and an import-export balance will be fixed;
- Increasing of the share of district heating will create 8-9 million jobs;
- District heating is one of the proven flexible systems that can through heat storage and simultaneous production of electricity and heat energy balance the electric power system;
- What is important is communication at local and regional level regarding the development of plans for district heating.

In the European Union there are more than 5,000 district heating systems, some of which are regulated systems, while others are on market. The activity of district heating is the market activity in Finland, Sweden and Germany, while Denmark, Iceland, the Netherlands and Norway have a regulated activity of district heating. Denmark and Sweden are examples of good practice in district heating, even though Denmark has a regulated system while Sweden has a market system.

According to Warell there are four scenarios for the opening of the district heating market:

1. Regulated third party access, whereby the owner of the network has to allow access to the network to all interested parties by pre-known conditions. In this case the separation of network and production activities should be carried out for the purpose of effective competition.
2. Access of negotiation of the third party, while the network owner and the producer of heat energy who needs access to the network negotiate the terms of accession, which may include both local conditions.
3. Model of a single customer, where the customer contracts the conditions of purchase with the producer, and a transaction in the name of the buyer performs only one company that takes into account the cost of distribution and supply. So there is a market of producers, but not the retail market.
4. Extended market of producers, which means greater transparency and information exchange regarding network and production activities. Access of the third-party initially may be introduced in areas where a high probability to achieve the expected

effects of competition exists, respectively in the places with the largest network and most production units.

District heating in Sweden exists since 1950. The amount of thermal energy sold in 1970 was 10 TWh, while in 2009 it was 50.5 TWh. Furthermore, more than 90% of fuel used for heat production in 1970 consisted of oil, while today the percentage is less than 5%, and the difference is mostly replaced by biofuel. The entire district heating industry has an annual turnover from 3.3 to 4.4 billion euros. The system exists in about 200 major and 300 smaller populated areas and heated over 75% of the buildings and 150,000 detached houses and it is growing. Biomass is one of the most important fuel for heat production (in 2000 the share of biomass in heat production was 28%). The share of waste in the district heating system is around 11%, and plans are to double it in short time. This is largely feasible due to Regulation on waste which banned disposal of combustible waste to landfill since 2002, and organic waste since 2005. In Sweden, customers can choose one of several modes of heating, but are still deciding to district heating because it is comfortable for use and competitive in price.

In Denmark however the development of district heating sector began in 1990, which was based on the turn of the heat production in cogeneration plants with fuel oil and coal to natural gas. Based on the Act of supply of heating energy, efforts were made to promote the expansion of decentralized cogeneration, which would:

- reduce CO2 emissions,
- ensure economic energy consumption through the expansion of the gas network.

Replacement of district energy took place in three phases:

Phase 1 (1990th-1994th) - Large plants on coal and natural gas were converted into decentralized cogeneration plants on natural gas. At the same time plants on waste were introduced.

Phase 2 (1994 - 1996) - The remaining plants on coal and medium-sized plants on natural gas were converted into decentralized plants on natural gas. At the same time most of the plants outside the public system were converted into plants on straw, wood chips and other biofuels.

Phase 3 (1996 - 1998) - Small plants on natural gas were converted into cogeneration plants on natural gas. The remaining plants outside the public systems were converted into plants on straw, wood chips and other biofuels.

There are 16 centralized public plants and they simultaneously generate electricity and heat. There are 415 decentralized public plants, of which two-thirds simultaneously produce electricity and thermal energy, and one-third produces only heat energy. In Denmark, there are 480 private plants, which are mainly used for heating offices, schools and similar, of which 50% are using biomass as fuel. 380 out of 480 private plants simultaneously produces electricity and thermal energy, and 100 plants produce only heat.

In transition countries there are many reasons like old plants, high energy prices, energy subjects burdened with large number of employees, non-insulated and old buildings which significantly influenced the increase in the price of heating, and consequently the reduction of consumption. Plants remained ower-capacitated, the number of employees increased and the purchasing power weakened which made the district heating very sensitive to sociological and political issues. Many companies stopped providing services of heat supply partially or completely. The main cause of this situation is the lack of financial resources, which leads to under-investment in property. The low level of collection of receivables due to energy poverty also caused the collapse of some district heating companies. Furthermore, citizens

were often resorted to alternative ways of heating in cases of charging too high tariffs for heat energy or state subsidies for gas and electricity to households.

Condition of district heating can be described as follows:

- District heating collapsed due to a significant drop in the amount of delivered heat in most countries (even large district heating systems are closed). Technical-economic situation of heating companies is difficult due to work "under cover costs", due to the application of tariffs which do not cover all eligible costs. This situation does not allow the modernization of existing systems, and the minimum renewal system is financed from external sources.
- Subsidies, small economic incentives, a strong political influence, unpredictable regulations, poor economic sustainability and low competitiveness discourage private investors from investing in the district heating sector.
- High energy consumption in multi-dwelling buildings with poor insulation, without the possibility of regulating the heat consumption and low purchasing power of the majority of end-users made district heating hardly available. As a result of this service is still subsidized in various forms. High amounts on heating bills do not match the standard of living of many customers. Disappointment with this situation is widespread, which results in a negative attitude of users towards district heating technology.
- Systematic planning of local energy infrastructure is still a rarity. Unregulated exclusions further burden an already difficult situation. Renovation of buildings (thermal insulation for the purpose of saving energy) is carried out very slowly. District heating firms cannot compete with more flexible and relatively cheaper individual heating capabilities, particularly with individual gas boilers.
- Political decisions or new obligations for the district heating sector are often not accompanied by the necessary financial resources. Speculative and populist decisions in the district heating sector are common. There are very few successful examples of private capital into the district heating sector (Lukosevicius, Wearing, 2011).

The balance between supply and demand for heating energy is as important as for other goods and services. Price per unit of product (in this case per kWh) is high in the case that there are more unused capacity (due to high depreciation costs). High maintenance costs for larger plants, with a small amount of energy distributed in a large network system and consequently greater losses as a percentage in relation to a greater amount of potential energy supplied, lead to accumulation of losses. As previously stated, in the transition countries there was a decrease of thermal energy causing the condition of ower-capacitated plants.

3. Allocators in district heating systems

Allocators are devices that allow the measurement of redistribution of consumption of heating in the common measurement point. They are installed in buildings with vertical pipe system, or in buildings where there is more heat pipes that supply heat to the radiators. In order to scale redistribution of spending more accurately, the first requirement is that all end users in a common measurement point respectively inside the building, have allocators installed. Otherwise a high-quality assessment of consumption between those end users who have installed allocators and those who haven`t installed them should be made. This is very difficult to do with a unique formula, because the redistribution depends on a number of factors such as the proportion of those who have installed allocators, the behavior of those who have installed allocators and the position of end users in the building. When there is no one hundred percent installation of allocators, ideal ratio of redistribution is trying to made through the coefficient of total energy redistribution between those who have installed

allocators and those who haven`t. In Croatia, it moved from the initial 1 (for which was known from the start it isn`t a good ratio, but with certain interpretations that redistribution couldn`t go to the detriment of those who have not installed allocators it is nevertheless accepted) over 1.25 and 1.5 till final 2 (interpretations were rejected when it was obvious that those who have not installed allocators now have lower consumption no matter they did nothing to reduce the amount of the invoice).

Thus, the actions of those who have installed allocators reduce the consumption of those who have not installed allocators. Suppose that end users install allocators and thermostatic valves with the intention of saving energy with a coefficient 1, all those who were saving would pay on average the same as those who have not installed allocators, which results in fact that all those who were saving, but not less than the average consumer, would pay more than those who did`t install allocators. So, they were heated less, but pay more than those who have not installed allocators and didn`t save energy. This led to the dissatisfaction of end users and removal of allocators. Sometimes in practice, neither coefficient 2 is the optimum coefficient of redistribution, especially in cases where the vast majority of end-users on the same scale have allocators installed and save the energy and at the same time there is a large number of those who have not installed allocators. These are the cases when 2 to 3 end users consume 80% of the energy of all those who have built allocators. In such cases, the bills of these end users are reaching up to several hundred euros which is not technically possible. It is therefore essential in redistribution to keep in mind that coefficient of redistribution must be a value at which the bills of those who have installed allocators couldn`t get higher than of those who have not installed allocators, or that those who have not installed allocators do not enjoy the benefit of smaller bills than they paid while none consumer had installed allocators. Because of the proven less consumption and more appropriate reallocation of spending, Republic of Croatia has prescribed obligatory installation of allocators by the Law on the market of thermal energy (NN 80/13). At the same time, the installation of allocators is subsidized by the Fund for Environmental Protection and Energy Efficiency. Table 1 shows the obligation of allocators installation in some EU countries.

Table 1: Obligations of allocators installation for neighboring countries

	Croatia	Italy	Hungary	Slovenia	Poland	Romania	Turkey
Obligation of installation	Yes	4 of 20 regions	No	Yes, in bilding built before 1985.	No	Yes	Yes, in bilding built before 2010.
Minimum installation	100%	100% where the obligation exists	Not specified, but usually 92%	100%	70%	80%	100%
Obligation of distribution hot water	No, except in buildings after 2013.	Yes	No	Yes	Yes	Yes	Yes

Table 1: Obligations of allocators installation for neighboring countries

Penalization for tenants without allocators	First year 25% and more	Not possible	2,5 times of average consumption in the building	1,6	Based on regulation, fixed price	10% compared with the maximum consumption	Not specified, usually maximum consumption of apartment of the same size
Frequency of bills	Monthly obligation	Annual obligation	Not specified, usually once a year	At least once a year	Annual obligation	Monthly obligation	Periodically, in practice once a month
Responsibility for reading of allocators	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation
Responsibility for redistribution	Distributor	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation	Firms that make installation
Exclusion from the system	With the 100% consent	Not possible	Not possible	With the 100% consent	Not possible	Not regulated	With the 100% consent
Obligation of measurement of cold water	For buildings after 2005.	Yes	No	For buildings after 1995.	Yes	Yes	No

Power consumption is very different and it`s higher in continental Croatia than in the Adriatic Croatia. Besides, consumption also depends on the insulation of the building as well as the price of energy. Lower price of energy causes higher consumption so installation of allocators has less sense in buildings with low cost thermal energy, as well as well-insulated buildings in the Adriatic Croatia. So when it came to buildings that meet all these requirements one should carefully consider what kind of allocators to install and whether they should be installed. It is necessary to resort lower investment costs when installing distributors and it is generally the case with evaporating allocators. Evaporating systems are the least expensive investment. Prices of reading and accounting are lower than with electronic, and they are also cheaper for maintenance. Their replaceable parts (mainly ampoules with liquid) are fully recyclable. Methods of recycling are cheap and easy. And evaporating allocators production is simple and very cheap. The only drawback is the inability of remote reading. Therefore, in this case the consumption is estimated and the final calculation is made at the end of the heating season. In Croatia mainly used are expensive radio allocators with remote reading. Their price is approx. 65 euros per radiator, with thermostatic valve and value-added tax. Although in practice these prices tend to be higher. Quite possibly one of the reasons is

obligatory installation, because with the increased demand the price is rising, but also due to the fact that only one part owner makes contract on behalf of all residents. Therefore, the obligation of installation should be prescribed in the way cost per measurement point does not exceed a certain amount. That is, subsidizing by the Fund for Environmental Protection and Energy Efficiency should above all subsidize allocators with lower investment costs.
In order to get an overview of the impact of prices on energy consumption, the comparison of consumption for all buildings that have allocators installed more than 90% in continental Croatia in 2013 will be given, depending on the price range of thermal energy. Buildings that do not have allocators are not covered because end users can not influence their own consumption.
There are three price categories:

- buildings that have cost of thermal energy approximately 0.2 € / kWh,
- buildings that have cost of thermal energy approximately 0.3 € / kWh,
- buildings that have cost of thermal energy approximately 0.4 € / kWh.

For buildings that have allocators installed and have the price of thermal energy approximately 0.2 € / kWh average consumption is 167 kWh / m2 per year. Buildings that have allocators installed and have the price of thermal energy approximately 0.3 € / kWh with an average consumption of 155 kWh / m2 per year, while the buildings that have allocators installed and have a price of thermal energy approximately 0.4 € / kWh have an average consumption 92 kWh / m2 per year. Furthermore, consumption in the Adriatic Croatia is less than 80 kWh / m2 per year, at a cost of 0.4 € / kWh.
The savings that can be achieved by installing allocators are significant if we look at consumption before and after installation of allocators. For example, we can take a building in the settlement Mikrorajon in Slavonski Brod, where there is 10 almost identical buildings in size, of which only one has a allocators installed in the amount of 100% (building 5), one in the amount of 73% (building 10), while others don`t have allocators installed. The average consumption of buildings without allocators is 182 kWh / m2 per year while it is evident that in the building number 5 with fully installed allocators that amount is 101 kWh / m2 per year. Thus, the average energy savings is 81 kWh / m2 per year. Considering that in Croatia there is approximately 150,000 apartments that are supplied with thermal energy by energy service companies and at least 50,000 apartments that are independently supplied with thermal energy as they have a common boiler. We can say that the installation of allocators can save 800 million kWh of thermal energy which is nearly 1 billion kWh of energy that is imported. With the price of thermal energy of 0.052 euro / kWh this is a saving of 41,83 million euros. The average price of installation of allocator with thermostatic valve is 260 euros for one apartment, resulting in a total amount of investment of 52,3 million euros, or return of 1.25 years on your investments. Figure 2 shows the energy consumption for settlement Mikrorajon in Slavonski Brod in 2013.
The public gets the impression that the dissatisfaction of end consumers becomes greater after installation of allocators, but from the total consumption and savings that are generated can be concluded that the ones who are dissatisfied are individuals whose accounts have become larger than they were before installation of the allocator. Responsibility for this is in regulations for redistribution and at entrepreneurs who are engaged in installation of allocators that are not actively involved in the preparation of regulations.

Table 2: Analysis of energy consumption in the settlement Mikrorajon

Analysis of energy consumption in 2013.					
Measuring point	Allocator	No of	Surfac	Energy	Consumptio

Table 2: Analysis of energy consumption in the settlement Mikrorajon					
	s installed	apartments	e m2	consumptio n (kWh)	n kWh/m2
MIKRORAJON, building 4	NO	35	1.181	196.560	166
MIKRORAJON, building 5	YES	35	1.106	111.490	101
MIKRORAJON, building 6	NO	30	1.233	214.620	174
MIKRORAJON, building 7	NO	35	1.103	204.780	186
MIKRORAJON, building 8	NO	35	1.167	243.450	209
MIKRORAJON, building 9	NO	30	1.150	208.140	181
MIKRORAJON, building 10	YES	30	1.092	152.980	140
MIKRORAJON, building 11	NO	45	1.793	325.140	181
MIKRORAJON, building 12	NO	30	1.179	222.390	189
MIKRORAJON, building 13	NO	29	1.220	209.060	171
TOTAL		334	12.223	2.088.610	

What practically troubles citizens who have an objection to the allocators the most can be divided into 3 groups:

- It`s not possible to set up the ratio of read pulses and consumed kWh of energy.

This problem results from the long-term distrust in the system and consumers thinking that they have been deceived. In addition, consumers sometimes receive large bills at a small number of pulses because of poor redistribution, which causes distrust. Therefore, a large number of installed allocators is required, with a high coefficient of redistribution of energy if the installation is not 100%, and that there is a part of the energy that can be reallocated to the square meters of the apartment, regardless of consumption, because of the fact that heat flows from a higher temperature body to lower temperature body it happens that the apartments that are not heated spend part of the energy of apartments that are heated.

- The expected savings in consumption are not achieved.

The fact is that not everyone will achieve the expected savings. Saving is 30% on average, which means that the consumer may realize savings of 5% or not realize savings at all, while others will realize savings higher than 50%, depending on the position of the apartments in the building and habits with regard to the room temperature. Problems can also be in a bad presentation of the companies that sold devices. Furthermore, there are a lot of buildings in which the total energy consumption is measured through one calorimeter, and even though the citizens reduce the consumption of thermal energy for heating, it is the total share of slightly less than 30% because they are not saving on the preparation of hot water. Previous tables show that consumption is much lower when the installation of allocators is high and when the energy consumption for heating and hot water is measured separately.

- Why are accounts greater for those who have built distributors of those who have not installed allocators?

Rules set by a low coefficient of reallocation of spending, and the citizens justifiably complain. The fact is that consumers who get higher bills they want to go back to the old method of calculation, and has the problem that the number of owners who have installed allocators in the building in some cases falls below 50%, which prevents the distribution of the allocators and raises the issue of unnecessary investment.

4. The role of entrepreneurs in the district heating sector

The role of entrepreneurs is essential to the overall development of the country, as well as in district heating. Therefore, liberalization of district heating is an essential element in the development of entrepreneurs and the competitiveness of the system. Only the opening of the market does not result automatically increased activity of market participants, as market activity, and innovation and entrepreneurship, depend on many other factors, such as:

- Access to money.
- Government policy.
- Government programs for entrepreneurship.
- Entrepreneurship education.
- Transfer of research and development.
- Business and professional infrastructure.
- The openness of the internal market and competitiveness.
- Access to the physical infrastructure.
- Cultural and social norms.

Furthermore, according to the research of GEM Croatia there is a dramatic decline in the perception of opportunities, which in Croatia in 2013 was 17.6%, and in the EU 28.7%. The perception of social status which entrepreneurs in the Republic of Croatia have amounts to 43% and in Finland 86%. For the Republic of Croatia is also characteristic low motivational factor that is 1.6, in contrast to the EU where it is 4.3. Therefore, necessary radical changes are required, which include simplifying the regulatory framework of institutions, along with recommendations for institutions:

1. Cooperation and simultaneity policies, strategies, programs and instruments (Triple / Quadruple Helix).
2. Simplification of the regulatory framework.
3. State venture capital fund.
4. Transparent mechanisms for monitoring and evaluation of government policies and programs.
5. Statistical monitoring activities of SMEs.
6. Diverse and sophisticated services for the launch and growth of the business venture.
7. Liability of the media and education to change the level of social and cultural norms of entrepreneurial activity.

Entrepreneurs and small business sector are important factors that influence the economy of a country. Therefore, entrepreneurship and entrepreneurial behavior should become a reality in the district heating. Entrepreneurial behavior can be achieved in all segments of district heating, both in market and in regulated, for which there are already legal premises. Even the Law on regulation of energy activities, in Article 5, paragraph 2, provides that the regulation of energy activities promotes entrepreneurship in the field of energetics. Entrepreneurial behavior of participants (who by definition must be innovative, proactive and responsible for

their decisions) should take place in an environment that supports this behavior. As entrepreneurial behavior is exhibited to a high level of uncertainty and complex environment characterized by a large number of stakeholders and a large number of rapid and unpredictable changes resulting from the uncertainty, a certain motivation and vision that would be stronger than the stereotypes and playing safe of all participants are needed. They are the main barriers to creative thinking.

In the market energy activities, such as for example thermal energy supply, conditions of activities must be clear, equal and transparent to avoid manipulation, while at the regulated energy activities, such as for example the distribution of thermal energy, innovation and generating new ideas should be encouraged in order to create new opportunities. In essence, it is about creating a new value for all participants in the process with innovations, because also the regulated activity can and should have a stimulating aspects. So, entrepreneurial behavior should be encouraged in all areas. Furthermore, the supply of heat energy itself and care for the end customer in the district heating leaves the possibilities for entrepreneurial behavior in a transparent and impartial manner, for innovation and creativity, but does not provide long-term security for entrepreneurs, if not adapting existing and finding new and rational solutions focused on solving the problems. In addition it should be noted that because of the high cost of heating, end users are also sometimes involved in solving the problem of heating of the building, and consumers with an entrepreneurial spirit and proposing solutions themselves. Proposed model creates a possibility that also innovative consumers recognize a business opportunity and start their own company.

When implementing regulation, one should take care of the value chain, so that cannibalization activities of district heating wouldn`t occur because of failed investment projects. In the entire district heating value chain should be taken into account that the relations and connections are such that each part from the production through distribution, to supply (supply of heat energy and / or consumable hot water) is competitive. It should be ensured that non-competitiveness of the individual parts of the district heating value chain does not result in a non-competitive price of heat energy or consumable hot water. In the case of district heating, when investments that result in a significant increase in the costs of existing users would be approved, there would be a situation that they exclude from the system, and new consumers wouldn`t include and this would lead to cannibalisation of the activity of district heating. So, as in the case of market activities, and by district heating entrepreneur must dare to innovate (and in all parts of the process - the final product or service), to be able to offer a competitive service district heating of consumers.

In implementing the entrepreneurial behavior the protection of consumers need to be taken into account. Their position continues to strengthen and they are seeking the possibility of terminating the contract even in shorter periods. Since the production and distribution of thermal energy require large investment costs (which can not be repaid in the short period) that can cause the problem, especially in the selection of plants depending on the type of energy source, because initially the selection of the plant can be good, but due to rapid changes in the prices of energy fuels the final cost of delivery of heat and domestic hot water may vary. It is therefore in the interest of consumers that each segment of the district heating value chain is sufficiently clear and as competitive as possible.

In the district heating value chain transparency should be ensured, one should encourage competition and innovation and prevent cross-subsidization of segments in the chain, i.e., energy activities of production thermal energy, thermal energy distribution and supply with thermal energy. In this way, the new opportunities in all segments can be created. The heat production will encourage competition regarding: the type and price of energy source, the efficiency of the plant and the cost base and peak energy production. Energy storage opens possibilities for balancing peak consumption (to avoid oversized and hence inefficient

production plants), for unplanned surpluses from production plants and storage of cheap energy. In the distribution of thermal energy as an essential part of the value chain, one should encourage the economics of construction the distribution network and reduction of losses, and at the approval of plans for network construction not to support the construction of dual energy infrastructure. In the supply and delivery of energy to end customers, as a part of the district heating value chain, one should in particular take account of the rational and equal energy consumption. Applying the new model of district heating opens opportunities for new services such as the integration of payment of utility bills, provision of service of advice to energy savings through the financing model from realized savings, and the use of solar collectors for preparation domestic hot water for the building. Furthermore, by reducing the required thermal power stations for the building it is possible to reduce the fixed costs of leased (required) production capacity.

In the case of of district heating, the collection is a major challenge for service providers to end users and opens up innovative possibilities for offering different billing models. In offering services the possibility of customers to settle heating of living space should be taken into account, as well as their preferences and the competitive alternative possibilities for individual buildings.

Due to the fact that there are energy-poor households, billing for these households should be resolved in a particular way. Otherwise the risk of collection of these households would bore households within the same building through increased price of heating for all households.

District heating is a good example of the value chain, which in wich every business segment and all of their activities are relevant, as well as mutual interaction of the segments with full transparency of costs so that service which the supplier of thermal energy provides to end customers can be competitive. Thereby, one should not ignore the fact that in the Republic of Croatia still a large number of households use wood for heating in the traditional way, and district heating enables the use of wood for the production and supply to more comfortable and more efficient way.

5. Conclusion

The role of entrepreneurs in the of district heating system as a large segment of the energy industry, taking into account the guidelines of the European Union for the progressive development of district heating, is great. District heating has several areas in which entrepreneurs can develop, such as the installation of allocators, measurement and collection of thermal energy, storage, production and distribution of thermal energy, and energy savings, and therefore the role of the entrepreneur is very big. The biggest obstacle to new entrepreneurs is the security of collection, which is the biggest obstacle to entering a large number of entrepreneurs. Frequent change of regulations is also an obstacle to entry of new businesses and investments in the district heating, as well as poor and insecure history in which the vast majority of energy entities dealing with district heating was bankrupt. However, the fact that a large number of companies for itself performs the service of production thermal energy, although it is not their "core business", opening the possibility to entrepreneurs to think about providing a complete service of heat energy for the other.

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