

ECONOMIC COMPARISON OF MOTORWAY CONCESSIONARIES IN THE REPUBLIC OF CROATIA

Research Paper

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ABSTRACT

The construction of motorways in the Republic of Croatia is one of the largest projects in the history of the country. Today, when almost the entire traffic infrastructure is completed motorway network is managed by four concessionaires: HAC, ARZ, Bina-Istra and AZM. Real concessionaires are Bina-Istra and AZM, while the other two are state-owned. Throughout the history of the legal part, explanation of what concessions are, over the concession law until the display of all four companies and at the end of the comparison of key economic factors the similarities and differences between the concessionaires owned by the state and the concessionaires that have foreign ownership are shown.

Keywords : Motorway, Concession, HAC, ARZ, Bina-Istra, AZM

1. INTRODUCTION

For the last 4 years, the Republic of Croatia has been going through various models of privatization of motorway infrastructure with the aim of reducing public debt. Since motorways represent a significant impact on the deficit and public debt, the Republic of Croatia is considering monetizing motorways or granting concessions to investors. In this context, the question arises whether private concessionaires are more efficient than public managers and whether private concessionaires can enable the Republic of Croatia to improve macro and microeconomic indicators such as public debt, deficit, employment, GDP, consumption, etc. Today it is increasingly said that the state it should not have its shares in companies, and how such companies need to be privatized, ie where it is not possible to give in concession. There are currently four motorway concessionaires in the Republic of Croatia, of which only Bina-Istra and the Zagreb-Macelj

Motorway are private concessionaires, while the Croatian Motorways and the Rijeka-Zagreb Motorway are state administrators.

The subject of the article is an economic comparison of the operations of motorway managers in the Republic of Croatia with the aim of showing the similarities, but also the differences that exist between companies. Similarities and differences can be seen in the legal status, management and maintenance, tariff policy, impact on the economy, GDP, and other macro and micro-economic indicators.

The structure of the article is divided in a way that explains in detail the very concept of concession, who are the concessionaires in the Republic of Croatia, and their comparison.

The first part of the article includes the history and development of the concept of concession, the concept of concession in the Republic of Croatia, types of concessions and describes the entire procedure for granting a concession.

Motorway concessionaires in the Republic of Croatia are presented in the second part of the article with emphasis on the legal status of each individual concessionaire, shares under management, management and maintenance, impact on the economy, tourism, GDP and other microeconomic indicators.

The third part of the article refers to the comparison of concessionaires based on the method of financing, tariff policy and toll collection, management and maintenance costs and investment costs through the cost of extraordinary maintenance of motorways.

2. CONCESSION

The beginning of the clarification of the legal form of the concession and everything that it includes begins with the very concept of the concession. How it has developed throughout history and what its meaning is in different countries.

2.1 The concept of Concession

Concession is a term that has been in use since the last century and its meaning has changed throughout history. According to the legal meaning, concessions appear in the era of feudalism when it meant a kind of privilege of the individual, while later the term included all trade and business licenses required to perform certain activities (Dabić, Lj., *Concessions in the law of Central and Eastern Europe*, Belgrade, Institute of Comparative Law, 2002, p.110).

The use and meaning of the term concession were different in the countries of continental law where Croatia also belongs. The French jurist Léon Duguit tried to offer an accurate and unique definition in the late 19th and early 20th centuries in order to avoid misunderstanding this term.

Duguit considered that a concession “in the legal sense of the word means an act by which a public body (state, province, municipality, colony) puts on the basis of his consent to an individual, usually a company, in the duty to ensure the functioning of a public service, under certain conditions “(Duguit, Leon, Transfiguration of Public Law, Belgrade, 1929, pp. 134-135).

According to the author, this definition should have been generally accepted in other modern European countries at the time, but also subject to minor changes depending on the laws in those countries. The meaning of this term even today in France is uneven and is understood in several ways. A concession is generally a unilateral act of a public authority, in the form of a permit, which is generally uncertain and revocable, granted by a public authority to an individual for the purpose of performing an activity or performing certain works or is defined as a procedure allowing the administration to grant certain rights. to another legal entity under the conditions very often contained in the contract, which determine the conditions for the division of rights (Borković, I., op.cit. (note 6) p. 29).

In German law, a concession is a legal relationship between the state (grantor) and a legal or natural person (concessionaire) in which the state gives a legal or natural person the right to exploit a natural resource or perform a certain public service (Fischer, P., Die internationale Konz-ession, Wien - New York, 1974, p. 35).

In Italian law, a concession is the implementation of certain measures by which the public administration increases the legal action of the concessionaire because it allows him to dispose of something he could not before (Enciclopedia del diritto, 1995: 399).

In fact, the term concession should only refer to cases where a public administration relinquishes a certain function in order to make it available to another entity that may be a natural or legal person.

Observing the historical development of the concept of concession, it is evident that it had different interpretations of legal theorists in different countries, but by comparing these definitions it can be concluded that there are many more similarities than differences between them. Croatian law is oriented and is compared with continental law, so the emergence and development of the concept of concession in the Republic of Croatia should not differ significantly from the development of other countries, followers of continental law.

2.2 The concept and meaning of concession in the Republic of Croatia

Concessions in this area were first mentioned in the Kingdom of Yugoslavia as a term of double meaning (Law on Foreign Investments, Official Gazette of the SFRY, No. 77/88). A concession is a formal act by which the concessionaire receives a public service, and also a concession means a public service whose performance the concessionaire received by this act (Krbek, I.,

Administrative Law: Book II, public administration organization, Yugoslav Press, Zagreb, 1932, pp. 59-92).

There are some other definitions of concessions, such as that concessions are "an act (grant, approval, permit, dismissal, dismissal) of the authorities of one state which allows citizens of that state, another state or foreign citizens to perform those activities for which it otherwise exists prohibition (Krbek, I., Administrative Law: Book II, Organization of Public Administration, Yugoslav Press, Zagreb, 1932, pp. 59-92). This definition was expanded by the "Law on Concessions" passed in 1992, and concession becomes a term denoting a permit (approval, permit, authorization) while in terms of content it is a special legal institute that the public authority allows a certain entity, natural or legal, domestic citizen or foreigner. , to exploit certain goods, perform certain works or perform any activity (Concessions Act, OG 89/92).

The Law on Concessions, which has been in force since 2012, is the first law that contains a general definition of a concession as a right acquired by a contract whose subject is the use of a general or other good that the law stipulates is a good of interest to the Republic of Croatia. Concessions Act, OG 143/12).

After a brief introduction and development of the concept of concession, the historical development of the legal meaning of the concession in the Republic of Croatia follows.

2.3 Historical development of the legal significance of the concession in the Republic of Croatia

The first "Concessions Act" was passed on 30 April 1990 by the Parliament of the Socialist Republic of Croatia, before the break-up of the Socialist Federal Republic of Yugoslavia and the creation of an independent Republic of Croatia (Concessions Act, OG 18/90). This law allowed only foreign investors to obtain a concession. The subject of the concession was considered to be a renewable natural resource or a good that was in general use. The law allowed foreign investors to build, operate, or operate a particular facility or plant for a specified period of time.

The conditions under which the permits were issued were prescribed by the "Law on Foreign Investments" (Law on Foreign Investments, Official Gazette of the SFRY, No. 77 of 31 December 1988) which was in force in the SFRY at that time. After the independence of the Republic of Croatia in 1991, the previous "Concessions Act" was amended and it was possible for domestic natural and legal persons to obtain a concession, and not only for foreign investors, as was the case until then.

Further legal development included a number of enactments of regulations, laws and bylaws, but there was a lack of connection between them and the concept of concession was not clearly

defined, leading to misunderstandings. With the aim of regulating the existing situation at the end of 2008, a new Law on Concessions (ZOK08) was passed (Law on Concessions OG 125/08). This not only regulated the current situation, but also adapted Croatian legislation to the European *acquis*.

This law defined the most important items of the concession: the type and subject, the circle of grantors and concessionaires was determined, and the obligation of grantors to implement preparatory actions prior to the concession award procedure was prescribed. The procedure deciding on the selection of a future concessionaire is also regulated, the concession contract is regulated, it is prescribed how the concession terminates and legal protection is provided. In order to better organize and monitor concessions, a register of concessions has been established, and the Ministry of Finance is becoming the central coordinating and supervisory body for concessions. The new "Law on Concessions" is the starting point for establishing and stabilizing concession relations. The harmonization of related laws followed somewhat later. The first step was public procurement, namely the change of judicial control of the State Commission for Control of Public Procurement, which was done in 2010 by the "Law on Administrative Disputes" (Law on Administrative Disputes, OG 20/10).

The "Law on Public Procurement" was adopted in 2011 and significantly changed the public procurement procedure that had existed until then, especially in relation to the legal regime of public procurement, and according to the "Law on Concessions" valid until then, public procurement was directly related with it (Public Procurement Act, OG 90/11). As the amendments to these laws directly affected the "Law on Concessions", it was concluded that it is best to draft a new law on concessions. Also one of the reasons was to encourage and strengthen the use of public-private partnership models.

The draft of the new law explains that the purpose of the new law is: to harmonize legal regulations governing concessions, harmonization of public contracts and concessions with the *acquis communautaire*, implementation of international practice in relation to the application of concession models in public investment and provision of public services, establishment of a mechanism for the *ex-ante* and *ex-post* evaluation of concession projects on the principles of "value for money" and fiscal responsibility, defining a single procedure for granting concessions with emphasis on transparency through public announcements of tenders and uniformity in the procedure of concessionaires, ensuring unified legal protection of suspensive character, centralization and technological improvement of the system of records and supervision over concession contracts, and finally strengthening the supervisory and inspection function of the Ministry of Finance and other competent bodies.

The new law is harmonized with acts, directives of the European Union, namely: Directive 2004/17 / EC of the European Parliament and of the Council, adopted on 31 March 2004, which harmonizes procurement procedures in the field of water management, energy, transport and postal services(Directive 2004/17 / EC of Europe Parliament and the Council of 31 March

2004). Directive 2004/18 / EC, which regulates the coordination of procedures for the award of public works contracts, public supply contracts and the provision of public services (Directive 2004/18 / EC of the European Parliament and the Council of 31 March 2004), dates from the same period. The latest is Directive 2007/66 / EC of the European Parliament and of the Council, which has been in force since 11 December, and concerns amendments to Council Directives 89/665 / EEC and 99/13 / EEC relating to the improvement of the review of the procedure public contracts (Directive 2004/17 / EC of Europe Parliament and the Council of 31 March 2004).

After the legal significance, it should be shown which all types of concessions exist.

2.4 Types of concessions

According to the Law on Concessions, Article 1, paragraph 3, and the Proposal for the Concessions Directive, there are three types of concessions: concessions for economic use of public or other goods of interest to the Republic of Croatia, then concessions for public works and concessions for public works services (Law on Concessions 143/12).

Public works are in fact public procurement whose subject can be design and execution or only execution of works, ie realization which results in construction works in order to fulfill an economic or technical function. The types of concessions may include mixed concessions, ie mixed contracts. This is the case if the subject of the concession is both works and services. A public-private partnership is also a certain type of concession. It represents the cooperation of public authorities with the private sector. The concept of public-private partnership is most often mentioned in the context of performing public works and providing public services.

After the introductory part in which we pointed out the legal framework of concessions in the Republic of Croatia, below we will show how motorway concessions work in Croatia, their specifics and differences in functioning.

3. MOTORWAY CONCESSIONAIRES IN THE REPUBLIC OF CROATIA

There are four concessionaires in the Republic of Croatia: Hrvatske autoceste (HAC), Autocesta Rijeka-Zagreb (ARZ), Bina-Istra and Autocesta Zagreb-Macelj (AZM). Although Croatian Motorways and Autoceste Rijeka-Zagreb cannot be considered concessionaires in the true sense of the word due to 100% state ownership, their legal status is the status of manager, but for simplicity and comparison we will use the term concessionaires for all motorways in Croatia.

The largest concessionaire in the Republic of Croatia is Hrvatske autoceste, and the most important business items are presented below.

3.1. Croatian motorways d.o.o. (HAC)

Croatian motorways d.o.o. the company is for the management, construction and maintenance of motorways. It was founded on April 11, 2001, when it started operating. The Republic of Croatia is the 100% owner of the company. The Assembly consists of the Government of the Republic of Croatia, represented by the Minister of Maritime Affairs, Transport and Infrastructure. The company has two boards, a supervisory board and an audit committee, and a management board. The governance structure includes four other sectors: the legal and general affairs sector, the design sector, the construction sector and the economic and financial sector. The share capital of the company amounts to HRK 131,140,100.00 (<http://hac.hr/hr/o-nama>, <http://hac.hr/hr/o-nama>).

The legal status of HAC shows what the organizational structure of a state-owned concessionaire is and it is not a real concessionaire like the last two companies.

HAC currently has the following motorways under its jurisdiction (<http://hac.hr/hr/o-nama>):

- A1 Zagreb - Split - Dubrovnik
- A3 Bregana - Zagreb - Lipovac
- A4 Zagreb - Goričan
- A5 Beli Manastir - Osijek - Svilaj
- A10 BiH Border - Ploče
- A11 Zagreb - Sisak

and the Sveti Ilija tunnel located on the state road D76 Baška Voda - Zagvozd. Part of the motorway from Zagreb to Bosiljevo is managed by ARZ. In total, 925.8 kilometers of motorways are under the jurisdiction of HAC (<http://www.huka.hr/publikacije/nacionalno-izvjesce>).

The total length of the section under management confirms that it is the company that has the longest network of motorways under management, but also the main sections.

3.1.1. Operation and maintenance

Croatian Motorways Maintenance and Toll Collection d.o.o. (HAC-ONC) company was founded by HAC and ARZ, which are also members of the assembly of the company. The structure of HAC-ONC is similar to the structure of HAC.

It consists of the Supervisory and Audit Committee, the Management Board, the Maintenance and Toll Collection Sector and independent departments (Department for Economic, Financial and Joint Affairs, Department for Informatics, Procurement Department and Department for Internal Control and Irregularities) ([http : //hac-onc.hr/hr/o-nama](http://hac-onc.hr/hr/o-nama)).

The Ordinance on the maintenance and protection of public roads regulates the type, scope and deadlines of regular maintenance of public roads, but also the control and supervision of the same. Maintenance is divided into regular and extraordinary maintenance. Regular maintenance is a set of activities that are performed for the most part, but also throughout the year. This includes facilities and installations to ensure the passability and technical correctness of the auto-motorway, but most importantly safety. Regular maintenance activities are monitoring and inspection of motorways and facilities, cleaning of motorways and facilities, maintenance of pavements, drainage, equipment and signaling, traffic monitoring, control and management systems, power facilities and plants, electrical systems, devices and installations, road sections and winter maintenance of the motorway (Crnjak M., Puž G., Marić A., Čleković V., Hrvatske autoceste, Hrvatske autoceste doo, Zagreb, 2008).

Occasional maintenance is considered to be occasional work in order to improve the elements of the road in some places, to ensure safety, stability, but also the durability of motorways and road facilities. Along with the Ordinance on the maintenance and protection of public roads, a standard has been introduced that complements it and connects it with legal provisions (http://narodne-novine.nn.hr/clanci/sluzbeni/2014_07_90_1826.html). The standard includes the already mentioned regular maintenance measures and determines the required level of efficiency of the motorway and related systems. The general management and maintenance part shown does not only apply to HAC-ONC but also to the other two concessionaire operators.

The subject of HAC - ONC's business is regular motorway maintenance, toll collection and other services. Regular maintenance tasks include: motorway patrol, winter motorway maintenance and maintenance of pavements, facilities, traffic signs and signaling equipment. Other services include: removal of damaged and abandoned vehicles, but also other items from the motorway, taking preventive, protective, measures for both motorways and safe traffic, informing drivers about the condition of the motorway, which includes information on traffic, emergencies and meteorological conditions, interventions in cases of traffic accidents and taking environmental protection measures (Crnjak M., Puž G., Marić A., Čleković V., Hrvatske autoceste, Hrvatske autoceste doo, Zagreb, 2008).

One of the peculiarities, but also the challenge of maintaining motorways, both from those managed by HAC and to other concessionaires, is the very diverse climate in the Republic of

Croatia. In the area of the so-called Mediterranean climate, the motorway is only 10-15 kilometers from the coast and winter temperatures are mostly positive, but the biggest challenge is the section that passes through Gorski Kotar, especially due to severe winters that often create traffic difficulties. Therefore, the winter period is a great effort, but also puts before the employees the responsibility to ensure the safety of drivers.

The volume of business of the operator, HAC-ONC, is similar to the business of other operators and emphasizes the indispensable need for the existence of operators with motorway concessionaires.

The large network of motorways has an impact on the economy as shown below.

3.1.2. Impact on economy

High-quality road infrastructure has a great impact on the economy, ie its development, in order to create connections both within the country and with neighboring countries for the development or improvement of existing trade. Transport has four functions in the economy (Čavrak V., Macroeconomic implications of transport infrastructure construction in Croatia, Proceedings of the Faculty of Economics in Zagreb, year 2, number 1, 2004). The first function is to connect inputs in the production process, from labor mobility through resources. Another important function is the impact on price. Namely, by improving transport, it is possible to reduce the price of transport, but also reduce the input of both labor and capital in the production process, which is ultimately felt by consumers when buying products. The third function is that the mobility of production factors creates more productive production. The fourth, and perhaps most important, function is the well-being of the individual who gains access to better goods, but they also become more abundant. The Republic of Croatia has made the greatest progress in building transport infrastructure by building motorways.

Even before the completion of the full profile from Zagreb to Split in 2005, the A1 Zagreb - Split - Dubrovnik motorway had a significant positive impact on the development of Lika and Gorski Kotar, especially in cities such as Ogulin, Otočac and Gospić. Also, this motorway primarily passes through Karlovac, which is a major traffic hub.

The economic importance of the motorway is the possibility of opening industrial zones, but also service facilities. Service facilities include ancillary service facilities, and centers for maintenance and traffic control. The control centers are located in two tunnels, Mala Kapela and Sveti Rok.

In total, there are eight service facilities on this route with different types of services they provide. The maintenance and control centers are located in three locations (Brinje, Perušić and

Sveti Rok). The opening of temporary facilities also creates new jobs that are of great importance for this region (Sić M., The impact of the Zagreb-Split motorway on the regional development of Lika, Hrvatski geografski glasnik 71/1, 87 - 101, 2009).

In 2005, 238 employees were employed in maintenance and control centers and those located in tunnels. An additional 100 employees are employed at toll booths. HAC alone employed 338 people at that time, and when we add people who are employed in service facilities, it can be said that in the municipalities along the motorway there was an increase in employees (Sić M., The impact of the Zagreb-Split motorway on regional development Like, Hrvatski geografski glasnik 71/1, 87 - 101,2009.). In addition, in 2004 the Government included Lika-Senj County in its Entrepreneurial Zones Development Program with a plan to build six entrepreneurial centers in Gospić, Otočac, Brinje, Lovinac and Perušić two. At the end of 2015, it was planned to build more business zones in 24 locations in the coming years, which further supports the claim that motorways are necessary and encourage economic development. That is why it is necessary to build the remaining section to Dubrovnik in order to complete the transport infrastructure and strengthen the economy of the far south through better transport connections.

The A3 Bregana - Zagreb - Lipovac motorway is part of the Pan-European Corridor X, and is also called the Posavina motorway. It represents the shortest connection of Western and Northern Europe with Southeast Europe and further the Middle East. The final section of the Posavina motorway from Županja to Lipovac, 30 kilometers long, was opened to traffic in 2006 (Crnjak M., Puž G., Marić A., Čleković V., Hrvatske autoceste, Hrvatske autoceste d.o.o., Zagreb, 2008). This motorway is the busiest motorway in the Republic of Croatia with truck traffic. The reason for this is the already mentioned belonging to the pan-European corridor through which the transport and trade of western and northern Europe with Southeast Europe and the Middle East takes place, but also the trade of the Republic of Croatia with neighboring countries.

The export of the Republic of Croatia to Serbia and Montenegro in 2005 amounted to USD 283 million, while in 2006 it amounted to USD 539 million, with the completion of the motorway having a safe impact (<http://www.dzs.hr/>). In addition, in Sisak - Moslavina County, the construction of several economic zones along the A3 motorway is planned, which shows the similarity between the use of the motorway for economic development in Lika - Senj County.

It can be seen from the attached that the motorway not only has an impact on the economy of the entire country, but also a great impact on the regions it passes through, such as Lika-Senj County.

In addition to accelerating transport with the aim of improving the economy also it led to new jobs.

Also the motorway affects tourism which is shown below.

3.1.3. Impact on tourism

The impact of tourism and transport is mutual. Tourism affects traffic by intensifying the construction and modernization of transport infrastructure, increasing and modernizing the capacity of means of transport, introducing new forms of traffic organization and increasing the traffic of passengers and cargo. Also, insufficient and poor transport infrastructure can lead to fewer arrivals of guests who choose road traffic.

The construction of the A1 motorway from Zagreb to Split has had a major impact on tourism. Apart from connecting Zagreb and Split and larger tourist centers such as Zadar and Šibenik via motorway junctions, it also connects with the main road network in Lika and Gorski Kotar which leads to national parks and nature parks which are also important tourist content, especially Plitvice Lakes. Northern Velebit and Paklenica.

There are ferry ports in Zadar and Split that require very good transport connections. So the arrival of tourists on the islands primarily depends on road connections on the mainland. During the first nine months of 2004, a total of 8,735,126 foreign and domestic tourists came to the Republic of Croatia, while in 2005 there were 9,268,168 tourists (<http://www.dzs.hr/>). Most of these guests during the tourist season were on the Adriatic coast and this growth is partly related to the completion of the full profile of the motorway A1 Zagreb - Split. The A3 Bregana - Zagreb - Lipovac and A4 Zagreb - Goričan motorways, which have an important function of connecting the countries of Central and Eastern Europe with ports in the northern Adriatic, contribute to the growth of tourist arrivals.

As the Republic of Croatia is a country that is largely dependent on tourism, the improvement of road networks in the form of motorways has undoubtedly led to greater arrivals of foreign guests.

Motorways affect the economy, but their construction has also affected GDP. Their impact is shown in the next section.

3.1.4. Impact on GDP

Investing in new sections, which implies construction affects GDP. To show how big impact it is on the value of the investment in the selected year it is divided by the GDP in that year. The impact of HAC on GDP is shown in the table.

Table 1 Investments in new sections from 2003 to 2015 - HAC

Source: Croatian Association of Toll Motorway Concessionaires

Concessionaire	Investments 2003	Investments 2004	Investments 2005	Investments 2006	Investments 2007	Investments 2008	Investments 2009	Investments 2010	Investments 2011	Investments 2012	Investments 2013	Investments 2014	Investments 2015
	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure
	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK
HAC	5.861,89	4.609,08	2.740,73	2.342,52	3.390,26	3.748,32	3.055,04	1.077,00	1.294,43	1.549,37	1.577,37	438,72	349,07

GDP	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
mil HRK	227.012	245.550	270.191	294.437	322.310	347.685	330.966	328.041	332.587	330.456	329.571	328.431	334.219

Source : <https://www.hnb.hr/documents/20182/1047571/hbilit227.pdf/931da48e-02d0-4a02-b9cc-84306e26eca5>
<http://www.dzs.hr/>

Table 5 Share of investments in GDP - HAC

Share of investments in GDP	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
HAC	2,58%	1,88%	1,01%	0,80%	1,05%	1,08%	0,92%	0,33%	0,39%	0,47%	0,48%	0,13%	0,10%

The largest share of investment in new sections in GDP was in 2003, as much as 2.58%, which is not surprising if looks at the dynamics of investing over the years. With the growth of GDP and the decrease of investments, the share decreases.

Thus, last year the share of investment in GDP was only 0.10%

Investing in new sections is a component of GDP and is therefore possible on this one way to show the impact of the motorway on GDP.

The second-largest concessionaire of motorways in the Republic of Croatia is the company Autocesta Rijeka Zagreb.

3.2 Motorway Rijeka – Zagreb d.d. (ARZ)

Rijeka-Zagreb motorway d.d. The Motorway Construction and Management Company was established on 11 December 1997 by a decision of the Government with an aim to restructure the then-existing road network in the Republic of Croatia. The official company began operations on March 15, 1998. The subject of business became the design, preparation and management of the continuation of the construction of the motorway. In addition to the above, the company became responsible for the maintenance of the motorway Rijeka - Zagreb, but also the accompanying roads and farm buildings located on the road land (<http://www.arz.hr/index.php?page=2&sub=2&lng=1>).

Initially, the "concession" was awarded to the company for 28 years. The share capital of the company amounts to HRK 2,152,000,000.00. It is divided into 21,520 registered shares. In the

event of the need to sell shares, this decision must be made by the Government. In the meantime, the concession agreement was extended in 2007, but the area of the concession was also expanded.

The organizational structure of the company includes the assembly, supervisory board and management. The Assembly of the company has only one member, and that is the Minister of Maritime Affairs, Transport and Infrastructure, through whom the interests of the main shareholder are realized, and that is the Republic of Croatia.

The similarity of the organizational structure with HAC confirms the fact that ARZ is not a concessionaire in the true sense of the word.

ARZ currently manages the following sections (<http://www.arz.hr/index.php?page=2&sub=2&lng=1>):

- A1- from Zagreb to Bosiljevo
- A6 Bosiljevo - Rijeka
- A7 Hole - Crossroads
- Rijeka bypass
- Krk Bridge

ARZ has a total of 187.03 kilometers of motorways in its jurisdiction.

ARZ is the second-largest concessionaire in its jurisdiction, with a length of kilometers of motorway.

Management and maintenance are shown in the next section.

3.2.1 Operation and maintenance

As already mentioned, ARZ has established HAC -ONC with HAC, which provides regular maintenance services, toll collection and other already mentioned services. The difference with HAC is that ARZ manages the Krk Bridge, but HAC-ONC is in charge of its regular as well as extraordinary maintenance and toll collection. The Krk Bridge was built by the company Sitolor d.o.o. which also participates in its maintenance due to the specificity of the facility, ie the size and importance.

The upcoming section shows the impact of motorways on the economy.

3.2.2. Impact on economy

The Rijeka - Zagreb motorway is a continuation of European transport corridors, which directly contributes to the Croatian economy. It connects continental and coastal Croatia via Gorski kotar, which brings additional benefits to Gorski kotar in addition to those already mentioned from the A1 motorway. From the employment of the population to economic zones. Apart from the Rijeka - Zagreb motorway, the Rijeka bypass plays a major role in the economy. Rijeka is one of the most important traffic hubs because it accepts and distributes traffic from Istria, northwestern and western Europe, Zagreb and Split. Creating a quality transport connection with the largest Croatian port is perhaps the most important element of the Transport Development Strategy

(http://www.mppi.hr/UserDocsImages/Strategija_prometnog_razvoja_VRH%201-studenti.pdf).

The port of Rijeka is the most favorable access to the sea for Central European and Danube countries. The economic significance of the Port of Rijeka without quality transport connections would not be so strong. The Rijeka road junction is integrated into strategic state goals and priorities, and the transport infrastructure in the hinterland of the port of Rijeka is constantly being improved. The construction of modern roads of the pan-European corridor seeks to achieve its integration into the transport system of Europe.

One of the backbones of the road network in this area is the Rijeka - Zagreb Motorway and the Rijeka - Rupa Motorway, which connects it with other motorways. The construction of the Rijeka - Zagreb Motorway was the first step towards increasing the importance of the Port of Rijeka for the economy of both the Primorje - Gorski Kotar County and the Republic of Croatia to a large extent.

The economic impact of the motorway is primarily focused on the further development of maritime traffic due to the specific strategic position of the Port of Rijeka.

How motorways affect tourism is shown below.

3.2.3. Impact on tourism

With the completion of the construction of the A6 motorway from Bosiljevo to Rijeka in 2008, major changes took place. In addition to the already mentioned positive impacts such as faster arrival of tourists, the construction of this motorway had some negative effects on the transit tourism of Gorski kotar.

Numerous tourist and catering facilities that were located along the so-called "old road" primarily thrived due to the arrival of tourists in the summer months.

With the construction of the motorway, a large part of the traffic is moved to the motorway, which causes a large drop in traffic until 2011 and brings transit tourism to the brink of sustainability (Knežević R., Grbavac Žiković R., Changes in the economic significance of transit tourism in Gorski kotar, Hrvatski geografski glasnik 75/1, 111-130,2013.).

The location is starting to play a key role, and the greatest possible proximity to the motorway is required. But changes in trends in tourism where tourists are increasingly visiting and the interior shows that the motorway still has a positive effect.

The facility that is managed by ARZ, and has a great impact on tourism is the Krk Bridge. It has greatly facilitated transport connections and brought a positive effect on tourism along the motorway. Only in the first

For 20 years, 27.2 million vehicles have crossed the bridge, and the number of guests on the island of Krk is increasing every year in which the Krk Bridge also plays a role (http://www.krk.hr/kako_do_nas/cestovni_promet).

It is obvious that motorways can sometimes have negative effects on tourism in addition to the positive ones, but they are still negligible compared to the strong positive effects such as the increase in the number of guests on the island of Krk due to traffic connections.

Due to ARZ's investment in new sections, these motorways also affected GDP, which is shown below.

3.2.4. Impact on GDP

The analysis of the impact on GDP was made according to the same principle, by calculating the sections of investment in new sections in each year with the GDP achieved in that year.

Concessionaire	Investments 2003	Investments 2004	Investments 2005	Investments 2006	Investments 2007	Investments 2008	Investments 2009	Investments 2010	Investments 2011	Investments 2012	Investments 2013	Investments 2014	Investments 2015
	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure
	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK
ARZ	699,93	329,05	89,68	651,02	1.598,12	1.420,82	1.214,19	110,11	29,55	37,85	0,00	0,00	0,00

Source: Croatian Association of Toll Motorway Concessionaires

Table 5 GDP of the Republic of Croatia (current prices)

GDP mil HRK	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
	227.012	245.550	270.191	294.437	322.310	347.685	330.966	328.041	332.587	330.456	329.571	328.431	334.219
Share of investments in GDP	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
ARZ	0,31%	0,13%	0,03%	0,22%	0,50%	0,41%	0,37%	0,03%	0,01%	0,01%	0,00%	0,00%	0,00%

Investments in new sections had the largest section in GDP in 2007, when the most was invested, amounting to 0.50% of GDP. This was followed by a decline, and since 2013 ARZ has not invested anything in the construction of new sections.

As this is a smaller amount invested than HAC did, it is not surprising that the share in GDP is smaller.

The following is an analysis of the first private motorway concessionaire, BINA-Istra d.d.

3.3 Bina-Istra d.d.

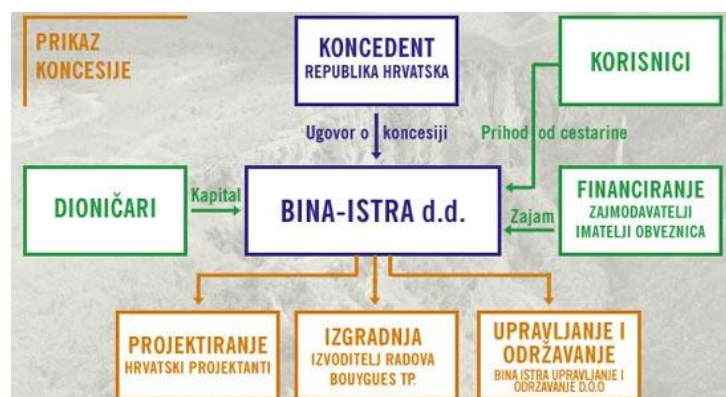
Bina-Istra d.d. is a joint-stock company for financing, construction, management and maintenance of motorways founded in 1995. The company is French - Croatian owned as shown in the ownership structure.

Picture 1 Ownership structure of BINA Istra d.d.



Source: Bina-Istra, <http://Bina-Istra.com/Default.aspx?sid=1>

Picture 2 Relationship between grantor and concessionaire



The share capital of the company, which has been paid in full, amounts to HRK 25,641,720.00. 2,564,172 shares were issued, with a nominal amount of HRK 10 per share (<http://Bina-Istra.com/Default.aspx?sid=1>).

The difference in the organizational structure of Bina-Istra and other concessionaires is in the existence of only the management and supervisory board, while the other three have an assembly in which the Minister of Maritime Affairs, Transport and Infrastructure is the only member, while the Zagreb-Macelj Motorway one of the members.

The signing of the Concession Agreement with the Government of the Republic of Croatia in 1995 envisages the takeover of the existing 54-kilometer section and the Učka tunnel. The concession was concluded for 32 years, after which the motorway should be handed over to the state free of charge. The company Bina-Istra d.d. is an example of a concessionaire in the true sense of the word.

The ownership structure shows that the state has indirect shares through HAC however not as a majority owner.

Bina-Istra d.d. is responsible for the Istrian Y, ie (<http://Bina-Istra.com/Default.aspx?sid=1>):

- A8 Kanfanar - Matulji
- A9 Umag - Pula
- Učka Tunnel

The A8 section is 64.21 kilometres long, and the A9 76.79 kilometres, which is a total of 141 kilometres in traffic.

The next part of the analysis involves management and maintenance.

3.3.1. Operation and maintenance

The company Bina-Istra operation and maintenance d.o.o. is in charge of the management and maintenance of the Istrian Y (BIUO) which was founded by the company Bina-Istra d.d. 1998. Management and maintenance is carried out through three main areas: management and safety, maintenance and toll collection.

The whole of the management and maintenance of roads, tunnels and facilities is determined by the contract between the company and Bina-Istra d.d. and Croatian regulations. High standards of management and maintenance are achieved through contractual obligations on the financing of regular maintenance activities, and investment maintenance is approved and financed by the company Bina-Istra d.d. based on the BIUO proposal.

Proposals for the restoration of dilapidated equipment and pavements and facilities are made by the competent services on the basis of field observations, technical standards, records of works, inspections and opinions of professional institutions and equipment manufacturers. The maintenance program, the content and the amount of funds required, depend on the years of use. The most demanding section for maintenance is the Matulji - Lupoglav section where the Učka tunnel was launched more than 20 years ago. In December 1999, the Rogovići - Vodnjan section was opened to traffic, creating the need to establish a road and facility maintenance service in two centres, the Učka tunnel for the Matulji - Rogovići section and the Kanfanar junction for the Rogovići - Vodnjan and Kanfanar - Medaki sections.

The centres are equipped with all necessary vehicles, machines, tools and signaling, as well as materials for winter and summer maintenance. The condition of the roads is monitored by the patrol service for each section separately to detect even the smallest irregularities that could endanger drivers. The needs for interventions are reported to the operator on duty at the control center in the Učka tunnel.

The most complex to manage and maintain is the Učka tunnel, which requires a specific organization. A complex management and maintenance system is implemented from the control center located in the tunnel. Reconstruction of the Učka tunnel equipment due to dilapidation proved necessary even before it was taken over by the concessionaire. The growth in turnover, which began in 1993, only accelerated

the need for renovation, so as early as 1995, when entering the concession, the renovation and modernization of equipment began.

Modernization has led to the management of systems and subsystems via a PC from the control center. Maintenance works are performed in the period from October to May due to reduced traffic density than in the summer months. If there is still a need for ongoing maintenance work in the summer, they are performed at night in order to prevent crowds and user complaints. The effort and commitment shown by BIUO employees was rewarded by obtaining ISO 9001: 2000 certification, which shows how the business is in line with world-renowned rules.

Management and maintenance differs from other operators in the innovations that have been introduced to improve traffic safety, but also to improve the overall management and maintenance.

How motorways affect the economy is shown below.

3.3.2. Impact on economy

The construction of the Istrian Y had a great impact on the development of the region, but also on the Istrian economy. This primarily refers to construction works in which local construction companies participated, and the total value of the works is about 270 million EUR, and the construction project employs about 500 people (<http://Bina-Istra.com/Default.aspx?sid=1>). Bina-Istra also invests in the communal infrastructure of towns and municipalities located along the Istrian Y by paying the communal contribution or building infrastructure (roundabout in Vodnjan).

In this way, almost HRK 25 million was invested from 2010 to 2012.⁴⁶ The improvement and development of the economy is also reflected in giving preference to local companies in regular and extraordinary maintenance work, but at the same time the rules of business and subcontracting management are respected. . From 1996 to 2005, investment in a quality road network and the establishment of infrastructure also influenced companies to settle along the Istrian Y.

The Rovinj tobacco factory moved its production units to Kanfanar, on the edge of the Istrian Y hub. Industrial zones are also being developed in the area around the Vodnjan and Višnjan junctions due to the proximity of the motorway. A total of five industrial zones have been built. The development of industrial zones is also encouraged by the financing of local access roads to Višnjan, Vodnjan, Pula and Pomer. Istria is of great importance for the economy due to its position as the westernmost part of the Republic of Croatia, connecting the rest of the country with Slovenia and Italy.

The impact on the economy can be seen in the opening of economic zones, but also a large investment in the community to improve the road network by connecting local roads with motorways.

Due to their position, motorways also have an impact on tourism because they are located in what can be said to be the most successful tourist region, which is shown below.

3.3.3. Impact on tourism

The Istrian Y as the main Istrian road that connects numerous tourist centers on the coast and the towns located in the interior has a great influence on Istrian tourism. Most tourists who come to Istria come by car, and these are mostly tourists from Italy and Slovenia, so they need to have a fast road so that they can come even when it is not the tourist season, in July and August. Over the past ten years, traffic on the Istrian Y has doubled and the tourist season has lengthened.

The launch of the western branch of the Istrian Y in full profile brought an increase of 1.2 million tourists who arrived in the last few years. At the same time, revenues of the tourism sector increased by EUR 779 million.⁴⁶ With the aim of even stronger tourism development, Bina-Istra agreed with the Istrian County Tourist Board and then invested HRK 260,000.00 in installing tourist signs at as many as 31 positions along the motorway (<http://Bina-Istra.com/Default.aspx?Sid=1>). The signalization marks historical, cultural and natural sights, tourist facilities and tourist places in the interior, but also on the coast. In this way, tourists were able to find their way around, but also to travel along Istria during their vacation.

This can be best seen on days when the weather is worse and tourists cannot spend time on the beach but travel and tour other places due to the increased number of vehicles on the motorway.

The Istrian Y has a very big impact on the arrival of a large number of foreign guests in Istria, but it is also used by guests who are traveling.

The impact of the Istrian Y on GDP is presented in the next section.

3.3.4. Impact on GDP

As before, the same method of calculating the impact, ie the share in GDP of investments in new sections, is also applied here.

Table 7 Investments in new sections from 2003 to 2015 - Bina-Istra d.d.

Concessionaire	Investments 2003	Investments 2004	Investments 2005	Investments 2006	Investments 2007	Investments 2008	Investments 2009	Investments 2010	Investments 2011	Investments 2012	Investments 2013	Investments 2014	Investments 2015
	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure
	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK
BINA ISTRRA	343,31	403,42	273,9	291,5	71,7	138,15	695,25	975,03	505,72	40,21	0,00	0,00	0,00

Source: Croatian Association of Toll Motorway Concessionaires

Table 8 GDP of the Republic of Croatia (current prices)

GDP	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
mil HRK	227.012	245.550	270.191	294.437	322.310	347.685	330.966	328.041	332.587	330.456	329.571	328.431	334.219

Source : <https://www.hnb.hr/documents/20182/1047571/hbilt227.pdf/931da48e-02d0-4a02-b9cc-84306e26eca5>
<http://www.dzs.hr/>

Share of investments in GDP	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
BINA ISTRRA	0,15%	0,16%	0,10%	0,10%	0,02%	0,04%	0,21%	0,30%	0,15%	0,01%	0,00%	0,00%	0,00%

The largest share of investment in new sections in GDP in 2010 was 0.30% due to investment most funds on the occasion of the release of the Umag - Kanfanar section in 2011. Since 2013, the company has not invested in new sections.

The last concessionaire that remained was the company Autocesta Zagreb - Macelj, whose analysis is below.

3.4 Motorway Zagreb – Macelj d.o.o. (AZM)

Motorway Zagreb - Macelj d.o.o. to finance, build, manage and maintain established by a decision of the Government of the Republic of Croatia of 27 March 2003. In July 2003, more precisely on July 11, by the concession agreement between the Republic of Croatia as the grantor and the company as a concessionaire, the company acquires the exclusive right over the development, design, financing, construction, management and maintenance of the motorway and all ancillary facilities, existing motorways and ancillary facilities for a period of 28 years, ie until 2032 (<http://www.azm.hr/page.asp?pageID=35&lang=hr>).

Shortly after its establishment through the public-private partnership model, the company was privatized and now Pyhrn Concession Holding GmbH has a 51% share while the Republic of Croatia has a 49% share. The company's share capital at its inception amounted to EUR 60 million, but currently amounts to EUR 12 million due to refinancing carried out in 2008. The organizational structure is similar to other companies and consists of the assembly, supervisory board and management.

Along with BINA-Istra, only AZM can be considered a real concessionaire of motorways in the Republic of Croatia, although one of the two members of the Assembly is the Minister of Maritime Affairs, Transport and Infrastructure.

AZM operates one motorway: A2 Macelj - Zagreb. It is in charge of 60 kilometres of the motorway (<http://www.azm.hr/page.asp?pageID=35&lang=hr>).

AZM has at its disposal at least kilometres from all concessionaires.

After defining the shares under management, an analysis of management and maintenance follows.

3.4.1. Operation and maintenance

With the management and maintenance contract in 2004, AZM left the management of the motorway to Egis Road Operation Croatia d.o.o. Egis Road Operation Croatia d.o.o. is a subsidiary of the French company Egis Road Operation SA, which is part of the Groupe Egis group. The mentioned company performs toll collection service for the concessionaire, performs regular maintenance of the motorway, equipment and manages and controls the traffic.

Since the opening of the last section in 2007, the operator has operated approximately 60 km of motorways and 6 tunnels with a total length of 3.6 km. The Krapina Traffic Control Center (<http://www.egis.hr/onama.php>) is used to manage the A2 Zagreb - Macelj motorway. The maintenance of the motorway is carried out according to the annual Maintenance Plan, which has been prepared in accordance with the regulations and provisions of Croatian law and regulations. After making the annual plan, it is then divided into 12 monthly plans.

Winter maintenance is carried out from two maintenance centers: the Mokrice Maintenance Center and the Krapina Traffic Maintenance and Control Center. The winter maintenance service plan is a document according to which all maintenance activities are planned. The patrolmen and traffic controllers from the Krapina Traffic Maintenance and Control Center are in charge of the proper and professional implementation of activities and control.

By signing the Motorway Maintenance Agreement between the concessionaire, ARZ and the operator, Egis Road Operation Croatia d.o.o. he became responsible for regular maintenance and all fixed equipment on the motorway.

Maintenance is carried out in accordance with annual and monthly plans on a daily basis on all systems implemented along the motorway, from traffic control and management systems, video surveillance, meteorological station systems and other things that are common to other concessionaires.

The quality of service provided by the operator to the concessionaire is here, as with the other two operators, confirmed by ISO 9001 certification.

The analysis shows the similarity of business with other operators.

How this motorway affects the economy is shown in the next section.

3.4.2. Impact on economy

The A2 Zagreb - Macelj motorway is the final part of the pan-European corridor Xa Graz - Maribor - Ptuj - Gruškovje / Macelj - Krapina - Zagreb and the international road E-59. It is located in the direction of the most important traffic, freight and passenger traffic flows that lead from northwestern and central Europe through the junction in Zagreb to the southeast of Europe (Crnjak M., Puž G., Marić A., Čleković V., Hrvatske autoceste, Hrvatske autoceste doo , Zagreb, 2008).

With the construction of the A2 Zagreb - Macelj motorway, the development of the Krapina - Zagorje County economy begins. The motorway has attracted domestic and foreign investors, and Zagorje is beginning to develop into an entrepreneurial environment. The Jankomir shopping zone was built in Zagreb at the very beginning of the motorway. On the east side, the Bistra business and trade zone is under construction.

Along with Zabok, there is also a shopping center and business zone of the city of Zabok, where the expansion of the existing business - industrial - trade zone along the motorway is planned. At the junction of Sv. Križ Začretje has already opened the Roses Fashion Outlet, which complemented the business zone built on the west side.

The city of Krapina is also in the process of completing a business and trade zone to take advantage of the benefits provided by the motorway.

The motorway led to the development of the economy in the form of the opening of economic zones in Krapina-Zagorje County.

How the motorway affects tourism is shown in the next section.

3.4.3. Impact on tourism

As already mentioned, the A2 Zagreb - Macelj motorway is located in the direction of the most important traffic, freight and passenger traffic flows, it is mostly located on the most important and tourist traffic flow. Tourists who come to the north of Croatia via the junction in Zagreb continue on the A1 and A6 motorways to Split, Rijeka and other Adriatic tourist centers.

However, this motorway favors the development of the tourist season, which lasts in continental Croatia throughout the year. The area of Krapina-Zagorje County is known for excursion, residence and health tourism to which spas, lakes (Stubičke toplice, Krapinske toplice) are connected. In addition, the area abounds in various historic buildings (castles and mansions), but also vineyards.

Although the A2 motorway used to only serve for the transition of tourists to the sea, it is increasingly contributing to the development of continental tourism, which is growing every year. The importance of this motorway for tourism is shown by the fact that on average about 23,000 vehicles pass through it daily in the summer. In the winter, the motorway is mostly used by those who go skiing in Slovenia and Austria (<http://www.egis.hr/onama.php>).

How this motorway affects GDP is shown in the next section.

3.4.4. Impact on GDP

The impact of this concessionaire's investments on GDP was obtained by the same calculation as for other concessionaires so that the obtained results would be comparable. Investments in new sections here too are divided by GDP for selected years in order to show their shares in GDP.

Table 10 Investments in new sections from 2003 to 2015 - AZM

Concessionaire	Investments 2003	Investments 2004	Investments 2005	Investments 2006	Investments 2007	Investments 2008	Investments 2009	Investments 2010	Investments 2011	Investments 2012	Investments 2013	Investments 2014	Investments 2015
	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure	new infrastructure
	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK	mil. HRK
AZM	0,00	196,54	1.084,82	887,1	147,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Source: Croatian Association of Toll Motorway Concessionaires

Table 11 GDP of the Republic of Croatia (current prices)

GDP	2003.	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
mil HRK	227.012	245.550	270.191	294.437	322.310	347.685	330.966	328.041	332.587	330.456	329.571	328.431	334.219

Source : <https://www.hnb.hr/documents/20182/1047571/hbilt227.pdf/931da48e-02d0-4a02-b9cc-84306e26eca5>
<http://www.dzs.hr/>

Table 12 Share of investments in GDP u -AZM

Share of investments in													
AZM	0,00/0	0,00/0	0,40/0	0,00/0	0,00/0	0,00/0	0,00/0	0,00/0	0,00/0	0,00/0	0,00/0	0,00/0	0,00/0

The largest share of investments in GDP of 0.40% was in 2005 due to investments in the last section of the motorway, which was opened in 2007. Since 2008, the company has not invested in new sections, so the share in GDP is 0%.

In the last part of the article, a comparison of four motorway concessionaires in the Republic of Croatia is made according to four criteria: financing, tariff policy and toll collection, management and maintenance costs and extraordinary maintenance costs.

4. COMPARISON OF MOTORWAY CONCESSIONAIRES IN THE REPUBLIC OF CROATIA

The first criterion for comparing concessionaires is the method of financing.

4.1 Financing

There are several sources of financing used by motorway concessionaires in the Republic of Croatia. These are loans, own funds, toll revenues and other revenues, fuel price compensation, repayable and non-refundable state funds, and funds from European funds. The structure of funding sources in 2015 is shown in the table above.

Table 13 Structure of sources of financing of motorway concessionaires in the Republic of Croatia

Financing structure (%)	2015			
	HAC	ARZ	BINA-ISTRA	AZM
Concessionaire				
Loans	58,5	0	0	0
Own funds	1,7	0	0	0
Toll and other revenue	30	93,1	52,8	70
Fuel price fee(0,20 kn/l)	9,5	0	0	0
Refundable and non-refundable state funds	0	0	47,2	30
EU fund	0,3	6,9	0	0
TOTAL	100	100	100	100

It can be seen from the attached that the concessionaire that manages the longest motorway network in the Republic of Croatia, HAC, is mostly financed from loans. As much as 58.5% of funding sources fall on credit, 30% on toll revenues and other revenues. Other income includes income from advertising on entrance cards and renting land for catering facilities. This applies to all concessionaires, not just HAC. Other, by their share, smaller sources of financing include fees in the price of fuel amounting to HRK 0.20 / l (9.5%), own funds (1.7%) and grants from European funds (0.3%)).

The other three concessionaires have only two sources of funding, but there are differences. ARZ is financed with 93.1% from toll revenues and other revenues, while 6.9% falls on funds from European funds.

Bina-Istra, as the only real concessionaire with AZM, is financed with 52.8% from revenues from tolls and other revenues, while 47.2% falls on state funds in the form of financial contributions paid by the Ministry of Maritime Affairs, Transport and Infrastructure every month.

AZM is also financed from toll revenues and other operating revenues with 70%, while 30% falls on state funds.

Through the presented structure of financing, it is evident why at one time the state intensively advocated the monetization of publicly owned motorways, those managed by HAC and ARZ. The main idea of the monetization project is to give the motorways in concession for a longer period of time in exchange for a one-time financial transfer that would be paid by the concessionaire. This would primarily affect the government's indebtedness, which would be reduced by the release of debt related to loans to these

two companies. The state gave its support to motorways through a fee in the price of fuel, but in 2014 it was reduced to a third of the previous value and now amounts to 0.20 kn / l.

The amount of debt that ARZ and HAC have to repay in the period from 2014 to 2020 is around HRK 36.5 billion. A favorable situation on the credit market would enable the refinancing of existing debt with a new loan, but this represents a certain risk related to the interest rate at which the loan would be approved.

Although the debts of HAC and ARZ covered by state guarantees have not been included in the calculation of public debt so far, but according to the methodology used by EUROSTAT and the Central Bureau of Statistics, ESA 95, in case of losses or accumulation of debts, debts of state companies enter public debt, and therefore it could happen that the debts of the mentioned two companies start to be reflected in the public debt of the state.

All of the above is the reason for the monetization of motorways managed by HAC and ARZ, with even future needs for investments that are necessary for the continuation of construction and maintenance of the existing condition, which according to the current business model should be financed by additional borrowing which will become unsustainable in the future.

According to the presentation of the financing structure, it is possible to conclude that Bina-Istra and AZM have a sustainable business model.

The next criterion in the comparison is the tariff policy and toll collection.

4.2 Tariff policy and toll collection

Tariff policies vary among concessionaires. Thus, HAC and ARZ make the amount of tolls by Decisions, while Bina-Istra and AZM submit proposals on the amount of tolls to the competent ministry, which approves one of the proposals and only after that these tariffs can be applied to users.

In 2015, HAC did not change the price of tolls as in several previous years. The same applies to ARZ.

Bina-Istra has been applying new tariffs every year for the last few years, but they are being adjusted for inflation next year. In 2015, the price of tolls increased by an average of 2.2%. Also last year, for the first time, a summer tariff was introduced approved by the competent ministry, where the full price of tolls in the period from 1.6 to 30.9.2015 increases by 10%, but for ENC users prices remain unchanged.

AZM also did not change toll prices in 2015 as in the previous few years.

The table shows the net revenues from tolls, as well as the percentage changes for each concessionaire compared to 2014.

Table 14 Revenue from toll collection without VAT in 2014 and 2015

Toll revenue (without VAT) 1 EUR=7,61 HRK	2014		2015		15/14 %
	HRK	EUR	HRK	EUR	
HAC	1.401.753.852	184.198.929	1.484.986.671	195.136.225	5,94
ARZ	505.273.019	66.365.929	539.732.914	70.924.167	6,82
Bina-Istra	164.568.435	21.625.287	186.318.178	24.483.335	13,22
AZM	195.313.803	25.665.414	203.266.719	26.710.476	4,07
TOTAL	2.266.909.109	297.855.559	2.414.304.482	317.254.203	6.5

Source: Croatian Association of Toll Motorway Concessionaires

Total toll revenues in 2015 amounted to 2.41 billion HRK. HAC had the largest share of over 61%, ARZ has a share of over 22%, AZM over 8% while Bina-Istra has a share of over 7.5% in total revenues. However, Bina-Istra achieved the highest growth in 2015 compared to 2014 of as much as 13.22%, which was certainly influenced by the summer tariff.

A closed toll collection system is applied on the entire motorway network in the Republic of Croatia, which implies several entrances and exits. An open billing system means that between two billing points there is one billing station in operation, which represents both the incoming and outgoing billing station. Currently, the system is open in application at NP Bregana, NP Most Krk, NP Rupa and NP Biokovo (St. Elijah tunnel).

Payment on all motorways is made in cash (KUNA and EUR), with the proviso that payment in EUR is only possible for foreign citizens, credit and debit cards, INA card and SMART cards. The electronic toll collection system (ENC) is not available only on the A2 Zagreb - Macelj motorway.

The different benefits of ENC billing are determined independently by each concessionaire. Thus, Bina-Istra offers ENC Plus, ENC Easy, ENC Next and ENC Tunel Učka No limit with the aim of attracting as many users as possible to the Istrian Y. Different ENC packages of concessionaires offer different discounts, and their use increases traffic flow and reduces congestion.

In case the user does not have ENC, payment is made at all concessionaires at the manual or automatic cash register. Toll collection for concessionaires is performed by operators, ie companies in charge of management and maintenance: HAC-ONC, Bina-Istra upravljanje i održavanje d.o.o. and Egis Road Operation Croatia d.o.o.

The presented comparison confirms the already expected conclusion, and that is that the highest income is generated by the one who manages the most kilometers of the motorway.

The next criterion in comparison is management and maintenance costs.

More about this source textSource text required for additional translation information

4.3 Management and maintenance costs

Management and maintenance costs refer to the annual regular maintenance of the motorway. As already mentioned, regular maintenance activities include: motorway patrols, winter motorway maintenance, and maintenance of pavements, facilities, traffic signs, and signaling equipment. Regular maintenance for HAC and ARZ is performed by a joint operator, HAC-ONC.

Table 15 Concessionaire operation and maintenance costs in 2014

Br.	Račun dobiti i gubitka	HAC - ONC	Bina Istra Upravljanje i Održavanje	Egis Road Operation Croatia
		Realizacija 2014. Ukupno	Realizacija 2014. - Ukupno	Realizacija 2014. - Ukupno
I.	UKUPNI PRIHOD	709.209.671	62.171.335	55.017.000
1.	OPERATIVNI PRIHOD	708.823.046	61.735.920	54.951.000
1.1.	Prihodi od ugovorne naknade za održavanje i naplata cestarine	529.300.000	61.385.228	49.832.000
1.2.	Prihodi od ugovorne naknade za održavanje i ARZ naplata cestarine	171.294.123	/	/
1.3.	Ostali prihodi - prihodi od re-fakturiranih troškova povezanih tvrtki, prihodi od privremene regulacije prometa, prihodi (provizija) za izdvojene aktivnosti	5.512.225	350.692	5.119.000
1.4.	Izvanredni prihodi - prihodi od prodaje dugotrajne imovine, plaćene kazne i sl.	2.716.698	/	/
2.	FINANCIJSKI PRIHODI	386.625	157.545	66.000
2.1.	Prihodi od dividendi	/	/	/
2.2.	Prihodi od kamata i ostali financijski prihodi	386.622	157.545	66.000
2.3.	Pozitivne tečajne razlike	3	/	/
II.	UKUPNI RASHODI	714.582.393	60.011.237	50.235.000
1.	OPERATIVNI RASHODI	714.414.878	59.948.846	50.177.000
1.1.	Troškovi sirovina i materijala, rezervnih dijelova, otpis sitnog inventara	43.441.631	2.579.606	10.950.000
1.2.	Troškovi energije (struja, plin, gorivo i maziva)	70.919.639	1.674.437	5.110.000
1.3.	Troškovi za usluge redovnog održavanja	46.843.935	4.682.567	4.962.000
1.4.	Ostali vanjski troškovi	48.222.582	11.530.371	285.000
1.5.	Amortizacija imovine	26.621.030	2.327.388	1.003.000
1.6.	Plaće (Bruto II)	431.925.700	31.540.694	19.922.000
1.7.	Materijalna prava radnika	37.795.798	3.237.851	1.847.000
1.8.	Ostali troškovi poslovanja	3.325.231	937.026	2.752.000
1.9.	Ispravak vrijednosti	2.407.930	23.479	7.000
1.10.	Rezerviranja	1.483.085	178.647	1.601.000
1.11.	Ostali operativni troškovi	1.428.319	1.236.779	1.738.000
2.	FINANCIJSKI TROŠKOVI	167.515	62.391	58.000
2.1.	Kamate	167.339	62.391	58.000
2.2.	Negativne tečajne razlike	176	/	/
III.	DOBIT ILI GUBITAK (I.-II.)	-5.372.722	2.160.098	4.782.000
	Kilometri pod održavanjem od 31.12.	1.090	145	60
	Broj zaposlenika od 31.12.	2.846	222	132
	Zaposlenik po km	2,6	1,5	2,2
	Ukupni troškovi po km (EUR/KM)	86.261	54.457**	109.981

Source: Court Register of the Ministry of Justice

HAC-ONC has the highest revenues, where the majority of revenues fall on revenues from contractual fees for maintenance and toll collection from HAC, which amount to HRK 529,300,000, and revenues from contractual fees for maintenance and toll collection from ARZ, which amount to 171,294. 123 HRK. The other two companies also generate a larger share of revenues from contractual maintenance fees in this way.

The largest part of expenses in all companies is represented by gross salaries of employees. Taking into account the total cost of gross salary and the number of employees, we come to the data that the average monthly gross salaries in HAC are HRK 12,647.16, in BINA-Istria HRK 11,839.60, and in AZM HRK 12,577.02.

Other significant costs relate to costs for regular maintenance services and energy costs. It is noticeable that the costs of regular maintenance are the lowest for the company Bina-Istra Management and Maintenance d.o.o. although Egis Road Operation Croatia d.o.o. manages more than half a kilometer of motorway than BIUO.

Bina-Istra also has the lowest number of employees per kilometer and the lowest total costs per kilometer expressed in EUR. Low costs and high quality of service provide a balance between efficiency and effectiveness.

HAC-ONC is the only company listed above that operated at a loss in 2014. One of the solutions would be to rationalize the business in the form of reducing the workforce, which would certainly be one of the moves of the future concessionaire if monetization occurs.

The last criterion in the comparison is the cost of outstanding maintenance.

4.4 The cost of extraordinary maintenance

The cost of extraordinary maintenance is actually an investment in existing sections over the course of a year. Extraordinary maintenance aims at longer-term arrangement and improvement of individual parts of the road without changing the technical elements, and with the aim of improving the safety, stability and durability of roads and road facilities and increasing traffic safety.

This type of work is performed occasionally depending on the condition of the motorway.

The above table shows the costs of extraordinary maintenance in 2014 and 2015 and the percentage change between those two years.

Table 16 Costs of extraordinary maintenance of concession

aires in 2014 and 2015

Investments (mil HRK)	Investments 2014 in built sections	Investments 2015 in built sections	15/14 (%)
HAC	160,76	75,29	-53,17
ARZ	17,13	17,13	0
Bina-Istra	23,93	24,04	0,46
AZM	28,1	19,8	-29,54
TOTAL	229,92	136,26	-40,74

Source: Croatian Association of Toll Motorway Concessionaires

Extraordinary maintenance costs are the highest for HAC which is reasonable given the number of kilometers of motorway. AZM has the second largest cost, although it has the least kilometers in its jurisdiction. When you look at the costs of extraordinary maintenance in 2015, it can be seen that HAC reduced costs by more than 50%, and AZM by almost 30%. Bina-Istra increased costs by 0.46% and jumped to second place in terms of costs for that year. The reason for the higher costs of extraordinary maintenance is that some sections were put into operation before the management of the Istrian Y was taken over by the Bina-Istra concessionaire, and the Učka tunnel was put into operation in 1981, and in 1995 by taking over the concession Bina-Istra immediately modernizes and restores the most vital functions of the Učka tunnel.

The total costs of extraordinary maintenance decreased by 40.74% compared to 2014.

The plan for 2016 is that the total costs of extraordinary maintenance for all concessionaires amount to HRK 286.03 million, which would be an increase of 109.91% compared to 2015, due to the large planned increase in costs by HAC of 147% in compared to 2015 and ARZ of almost 278.58%.

Bina-Istra and AZM plan to slightly increase or even reduce their costs.

An additional comparison was made with the semi-annual toll revenues for 2016.

4.5 Semi-annual collection in 2016

Toll revenues for the first six months of the current year are shown in the table above and compared with the same period in 2015.

Table 17 Semi-annual revenue from toll collection without VAT in 2016 and 2015

Toll revenue (without VAT)	lip.15		lip.16		16/15 %
	HRK	EUR	HRK	EUR	
1 EUR=7,63 HRK					
HAC	577.593.666,74	75.700.349,51	624.078.672	81.792.749	8,05
ARZ	219.139.214,00	28.720.735,78	236.452.937	30.989.900	7,9
Bina-Istra	74.439.685,00	9.756.184,14	79.567.948	10.428.302	6,89
AZM	80.834.271,51	10.594.268,87	86.318.083	11.312.986	6,78
TOTAL	952.006.837,25	124.771.538,30	1.026.417.639,72	134.523.937,00	7,82

It can be seen that HAC achieved the highest growth in the comparative period of 8.05%. ARZ achieved a growth of 7.90%, the third is Bina-Istra with 6.89% growth, and the last AZM with 6.78% growth in the first six months of the current year. In total, tolls are higher by 7.82%.

Source: Croatian Association of Toll Motorway Concessionaires

include revenues in July and August, which are usually two months with the largest shares in total revenues.

5. CONCLUSION

Motorways are one of the indicators of the development of the state. The existing network of motorways in the Republic of Croatia is extremely good and with its development over the years it has greatly improved the road connectivity of the entire country. It is now possible to reach the most remote parts in just a few hours.

The motorway network is managed by four concessionaires, two of which are owned by the Republic of Croatia, and although they are officially called concessionaires, they are not in the true sense of the word. The other two concessionaires are foreign-owned.

The comparison made between all four concessionaires showed certain similarities, but also differences both in their legal status and in economic factors.

The similarities are reflected in the way they manage and maintain motorways through operators, companies established by the concessionaires themselves (HAC, ARZ and Bina-Istra) or entrusted to an unrelated company (AZM) to perform the function of management and maintenance and toll collection.

After the comparison, it can be concluded that private concessionaires have better prospects for more successful business in the future. Since private managers are usually better managers than public ones through this article, we proved this by comparing motorway concessionaires in Croatia that the costs of management and maintenance in terms of cost and number of employees per kilometer are the lowest for private concessionaires. For example, Bina-Istra stands out with innovations in terms of security, innovative ways of toll collection such as payment via SMS, the first to introduce payment by credit

cards, the first to introduce payment via automatic toll booths, etc. Out of a total of 106 tracks on the motorway managed by Bina Istra in night work and under low traffic only 4 cashiers manage the network of toll booths which greatly reduces the costs of management and maintenance.

Another advantage of real concessionaires is investing in the construction of new sections without a state guarantee, unlike public managers. Although the State remains the owner of the land and property of all concessionaires, the management and maintenance of private concessionaires reduces policy influence and state interference in the private sector and market principles especially in the context of EU state aid guidelines and competition rules in the European market. A common feature of all concessionaires in Croatia is definitely a positive impact on the economy, employment and tourism, which represents 30% of Croatia's GDP. Since the quality infrastructure of motorways allows over 80% of tourists to come to Croatia by vehicle, this significant investment will definitely have significant positive effects on the deficit, public debt and GDP in the medium and distant future, although currently some negative consequences are felt through increased public debt and the impact on the deficit through subsidies and financial contributions of concessionaires. In this context, the Republic of Croatia has considered the privatization of public motorways through a monetization process that has been halted by population dissatisfaction and has now been replaced by a restructuring process and debt rescheduling by public concessionaires.

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