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WATER MANAGEMENT - AN IMPORTANT CHALLENGE FOR MODERN ECONOMICS

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Abstract

Water resources are one of the most important issues of our time. Representatives of the world's countries and experts of the region invest all their time and skills in devising the proper way of managing the integration of the concept of sustainable development. Also, the goal of every state in the management of these resources is to find the right ratio of the public and the private sector in the management of water supply, most of the reasons are to avoid any kind of conflict because of water resources. The same conflicts are very divisive in terms of physical confrontations, protests and the spread of various diseases in the area with contaminated water. For these reasons, it is crucial to recognize and correct implementation of the process of water resources management, to adjust it with the concept of sustainable development in the future.

Key words: water resource management, water supply, water resource liberalization, conflicts over water, water security

1. INTRODUCTION

One of the biggest challenges of the 21st century is to make sure all people on Earth have better living conditions while reducing the impact of human activities (anthropogenic impacts) on the natural ecosystems and the global environment. Since water is fundamental to every living thing, and for many purposes it has no replacement, as one of the priorities on the way to achieving this noble goal is to ensure the availability of sufficient quantities of drinking water for the needs of present and future generations. However, in dealing with the growing problems of water supply, the general environmental protection and improvement of human life, especially the poor, at world level, made, or appear to be very modest, limited gains. In fact, the world applies to the new problems and challenges as before. Although water is a renewable natural resource, now due to disruption of the hydrological cycle more present fact is that natural supplies of drinking water is consumed in much faster rate than it is naturally filling and recharging. It is becoming increasingly evident and in surface and groundwater, where water consumption significantly exceeds the natural recharge. In addition, due to the limited availability of water ways, intensive use of water leads to a deterioration of its quality to the extent that it becomes practically unusable for other purposes. Marked improvement in the quality of such water, on the one hand, is very expensive (cost of energy, technology, final disposal of waste products), on the other hand gives rise to significant pressures on the environment with the resulting negative impacts.

The purpose of the research is to show the importance of water resources management, development of the same throughout history, description of important concepts such as the liberalization of water resources and water security. Also, the authors will critically examine the role of public and private sector in the management of water resources for the reason that their role is crucial in addressing the current issues about natural disasters (such as the recent floods in Slavonia or the great drought in the Middle East). The theoretical contribution to the work of science lies in the fact that they appear under-researched concepts and created guidelines for further research of the same, in order to better understand the concepts that will have a significant impact on the future of humanity.

In terms of composition, the paper is divided into five chapters. After the introduction, the first chapter presents the history of water management and development of the area. In order to understand the current status it is important to start from the very beginning and the initial state of water resources. Role of water in the ancient civilizations and religions, as well as short day transition to a new era, was described in detail. The second chapter deals with legislation on water management. Through the development of modern economies the legal framework is growing and within which to regulate all resources, including water. At the global level with the legal framework at the national level were held, and are held still, meetings of representatives of many countries of the world which bring the various agreements and regulations, signed by the Republic of Croatia,

out of its own legal framework. The third chapter is all about the structure of the water supply, sector within countries in the world. Accordingly, we analyzed the cases in which the water supply is left entirely to the private sector, cases in which water management is fully under public management, as well as cases that present a combination of these, or public-private partnerships, which are the most common form of management. The fourth chapter deals with the liberalization of the water sector, and the introduction of competition in the same area, the most reasons to reduce water losses and increase the efficiency of the system. Also mentioned are the conflicts over water in countries that are lacking water resources, the concept of water security that has resulted from that situation and bilateral relations these countries. The last, fifth, chapter deals with the future. Although it is still uncertain, there are certain events that are based on past data and can be predicted. Apparently, if there wouldn't be drastic changes in the field of water management, scenario of the future will look like an expanded view of the previous chapter, an increasing number of countries, regardless of the availability of water resources will be involved in the war over water.

2. HISTORY AND DEVELOPMENT OF WATER MANAGEMENT

During the last century a number of major revisions in production and use of knowledge in the context of natural resource management began to undermine the basic assumptions underlying the traditional approach leads (Pahl – Wostl, et al, 2011., p. 837). Today the water is everywhere, even metaphorically. It is mentioned in the news, either too little or too much, the center is the story of crisis and disaster perceived through extreme droughts, floods, tsunamis, and the contamination which is a major source of infection and death (Linton, 2010, p. 10).

To whom belongs the water? Who and why should rightfully control and have power over its distribution and, consequently, does the control over water retain citizenship or would it be left to private actors? (Larise, 2014, p. 10-11) In the answers to these questions, the three topics most frequently dominated by debates about law and water policy in the last 15 years. The first theme is water as public property, with an emphasis on the fact that it is owned by the state as the guardian of the public as a whole, with responsibility for water resources management in a holistic approach in order to increase overall social benefit. While the doctrine of public ownership through the history emphasize the importance of waterways for navigation and trade, it has recently focused on the need for sustainable protection of the environment for present and future generations. The second theme is water as an economic good, in which price is determined, it is traded and managed by the public sector. The final vision of water as a global human rights, under which all people have access to clean and adequate water resources for personal and household needs. Despite the perceived inconsistencies and established. According to many authors, treating water as an

economic good is infinitely more to the management of water as a public good and as a human right. The full price of water, the distribution of most of the water to the highest bidder and the involvement of the private sector in water management are, from the perspective of these authors, incompatible with the objective that the water is unique public resource that should be managed in a way to promote a broad public interests (particularly with regard to the environment and the rights of the poorest members of society) (Thompson, 2011, p.17). Most of historical civilization from which has emerged and our global civilization, were explicitly prohibiting private possession of water. Moreover, throughout the history of mankind water is considered sacred, something that should remain untouchable in terms of substantive human relations. Also, the Justinian Code about possession of water resources said: "By the law of nature, the following things belong to mankind: the air, running water, the sea and the coast of the Sea". Islamic Sharia law for centuries protected the right general approach leads, building on the Koran by which the water is "the source of all life," while the civilizations of the Indian subcontinent water for millennia considered the common good, the excluded, just like the air we breathe, of all the relations of private ownership.

According to the Vedas, the mere possibility of life on earth is related to the rain god Indra and his decision to take the heavenly water and link it to the earth, which only became possible after his victory over the demon of chaos Vritra who, with the desire to always keep the water in his exclusive possession prevented the emergence of life on earth. Therefore, the water of the river Ganges, according to Hindu tradition, has always been a link between the world of humans and the divine world. Swahili term Abadi, which marks the human settlement, is derived from the word ab, meaning water, thereby expressing an unbreakable connection between the human with streams and water sources. For American Indians, water is one of the most sacred natural phenomena; the idea that exists continuously to the present day and is reflected in the current requirements of the Indian community in the United States, Canada and Latin America. They are calling for ecological democracy which represents anti-pol globally dominant norms of liberal democracy, and implicitly includes a general right over the water, the environmental sustainability of the economic system and the ethics of sharing. Water is also one of the central elements of traditional Chinese philosophy of nature.

The neo-liberal market economy shifted the historical significance of water from the common good to private ownership, the goods that can and must be possible to trade on the principles of the capitalist economy, similar to any other goods. Each value can and must be translatable into monetary value expressed in monetary price. The commodification of all human values and consequently their reduction under an irrevocable logic of markets, trade and capital begins in the middle of the 19th century, along with unforeseeable consequences. This logic race grapples general human resources, sarcastically defined even in Roman law sentence Qui prior est tempore, portior est jure, or

freely translated fastest boy, gets the girlfriend, became the only compass of global neo-liberal project, which begins with the arrival to power of Ronald Reagan and Margharet Thatcher. Neoliberal doctrine fundamentally tightens supsumption of all human and social values under the logic of the market and dictates the demolition of all state and social control in the use of water as well as all stood general social resources. After the destruction of the Bretton Woods system, the International Monetary Fund and World Bank have become the central institutions of the neoliberal order, which starting in the early 1980s warrant the creation of global markets of water, attaching conditions to development loans and have access to sovereign states and their economic actors in global trading networks in obedience compared to dictate of privatization deregulation. The totalitarian logic so called free markets do not allow exceptions and strictly punish disobedience, using at the same time and the aforementioned blackmail and mythology about the free market for economic development of society unconditionally better regulated, and the axiom that private ownership within a competitive market is by definition more efficient than social or public. Empirical facts, however, show the opposite. Namely, they show that a single case of the privatization of water in the last ten years on a global scale for a society brought nothing but suffering, accidents, disease, discrimination and social protests that sometimes, as in the case of Bolivia, even grew into revolution. However, behind the apologetics of neoliberal economics and its logic, which was founded in the general willingness of the act of faith, despite the undeniable facts that prove the contrary, are powerful vested interests, so powerful that any struggle against them, in order to preserve the survival of the individual and society seems like those between David and Goliath.

The privatization of water in the UK, which was conducted shortly after coming to power Margharet Thatcher, is in many ways a paradigm for all the following examples of water privatization around the world in the 1990s and 2000s. Polish Parliament adopted it on November, 4. 1988, and the result is a drastically worsening water quality and supply, while significantly increasing its cost. Maintenance of water supply infrastructure is extremely expensive and requires constant investment. These investments are incompatible with the requirement of continuous profit growth, which is the raison d'etre of private companies. It should be recalled that the rate of profit on the privatization of British waters in 1990 has reached 36 to 60 percent and that the salaries of senior management in these companies from 1990 to 1998 grew at a ratio of 200%. Part of the shares until then public RWA Water Company is expected, passed into the hands of institutions of finance capital, which are logically disposed largest potential liquid capital for such investments, which were bought for the purpose of financial speculation. The need investment in the infrastructure of the water supply of private actors is therefore led to the inescapable dilemma: either falling profits or dramatically raising prices to consumers. The answer is, as expected, was the latter, in addition to the way missing and promised investments in infrastructure, which were eventually used only as an alibi constant increase water prices. Lack of adequate investment in infrastructure and the absence of

any works on it have resulted in the conversion of 8 500 employees in this sector in the labor surplus, which had to be released. Lack of maintenance of the water supply network has led further to the enormous water losses in the system, which proved disastrous during the drought in 1995. In order to prevent further losses and potentially unforeseen consequences of neglecting the infrastructure of water supply, repairs to the system at the end again financed from the state budget, so that the loss fell on the backs of taxpayers, and profits continue to be funneled into private pockets. The model in the UK encountered bitter resistance, and is implemented only in England and Wales, and in Scotland and Northern Ireland water remained in public ownership. This basic model, with more or less variations, has been pasted during the 1990s and 2000s at the global level, by the direction of the IMF and the World Bank. Of the 276 loans that the World Bank from 1990 to 2002 allocated for projects related to water around the world, 84 were directly conditional on privatization, and in other cases loans have been allocated exclusively to private actors. International Finance Corporation, a direct sub-sector of the World Bank, had frequently been a shareholder in the privatization of water, as was the case in Argentina and Bolivia (to 2002). The privatization of water resources in Nepal was under non condition of any investment Asian Development Bank in the country. Contrary to liberal myths about how private ownership of key economic sectors and resources leads to healthy competition, which in turn brings lower prices for final consumers, empirical data suggest the opposite: that private ownership of key industries and resources leads only to the formation of oligopolies and monopolies, who are able to dictate prices at their own discretion. In the global water business, over the past decade are established two multinational companies that de facto monopoly the global market water: Suez Int. and Veolia Water, both mixed corporation whose business range includes multimedia, financial speculation and water resources. More than two-thirds of private property over the water on the planet is in the hands of these two companies and their sub-units that operate internationally under different names (Larise, 2014, p. 11).

3. WATER MANAGEMENT LEGISLATION

Water is the most valuable resource that a country can dispose of. For the state to maintain such resource must manage water and put it under special supervision and control of state (Kozina, 2011, p. 139). The concept of legal regulation has different meanings in certain professions in which is used mainly as a term of art to describe a specific characteristic management processes. When it comes to the economic context, the regulation can be described as encompassing all the control measures that the state imposes certain types of business transactions. When a company or country chooses to enter competition as the dominant in managing the economy, then the social and normative regulation consists in the fact that it is intended to prevent distortion of competition (Popović, 2007, p. 690).

3.1. Water management in the world

Human society depends entirely on water resources in terms of drinking water, the use of household, industrial and agricultural production, which represents almost all human activity (D'Odorico, 2010, p. 1). It is important to emphasize that the human race has greatly changed the way the world's water resources work, and now the time has come to this same race to change the way of thinking about them (Sivapalan, 2011, p. 1). Thus, the central theme of the world conference on water strategy is the management of water resources in the 21st century. In this context, points out the basic postulate of a complex function of the water and its social, economic and environmental dimension. Hence the strategy of water resources management should be based on the harmonization of social, economic and ecological demands and interests. This means that none of these three dimensions of water resources can't have an absolute priority, and that others are neglected. If you ask a question of priorities, then it should be kept in mind one of the most important postulates that states that as part of environmental protection, basic human needs must be given priority. In other words, the supply of drinking water, adequate quantity and quality, is the most important task of water management in each state (Petković, 2004, p. 296-297). Traditionally, management of water resources in the world can be characterized as a centralized and mechanized system and large-scale operating within the control regime which leads expansion and efficiency, facilitated the technical and professional support, which, in turn, operates in a stable regulatory framework. While traditional systems have been relatively successful in the past, the capacity of these large-scale socio-technological regime to respond to a growing number of challenges, including uncertainty and complexity, in the modern economy is questionable. With current projections of climate change and increasing demand for water as a result of the growing population, proponents of sustainability proposed changes to the management activities that are sustainable. Regimes sustainability emphasized to flexible framework, primarily flexible, which would include all practices and activities to create a culture that embraces experimentation and learning in order to encourage sectorial adjustments. For example, these regimes to encourage a wide range of experiments and the introduction of alternative ways to supply water on a centralized, hybrid and decentralized level. However, in the global management of water resources, there are numerous barriers to improving the regulatory framework, which include, among others, divided organizational responsibilities, and the perception of the effects on health of the population (Farelly, Brown, 2011, p. 721-722). The protection and sustainable use of water resources, are also regulated by the provisions of two specialized branches of international law: international water law and international environmental law. Both these branches, with certain peculiarities, have the same resources that otherwise has general international law, and which are listed in the Statute of the International Court of Justice. In practice, however, by far the most significant regulation of specific contractual provisions and certain declarative acts. In addition, it should be noted that when considering international legal regulation of this issue should be noted that it depends largely on the application of

international law at the national level but also on the development of national legislation, the efficiency of the relevant institutions, staffing and basic preconditions to legal regulations applying in practice.

3.1.1. Declarative documents

A full range of declarative international documents contains provisions regarding the protection and use of water resources. It, above all, relates to the documents adopted at major international conferences, such as the Stockholm Declaration on the Human Environment (1972), the Nairobi Declaration (1982), the Rio Declaration on Environment and Development (1992), the UN Millennium Declaration and (2000) and the Johannesburg Declaration of the Summit on Sustainable Development in 2002. When it comes to the work of international professional associations, it is important to mention some documents adopted by the International Law Association (ILA), UNEP and the Danube sub regional plan. As part of the ILA 1966 adopted the so-called. Helsinki rules. According to the Helsinki rules, each country, within its territory, is entitled to a reasonable and equitable share in the use of international water catchment area. After the Helsinki rules, under the aegis of the ILA adopted a number of other rules relevant for the use and protection of water. The UN Environment Programme (UNEP) in 1978 adopted a document entitled "Principles of conduct in the field of environment as a guide countries in the conservation and harmonious utilization of national resources divided between two or more States." It applies to all natural resources shared by two or more countries, including of course the international watercourses. The most important principle is entered in this document is the principle of fair use. According to it, the state should cooperate on an equal basis and taking into account the sovereignty, rights and interests of other countries, in terms of control, prevent, reduce or eliminate negative impacts in the environment that may arise from the use of such resources. They are expected conclusion of bilateral or multilateral agreements in order to more specific regulation of mutual relations. Also, one of the most important documents for the cooperation of the Danubian countries is the "Declaration on the cooperation of the Danubian countries on water management issues of the Danube River and in particular on the protection of its water pollution" adopted in Bucharest in 1985.

3.1.2. Contractual regulation

The most important international multilateral agreement of universal character which regulates water is the Convention on the Law of the use of international watercourses in no navigational purposes (New York, 1997). It has not yet entered into force but is of great significance especially because for the first time an international agreement on a universal plan lays down the conditions for the use, development, conservation, management and protection of

international watercourses and the promotion of optimum and sustainable use of the not navigation purposes. In the preamble to the Convention indicates, among other things, the importance of enhancing international cooperation and good neighborly relations between the countries. In addition to this international treaty adopted at the global level there are a number of other contractual instruments that are to a greater or lesser extent related to international watercourses. Today, a large number of international organizations are dealing with certain aspects of the use and protection of water and protection of the environment in general. First of all organizations within the United Nations, both at the global and sub-plans, made a major contribution among other things, in the field of use and protection of water. Here we should mention the UNEP, UNDP, OECD, WHO and FAO. Among other global international organizations, the important role was played by the World Bank and the Global Mechanism for financial support in the field of the environment (GEF) (Vukasović, 2006, p. 171).

3.2. Water management in the Republic of Croatia

Assessment of water management is shown in the Water Management Strategy of the Republic of Croatian / 32 / shows clearly that water management in Croatia should improve (improve systems: sewage and waste water, flood protection, irrigation, etc.) (Karleuša, et al., 2010, p. 2). But before parsing the specified conditions it is necessary to define the most important concepts related to water resources management in Croatia. As one of the most important general concepts in water management in the Republic of Croatia law states the following:

- **Water** (intended for human consumption) is all water, either in its original state or after treatment, intended for drinking, cooking, food preparation or other needs of households, regardless of its origin and whether you comes from the public water supply, from the tank or from a bottle or container for the water and all water used in industries to produce food for the production, processing, preservation or marketing of products or substances intended for human consumption unless the competent authority does not consider that water quality can't be affect the safety of food products in their final form;

- **The water environment** is the water system, including water and water-related ecosystems (organisms and their communities), human and material and cultural heritage created by man in the totality of their actions;

- **Public water supply** is business abstraction of groundwater and surface water intended for human consumption and its processing and delivery to the end user or to another supplier of water services, if such operations are done through the structures of public water supply and the management of these buildings;

- **Pollution** is presence of direct or indirect substances or heat into the water and soil caused by human activity, which can be harmful to human health

or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems, which leads to damage to tangible assets, disruptive features of the environment, protected natural value or impact on other legitimate uses of the environment;

- **Water policy** is a set of laws, procedures and measures which, within the scope of the Croatian regulatory system and the law regulating the financing of water management, regulate and implement water management, detailed drainage amelioration and irrigation, and water services to other legitimate uses of the environment; (Zakon o vodama, NN 159/09, 14/14)

Water management and water resources, as a very important part of the action, too, must comply with the laws of the European Union (EU), and agree with the environmental policy, legal and organizational framework of the EU in the field of environmental protection. Within this, it is necessary to apply some principles: **sustainable development**, and coordinated system of technical, technological, economic and social activities in the overall development, where the economically and reasonably natural and created values with the aim of preserving and improving the quality of the environment for present and future generations; **sustainable waste management** which means a more efficient and rational use of resources, waste minimization and treatment with it so that it contributes to a comprehensive sustainable development; **conservation of natural values** and the "polluter pays" and "user pays"; **implementation of incentive measures**; a shared responsibility (decentralization of decision-making); **raise awareness** about the importance of environmental protection; proximity and regional approach to **waste management** that is the hierarchy of waste management, open and flexible market for waste management services and the use of economic instruments before the legal (Pavičević, Stamenović, 2007, p. 131).

The Law on Water defines sources of funds for financing water management and ways of calculation and payment. However, the Utilities Act determines the supply of drinking water and drainage and waste water treatment as a communal activity for which the height of prices, tariffs and determines the payment service provider. However, the supplier of utility services required at each change of prices and tariffs of their services to obtain prior consent of the local government units in the area where the service is provided. The delivered price and the local government is obliged to respond within a period of fifteen days, and if not, by law, is deemed to have given its approval. Changed tariffs apply when they are accepted by local governments that hold a majority ownership of the supplier of the water supply services. Reported list must contain a description of the type of utility service and the manner of calculation and payment services, the structure of the existing price of utilities, the proposed new price of the service and its structure, percentage changes in prices in relation to the current price of and reasons for changes in the price with detailed explanation and calculation. The implementation of this procedure, particularly in the assessment of the reasons for the change in price, requires the bodies of local self-

government relatively high level of knowledge of the technology of water resources management of supply to sewerage and wastewater treatment, as well as high economic expertise for the proper assessment of the cost elements that make up the final the price of water. In practice this is not easy and does not necessarily guarantee that consumers will always have a non-discriminatory pricing of services. Private equity in water supply operators brings to the forefront the profitability of businesses that provide water supply services, which means that the price of this natural resource for end-users must be economic, cover all costs incurred in connection with a public water supply and drainage, provide the return on investment of the owner and give a boost to for further investment in the modernization and development of infrastructure. Privatization is arguably one of the ways to encourage higher productivity so that in addition to meeting the technical, health and environmental standards lay charges and the way business operators at the center of observation. Private ownership in terms of quasi-natural monopolies and the high inelasticity of supply and demand leads to easy opportunities to achieve extra profit businesses from consumers, especially when it comes to the category of households which are the smallest people in the total consumption and the socially most vulnerable. Therefore, the conditions should be developed in which it is not possible to impose excessive prices for consumers, but which allow coverage of all business costs and sustainable development of the activities of special public interest. The question is therefore practical: whose real costs are paid by the consumer, economically efficient, the average effective or ineffective water operators? In Croatia, the price of water ranges from 2.5 to 16 HRK per m3, and should provide compensation for all costs of maintenance, functioning and development of the water system. It is certain that these price differences, without going into the possible hydro-geological and geographical specificities, pointing to significant differences in efficacy between individual operators. For example, losses in water supply networks vary from 8% (Koprivničko - križevačka County) to 68% (Zadar County) as the difference between the abstracted and delivered water to the county level in Croatia. Therefore larger representation of the economic analysis of operating costs of each operator contributes to a better comparative and sorting capabilities to above-average and below-average successful operators. For it is a prerequisite for independent action (regulatory) bodies having the necessary powers to independently ex officio regularly collect the necessary data and regulating tariffs in the water sector. Therefore, public authorities belong to more the role of regulators relations in water management, rather than the role of the providers of such services, as an internationally observed that in such cases, on average, there is less investment in the construction and maintenance of water infrastructure with more public subsidies. Equally, as a rule, relatively low prices that do not reflect the real costs contribute to inadequate consumer compared to the value of water services as well as the very water resources are not inexhaustible and have environmental value (Popović, 2008, p. 696). In Croatia, in the end, so far, published relatively little evaluation of water regime, and these

studies have generally been very spatial limited (Barbalić, Kuspilić, 2014, p. 614).

4. ROLE OF THE PUBLIC AND THE PRIVATE SECTOR IN THE WATER SUPPLY

The core problem of today's water supply is its unsustainability in almost all segments. Many sources of drinking water contaminated and fully or over-exploited, some of which are irreversible, and she in coastal areas are additionally exposed to saltwater intrusion. The former relationship with water as the public benefit, therefore, today is completely unacceptable. Water is not only natural and public wealth, but also an economic good, which is mainly conditioned by the economic and financial costs of supply and protection of water shortage and / or limited availability of water and the privatization of public water supply. The fact that further support of the need for this change in the attitude towards water are significant water losses due to lack of maintenance of water supply system occur at the stage of its exploitation (Vuković, Halkijević, 2012., p. 362).

4.1. The role of the public sector in the management of water resources

The oldest is the belief that water belongs to a group of public goods (Thompson, 2011, p. 19). However, it is necessary to point out that the characteristics of a public good (although it has aspects that can't be monetarily valued) does not mean free access, that is, withdrawal from the determination of price dimensions (Lošonc, 2006, p. 174). During the nineteenth century and the first half of the twentieth, the doctrine of public trust found its place primarily in the decisions of the US courts that deal with navigation rights and other forms of non-consumer use of waterways. In recent decades, however, it is obvious that the extension of the doctrine of public trust in the processes of environmental and cultural interests in water and, geographically, in the determination of a broader set of common legal jurisdiction. As elaborated within the Water Law, which regulates the water supply, the doctrine of public trust involves at least three important principles. First, the government or the public sector, retains the ultimate right to the property over the water, on behalf of the public at large. Although the government may authorize private individuals or private undertakings limited rights to use the water (as is the case with, for example, coastal areas). Second, the government or the public sector, owns the rights to water as a trustee to the public as a whole. Water is not like other state property, such as the post office, sports facilities, military bases and even parks, over which the government has the right of ownership. Instead, the public sector is responsible for water management in the public interest, and as a result there is less limited ownership rights. Ultimately, regardless of the rights that are assigned to the government in the past or are actions individuals and private entities rely,

in relation to the previous policy, the government has the authority and obligation to change the rules of water management at any time in response to changing conditions, information or public document because it has a permanent obligation to manage water for the purpose of public trust (Thompson, 2011, p. 20). Most of the investments in the water sector in high income countries are financed through the public sector, using state of the public finances, collected through taxation or loans, which have been built with the guarantee of tax inflows. There are clear reasons why public spending is the preferred form of financing water supply infrastructure. First, the state may finance the construction directly from tax revenue, in which case there is no cost of capital. In the event that the state decides to borrow money, as a way to shift costs to taxpayers in the future, it can be done cheaper than it would have done the private sector, because of the high security tax revenues. Private investors will not only have to pay higher interest rates, but face a risk of inability to provide long-term returns on investment. Capital expenditures represent 75% or more of total costs, and lower the cost of public funding decisive. The difference in the cost of capital of public and private sector is as big as the total operating costs. Therefore, it is possible that the private sector make up a larger capital costs with comparative savings in operational efficiency. Another reason why the public finances are needed is to make payment for services for households based on the return of the total cost by the private investors resulted in expenditure of 3.8 to 5% of income for households with low income. A true consumer market would be faced with coverage of less than 100%, while the commercial operators will provide services to consumers whose ability to pay high fixed cost unreliable. The third reason, noted that the health benefits of water and sanitation community, not private, and so will the willingness of individual consumers to use these services to be the socially optimal level. To realize the social benefits, the connection must be mandatory, not optional (Hall, Lobina, 2010, p. 4 – 5).

4.2. The role of the private sector in water resources management

Water, despite its possible instrumentalization market, therefore, can't be fully converted to market goods. Its ecological, cultural characteristics are resisting its subordinating the logic of the market circulation. Therefore it is necessary to think about its division, delivering (Lošonc, 2006, p. 172). However, for several reasons, the participation of the private sector with frequent the frequencies in the water sector in the world. Although there are no definitive studies to determine the relative efficiency of private entities dealing with water supply in comparison to those of the public, there is no consensus in the literature regarding the economic savings from better risk diversification. Moreover, the regulatory agreements misallocation of risk has another serious consequence: the negotiations on the renewal of the contract. Such situations include negotiations between the operators and the government in a non-competitive (and generally

not transparent) environment. Since there are significant differences in the data, legal skills and technical support, the private sector tends to benefit from contract renegotiation (Marques, Berg, 2010, p. 1-2). Government who implemented the concept of public-private partnerships tend to offer more justification for the introduction of this model, instead of making more forms of public provision. One of the key justifications for the PPP is that it is primarily used to control public spending. Under to the appropriate terms (in relation to the allocation of risk) investments in public-private partnerships do not require public borrowing thereby providing the possibility of off-balance payments. Secondly, where the PPP is structured on the basis of private financing government can avoid the initial capital costs. The spread of these costs in the longer term can assist in achieving the fiscal targets. The third reason for the PPP is that it provides a model for the use of infrastructure and services at a lower cost, which stems from the most superior scale efficiency of the private sector and technical efficiency. The key driver of the use of infrastructure and services at lower prices is room for risk transfer in the context of public-private partnership. This same space for risk transfer provides the fourth argument in favor of PPPs. If risks are properly allocated between private and public undertakings, resulting in harmonization conducive to a higher level of efficiency. Fifth justification for PPPs is that they provide space for greater innovation and calculation of dynamic efficiency and offers from the supplier are classified according to the output specifications (output) for the detailed specification of inputs, as is the case in traditional procurement process (Reeves, 2011, p. 97 – 98).

5. LIBERALISATION OF WATER SYSTEM AND CONFLICTS FOR WATER

Over the last 15-20 years problems in the water sector have emerged. Developed countries are struggling to provide much needed investment in maintaining and updating its water system. The main concern of the less developed countries, on the other hand, the lack of access to safe drinking water, which, combined with inadequate infrastructure causes more than 5 million deaths every year. Awareness about these difficulties and pervasive infrastructure changes in other sectors show an extremely slow pace of reforms in the water sector. Moreover, most of the systemic reforms so far implemented by developed countries, although in them the situation in the water sector seems less urgent than the situation in developing countries (Menard, Peeroo, 2011, p. 2).

5.1. The liberalization of the water system

The reforms include changes in the decision-making rights, changes that change the way of management and, in many cases, the allocation of property rights of the existing operators. Thus understood, the reform can be implemented in many different forms. Since the early 1980s comprised a model that ran from

liberalization, which has identified the introduction of competition, to privatization. However, it is relevant to look at the broader definition of liberalization, especially in the water sector, where competition barely exists, and winning market share continues to be a major challenge. The movement towards liberalization of urban water systems is mainly driven by financial and ideological factors. However, it turned out that it is far less "liberal" than in other sectors. The most important driver of the reform of the water system was and will remain finances. While developing countries are faced with high costs of enlargement system for explosive urban population, public enterprises in developing countries have to deal with aging networks that require significant investments. Even in well-maintained systems, local authorities face the investments needed for a sharper increase in the quality and adjustment to the new legal framework. Moreover, major investments, was due to higher quality standards, and the need for renewal of obsolete systems, or due to the demographic explosion in the development of cities everywhere are faced with major budget constraints.

In attempting to implement the process of liberalization of the water sector, the problems that usually occur and display cases were recorded in several European countries:

- **England i Wales**: An example of England and Wales is unique in that no other country has a fully privatized water sector. This case provides a stylish example of how financial considerations supported by a strong ideology constitute the most radical form of liberalization: complete privatization. However, this experiment has at least two distinctive features in relation to the reform of other utilities. First, because of the characteristics of the water system, the sector remains under control, the visible action of an independent regulator, the Body for regulation of the water sector. Second, while the liberalization of the water sector in most countries goes hand in hand with the process of decentralization in England and Wales went in a completely different direction, which is also accompanied by an increase in centralization.

- **France**: French way towards liberalization is different. It is rooted in the system through a long tradition of public-private partnerships. However, public-private partnerships have not always been as widespread now, given the recent legislative changes designed to create benefits for the more open, competitive sector. The main drivers behind the launch of liberalization in France are financial restrictions, as well as the UK, which, combined with ideological forces play a very important role. However, unlike the situation in the UK, the process never reached the point of complete privatization, which also was accompanied by a movement towards decentralization.

- **Germany:** From the dynamic model of liberalization in different countries, one in Germany is at least striking. Among many factors that could explain this situation, leading it could be embedded in the very nature of German political institutions. Germany consists of a kind of federal states. Since each of

the 16 states has its own law, the water sector is highly fragmented, with thousands of small, local operators and the many ways organizations. Therefore, no large operators that dominate the national market, the opposite of the situation in France and the UK. Only about 30% of the German population gets its water from the arrangement involving the participation of the private sector, and it represents only 9% of the total number of operating units. The private sector is mainly active in the big cities, in the eastern part of Germany (where after the reunification, destroyed water structure requires large investments at a time of significant restrictions on public finances). In fact, public-private partnerships that remain as exceptions. Most water services are performed under public management. Strong resistance to liberalization has been developed in Germany, not only because of opposition from trade unions, but also because of its continued resentment of the population to water privatized (Menard, Peeroo, 2011, p. 12).

5.2. Water wars

Water is a limited and irreplaceable resource, very essential for survival. Water is central to the concept of sustainable development as a fundamental driving force and primary source of social income, economic development and environmental safety. National, regional and international stability and peace all the more dependent on the effective and sustainable management of the world's freshwater resources (Mason, Blank, 2013, p. 5). System of water resources in the world under the challenges of the many problems (Simonovic, 2008, p. 157). These are: climate change, population growth, migration, urbanization, changing land use in the economic sector, and these are just some of them. All these changes have a direct shot on the water sector, the provision of water services and the availability of ecosystem (Mason, Blank, 2013, p. 7).

5.2.1. Conflicts over water in the Middle East and Africa

The crisis of water resources in the Middle East is a "strategic orphan" that none of the countries and international institutions does not want to "adopt". Despite irrefutable evidence that the region is approaching a dangerous shortage of water and pollution, Western leaders have not managed so far to solve the problem as a strategic priority. However, when you finish the current conflict in the Persian Gulf, it could break significant water crises. Intensifying the problem of security requires continuous action policy as well as a new bureaucratic and advisory structures. In the middle 1980s, US authorities have estimated that at least ten places in the world war may break out due to the disappearance of shared water resources: the majority of the Middle East, Jordan, Israel, Cyprus, Malta and the countries of the Arabian Peninsula, which are considered a dangerous zone where everything available stocks of fresh surface water and groundwater to be fully exploited. Algeria, Egypt, Morocco and Tunisia face

similar prospects within 10 to 20 years. Morocco has taken serious measures in the water and sanitation sector. However, the country faces the prospect of decline of the water supply system. Algeria, Israel, West Bank, Gaza, Jordan, Tunisia and Yemen have already facing a "water barrier" that require accelerated efforts, investments, regulations and controls just to keep pace with the rapid growth of population. Middle Eastern and North African countries, combined, absorbed about 80 million people by the end of 1990, within which is still fighting David, who represents the existing water facilities and sanitation services and Goliath, or the demand for water.

In 1999 Bolivian government gave a concession for water supply for 40 years, in the cities of Cochabamba and Agus del Tunari, an international consortium led by Bechtel. The concession included all water resources in the basin, including jointly constructed wells. In some areas, water prices have gone up by as much as 200%, and thousands of people repeatedly coming out to the streets in protest. One person died in the clashes, while on several occasions was declared 90-day state of emergency, which ultimately led to the consortium officials escaped from the city, and the government canceled contracts. Water supply is again returned to the public administration, although the poor population then felt only insignificant improvement in the level of services. In addition, they are still paying 10 times more compensation than those households that were connected to the municipal system (Furlong, 2010, p. 46). The water and its use and the need for it, is so essential to this and all other areas that came into use the term "water security", as a concept for the use of water in the negotiations and the creation of lasting peace based on international cooperation (Janković, 2007, p. 267). Currently, water security is a concept that is attracting increasing attention within the political and academic debate or (Cook, Bakker, 2012, p. 94). Therefore, it can be concluded that the security of water resources will soon be on a par with military security in the Cabinet of Ministers of Defense (Starr, 1991, p. 1-2).

5.2.2. Conflicts over water in Asia

Drought and slow desertification are the biggest problems faced by China, options under consideration from other Asian countries, including India, are to take control of major hydro sources for India and much of Southeast Asia, and even further, to area of Central Asia and Russia. Obviously, if China is faced with catastrophic problems related to water resources, will act in accordance with their interests, regardless of the current statements of the "shared vision" and a prominent desire to be part of the "world community". Beijing is in his plans expressed a clear position for the rearrangement of Himalayan water courses. The team would move most important waterways for most of the Asia subordinate to his will and the coming years of diplomatic negotiations would address the urgent problem of mass starvation.

India is also facing a big problem of water collection. Hydrologist's reports of NASA's science team say that the water is pumped and consumed much faster than it is renewed by natural mechanisms. The team found that, due to excessive use, water supplies in northern India fell by about a fifth more than expected. Also, the level of groundwater in the three provinces in northern India was decreasing by an average of 4 cm per year from 2002 to 2008, in addition to increasing the amount of groundwater in the country is unsuitable for drinking and irrigation. Conflict over water on which most obviously affect relations of China and India and countries in Southeast Asia, it also has major consequences in Central Asia and potentially draws China into conflict with Russia. Irtysh River, which connects the border of China, Russia and Kazakhstan puts relations of these countries in the same trouble as well as relations of China and India because of Brahmaputra. Therefore, the international community stands out as the biggest problem in this area, despite China's assurances to the contrary, the current "potential interstate conflict over water resources" because some Asian countries already abound disputes about the same, and such disputes are from India and Pakistan to Southeast Asia and China (Bolton, 2010, p. 67).

6. WATER RESOURCES MANAGEMENT IN THE FUTURE

No one can certainly claim what will be the future of water resources in the world in a country (Dellapena, 2013, p. 1). Thus, sustainable use of water resources that meets the needs of a growing world population can't be achieved without better understanding and careful planning of water demand management (Dziegielewski, 2011, p. 1) because of the reason not to acquire the darkest forecasts of wars over water resources and powerful people to operate them, while they might be above the law (Bod, 2010, p. 445). The current authorities in many countries do not know how to deal with problems which carries the supply of safe drinking water. Often a lack of funds prevents quality programs. Many consider that concerning about water should take as big a global campaign where things are resolved globally. Since the conference in Stockholm until the recent conference in Rio G 20+ debate over how to take advantage of and preserve the water resources around the world. Unfortunately frequent conferences and meetings are not too successful, because of conflicts and differences in the interests of different countries, groups etc. (Dellapena, 2013, p. 1-2).

How water management can be sustainable when future can't be predicted with a certain degree of security? Nobody knows with certainty all influences on today's decisions. Nevertheless, one must take into account that future generations have access to water resources only if they develop plans, projects and policies for water management. Sustainability is closely related to various measures of risk and uncertainty about the future. Forecasts of future development will be wrong, and should be periodically reviewed. Realizing that some water management objectives change over time, it is necessary to consider

the flexibility today the planned system. How is the sustainability of the functions of various economic, environmental, ecological, social and physical goals, that water management must inevitably involve a multidisciplinary decision-making process (Gereš, 2004, p. 926-927).

The problem of over-exploitation of water resources is extremely complex from the standpoint of social, economic and political conditions. Solutions must meet the environment and be socially and politically feasible. The general objective to minimize the environmental loads below the threshold permanently tolerable load, allowing for sustainable development. Many countries pay compensation for use of water resources. Size of the fee depends on country to country, most are paid in countries with a higher standard of living than in those countries where the standard of living is lower. The use of water resources is given in many countries in private hands, and this is particularly true for companies which primarily handle sales of drinking water. This method of cooperation between the state and private companies was first introduced in England and then in France and Germany. Yet governments are the ones who largely finance the operations of the system that deals with water supply. Through a variety of taxes and fees in the future are expected to collect the money that will later invest in the maintenance of existing and new infrastructure, the human frame, etc. (Hall, Lobina, 2010, p. 4).

More than any other sector, the water will continue to remain the most connected with most of human development (Ivanova, 2005, p. 46). A clean, healthy drinking water, has become clearly one of the key elements of modern life, but also of economic development. The issue of security of drinking water but is now critical in many parts of the world, and in the future would be, according to many, could become a key strategic issue of human society on a global level. The issue of rational use of water certainly raises in those regions and countries where (at least for now) there is enough water (Goić, 2004, p. 596).

The specificity of the water in its circulation, or in its re-use. But too much pollution, industrialization and modernization (especially urbanization, and half the world's population lives in cities, so we experience the urban transition) increases the requirements of the above resources, and given the rapid growth of urbanization is not difficult to conclude that the towns in the immediate future to embody places high concentration of pollution water. We should not forget that the water surface disproportionately located, for example, nine countries has 60% of fresh water. At the same time, as shown by numerous natural disasters, a large concentration of water does not exclude that in the same countries, at least in some parts, drought occurs. In any case, no one calls into question that water today is as a strategic resource. Despite the growing availability of water in many parts of the world, there are vast areas where people are suffering due to contaminated water and appropriate consequences. It is anticipated that even without the dramatic climate changes that are announced, the number of people who will be affected by shortages of water resources rise to 1.7 billion, how about today is, at some 5 billion people by 2025. There has been growing market of

bottled and mineral water. By some estimates, this market grew in the last 10 years as much as 20%. Some of the most powerful economic actors on the market of bottled water corporations like Nestle Waters, dispose of 16% of total sales in the world market, while the other participants, such as the world-famous Coca-Cola, with its brand Bon Aqua intend to participate, with a larger market share. Given the current and potential water shortages, corporations are becoming more focused on the future of this market, and with the desire to acquire the largest possible share of the market that is still expecting a real "boom". Estimates are that this market will in future carry the highest returns (Lošonc, 2006, p. 162).

It is believed that happenings today are a turning point in thinking how to properly and sustainably manage water resources. Traditional and current technology does not solve the urgent problem and requires a constant and a great investment that is not a problem for a few very rich countries, like the United States and some Western European countries such as Germany, England, France, and the like. In this context, it is more often referred to the so-called "pure system" that is, systems that are decentralized, easily adaptable and energy-efficient. Groundwater which is around 30-35 times higher than those on Earth (rivers, lakes) are quite unused and it is considered that the sustainable development of groundwater and their constantly finding may play a major role in a possible shortage of water in the future. Thus large amounts of groundwater lying unused and can be achieved to use newer technologies and systematic research that water can reach the end users - the people. It is possible, for example, using satellite images, geological mapping, photographic images, geophysical analysis and the like. Using all this information to teams of geologists found enormous deposits of underground water in all parts of the world. But unfortunately, the vast majority of research that stops, because the process of finding and the extracting water is very expensive and time consuming for it unfortunately the majority countries do not have financial conditions (Fitch, 2014, p. 27).

The future, ultimately, carries, according to an estimate many experts who deal with water security, numerous wars because of water. Asian countries and the Middle East will be able to divide on those with large amounts of fresh water, the country with sufficient quantity of drinking water and those with a serious water shortage. Countries like Israel and Jordan will suffer from severe water shortages, while, for example, Saudi Arabia threatened to already in the middle of this century there was an almost complete water shortages. Therefore, countries of the Arabian Peninsula will most use water made the process of desalination of sea water. Kuwait is now, thanks to large exports of oil and vast profits, built a large number of processing factory of sea water, which settled 100% of their current needs, which will continue into the future (Janković, 2007, p. 287).

In conclusion, authors agree that, for water supply management there should establish a right management model that includes:

- Planning: includes strategies and measures, which are then implanted in the legislation, inventory of resources and the adoption of strategies / policies / concrete (action) plans.

- Organization: at all management levels is needed to determine the key holders who are responsible for the functioning of the water management system. It is probably not possible to let it to one subject, a kind of "stakeholder network for water management system" should be created, define a body that will be in the "center" of the organization. Authors also propose that the system should be bottom-up, or moving from the local level to the top. Which means that most responsible for water would be a local level

- Leadership: the central authority in the network of stakeholders it would be responsible for following the water management system and have law defined power and authority to carry out the entire water management policy on its (local or regional) level. Considering model is devoted to local level, it would be similar to linked-"networks" and those on regional /national / EU /global level have, for example, the annual meetings, where they coordinate their policies, possibly redefine strategies for water management, and monitored system proposed improvements, etc.

- Control: The same "central body" would be in charge of monitoring the entire system, and that monitoring should be harmonized with previously described meetings (ie. annual) in order to coordinate strategies and policies and the monitoring system and its sophistication, consistency and transparency.

8. CONCLUSION

At this point, management of water resources in some countries is carried out within the legal framework adopted by the national government. Global meetings of government representatives and the experts complement the laws of individual countries and the relevant information is essential to maintain more frequently in order to efficiently monitor and the revise the current state of scarce water resources.

Depending on the organization within the country's water resources management and the water services is left to either the public administration or the private sector. Public administration in this regard have access to finance from the state budget and the end users providing services at a lower user fees, but the private sector is significantly more effective although they charge more. The ideal is a combination of both sectors connected to the public-private partnership. It is also the optimal form of water resource management in modern economies, although some countries, such as the UK, fully privatized its water sector, and some of it, like Germany, is entirely left to the administration.

Important thing to conclude is that theoretical contribution of this paper is pointing out that water management is a specific form of management, mostly

because of the fact that all of the subjects included in managing are dealing with seemingly free public good that world has in abundance, which also provides a whole new view on the water sector problems, such as water losses.

The liberalization of the water sector, which is a process that ultimately leads to full privatization, in many countries has led to conflict because of water resources. The unconsidered and the poorly planned government actions in several countries have caused unintended consequences. World of possible water scarcity, pollution and the spread of infectious diseases for this reason more sows fear.

The authors concluded that the future is not bright. The fact is that no one can accurately predict what the future will be, but according to historical and the current data, the world's population will be facing many wars over water, in the event that the way to manage water is changed and the not resort to the management of the concept of sustainable development. However, one situation will almost with certainty realize. In fact, 10% of the world's water resources is under private control, while forecasts suggest that this percentage in the future to climb, minimum, 70%. The authors believe that the greatest contribution of this study to scientific theory and practice is drawing attention to a very important factor in the survival of humanity and the creation of guidelines for further study of the same, mostly because of the fact that earlier researches haven't shown a focused review of all water management problems or pointed out a need for a multidisciplinary approach to same problems. Therefore guidelines for further research are: to further deepen proposed management model through each function, to further elaborate organizational model of stakeholders in water management, to better define the role of the "central authority" functions, to develop a model for monitoring water management, key performance indicators, and control mechanisms in all scientific area, and particularly in system planning and control (monitoring) which require a multidisciplinary approach, because it is not possible for it to be created only by economists, but should include scientists and experts from different scientific areas - ecology, biology, chemistry, medicine, construction and others, and finally to create proposal for including all of the above in a legislation framework.

REFERENCES

Barbalić, D., Kuspilić, N., (2014.) „Trendovi indikatora hidroloških promjena“, Građevinar Vol. 7, pp. 614

Bolton, K.R., (2010.) „Water Wars: Rivalry Over Water Resources, A Potential Cause Of Regional Conflict In Asia And The Geopolitical Implications“, World Affairs Vol. 14, pp. 67

Cook, C., Bakker, K., (2012.) „Water security: an emergeing paradigm“, Global Environmantal Change Vol. 22., pp. 94

Dellapena J.W., et al., (2013.) „Thinking about the Future of Global Water Governance“, Ecology and Society Vol. 18, pp. 1 – 2

Dziegielewski, B., (2011.) „Management Of Water Demand: Unresolved Issues“, Journal of Contemporary Water Research, pp.1

D'Odorico, P., et al, (2010.) „Does globalization of water reduce societal resilience to drought?“, Geophysical Research Letters, Vol. 37, pp. 1

Fitch E.J., (2014.) „The Future Of Water Resources In The United States“, Water Resources Impact, Vol. 16, pp. 27

Furlong, K., (2010.) „Neoliberal Water Management: Trends, Limitations, Reformulations“, Environment and Society: Advances in Research Vol. 1., 2010., pp. 46

Gereš, D., (2004.) „Održivi razvoj vodnoga gospodarstva“, Hrvatski Savez Građevinskih Inženjera, Sabor Hrvatskih Graditelja, pp. 926 - 927

Goić, S., (2004.) „Mikroekonomski aspekti cijene vode“, Ekonomski Pregled, Vol. 55, pp. 596

Hall, D., Lobina., E., (2010.) „Financing water and sanitation: public realities“, Public Services International Research Unit (PSIRU), pp. 4 – 5

Ivanova, M., (2005.) „Environment: The Path of Global Environmental Governance – Form and Function in Historical Perspective“, Stakeholder Forum for Our Common Future, pp. 46

Janković S., (2007.) „Sukobi Na Bliskom Istoku – Osnovna Obeležja“, MP 2-3, pp. 267 – 287

Karleuša, B., et al., (2010.) „Ekspertni sustav za ocjenu uspješnosti planiranja u gospodarenju vodama“, Građevinar, Vol. 62, pp. 2

Kozina, G., et al., (2011.) „Upravljanje Vodoopskrbom“, Tehnički glasnik, Vol.5, pp. 139

Larise, D. (2014.) „Prilog povijesti globalne privatizacije vodnih resursa“, Le Monde Diplomatique Vol. 13., pp. 10 – 11

Linton, J., (2010.) „What Is Water?: The History of a Modern Abstraction“, UBC Press, pp. 10

Lošonc, A., (2006.) „Vodeni svet, ili neoliberalizam na probi: da li je voda javno dobro ili privatna svojina?“, Panoeconomicus, Vol. 2., pp. 162 – 174

Mason, S.J.A., Blank, D., (2013.) „Mediating Water Use Conflicts in Peace Processes“, Center for Security Studies (CSS), pp. 5 – 7

Marques, R., Berg, S., (2010.) „Risks, Contracts and Private Sector Participation in Infrastructure“, Journal of Construction Engineering and Management Vol. 137, pp. 1 – 2

Menard, C., Peeroo, A., (2011.) „Liberalization in the Water Sector: Three leading models.“, Handbook of Liberalization, Rolf Kunneke and Matthias Finger, pp. 2 – 12

Pahl – Wostl, C., et al., (2011.) „Maturing the New Water Management Paradigm: Progressing from Aspiration to Practice“, Water Resource Management Vol. 25, pp. 837

Pavičević, V., Stamenović, M., (2007.) „Nacionalni program zaštite životne sredine u oblasti voda i vodnih resursa“, Tehnološko-metalurški fakultet Beograd, pp. 131

Petković, S., (2004.) „Perspektive srpske vodoprivrede u prvoj deceniji XXI Veka“, Vodoprivreda Vol. 36, pp. 296 – 297

Popović, N., (2008.) „Regulacija cijena u vodoopskrbnoj djelatnosti u Republici Hrvatskoj“, Hrvatska Javna Uprava, Vol. 3, pp. 690 - 696

Reeves, E., (2011.) „The Only Game in Town: Public Private Partnerships in the Irish Water Services Sector“, The Economic and Social Review, Vol. 42, pp. 97 - 98

Sivapalan, M., et al., (2011.) „Socio-hydrology: A new science of people and water“, Hidological Processes Vol. 10, pp. 1

Simonovic, S.P., (2008.) „Managing Water Resources: Methods And Tools For A Systems Approach“, Vodoprivreda, Vol. 40., pp. 157

Starr, J.R., (1991.) „Water Wars“, Foreign Policy Vol. 82, pp. 1 – 2

Strategija upravljanja vodama, Hrvatske vode 2009.

Thompson, B.H., (2011.) „Water as a Public Commodity“, Marquette Law Review Vol. 95, pp. 17 – 20

Vukasović, V., (2006.)„Međunarodnopravno regulisanje zaštite i održivog korišćenja vodnih resursa“, MP 1-2, pp. 171

Vuković, Ž., Halkijević, I., (2012.) „Usmjerenost prema održivoj vodoopskrbi“, Građevina, Vol. 5, pp. 362

Zakon o vodama (NN 153/09, 14/14)