Bartosz Zakrzewski, Cezary Krysiuk

The automotive tndustry in Poland a key element for the security and development of the country

JEL: R41. **DOI:** 10.24136/atest.2019.198.
Data zgłoszenia: 04.07.2019. **Data akceptacji:** 28.09.2019.

The article characterizes the impact of development of the automotive industry for the security system of the Polish state. The automotive industry in Poland was and still constitutes a significant share in generating GDP. This is about 10-12% (in different time periods). From 1950, it significantly stimulated the Polish economic situation, gave jobs, was a leaven of scientific and technical progress, made a significant contribution to exports, promoted local investments and created conditions for cooperation with other industries and science. It can be expected that in the next decade this share will remain unchanged or will increase. For this to happen, we need to develop a new sectoral policy for motorization in Poland. The potential and development of the automotive industry also has a significant impact on the defense of every country, including Poland. The safety of the country and its citizens depends on the efficiency of the transport system, which the key element is automotive industry. The Polish automotive industry associated with the modern road network and public transport systems enable the development of the Polish economy and increase its links with the global economy. The article presents that the automotive industry is an extremely important factor in managing the security and defense of the Polish state.

Keywords: automotive industry, motor transport, motor vehicles, trucks, road infrastructure, automotive factories in Poland.

Introduction

The article is the result of many years of research at the Motor Transport Institute in Warsaw [18, 34]. It applies to a large section of the Polish economy - the automotive industry. A few years ago it was noticed at the Institute that most of the papers that have been published so far on the development of the Polish automotive industry, especially in the years 1945-1990, was of a popular scientific nature. In recent years, books have appeared in this topic by Tomasz Szczerbicki [27], Włodzimierz Bukowski [1], Adam Zakrzewski [32], Stanisław Szelichowski [28] or Zdzisław Podbielski [21], [22]. All the above-named authors have no economic or historical educational background and are most often journalists. Their publications do not have an extensive critical apparatus outside the selective bibliography and are based mainly on their own memories, chaotically acquired photographs and illustrations, partially only reviewed archives. They are therefore incomplete and are not strictly scientific books. On the other hand, the work of older researchers on the history of motoring (e.g. Witold Rychter [26], Aleksander Marian Rostocki [24], and Kazimierz Groniowski [6, 5]) are already largely obsolete today. In reference to the last years - 1991-2018, a massive work on the analysis of the Polish automotive industry has been done by the analysts from PZPM [9], Samar [13], ITS [37, 33, 38] and also highly respected automotive journalist Robert Przybylski [23].

There will soon be 30 years (one generation) since the fall of the communism, i.e. from 1989, and this is a good moment for the first summaries of the role of the Polish automotive industry in the national economy in the period 1945-2018, and therefore also in our times. Many papers on the development of the Polish automotive industry in the years 1945-1990 were prepared by the author of these considerations [37, 33, 38]. Currently, ITS is conducting research on, for example, the situation in road transport [19]. Additionally, the Institute has conducted the research on the development of the country's transport system in terms of road infrastructure also at the request of the Ministry of Infrastructure and Development [1]. This article summarizes these activities – and it is an analysis of the current state of the Polish automotive industry and its prospects in the next few years.

Taking into account the development of the Polish automotive industry beginning from the Second World War [16], **I would argue that in the years 1945–2018 the automotive industry was and still is one of the most important branches of the Polish economy. In addition, it has a significant impact on the growth of Polish GDP, and its importance in the coming years will grow. Its role, from the end of World War II, has grown over the years and today the automotive industry in Poland is the „driving force" of the Polish economy, giving employment to nearly a million people** (adding up their families it provides livelihood to about 4 million people). **The purpose of this article is to recall the arguments that the automotive industry in Poland has a significant impact on the security and defence of the country**, not only creating prospects for the development of the Polish army (modern equipment and armaments), but providing citizens of the Republic of Poland with the possibility of driving safely from place to place using modern fleet of vehicles along newly-built roads.

The structure of this material is one large paragraph composed of three subsections. The first one concerns the history and tradition of the automotive industry in Poland, the second is the current state of the automotive industry and the third forecasts for the coming years. The whole ends with an appropriate ending with conclusions and proposals.

The basis for the analyses performed in the article is collected statistical information from available sources and reports. The main research method is observation, analysis and inference. Available source materials from the Polish statistical institutions (GUS [29], PZPM [9], Samar [13], ITS [19]) and ministerial ones [1] were analyzed. In addition, literature has been analyzed including magazines such as: „Statistical Yearbooks" as well as automotive magazines, e.g. weekly „Motor", „Auto-Moto-Sport", „Motoryzacja", „Technika Motoryzacyjna „ and others. Within the scope of the topic undertaken, an analysis of the available specialist literature and internet data was conducted. Photographic documentation was made on the vehicles [16, 17, 18] manufactured in Poland and imported to Poland.

1. Motor industry in Poland

1.1. History and traditions

Cars had appeared on Polish territories yet when the country was partitioned, before the beginning of the First World War, at the end

of the 19th century, when Poland was not on the maps of Europe. Ursus (1893) was one of the first Polish automotive plants. After regaining independence in 1918, the Central Automotive Workshops (CWS) started their activity, where the first series production Polish cars were manufactured [16]. Initially, the entire production was intended for the needs of the army, only after the end of the wars for the borders of the Second Polish Republic a large part of the car fleet was allocated to the civilian market. From other well-known pre-war automotive plants, we can mention the successor of CWS, i.e. Państwowe Zakłady Inżynierii (PZInż). The subsequent production plants of the automotive industry was the Lilpop, Rau and Loewenstein factory, known in the machine construction industry, which manufactured, on the General Motors license such cars as Buick, Chevrolet and Opel. Before the war, the Polish government also signed with the Italians a license for the production of Fiat cars (e.g. Fiat 508 and 518). The maximum annual production of Polski Fiat cars in 1939 was as follows: Fiat 508 – 2,500, Fiat 518 – 1000, Fiat 621 l truck – 1,100. Added to this was the production of Ursus-Saurer engines on a scale of 250-300 per year. The Lilpop company assembled General Motors cars in the numbers from 300 to 600 per month. The license was therefore well used, which translated into the production of several tens of thousands of Polish Fiats (cars and trucks) [20].

All this was far too little to motorize the Polish army, let alone Polish society. Motorization of the Polish society before the outbreak of World War II was, however, insignificant compared to the Western Europe countries. This was due to the First World War destruction and the difficulties of post-war reconstruction of the country reborn like a phoenix from the ashes. The gradual development of the Polish pre-war automotive industry was brutally interrupted for six years by German and Soviet aggression in September 1939. The German invader plundered and pillaged Polish territory, which combined with war destructions after the German-Soviet front had crossed at the turn of 1944–1945 has led to the destruction of almost all production plants for the needs of the automotive industry.

After the end of World War II, the reconstruction of the automotive industry in Poland began almost from scratch [34]. In addition to the rebuilt pre-war Ursus, the communist authorities established, in the years 1950–1989, new automotive factories, such as Truck Factory (*Fabryka Samochodów Ciężarowych „Star”*) (known as Zakłady Starachowickie until 1953, which was the cradle of the Polish car industry alongside Ursus), Passenger Cars Factory (*Fabryka Samochodów Osobowych-FSO*), Truck Factory (*Fabryka Samochodów Ciężarowych FSC*) in Lublin, Vans Factory (*Zakład Samochodów Dostawczych ZSD*) in Nysa (from 1986 with FSO), Compact Cars factory (*Fabryka Samochodów Małolitrażowych FSM*) in Bielsko-Biała, Agricultural Cars Factory (*Fabryka Samochodów Rolniczych FSR*) in Poznań, Sanok Bus Factory (*Sanocka Fabryka Autobusów Autosan*) Jelcz Car Factory (*Jelczańskie Zakłady Samochodowe*) and [39], [40]. In the socialist centrally controlled economy, all plants were part of the POLMO Automotive Industry Consortium. Many of them have been manufacturing for export, acquiring valuable foreign currency for the country, while the ordinary people were waiting for their dream car for years. In the absence of a sufficient number of vehicles in the Polish Socialist Republic – PRL, the phenomenon called „motoring hunger” occurred [27].

At the beginning of the 1950s, the first prototypes of passenger car designed for the masses were completed, such as GAD 500 [35] and Pionier [35]. The first Polish passenger cars, however, were purchased under the Soviet license - FSO *Warszawa* and then the native design of FSO - *Syrena*. The most well known passenger cars from the years 1945–1990 were: FSO *Fiat 125p*, FSM *Fiat 126p*, or FSO *Polonez* [3], [4]. In addition, popular *Nysa* and *Żuk*, and when it comes to trucks – *Stars*, including *Star 20*, *Star 25*, *Star 66* or *Star 266*. In addition, *Jelcz* semi-trailer tractors and buses as well as *Autosan* buses. In the 1970s, during the „reign” of the First Secretary of the Polish United Workers' Party – Edward Gierek, a motorization of the Polish society took place, to which contributed *Fiat 125p* and 126 p cars built on the purchased Italian license [21].

Following the political and socio-economic transformations of 1989–1990, Polish automotive plants were privatized. FSM was taken over by Fiat Auto Poland, FSR by Volkswagen, and FSC and FSO by Daewoo. The Jelcz and Star factories were also privatized. Many activities undertaken to take over the property of Polish automotive enterprises by Western concerns are considered at least controversial at present. After the collapse of Daewoo, the car production was also shut down at FSO in Warsaw. On the post-industrial areas of FSO in Warsaw, housing development is currently planned (!). After the collapse of Polish plants, there was a massive import of used cars from Western Europe, which multiplied the car fleet on the Polish roads.

1.2. Present day

Currently, the automotive industry is one of the pillars of the Polish economy. Its significant potential is created by the plants (final factories) manufacturing passenger cars, vans, trucks and buses as well as numerous OEM factories (such as Volkswagen, Toyota, PSA, Daimler), where millions of engines, gearboxes and other components are manufactured. To this, a large group of specialized suppliers of parts and subassemblies should be added. It is estimated that for every job in the final factory, the sub-suppliers and cooperating companies make up at least five more jobs, which produces about one million people employed in the automotive industry in Poland.

The significance of the automotive industry for the economy is huge because it is an important Polish exporter and payer of income tax, ranging from salaries to property tax. The automotive industry is also an impulse for the development of local communities, e.g. in Lower Silesia (Wałbrzych, Jawor, etc.), or in Wielkopolska (Września, etc.) where many automotive factories have been located.

Automotive industry belongs to the most developed areas of the Polish industry and is a technical progress as well as organizational progress carrier. Today's Polish automotive factories have modern, computerized and robotic equipment that requires highly qualified personnel. The automotive industry cooperates with Polish education at all levels, including universities and scientific institutions, e.g. Motor Transport Institute (ITS) [34]. Automotive manufacturers create their own research and development centres in Poland, employing best specialists available on the market.

The automotive industry in Poland, starting from the political and socio-economic transformations of 1989 has been developing very dynamically. This is a lasting trend that can be observed also in the last few years. Especially in the last 25 years, the automotive industry has become the main pillar of the Polish economy. In 2017, the value of sold production of the automotive industry amounted to **PLN 148.4 billion**, which corresponds to **11%** of the value of sold production of the **entire Polish industry**. In the first

place there were producers of food products, the revenue of which is PLN 224.7 billion.

Motoring is also a pillar of Polish foreign exchange. **The value of exports of the automotive sector in 2017 amounted to EUR 33.1 billion, which gave a 16.2% share in total foreign sales.** The most valuable were passenger cars exported – 6.8 billion Euros and vans – 92.8 billion Euros.

Investments in the Polish automotive industry in 2017 amounted **to PLN 6.7 billion, which gives a 13.7% share in total industry investments.** In this respect, representatives of the food producers – PLN 7.3 billion – turned out to be more impressive.

In terms of size, the automotive sector is the third employer after the food industry (391 thousand employees) and producers of metal products (283 thousand employees).

New vehicles manufactured in Poland as well as those imported from abroad mean that the number of Polish car fleet is increasing. The total number of motor vehicles and tractors registered in Poland at the end of 2017 amounted to **29.6 million** when in 2016 it was 28.6 million [29].

The number of registered **passenger cars** in Poland at the end of 2017 was **22.5 million** and was higher by 3.8% than in 2016, with the number of cars up to 30 years old being 19.3 million (by 2.9% more than in 2016). There were 586 cars per 1000 inhabitants (in 2016 – 564), including those up to 30 years old – 501 (in 2016 – 487). The share of passenger cars up to 5 years of age increased from 9.6% to 9.8%. The share of vehicles in the age group of 16–30 years decreased (from 42.9% in 2016 to 42.6% in 2017), and increased in the age group – over 30 years old (from 13.6% to 14, 4%).

The **number of trucks** (including vans) at the end of 2017 was **3.2 million**, i.e. 2.2% more than previous year, with the number of vehicles under 30 years old being 2.6 million. (1.1% more than in 2016). The number of **semi-trailer tractors** at the end of 2017 amounted to **390.4 thousand** and was higher by 7.9% than previous year. At the end of 2017, **116.1 thousand** buses were registered in Poland (2.6% more than in 2016).

In Poland, **1 747.2 million tons of cargo were transported by road** in Poland in 2017, i.e. 13.0% more than in 2016, and the haulage work in ton-kilometres was higher by 14.8%. The commercial transport carried 1104,2 million tons (15.7% more than last year), and haulage work was higher by 15.6%.

The volume of cargo carried by the road transport expressed in ton-kilometres accounted for **17.5% of total European Union transport**, which places the Republic of Poland among the 28 European Union countries in the first place, ahead of Germany and Spain. In the international transport, Poland had an even larger share (over 30.7%) and was also in the first place, ahead of Spain and Germany.

Throughout 2018, there were **531.9 thousand new passenger cars registered, 68.8 thousand vans, 29.9 thousand trucks, 26.1 thousand trailers and semi-trailers, and 2.7 thousand buses**. In comparison to 2017, cars with gasoline engines and alternative drives were more popular, while Poles less frequently opted for diesel-engined cars. The number of new passenger cars registrations increased by 9.4% year after year, but at the same time the number of passenger cars manufactured decreased by 12.3% and amounted to 451.6 thousand. 659,600 motor vehicles came off the assembly lines and the value of sold production of the companies from the automotive industry amounted to PLN 153.7 billion, i.e. 3.5% more than in 2017.

In 2016, 614 business entities operated in the Polish automotive sector. Currently in Poland, cars are being manufactured by

Fig. 1. *Production of motor vehicles in Poland in the years 2000-2018 in thousand divided into passenger cars, lorries and buses [28]*

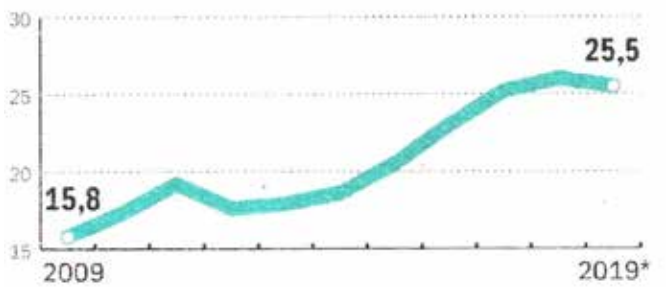

Fig. 2. *Export of the Polish automotive industry in 2009-2019 in billion Euro. Forecast for 2019. [10]*

such international companies as: Fiat, Volkswagen, Opel, MAN, Solaris, Ursus, Volvo or Melex.

Selected passenger cars manufactured in the recent years in Poland include: Fiat Panda, Fiat 500, Opel Astra III and IV, Ford Ka, Chevrolet Aveo, Lancia Ypsilon.

In 2017, **689.729 passenger cars were manufactured** in Poland, which gave it the fourth position in terms of production in Central and Eastern Europe, just after the Czech Republic, Russia and Slovakia.

Analysing the number of manufactured motor vehicles, the Republic of Poland remains in third place among the countries of Central and Eastern Europe. In 2015, the revenues of automotive manufacturers in Poland reached the value of EUR 32.1 billion, while the revenues of companies dealing in the motor vehicles trade, parts and accessories as well as automotive repairs amounted to EUR 36.2 billion. In the competing with Poland Czech Republic, the total revenues of manufacturing companies in the automotive industry were higher and amounted to 40.8 billion Euros, but taking into account the smaller internal market, sales and repairs brought the Czech Republic lower revenues, just 17.7 billion Euros.

In 2016, the production of motor vehicles, trailers, semi-trailers and remaining transport equipment accounted for 11.7% of the total production of the industry in Poland. Poland is one of the largest car manufacturers in Central and Eastern Europe. In 2016, Poland ranked 21st among the largest car manufacturers in the world.

The automotive industry in the Republic of Poland accounts for 11.2% of the value of sold production. In terms of the value of sold production, it ranks second after the food industry, ahead of all other segments of the processing industry, as well as important industries such as mining and quarrying, energy, the oil sector or municipal services.

In 2018, the automotive export was worth EUR 25.95 billion, which is 3% better result than in 2017. Good results in the segment of parts and accessories contributed first of all to this. In 2018, the value of parts and accessories produced in Poland amounted to

PLN 89.3 billion. This is a record result, better by 5.8% than in 2017. The value of exports of parts and accessories from Poland has been steadily growing from 26.7 up to PLN 50 billion since 2011. (Fig. 1)

Most of the Polish automotive sector is in the hands of foreign enterprises. The largest Polish company was Solaris, which in September 2018 was bought by the Spanish CAF group. During the 22 years of its existence, Solaris produced 17 thousand buses and trams that run in 32 countries around the world. Solaris has four production plants: the main factory and headquarters in Bolechów where the final assembly of buses and trolleybuses is carried out, two plants in Środa Wielkopolska where there are: a welding shop for buses' and trolleybuses' skeletons and a welding shop for, so called, tram boxes. There is also a production hall leased in Poznań at Wieruszowska Str. for the final assembly of rail vehicles [14]. In 2019, Solaris forecasts sales of 1.6 thousand buses, which is the limit of the maximum production capacity of the factory working in two shifts. Ultimately, the production capacity of the plant is to increase to 2 thousand vehicles manufactured. In 2018, the company sold 1.226 city buses, more than 170 less than in 2017. However, revenues increased to PLN 1,867 million. It is 17 million more than a year earlier. In Poland, Solaris remained the sales leader with a result of 402 buses, which gave it 33% of the market.

Another significant Polish automotive company with operating on a European scale is **Wielton SA** based in Wieluń. It belongs to the group of three largest manufacturers of semi-trailers, trailers and car bodies in Europe and is among the ten largest companies in the industry in the world. About 1,400 people work in the production centre in Wieluń, and around 3,200 employees are employed in the entire Wielton Group, including 300 designers and engineers. Wielton's clients are transport, construction, production, distribution and agricultural companies, and the products are distributed in 35 countries in Europe, Asia and Africa. The Wielton Group has three production centres, in Poland (in Wieluń), in France, in Germany and the assembly plants: in Italy and in Russia. At the end of 2016, Wielton set up a subsidiary in Africa in Côte d'Ivoire, where it was the first European manufacturer to build a road trailer assembly plant [10].

The Melex company is another world-renowned producer of the automotive industry, in this case electric vehicles. The production of electric vehicles was started in Mielec in 1971. By the 1977, approx. 46 thousand vehicles were produced of popular „meleks" mainly for the American market where they worked well as so-called golf carts. Nowadays, Melex vehicles are manufactured as passenger, luggage and special vehicles [7]. In addition to golf courses, they are also used at the airports, stations, old towns in big cities and, for example, in logistical centres where quiet and low-emission transport is needed.

Another important make of the Polish automotive industry is **Ursus**. The company, whose history dates back to the end of the nineteenth century, is currently located in Lublin where it manufactures, among the others, agricultural machinery and tractors, trolleybuses, trailers, buses and passenger cars with electric drive. The company produces around 1.5 thousand tractors and several thousand agricultural machines sold in Poland and abroad to the Czech Republic, Belgium, the Netherlands and Pakistan [15]. In recent years, Ursus has also started selling its products in Africa, including in Ethiopia, Tanzania and Zambia.

A rich history has also the company **Autosan Sp. z o.o.** In addition to the buses such as N-50, H-01, H-25, H-277, H-100, the Autosan bus introduced H9 bus in 1973 which became the symbol of intercity communication used e.g. in PKS in the 1970s to the 1990ths of the XXth c. On the 30 of March 2016, the owner of Autosan became a consortium of PIT-RADWAR and Huta Stalowa Wola companies belonging to Polska Grupa Zbrojeniowa [7]. Currently, this company has a wide range of city, intercity and other buses (e.g. urban SANCITY 12 LF E) manufacturing over 100 buses a year.

1.3. Development forecasts for the Polish automotive industry

The automotive industry in Poland is developing dynamically. In the first month of 2019, the number of passenger cars and vans registrations was similar to that achieved in 2018, which indicated that the market for passenger cars and LCVs maintained their current level. In total, 51,344 new passenger cars and LCVs up to 3.5 tons (t), appeared in Poland, i.e. more by + 0.6% than a year earlier, but usually less than in December 2018 (-2%) [9].

Among commercial vehicles above (over) 3.5 tons, the beginning of 2019 was very optimistic. January 2019 ended with the result of 2,101 new registrations with an increase of 2.4%, after an increase in demand in the same period of 2018 by 26%. For the second time in history, the number of new commercial vehicles exceeded the number 2,000 in the first month of the year. After deceleration in December 2018 [-29% year after year (y/y) y and -14% month after month (m/m)], January decrease (-4.6%) m/m in this year. It was definitely more moderate than observed in earlier years (in January of the three previous years: -34%, -40%, -34%).

In January 2019, 822 new two-wheelers were registered, which is 28.6% more than in January 2018. The result of January 2019 comprised 460 motorcycles (+ 27.1% y/y) and 362 mopeds (+30 , 7% y/y) [9]. In January 2019, domestic carriers registered a total of 188 new buses. It is the same results as in 2018, and since 2706 buses were registered last year, then this year it may be a very similar result.

In March 2019, 4025 new two-wheelers were registered. This is more by as much as 82.4% than in March 2018. In addition, in the first quarter of 2019, a total of 6543 new two wheelers were registered, that is by 75% more than in the same period in 2018, but less by 1.4% than in 2017. In the first quarter of the 2019 7985 new vehicles with a MAW of over 3.5 tons appeared and this is more by 2.6% than in the first quarter of 2018. In the group of trucks there was an increase of 4.2% to 7453 and among buses, decrease by nearly 1/7 (-15.2%) to 532 [9]

In March 2019, the result of 56550 passenger cars and vans (up to 3.5 tons) was registered, which was 1.3% lower than last year. A high double-digit growth among delivery vans (+14% y / y) slowed down the decline in the passenger car market, which decreased by 3%. From the beginning of 2019, 156 839 new light cars (counted together passenger cars and vans up to 3.5t) were registered. The level achieved is higher by 1% per year. In the first quarter of 2019, 139,809 new passenger cars were registered, i.e. 76 fewer than in the corresponding period of 2018 [9].

However, the record-breaking results of the Polish motoring exports to date may decrease in 2019. According to the analysts, the value of foreign sales of the automotive industry will decrease in 2019 to the level of EUR 25-25,5 billion from nearly EUR 26 billion in 2018. The data for January 2019 is bad news, where the value of exports amounted to less than EUR 2.1 billion and in annual terms, it decreased by 1.8%. Moreover, in the fourth quarter of 2018, the growth rate of exports of parts and accessories especially was clearly weakening. In January 2019, the value of this sales segment decreased compared to the same month a year earlier by 0.8%, to less than EUR 1.1 billion. At the same time, it was the first January decrease in this product group since 2014. The export of

passenger cars and delivery vans has also contracted: by 1/10, to the value of 453.5 million Euros [31].

In the coming years, an economic slowdown is expected, which will take place gradually, and its effects may be observed only in mid-2019. Despite that, significant automotive investments are still being carried out in Poland. At the Jelcz-Laskowice plant, the Toyota concern will start production of engines for conventional and hybrid drives in 2019, which means a total reconstruction of the factory in Jelcz. The equipment used so far has been replaced by modernized machines. In February 2019, the factory completed the acceptance and installation of machinery and equipment. Preparations for new production are carried out as planned. From January 2019, another stage of employment has also started. By July 2020, the plant intends to double the number of employees and employ about 650 people.

Also in Jawor in Lower Silesia in the Wałbrzych Special Economic Zone, the first Mercedes-Benz engine factory in Poland was built and will produce four-cylinder gasoline and diesel engines for passenger cars of this brand. Its launch is planned for the end of 2019. Employment in the plant will be about 1000 employees. In addition, Mercedes-Benz Cars will build a new battery factory in Jawor, next to the existing factory of this company and will give employment to another 300 people.

It is true that the mood among automotive company representatives is deteriorating, but despite this, half of the representatives of both distributors and manufacturers in the next six months plan to increase the level of sales. The results of the latest KPMG and PZPM study indicate that 65% of representatives of distributors and 80% of representatives of manufacturers present on the Polish automotive market positively evaluate the current situation prevailing in the automotive industry. Despite the concerns expressed by some managers about the upcoming economic situation, half of the representatives of both distributors and manufacturers plan to increase their sales level in the next 6 months, and 57% of representatives of manufacturers and 41% of distributors are planning to increase revenues. Additionally, four out of ten distributors are planning to increase the level of employment in the network and the number of services over the next six months. In turn, 43% of representatives of manufacturing companies plans to increase the level of employment.

Road infrastructure will continue to develop and along with new motorways and expressways new motor vehicles will arrive on the roads. In 2018, the expressways network in Poland increased by 321.4 km and now stands at 2092 km. At the beginning of 2019, there are 3730.7 km of fast roads in Poland, including 1638.5 km of motorways (A2, A4 and A1) and 2092.2 km of expressways. Polish government plans that the entire road network is to have a total of 7,650 km. Currently, the process of supplementing the road network, creating primarily the motorways back bone of the country, as well as a very delayed strengthening of the road infrastructure of metropolitan cities or transferring transit traffic outside the boundaries of many settlement units, is underway. With the completion of subsequent investments, the car fleet will grow on the roads. The new roads will contribute to the placement of further investments, including those in the automotive industry [1].

The automotive segment in Poland will also develop in terms of electromobility. In 2016, 54 e-buses were registered in Poland, including 44 Solaris (81% of the market), in 2017– 114 buses (47 Solaris – 41% of the market) and in 2018 – 46, including 29 Solaris (63% of the market). There is a lot of interest in alternative drive in Europe where the e-bus market in 2016 increased by 46%, in 2017 by 182% and in 2018 by 22%. According to the estimates of the Polish Ministry of Energy in 2020 in 32 selected agglomerations, in the segment of vehicles powered by electricity, there will be 50,000 of these vehicles on the roads, moreover, approximately 6,000 charging points with normal charging power will be created and another 400 points with high charging power. In addition, in the segment of cars powered by natural gas in the form of CNG, there will be 3,000 vehicles on the roads for which 70 refuelling points will be created. According to the estimates of the Ministry of Energy, five years later, i.e. in 2025, on a national level, there will be 1 million electric vehicles on the roads, while in the segment of CNG-powered cars, 54 thousand vehicles will travel on the roads, for which 32 charging points will be available along the TEN-T core network. In 2025, in the segment of LNG-powered cars 3 thousand vehicles will travel on the Polish roads. 14 LNG refuelling points will be created along the TEN-T base network, installations for offloading LNG ships will operate in the following ports: Gdańsk, Gdynia, Szczecin and Świnoujście.

Summary

The article presents the general characteristics of the Polish automotive industry as at the end of the first quarter of 2019. **Analysing the presented data, I strongly argue that the Polish automotive market is still unsaturated and the number of vehicles** moving on the Polish roads will continue to **increase** for several years. These will be vehicles, both imported and manufactured in Poland [29]. In particular, the number of new vehicles manufactured in Poland sold to customers is growing. In the same way, the automotive investments in our country will increase, which is evidenced by even the newly built Mercedes factories in Lower Silesia. Also the role of the Polish automotive industry in the economic life of the country will increase even more if one takes into account the government declarations about the production in Poland of a million **domestic** electric vehicles. Thus, the automotive industry in Poland will be of key importance in the field of security and defence of our entire country, also in the context of the development of transport infrastructure [1].

The automotive industry is today one of the most important branches of the Polish economy. It has a huge impact on the development of Polish GDP, and its importance in the coming years, despite the anticipated economic slowdown (it is not known what conditions will the Brexit be executed), will therefore continue to grow. **The automotive industry contributes to the economic development of Poland, which translates into internal and external security of the country in both** the NATO and European Union structures. The investments in the automotive industry in Poland have a significant contribution to the development of the Polish economy, which translates into increased state security, e.g. by modernizing the Polish fleet and extending the existing road network.

The development of the Polish automotive industry, employing hundreds of thousands of workers, observed since the beginning of the 1990s, still requires the creation of a **complete road network** with a clearly outlined networked motorways „spine". Currently, the road network (motorways and expressways) is ready only in about 30% and systematic work is underway to supplement it, especially in the east of Poland (A2, S19). Fortunately, the Republic of Poland has an opportunity to use EU funds, allocated in large part for the needs of social and economic infrastructure development [1].

Thus, I believe that **the purpose of this article has been fully implemented.** Nevertheless, I realize that many detailed threads have just been mentioned and are waiting for further development. The most important, however, is the decision to support the Polish state for

the further development of the Polish automotive industry, which on a longer run will contribute to increase the security of the Polish state and its residents.

Bibliography:

1. Brdulak J., Florczak E., Krysiuk C., Pawlak P., Zakrzewski B., *Analiza wpływu zbudowanej infrastruktury drogowej na poziom aktywności ekonomicznej w otaczających jednostkach terytorialnych*, Ministerstwo Infrastruktury i Rozwoju, Warszawa 2018.
2. Bukowski W., *Samochody PRL-u*, Dom Wydawniczy Księży Młyn, Łódź 2009.
3. Dembiński J., *Album samochodów FSO*, Klub Pracowników i Przyjaciół FSO, Warszawa 2004.
4. Górski M., *Historia konstrukcji samochodów FSO 1951–2006*, Oddział Warszawski SIMP Klub Pracowników i Przyjaciół FSO, Wyd. II, Warszawa 2009.
5. Groniowski K., *Analiza przyszłego rozwoju motoryzacji w Polsce*, Praca arch. ITS nr 1001, Warszawa 1961.
6. Groniowski K., *Z dziejów motoryzacji*, Wyd. Naukowo-Techniczne, Warszawa 1963.
7. http://www.autosan.pl/ (access: 25.4.2019).
8. http://www.melex.com.pl/ (access: 25.4.2019).
9. http://www.pzpm.org.pl/(access: 25.4.2019).
10. https://moto.rp.pl/tu-i-teraz/27360-niemcy-pomoga-naszej-branzy-motoryzacyjnej (access: 9.6.2019)
11. https://wieltongroup.com/ (access: 25.4.2019).
12. https://www.gddkia.gov.pl/ (access: 25.4.2019).
13. https://www.samar.pl/ (access: 25.4.2019).
14. https://www.solarisbus.com/ (access: 25.4.2019).
15. https://www.ursus.com/ (access: 25.4.2019).
16. Krysiuk C., Kulesza A., Malawko P., Pawlak P., Sienkiewicz B., Szlassa P., Zakrzewski B., Zbyszyński M., *Historia polskiej motoryzacji. Samochody osobowe i jednoślady*, Wydawnictwo SBM, Warszawa 2012.
17. Krysiuk C., Kulesza A., Malawko P., Pawlak P., Sienkiewicz B., Szlassa P., Zakrzewski B., Zbyszyński M., *Samochody w PRL-u*. Ikony polskiej motoryzacji, Wydawnictwo SBM, Warszawa 2012.
18. Krysiuk C., Zakrzewski B., *Instytut Transportu Samochodowego*, w: *Samochody w PRL-u*, Wyd. Dragon, Bielsko-Biała 2010, s. 12–13.
19. Kwartalnik „Koniunktura w Transporcie", ITS, Warszawa 1997–2019.
20. Majewski M.W., *Rozwój motoryzacji w Drugiej Rzeczypospolitej*, Wyd. Naukowe uniwersytetu Pedagogicznego Kraków 2016.
21. Podbielski Z., Polskie fabryki samochodów 1946-1989, Dom Wydawniczy Księży Młyn, Łódź 2016.
22. Podbielski Z., *Samochody osobowe krajów socjalistycznych*, WKiŁ, Warszawa 2013.
23. Przybylski R., *Historia światowego transportu samochodowego*, Wyd. Auto-Press, Warszawa 2013.
24. Rostocki A. M., *Historia starych samochodów*, WKiŁ, Warszawa 1981.
25. Rummel A., *Polskie konstrukcje i licencje motoryzacyjne w latach 1922–1980*, WKiŁ, Warszawa 1985.
26. Rychter W., *Dzieje samochodu*, WKiŁ, Warszawa 1987.
27. Szczerbicki T., *Samochody w PRL, rzecz o motoryzacji nie tylko...*, Wyd. Vesper, Warszawa 2010.
28. Szelichowski S., *Motoryzacja w Polsce*, Wyd. Carta Blanca, Warszawa 2012.
29. *Transport – wyniki działalności w 2017 r.*, GUS, Warszawa 2018.
30. Wiechczyński K., Zakrzewski B., *Samochody*, Wydawnictwo SBM Sp. z o.o., Warszawa 2017.
31. Woźniak A., *Motoryzacyjny eksport ostro hamuje*, „Rzeczpospolita", (11340) 25.04.2019, s. A19.
32. Zakrzewski A., *Auto-Moto PRL*, DEMART SA, Warszawa 2009.
33. Zakrzewski B., *Badania drogowe samochodów osobowych w Instytucie Transportu Samochodowego w latach 50. XX wieku*, „Technika Transportu Szynowego" nr 9/2012, s. 799-807.
34. Zakrzewski B., *Instytut Transportu Samochodowego: 60 lat minęło...1952–2012*, Wyd. Instytutu Transportu Samochodowego, Warszawa 2012.
35. Zakrzewski B., Pawlak P., *Rodzina prototypów polskiego samochodu „Pionier"*, „Logistyka" 2014, nr 3, Instytut Logistyki i Magazynowania w Poznaniu, s. 6958-6964.
36. Zakrzewski B., *Pierwszy powojenny polski prototyp samochodu – GAD 500*, „Biuletyn Informacyjny ITS", nr 5/2010, s. 21-36.
37. Zakrzewski B., *Samochody osobowe badane w ITS latach 50. XX w.*, „Technika Transportu Szynowego" 2012, nr 9, s. 809-835.
38. Zakrzewski B., *Samochody osobowe importowane do Polski w latach 1945–1990*, Praca ITS nr 6421/IN, ITS, Warszawa 2014.
39. Zieliński A., *Polskie konstrukcje motoryzacyjne 1947–1960*, WKiŁ, Warszawa 1985.
40. Zieliński A., *Polskie konstrukcje motoryzacyjne 1961–1965*, WKiŁ, Warszawa 2008.

Przemysł motoryzacyjny w Polsce kluczowym elementem bezpieczeństwa i rozwoju kraju

W artykule scharakteryzowano wpływ rozwoju przemysłu motoryzacyjnego na system bezpieczeństwa państwa. Przemysł motoryzacyjny w Polsce ma znaczący udział w generowaniu PKB. To około 10–12% (w różnych przedziałach czasowych). Od 1950 r. przemysł motoryzacyjny znacząco stymulował polską gospodarkę, dawał miejsca pracy, był zaczątkiem postępu naukowo-technicznego, wnosił znaczący wkład w eksport, promował lokalne inwestycje i tworzył warunki do współpracy z innymi branżami i nauką. W następnej dekadzie XXI wieku udział ten może nawet wzrosnąć. Aby tak się stało, należy opracować nową politykę sektorową dla motoryzacji w Polsce. Potencjał i rozwój przemysłu motoryzacyjnego ma również istotny wpływ na obronność. Bezpieczeństwo Polski zależy bowiem od wydajności systemu transportowego, którego kluczowym elementem jest przemysł motoryzacyjny. Branża motoryzacyjna powiązana z nowoczesną siecią drogową i systemami transportu publicznego umożliwia rozwój polskiej gospodarki i zwiększa jej powiązanie z gospodarką światową. Artykuł wskazuje, że przemysł motoryzacyjny jest niezwykle ważnym czynnikiem w zarządzaniu bezpieczeństwem i obroną państwa polskiego.

Słowa kluczowe: przemysł motoryzacyjny, transport samochodowy, pojazdy silnikowe, ciężarówki, infrastruktura drogowa, fabryki motoryzacyjne w Polsce.

Autorzy:

dr **Bartosz Zakrzewski** – Instytut Transportu Samochodowego, Sekcja Informacji Naukowej i Wydawnictw
mgr **Cezary Krysiuk** – Instytut Transportu Samochodowego, Centrum Telematyki Transportu