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TRENDS, DEMANDS AND PARADOXES OF LUBRICANT MICRO MARKETS SUCH AS CROATIA AND THE SURROUNDING COUNTRIES

Abstract

Consumption of lubricants and base oils is not equally spread in different markets and regions of the world. The trends in lubricant and base oil quality requirements in micro markets like Croatia and the surrounding countries differ from one market to the next, as well as the unevenness in demand which is less dependent on the quality and specifications, and more on the key economic factors of a given market. In the past decade, trends in the lubricant business in Croatia and the surrounding region, coupled with the synergistic effect of continuous and increasing imports of new industrial equipment and vehicles, as well as the current quality requirements in Europe, have all affected a continuous decrease visible in lubricant consumption in Croatia and the surrounding region. This paper provides a brief overview of the key factors impacting upon quality requirements and other trends in the Croatian lubricant market. Particular attention is dedicated to the analysis of paradoxes inherent in lubricant micro markets such as the Croatian market, and to a comparison of current and future trends with those of ten years ago.

Keywords: *lubricant consumption; regional lubricant market; automotive lubricants; industrial lubricants; lubricant trends in the Croatian market*

Introduction

Significant changes in the Croatian market and the neighboring markets have taken place in the past couple of years. There are major differences within the region in terms of the intensity of impact of global and European trends on the lubricant market; on top of that, the trends of lubricant quality development, together with the state of commercial and personal vehicle fleet, differ from one market to the next. Since the Republic of Croatia acceded to the European Union as the 28th Member State on July 1, 2013, a lot has changed in the economy of Croatia, including the lubricant industry. In economic terms, however, Croatia is still highly linked with neighboring countries in the immediate region.¹ In addition to its good geographical position and transport links, Croatia belongs to better-developed countries of the

immediate region¹. Towards the beginning of 2014, the population size slightly exceeded 4.26 million inhabitants, which represents approximately 17.8% of the total population of the immediate region¹.

¹The immediate region is perceived as including the countries of ex-Yugoslavia: Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Kosovo, Montenegro and Macedonia. In a wider sense of the word, the region also includes Hungary, Bulgaria and Albania.

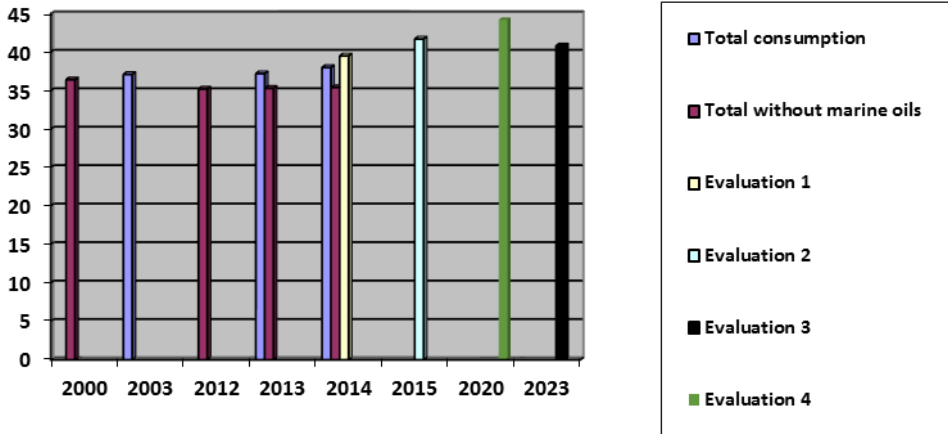
Lubricant consumption comparison and forecast for Croatia and the region in the period 2004 - 2024

In the past ten years or so, most observers of the global lubricant market have been providing diverse forecasts of lubricant market growth in the period from 2012 all the way to 2025. These forecasts tend to diverge from the usual lubricant classification quite significantly, including in terms of the types of lubricants or related products taken into account in in-depth analyses. For example, some analyses and forecasts do not take into account the consumption of marine lubricants. In addition, some analysts tend to classify transformer oils and/or process oils in different ways. Automotive lubricants and related products also represent a special challenge. What is common to all these forecasts prepared in the past couple of years, however, is the fact that, starting from the peak level of 2007 (at 40 million tons per year) and recovery in 2010 (at 37 million tons per year), they foresee continuous growth of the total global lubricant demand at the level of 2.4% to 2.6%. In the past two or three years, such forecasts have proven to be highly optimistic and unrealistic. It is only since 2015, that we have started seeing somewhat more cautious forecasts, with forecasted rates at the level of 0.5% to 1.4%.^{/1-4,11/}

Figure 1 provides a comparison of the data on actual and forecasted global lubricant consumption for the period 2003-2023.^{/1-8,11/} The following trends can be noted: the total consumption of 37.1 million tons per year in 2003 increased to 38 million tons per year in 2014, despite the oscillations connected with peak consumption in 2007 and the biggest drop in consumption in 2009 and 2010 – resulting in average annual growth of 0.8%. However, if we look at the consumption of lubricants and related products without marine lubricants, a somewhat lower annual growth rate of 0.5% can be noted in the period from 2012 to 2014.^{/3/} Growth forecast of 1.4% made towards the beginning of 2009 (Forecast 1 – Figure 1),^{/1/} together with growth forecasts of as much as 2.7% (Forecast 2 – Figure 1)^{/3/}, seem rather paradoxical and even incredible from today's perspective. Even the forecast that lubricant consumption would exceed 44 million tons per year until 2020 seems somewhat too optimistic and unrealistic (Forecast 4)^{/3/}.

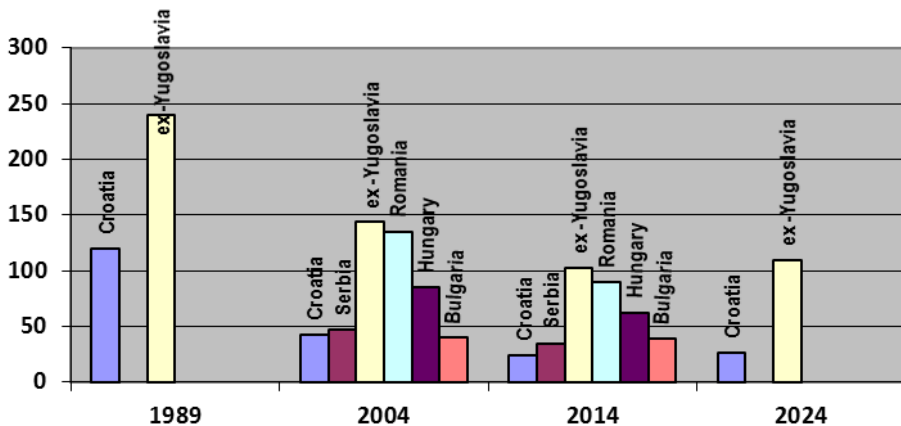
If we take into account the actual growth achieved in the past couple of years, assuming that it would remain retained in the future, we can expect that the total lubricant demand in the world would reach and slightly exceed 40 million tons per year only in 2023. As for Europe, most analysts agree that the period from 2015 to 2021 will be marked by the current growth level, i.e. 0.5% per year.^{/2,10/}

Figure 1: Estimates of global lubricants consumption, 2000-2023



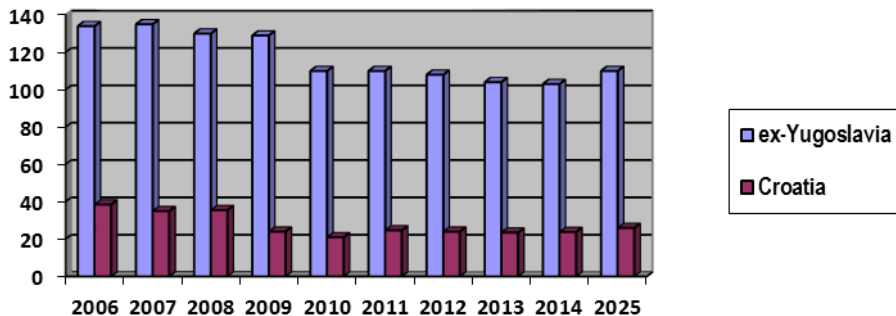
In the period 2000-2014, Europe saw a drop in consumption by 8 million tons per year, with demand reduced to the level of 19 million tons per year, which represents a drop of almost 30%. Same as in Europe, a major drop in demand over the past twenty-plus years was recorded in Croatia as well, but also in the immediate region. Figure 2 shows a change in demand in Croatia in the period of approximately thirty years. A comparison with relatively big markets in the region for the period from 2004 to 2014 has been prepared as well. Consumption forecast for Croatia until 2024 is also provided, pointing to an average growth rate of 0.3% to 0.5% per year.

Figure 2: Comparison and evaluation of lubricant consumption in the region in the period 1989-2024



One should note that the immediate region¹ saw a drop in lubricant consumption at the level of approximately 28.5% to 30% in the period 2004-2014; the most intense drop in the region was recorded in Croatia – as much as 44% (see Figures 2 and 3). The causes behind this phenomenon are diverse, ranging from the poor situation with the economy and the recession, to disappearance or loss of function of the industry, with outdated technology predominantly in state ownership, to the increasing use of new-generation machinery and vehicles equipped with new technology as a highly relevant trend.^{5-8/} Similar trends of declining demand, with minor deviations, can also be noticed in other countries in the wider region (Hungary and Romania) in the period 2004-2014. According to available data, the consumption in Bulgaria stayed at the same level; however, that particular market was not in focus of our analysis. Figure 3 shows that decrease in consumption in Croatia was most intense in 2009 and 2010, following which the consumption began to stagnate. A similar trend can also be seen in other countries of the region; however, it is worth pointing out that in some countries it only started in 2010, and was not as pronounced (e.g. in Kosovo, Montenegro and Macedonia).

Figure 3: Consumption of lubricants for immediate region, Croatia, 2006-2025



According to forecasts, lubricant demand in Croatia will reach 26 thousand tons per year in 2025. Such forecast is based on the assumption of maximum continuous annual growth rate of 0.5%, coupled with the expected modest, but still positive changes in the economy, such as e.g. the GDP growth of +1.6% in 2016 and beyond. The immediate region¹ starting from the level of 103 thousand tons in 2014, is expected to reach 110 thousand tons until 2025.

The total consumption in the immediate region stood at 145 thousand tons in 2004, as can be seen in Figures 3 and 4. As we compare consumption shares of countries in the immediate region for the period 2004-2014 (Fig. 4,5), it turns out that the most substantial changes occurred in the relatively big markets of Serbia and Croatia, which saw the biggest quantitative drop in consumption; the shares in consumption have not changed substantially, however. That can also be seen in Figure 6.

Figure 4: Consumption shares of the markets of ex-Yugoslavia, 2004

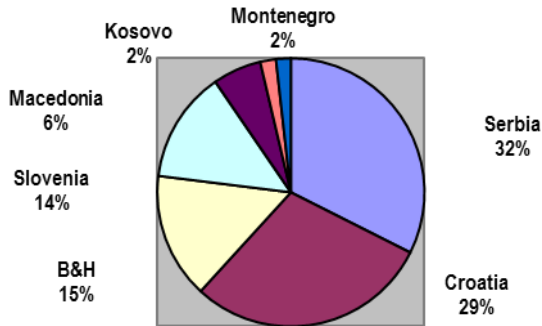


Figure 5: Consumption shares of the markets of ex-Yugoslavia, 2014

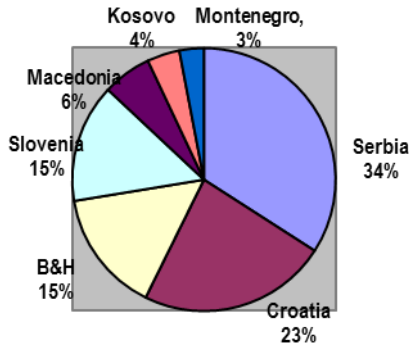
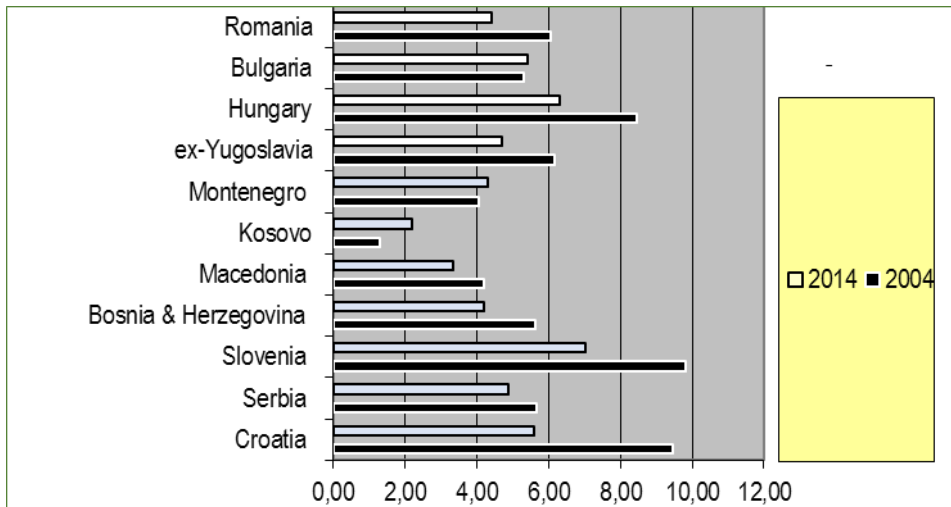


Figure 6: Comparison of lubricant consumption in the region, 2004-2014



Key factors, trends and paradoxes in the Croatian market until 2014

Global lubricant industry trends^{/3/}

In the past couple of years, the share of lubricants and related products for the industry has not changed, and stood at 47% of the total lubricant demand in 2014. According to the same source,^{/3/} process oils are at 15%, hydraulic fluids at 9%, and other industrial lubricating oils are at 7% of total consumption. Motor oils for stationary engines in industry stand at 7%, metal processing fluids at 6%, and automotive and industrial lubricating greases cover the usual 3% of the total consumption. There are two basic reasons behind this change in share distribution, i.e. behind the increase of the share/demand for industrial lubricants:

- a) Permanent development of new vehicle, engine and vehicle component technology, directly tied to strict environmental protection requirements;
- b) Economic trends in BRIC² countries, EU and US, and in several other developed countries (Japan, Canada, etc.).

²BRIC = Brazil, Russia, China and India

Impact of European lubricant industry trends on the Croatian market

European and global trends that impact upon the lubricant market in Croatia do not always result in positive effects. Negative and positive impacts on the Croatian lubricant industry are connected with the following:

- a) Croatia is fully implementing very strict EU regulations and guidelines on environmental protection, aimed at decreasing the water consumption, thermal energy use and exhaust gas emissions; on top of that, the country also supports the procurement and use of fuel-saving vehicles and vehicles powered by alternative fuels from renewable sources. REACH guidelines represent the most influential document in the lubricant industry. However, one shortcoming of the existing situation lies in the fact that state institutions neither stimulate nor regulate the implementation of rapidly biodegradable lubricants and, in general terms, lubricants that would be less harmful to the environment and human health. One exception is the growth trend in demand for top-quality lubricants in export-oriented food industry.
One major issue is the relatively old vehicle fleet, with the average age of 12 years,^{/10,11/} as well as a slow trend of replacing old vehicles with new ones, coupled with a significant decrease in sales of new vehicles in general. It is worth mentioning that, as of mid-2014, the country is subsidizing the procurement of electric and hybrid vehicles by 4,000 to 10,000 EUR per vehicle, depending on vehicle type and size. These trends have a significant impact on decreasing automotive lubricant sales.
- b) Croatia has a well-functioning disposal system for used and waste lubricants and related products. Lubricants imported or produced in Croatia are accompanied by the relevant documentation, and a so-called eco-tax levied on lubricants is paid to the state, in the amount of 1 HRK per liter. On the basis of this tax, the Republic of Croatia is stimulating independent organizations

- professionally dealing with lubricant collection, manipulation and disposal. The final and only technological solution is incineration in several cement factories in Croatia.
- c) In the past couple of years, there is a noticeable progress in the use of renewable energy sources, thermal energy savings and similar efforts, with major support provided by state institutions. A large number of wind turbines have been built; city transport (buses) and taxi vehicles predominantly use gas as fuel; in addition, fuels with biocomponents (biofuels) are also increasingly used, for example by city buses. However, the use of energy-saving lubricants and their efficiency is still an unknown, not only for state agencies and institutions, but – unfortunately – for industry as the end user as well. The problem lies in insufficient information and lack of knowledge not only among owners and management structures, but also in insufficient knowledge and status of engineers in production and maintenance. A positive side of the story is the fact that such lubricants can easily be obtained in the market.
 - d) Lubricant market in Croatia is almost ideal for the end user today. There is abundant supply of a number of products; many lubricant suppliers are active, and there is permanent cost-cutting pressure when it comes to the pricing of final products. On the other hand, however, due to the poor economic situation, end users do not utilize these positives to a high extent, because they tend to be focused on obtaining the lowest price for a given product. Authorized distributors of lubricants produced by foreign producers face major issues, because end users can obtain lubricants throughout Europe, typically at a lower price than the price in the Croatian market.
 - e) One can conclude that the situation in Croatia is marked by a major paradox. On the one hand, we are witnessing a catastrophic situation in a considerable part of the industry, due to the disastrous hit suffered by the economy during the transition and change in ownership structure, coupled with a sudden fall and disappearance of industrial production based on outdated technology. Investments in new technology and production are still at a low level, and the vehicle fleet is old, in particular when it comes to personal vehicles; finally, there are all the negative effects that come with a poor economic situation and major unemployment.
 - f) On the other hand, lubricant suppliers offer a wide range of top-class lubricants, and lubricant prices have been stagnating for quite a while. In practice, what we have is a “fire sale” situation, with discounted lubricant sales. Lubricant industry has been marked by low profit margins in Croatia for quite a long time, not without reason. In the end, authorized distributors have no other business factor going in their favor, other than guaranteed delivery of lubricants per order, which makes one wonder what will eventually be their fate. Major global producers are not concerned by this, since they believe that there is never a shortage of potential distributors. The market is too small to increase investments in brand and the market itself.

What major players forget, however, is that a certain continuity of persistent work of a company recognizable in the market, or of a sales team, is necessary to achieve any kind of permanent growth. In such a situation, the DIY (do-it-yourself) approach to sales is increasingly prominent, with buyers left to tend to themselves. They make their decisions on the price, quantity and quality, while sticking to the usual sales channels, not too keen to try out new lubricant brands, regardless of well-advertised and presented advantages brought by higher quality, and also not too keen to focus on new sellers or distributors of lubricants.

Despite many positive effects and guidelines of the Republic of Croatia, many production and other companies, including state organizations and companies, perceive the requirements and guidelines on environmental protection and on decrease of energy consumption as being rather low on their priority lists, compared with the requirements regarding productivity and system and/or machine reliability. Unfortunately, in such situations production and maintenance engineers tend to stick to the proven tribological principle elaborated by Jim Fitch in 2002: “...*the principle objective of the practice of lubrication is to reduce wear at the lowest possible cost.*” It is a fact that there are certain arguments in favor of such a cautious and rather conservative approach, since energy-saving requirements and friction-reduction requirements in lubrication use are not always compatible. In addition, debates on this issue, coupled with expert and applied research, are still ongoing.^{3/}

Having all that in mind, it is no wonder that Croatia and countries facing similar issues as those mentioned above typically use lubricants with lower and medium quality properties (operational parameters), which means lowest-price lubricants in practice.

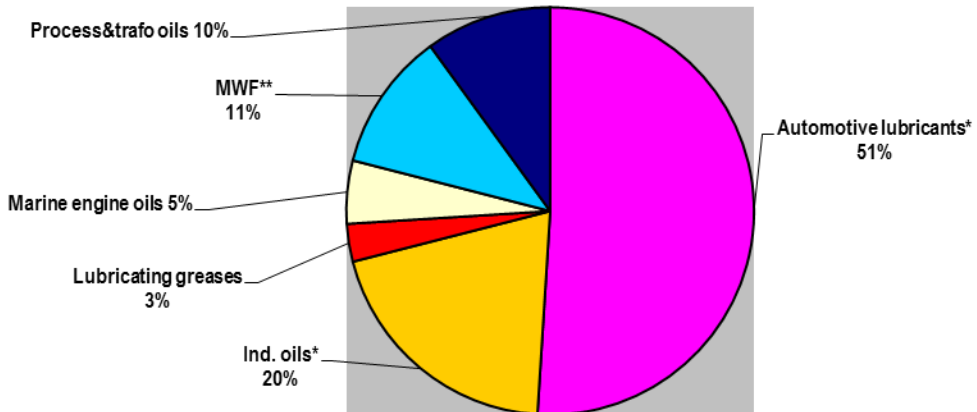
Lubricant market in Croatia

Consumption shares per type and quantity estimates, 2004-2014^{7,8/}

Figures 7 and 8 provide a comparison of lubricant consumption per type in 2003 and 2014. Hydraulic oils are shown separately in the overview of lubricant consumption in 2014, since it is difficult to determine which part of hydraulic oils was used in road and off-road vehicles and construction machinery, and which part was used in classical industry. However, it is assumed that at least 35% of the quantity of mineral-based hydraulic oils sold in 2014 was used for road and off-road vehicles in transport, agriculture, forestry, railway and construction sectors, and in vessels.

Figure 7 shows that, same as in other countries of the region, the biggest share of the consumption of lubricants and related products pertained to vehicles, at 51%. However, if we would attempt to roughly divide lubricant consumption per use into industry use and transport (including vehicles in agriculture, railways, forestry and construction), based on current benchmarks, the ratio would be 60:40 in favor of transport.

Figure 7: Estimated consumption per type of lubricant in Croatia in 2003
Total quantity = 43,000 t



Legend for Figures 7 and 8:

* Also included are related products that are not lubricants but are applied at the vehicle or ind. system (e.g. antifreeze or heat transfer oil)

** Metalworking fluids & temporary anticorrosion fluids

On the other hand, 2014 was marked by somewhat different trends, as can be seen in Figure 8. It is worth pointing out that the stated quantities of marine engine oils in both Figures (for 2004 and 2014) pertain only to registered consumption in medium- and long-distance ships and vessels registered in the Republic of Croatia. Such oils are not used at all in other countries in the immediate region, with the exception of almost negligible quantities in Montenegro.

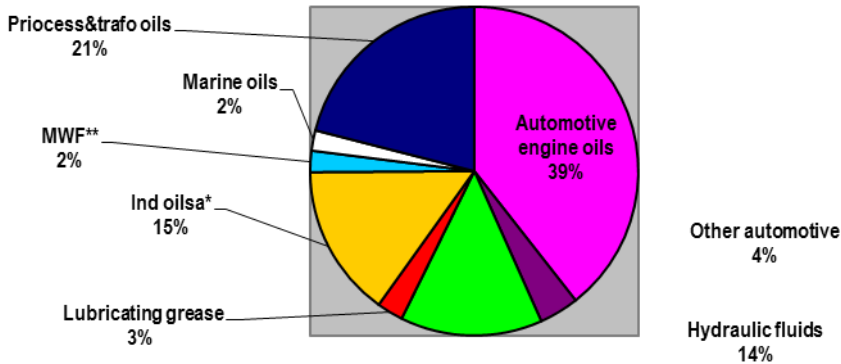
Several official sources^{14-16/} state divergent data on the import of lubricants to Croatia, production of lubricants in Croatia, export of lubricants and mathematical calculations of consumption and market capacity. The common denominator of all such data is that they are neither harmonized nor complete or punctual, and it is questionable which sorts of products ended up added together under the category of lubricants and related products, when taking into account the ISO 6743 classification. At the very least, one can conclude that the stated numbers are somewhat excessive compared to the actual consumption.

On the basis of overview of data from various sources, including data in connection with two registered domestic producers, the following estimates for 2014 can be provided:

- Around 15,500 tons of lubricants and related products were produced in Croatia;
- According to estimates, around 22,700 tons were imported, resulting in the total of approx. 38,200 tons; approx. 10,500 tons of products were exported in the same period^{11,15/};

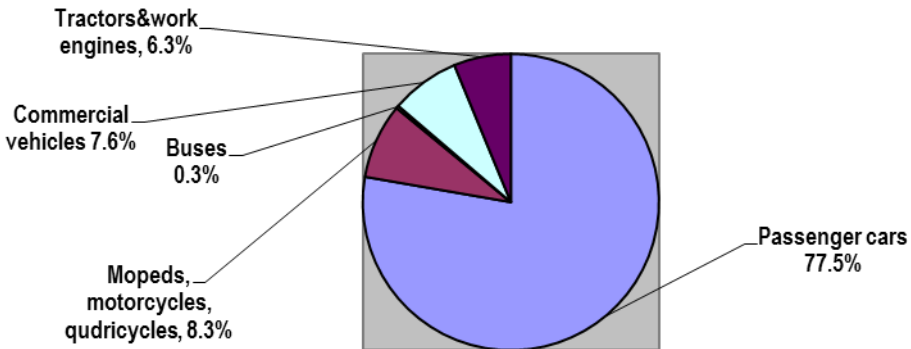
- It is worth emphasizing that conventional export, i.e. classical sales coupled with land transport mostly to neighboring countries, was at the level of approx. 7,000 tons. The domestic producer INA MAZIVA from Zagreb was the biggest exporter, with the share of at least 55%. Other quantities pertain mostly to lubricant supply for long-distance ocean liners registered outside of Croatia.

Figure 8: Estimated consumption per type of lubricant in Croatia in 2014
Total quantity = 23,800 t



One can note that the total share of all lubricants and related products used in industry stands at approx. 57% (Figure 8)^{12/}. By comparison, the global average is 47%. In addition, one can also note a high share of process oils and electrical insulation oils at 21%, while the global average is 14%. It has to be said that a significant portion of this group, i.e. almost 80% of the stated quantity, pertains to electrical insulation oils. This is specific for Croatia due to strong export industry in this segment compared to other neighboring countries in the region, where various types of process oils are used in the rubber industry to a higher extent than the already mentioned transformer oils. It is a paradox of a kind that this data, coupled with the fact that the ratio between these groups was almost the same in 2004, only inverse (43.3% vs. 56.7%), might lead an observer to a wrong conclusion about the state of affairs in the economy at first glance. Unfortunately, the reason behind this change is not the growth of industry, but primarily the declining number of registered new vehicles, coupled with a slowing trend of replacement of old vehicles by new ones, decreasing activity of commercial vehicle fleets, in particular in the export of goods (following the EU accession), and, generally speaking, poor situation in the economy. Figure 9 shows the state of the vehicle fleet in Croatia.

Compared to 2008, when the number of registered vehicles reached its peak (at 2,021,936), the year 2014 saw only 1,859,650 vehicles registered in the country. The drop in the number of vehicles stands at 8.4% in the period since 2004 until today, which is connected with the declining purchasing power of citizens and companies.

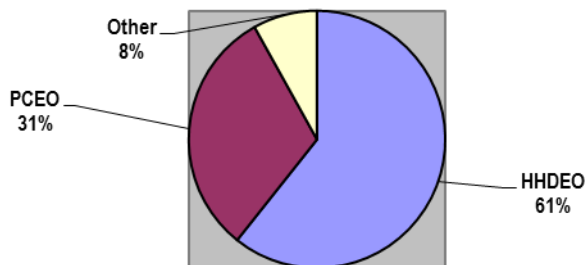
Figure 9: Registered vehicles in Croatia, 2014^{10,14/}

In accordance with that, the average vehicle age has been changing too. It stood at 10 years in 2007, rising to 11 years in 2013 and 12 years towards the beginning of 2015. A similar situation can be encountered in other countries of the immediate region as well, and the worst situation is in Serbia. For example, in the first four months of 2014, not a single new vehicle produced in 2012, 2013 or 2014 was registered in that country.

Assessment of demand for automotive lubricants and related products in Croatia, 2014

According to assessments, the total demand for automotive lubricating oils and related products^{3/} in Croatia stood at 11,300 tons in 2014. Figure 10 shows the shares of vehicle oil consumption in 2014, and Figure 11 shows the consumption of motor oils for personal and commercial vehicles per SAE grade in 2014.

Figure 10: Estimated consumption of lubricants for vehicles in Croatia, 2014



Legend for Figures 10 and 11:

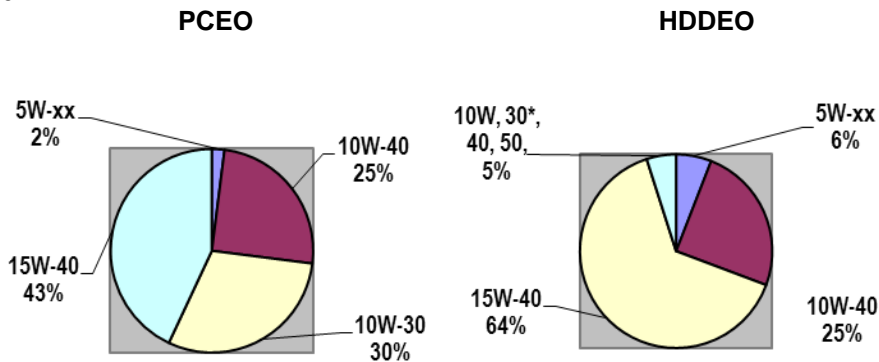
PCEO = Passenger engine oil

HDDEO = Heavy-Duty Diesel Engine Oil

Other = Hydraulic fluids, ATF, automotive gear oil, grease, tractor oil, outboard engine oil etc.

As can be seen in Figure 11, despite the relatively old personal vehicle fleet, the share of conventional grade (SAE 15W-40) is lower than in previous years, and stands at only 43%, with a clear declining tendency. In addition, the share of single grade oils for commercial vehicles dropped significantly compared to the previous period, since SAE 10W-40 is used to a higher extent. A similar trend can be seen only in Slovenia, while other countries of the region still use lower-quality single grade oils to a higher extent, in particular SAE 30.

Figure 11: Estimated PCEO and HDDEO consumption per SAE grade in Croatia, 2014



Note: *SAE 30 grade represents about 70% of the amount of single grade engine oil

Assessment of lubricant brand shares in key markets of the immediate region (Serbia and Croatia), 2014

Unlike Serbia, the only major national producer (INA) holds a seemingly respectable share of 38%, while other players, predominantly foreign companies outside of the region, cover almost 60% of the Croatian market. The situation in Serbia is different – namely, it is questionable to what extent some companies sell their own products, and to what extent do they engage in selling repackaged imported products.

In other words, the situation is predominantly defined by the coverage of the market by individual companies, rather than by brand shares. Despite that, however, a general assessment is that local brands hold approximately 50% of the market; brands from neighboring countries stand at approx. 11%, while major foreign companies hold up to 39% of market share.

One can also note that both markets no longer have a genuine leader, apart from the fact that certain companies lead in terms of quantities. The market (end buyers and traders) dictates the pricing and quality requirements.

Table 1: Shares of lubricant brands in the Croatian and Serbian market, 2014

Croatia			Serbia		
Rank	Brand / Company	Share, %	Rank	Brand / Company	Share, %
1	INA Maziva Zagreb	> 38	1	FAM	~26.0
2	Nynas	~ 21	2	NIS	14.5
3-4	BP/Castrol	~ 7	3	RNB	8.5
	Shell	~ 7	4	Viscol	8.5
5-8	Fuchs	17	5	Adeco	
	Total/Chevron		6	Others (local)	
	Valvoline		7	Mol	
	ExxonMobil		8	Prista	
9	Others (~57)	~ 10	9	Rafinerija ulja Modriča	8.5
			10	INA Maziva Zagreb	
			11	Others (~52)	

Assessment of current and future trends and key factors for the Croatian market

Summary of trends and key factors in the Croatian lubricant market

Based on what we have elaborated, one can point out the following relevant factors/trends in the Croatian market:

- Lubricant sellers are not too interested in the introduction of new quality to the market (logistical issues – costs!);
- End user determines the price that he is willing to pay;
- Surplus of supply is permanently present;
- There is a clear difference between various lubricant brands;
- Strong competition is present – resulting in decreased profit for all sellers;
- The situation in the market is ideal for the buyer – perfect competition;
- Merciless competition for the market continues, together with competition for every buyer and every “kilo” of lubricant;
- Rise in new lubricant qualities for the first filling and service filling depends on the growth of import of new vehicles and equipment;
- Even though the situation in the economy is still unfavorable, moderate positive economic growth is forecasted at the level of +1.2% (in 2016; EU forecast)^{13/};
- Even though it has the biggest share in the market, INA MAZIVA company does not control the market and it does not have a leader position;

- Major global producers and sellers of lubricants do not have a major impact on the market;
- Taking into account the market potential, logistic costs represent a rather influential business factor;
- Changes of authorized distributors are rather frequent (typically every two to three years);
- There is permanent growth in the number of companies registered for lubricant sales – despite the increasing number of closures of similar companies (over 200 companies).

Forecast of trends in the Croatian market for the forthcoming period, 2016-2024/25

- Production of top-quality lubricants will not exceed 2% of the total quantities;
- The number of lubricant brands and sellers will grow;
- Market pressure will continue, in terms of decreasing or stagnating lubricant prices;
- Lubricant producers and sellers will intensively look for and create new sales channels;
- Local authorized distributors of foreign lubricant brands are expected to face major business issues and challenges;
- Moderate rise in demand is expected, up to the maximum rate of 0.5% per year until 2025;
- Lubricant consumption will exceed 26,000 tons, but will not reach 30,000 tons;
- Positive changes will predominantly be reflected in the rise of lubricant quality in the market, while the rise in quantity will be secondary;
- Despite the current “age” of the vehicle fleet, consumption of synthetic automotive lubricants will grow continuously;
- It is expected that permanent growth in the number of lubricant brands and sellers will continue;
- Lubricant cost-cutting pressures in the market will continue, together with the pressure on decreasing seller margins.

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