



RAS

INVEST
IN SERBIA

THE E-SECTOR



„I have, as you can see and hear, remained a Serb even across the sea where I do my research. You should do the same with your knowledge and work to raise the fame of Serbianness in the world.“

Nikola Tesla

One of the greatest genius of electrical engineering Nikola Tesla remains a national hero and eternal inspiration to Serbian scientist and engineers. His ashes rest in Belgrade Nikola Tesla Museum today.

Dear Reader,

This brochure was developed by RAS to present the investment and business opportunities in Electronics Industry in Serbia 2020. For any further questions and details please contact us through our web page www.ras.gov.rs.

The Development Agency of Serbia (RAS) is a government agency dedicated to support micro, small and medium enterprises and entrepreneurs in order to strengthen the Serbian economy, support direct investment and export promotion, raising the reputation of Serbia and Regional Development.



Development Agency of Serbia (RAS)



Razvojna agencija Srbije



ras.gov.rs

| Executive **SUMMARY**

▪ The “Hard Drive”

Presenting the origins and the bumpy drive of Serbian electronics industry. From days of grand investments in socialist era, through the decline in difficult times of Yugoslav civil war and rebirth with arrival of international renowneds and local SME sector.

▪ E & R & D

Education Research Development

Where are the largest educational centers in Serbia, how did Serbia introduce the dual educational system? How is the government of Serbia investing in the R&D centers and what are the investments of private sector.

▪ Processing Units

To present the most prominent companies in the sector today we have divided them into three segments – automotive electronics, electrical machinery and SMEs. This chapter will give you inside into where they are and what they do.

▪ “Incentwere”

What can Serbia offer as investment environment for electronics industry? What are the special advantages and incentives created by the government and plans for future development of this sector.

THE "HARD DRIVE"



APOLLO Serbs

Seven Americans of Serbian descent have had the distinct honor of participating in the construction of Apollo spaceships and by their professional ability and knowledge have contributed to opening the inroads of the infinity of space to our civilization.

Shortly after the return of Apollo 11 from the moon, Serbs who worked on the Apollo program gathered together for this photo in front of the spaceship.

Slavoljub Vujic

Engineer for research on malfunction of electronic instruments

Danilo Bojic

Chief Engineer and specialist for "Service propulsion system and Reaction control system"

Milislav Surbatovic

Engineer for system of docking and separation of spaceships

Petar Galovic

Engineer for "Emergency Hatch System"

Pavle Duic

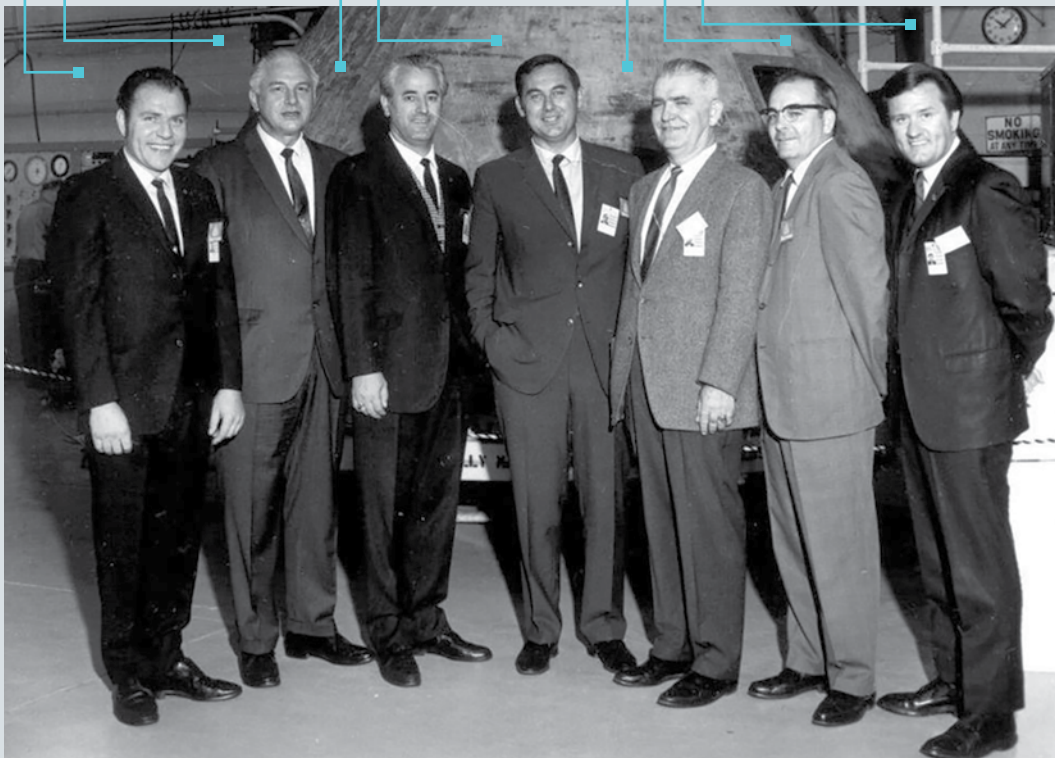
Engineer for electrical energy

Milojko Vucelic

Senior manager for landing astronauts

David Vujic

Engineer, official spokesman of NASA and the Apollo 11 programme



Serbia's electronics industry dates back to post World War II period when small-scale manufacturing of radio devices began throughout the former Yugoslavia. The main production centers of the electronics industry slowly formed in Slovenia and especially in Serbia. The evolution of electronics industry in the country really took off in the 60's with formation of company Electronics Industry of Niš (EI Niš) as the leading force. At its peak in the 90es, EI Niš employed more than 28,000 people in more than 70 subsidiaries. Thus, city of Niš was rightly considered as Yugoslavian hub of electronics, with factories capable of producing entire scope of products, ranging from semiconductor components for electronic assembling to final products such as TV sets, sound systems, radios, optical instruments, measuring instruments and X-ray machines.

The ecosystem of electronics industry also encompassed formation of universities with comprehensive curriculum in electronics and electric engineering and R&D institutes situated at both academic institutions and with companies. All of this was combined with multitude of joint venture arrangements with leading international companies in the field.

Just when the sector was ready to enter its golden age civil war in Yugoslavia and economic sanctions imposed on Serbia caused a serious malfunction in this sophisticated industry. One by one the large socialist conglomerates dissolved and it would not be until the new millennium that the sector would see a new development path. Gradually a fresh sector of private SMEs started to flourish on the remains of the old giants while the role of the large companies was taken over by multinational brands looking to take advantage of experienced workforce and industrial heritage of the country.

Largest Investors

Schneider
Electric

ZUMTOBEL

brose
Technik für Automobile

EAT•N

NCR

IMI

LEONI

GRAH
AUTOMOTIVE

• APTIV •

Continental®

ZF

BOSCH

GRUNER G

ARISTON
THERMO GROUP

SIEMENS

Zoppas Industries

gorenje

LEAR
CORPORATION

YURA
YURA CORPORATION

Draxlmaier

SECTOR IN NUMBERS



1,378 COMPANIES



33,827 WORKERS



€1.84b EXPORTS

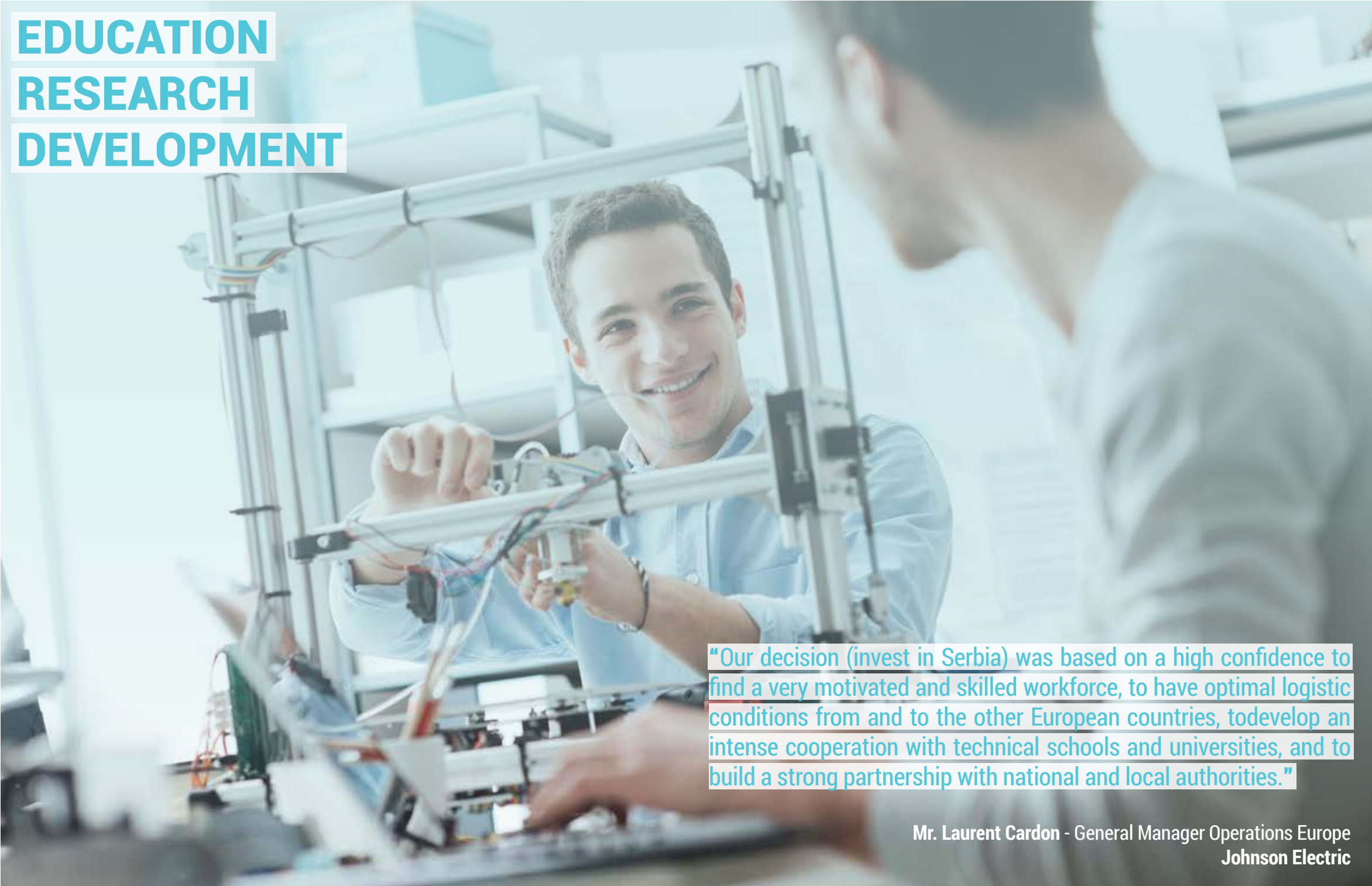


10.6% SHARE OF THE TOTAL SERBIAN EXPORT

"Serbia has taken important steps to implement the reforms necessary for attracting foreign and domestic investors. We are pleased to be further strengthening the investment climate and enhancing governance. Given Serbia's strong potential, such positive changes in what is the largest economy in the Western Balkans will have a wider impact throughout the region."

Sir Suma Chakrabarti, EBRD President (2015)

EDUCATION RESEARCH DEVELOPMENT



“Our decision (invest in Serbia) was based on a high confidence to find a very motivated and skilled workforce, to have optimal logistic conditions from and to the other European countries, to develop an intense cooperation with technical schools and universities, and to build a strong partnership with national and local authorities.”

Mr. Laurent Cardon - General Manager Operations Europe
Johnson Electric

Dual Education

High School & University



Serbia is the only country in the WB Region which has the Law on Dual Education.

Starting from 2013, dual education has been implemented in Serbia. The Serbian National Assembly passed the Law on Dual Education on November 2017. The law introduces a model of dual education in secondary education, as work based learning, for profiles of three and four years.

All profiles are created in line with the needs of industry and the modern market, encouraging the youth to be trained for professions needed on the market and enabling them to become integrated with production processes after finishing school.

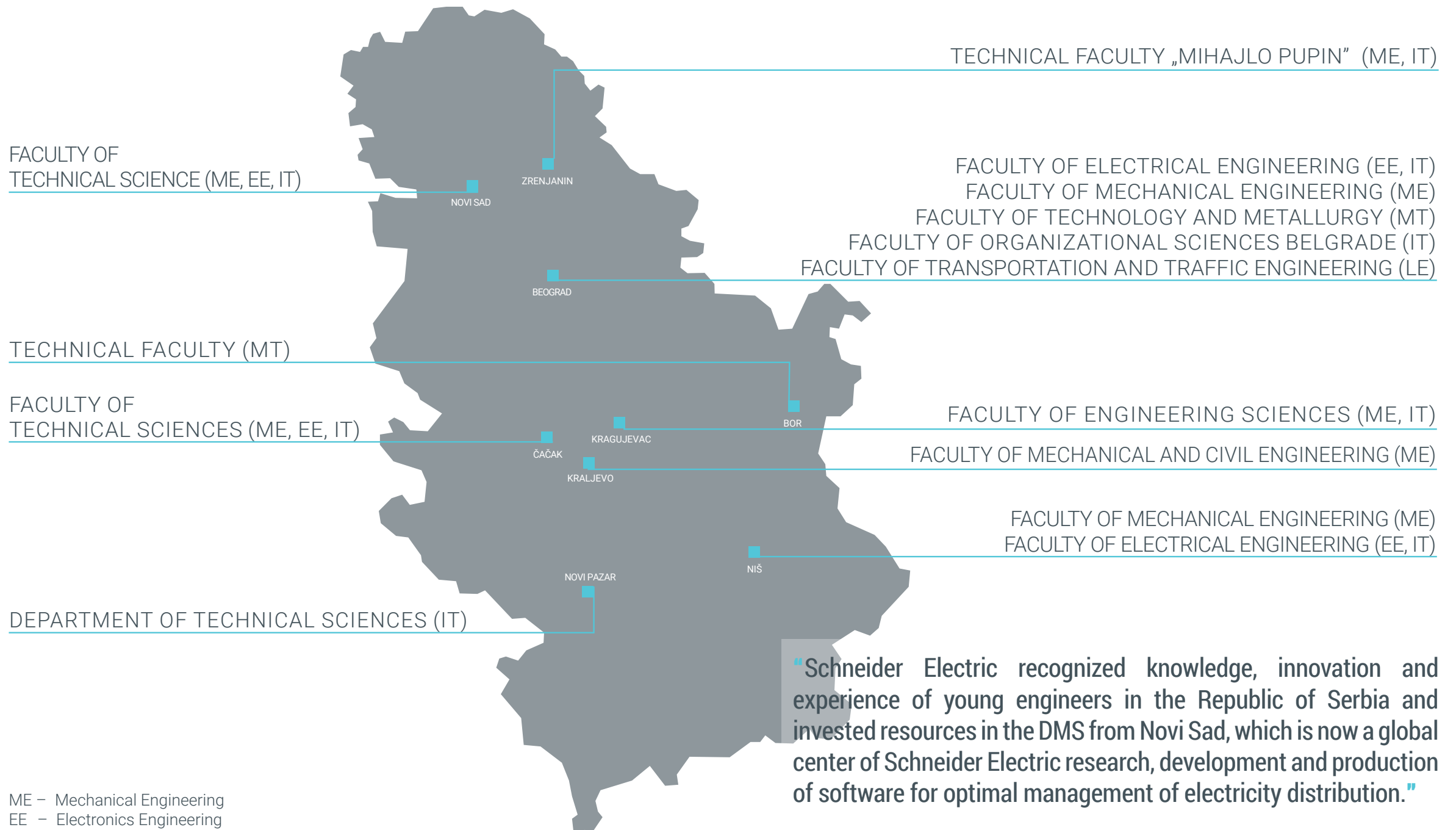
dualnoobrazovanje.rs

**4,500 students, 80 schools,
35 educational profiles,
600 companies
from different sectors have
already taken part in this
program.**

The first lecture on electrical engineering in higher education in Serbia took place in Belgrade in 1894. Four years after this first lecture an electrical engineering lab was created marking the beginning of electrical engineering study program at Belgrade University. Today Belgrade School of Electrical Engineering is a top educational and scientific institution in the field of electrical engineering and computer science. More than 1,000 students enroll in these programs every year.

Apart from Belgrade two large educational centers in the field are Faculty of Electronics in Niš and Faculty of Technical Sciences in Novi Sad. Electronics Faculty in Niš developed in parallel to the EI Niš company and has more than 50 years of tradition, specializing in fields of electronics components and microsystems, electronics, power engineering, computer sciences and ICT.

Faculty of Technical Sciences in Novi Sad is a diverse institution with a mix of power, electronic, telecommunication engineering, computing, measurement and control, software engineering and information technology.



“Schneider Electric recognized knowledge, innovation and experience of young engineers in the Republic of Serbia and invested resources in the DMS from Novi Sad, which is now a global center of Schneider Electric research, development and production of software for optimal management of electricity distribution.”

**Mr. Dragoljub Damljanovic - General Manager
Schneider Electric Srbija d.o.o.**

ME – Mechanical Engineering
EE – Electronics Engineering
IT – Information Technologies
LE – Logistics Engineering
MT – Metallurgy Engineering



Science Technology Park Niš is the meeting point between research, innovation and economic development. STP Niš has been established as a partnership between the Republic of Serbia Government, the City of Niš and the University of Niš. It aims to become a regional center for the dynamic development of innovative science and technology entrepreneurship, the international promotion of projects and companies. Valuable assets will provide a range of benefits to regional and national economic systems, including specialized skills for business innovation services, capacity for the creation and development of innovative start-ups, cutting-edge equipment and technological facilities for industrial research, advanced training for human resources.



MIND Park is an industrial cluster-based area, spread across 150ha in Central Serbia. The Park is set to become globally unique as a centre of competence, focused, but not limited to the rail vehicle industry only. The Park provides turnkey facilities in accordance with your business needs. Customised manufacturing halls, modern office spaces as well as a science-technology park will be supported with excellent infrastructure and business support services as well as concentrated know-how in industry.



The Science Technology Park Belgrade is intended for startups and growing high-tech development companies (SMEs and development centers of international companies), helping them develop and commercialize innovative products and services. STP Belgrade has been established as a partnership between the Republic of Serbia Government (represented by the Ministry of Education, Science and Technological Development), the City of Belgrade and the University of Belgrade, based on international experiences and best practices, thus becoming a place where Institutions meet Science and Industry. STP Belgrade has become a new business core of the city that brings together dozens of high-tech development companies/teams by providing different programs and activities, and plays an essential role in developing the innovation ecosystem in Serbia.



The Park will be used by the Faculty of Technical Sciences, and its construction was a joint project of the Government of Serbia and the Provincial Government of Vojvodina, with the help of the City of Novi Sad and the Faculty. A new facility, spanning 30,000 square meters in total, where 3,000 students and 400 professors and assistant professors from the Faculty of Technical Sciences can enjoy state-of-the-art working conditions on an area of 10,000 sqm. The Science & Technology Park, a smart, green building, is a remarkable facility in the architectural and the technical-technological sense and an important starting point for future development. It is important for multiple reasons, primarily for establishing the link between science and business, as well as for the development of IT and startup projects.



In 2017 Dutch electronic goods manufacturer Cooperatief IMI Europe has opened a Design & Development Centre in Niš. Main activities are electronic design, mechanical design, software and product development, building platforms in the areas of automotive cameras, motor drives, and power modules. At this moment there are 6 engineers, while the further team expansion will be in accordance with number and volume of assigned projects Teams: D&D IMI Niš and D&D IMI Bulgaria (Sofia) belong to the same department and are under the responsibility of D&D Manager/Europe.



Activities of Robert Bosch in Serbia consist of production and R&D of automotive wiper systems, regional distribution and a series of services on the group level. Production and R&D are performed in Bosch factory located about 30 km from Belgrade in municipality called Pećinci. The plant that was initiated in 2012 today employs more than 1,100 workers and is constantly in expansion proces. Global group services are performed in Bosch Competence Center in Belgrade and include automotive aftermarket and software R&D activities.



In 2018 the German company Continental opened a Research & Development center for vehicle interior and safety control systems in Novi Sad. Centre includes two business units that work on innovative products and solutions related to the future of the automotive industry. In less than three years from the foundation and start of work in 2017, Continental Automotive Serbia has hired over 500 highly qualified engineers that develop electronic products for leading global passengers' cars and commercial vehicles such as Mercedes, BMW, MAN, Volvo.



In 2018 The German engineering specialist ZF Friedrichshafen announced €160 million investment in an R&D centre in Pancevo. Focus is on the development and production of electric shafts for OEMs, including emobility electric motors, electronic and mechatronic gearboxes, microswitches and printed circuit boards. At the Pančevo plant, located 14 kilometers from capital, ZF Tech Center performs complex testing of electric drives including high temperature testing, functional testing and torque, power and efficiency testing.

PROCESSING UNITS

“The attractiveness of the geographic location, logistics advantages, availability of skilled workforce, and a very good support of the Government of the Republic of Serbia and the local community are the main reasons why the Bosch Group decided to invest in the municipality of Pecinci and the Republic of Serbia”

**Mrs. Jovanka Jovanovic - General Manager
Robert Bosch d.o.o Srbija**

Automotive Electronics

It is safe to say that while a car was once a pure mechanical device nowadays it is a complex electronics-mechanical platform that embodies every new technical development in the field not limited to AI itself.

While cars are becoming “ultimate electronics devices” automotive electronics is becoming key component of both Serbian electronics and automotive industries.

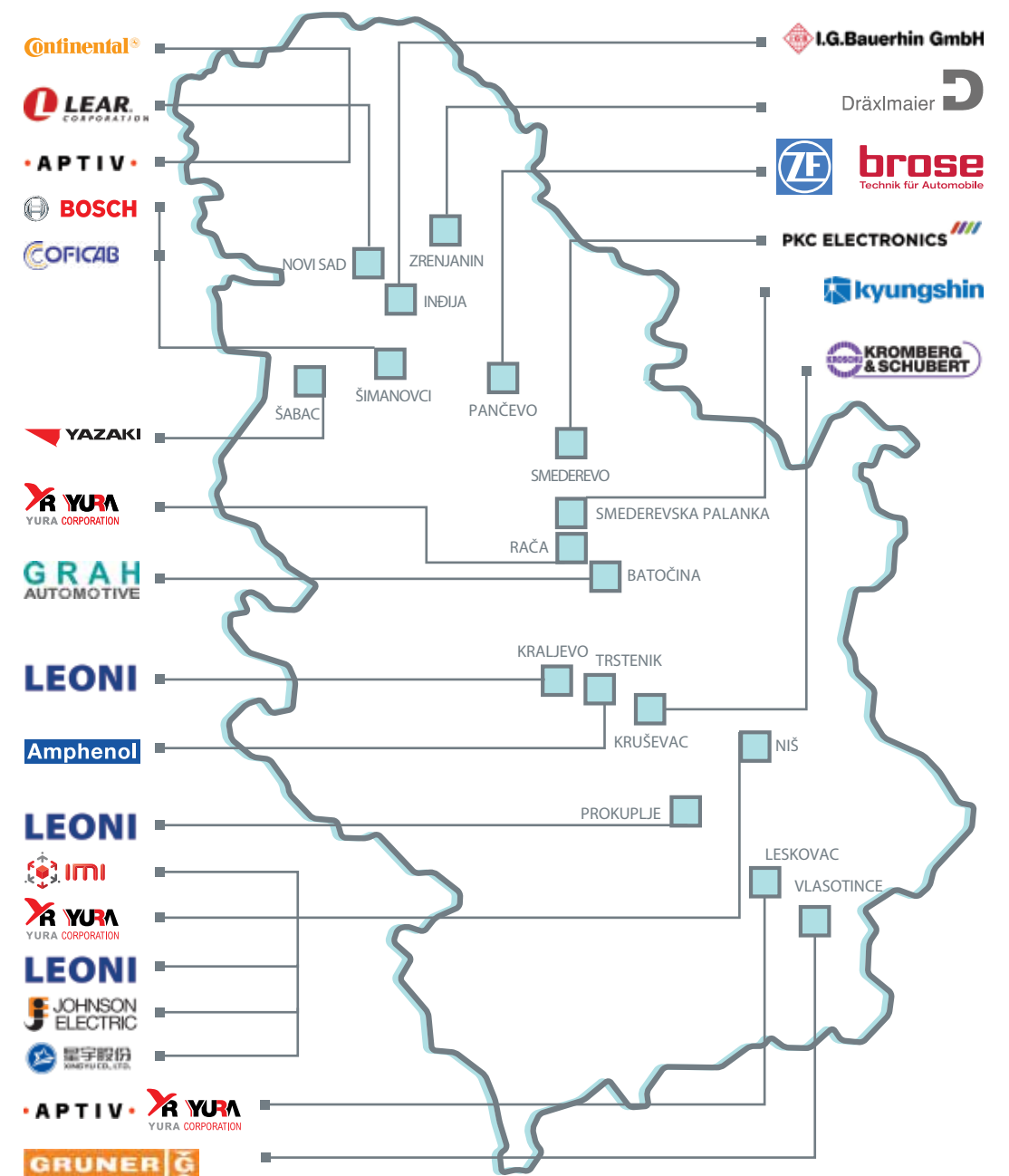
This is why applied electronics for motor vehicles became a sector of its own that encompasses wiring, motors, switches and connectors, control units, measuring units, sensors, displays, touch screens and infotainment system, not to mention tendencies towards autonomous driving.

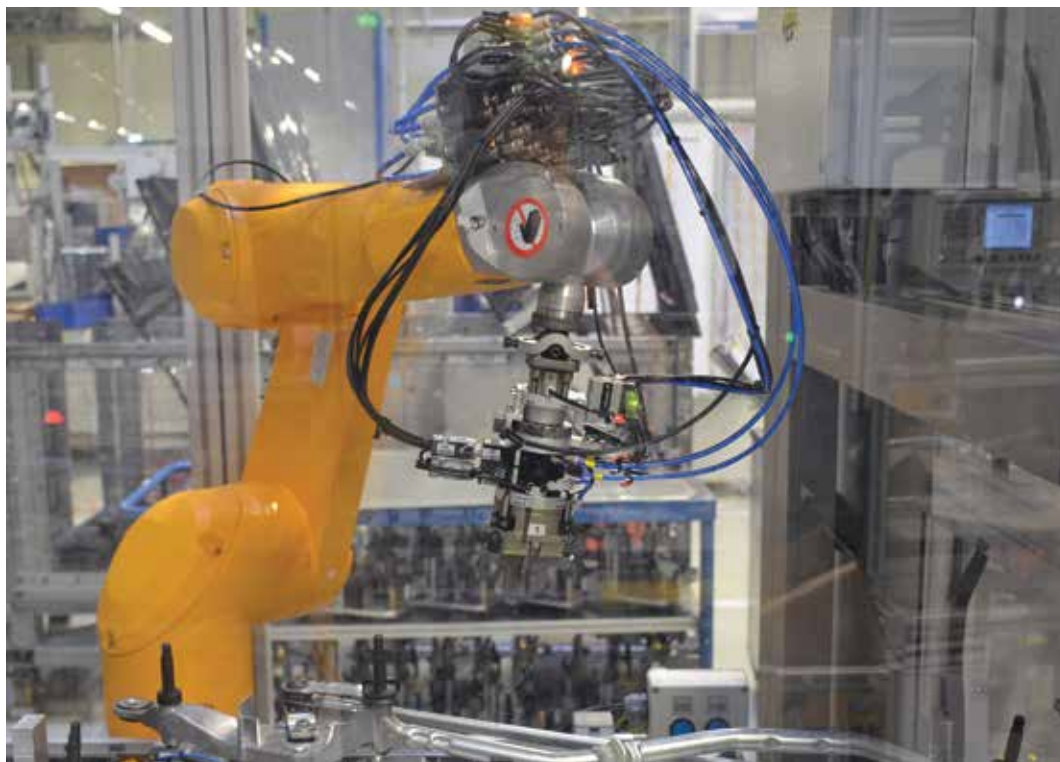
Knowing all of that it is no accident that the major share of electronics companies in Serbia are related to the automotive electronics and that it is the sector that is attracting majority of foreign investments in Serbia. As such, the sector is clearly dominated by foreign and not local Serbian companies and by brand names that can be recognized worldwide.

The leaders without a doubt are industrial giants coming from Germany – Bosch, Continental, ZF Friedrichshafen, Brose, accompanied with the leading brand in the field of electric motors – Hong Kong based Johnson Electric. To say that these companies are producing state of the art electronics and mechatronics automotive systems is not enough since they have also implemented their R&D centers in Serbia and are using today much sought-after engineers coming from Serbian technical universities.

When it comes to employment itself it is the wiring harness producing companies that take the major roll. This owes to the fact that Serbia faced high unemployment rates in the middle of the previous decade and investments from companies like Leoni, Yura, Aptiv, Draexlmaier, Yazaki, Kromber & Schubert and Lear Corporation were more than welcome to give people much needed work. Wiring harness remains one of the Serbian major export items today, but FDI trends are moving towards more knowledge intensive industries.

Largest companies - Automotive industry





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**INVENTED FOR THE
MOBILITY OF THE FUTURE**



brose
Technik für Automobile

Brose is expanding its capacities and setting up a new development and production plant at Pančevo near Belgrade. From summer 2021, the automotive supplier will produce drives and electronics for cooling fans, among other products. Depending on the development of turnover, up to 1,100 jobs will be created in development, sales, purchasing and production.

**FUTURE
MOBILITY**

Electrical Machines and Appliances

Establishing a pattern in the production of electrical machines and equipment in Serbia would be a difficult task. What is certain is that this segment is

dominated by large-scale multinational companies

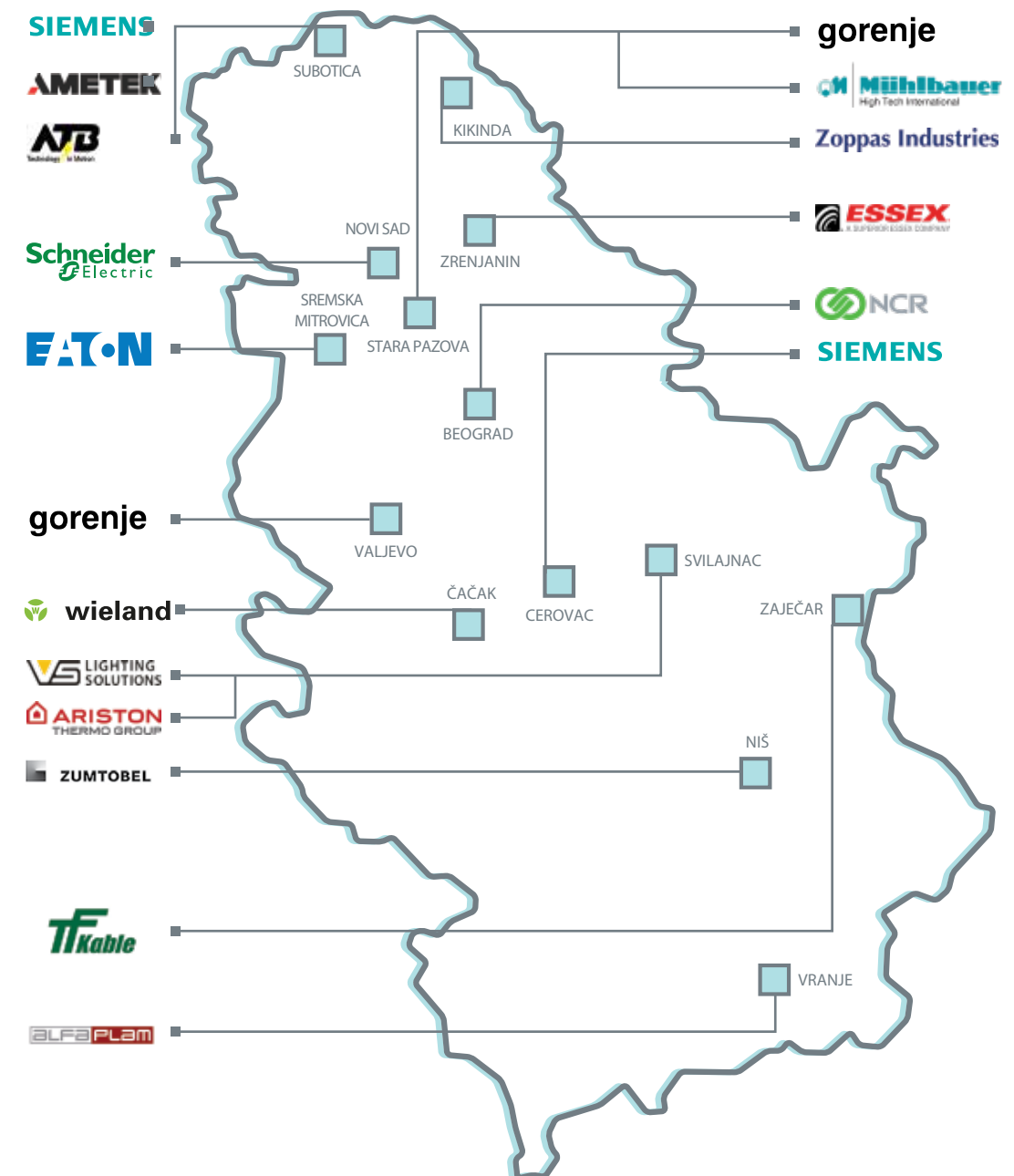
that found fruitful footing in Serbian availability of educated workforce and electronics industry heritage.

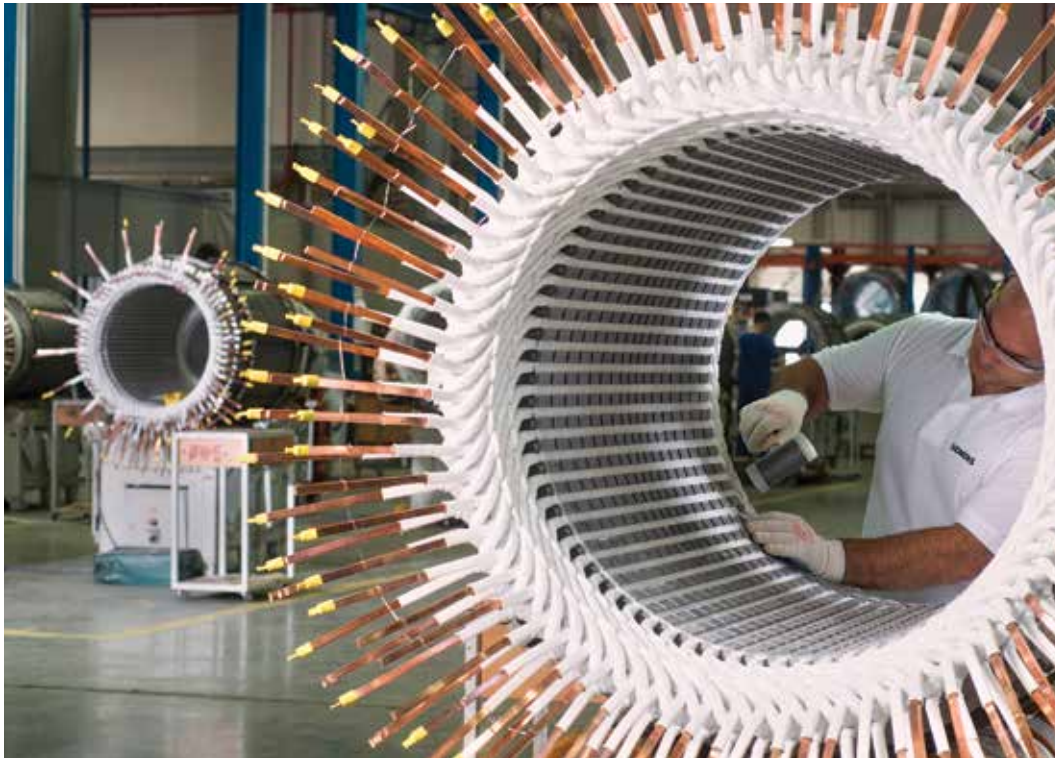
The segment encompasses production of home appliances, led by Slovenian brand Gorenje that is in turn owned by Chinese group Hisense. Gorenje has three factories in Serbia that range from production of refrigerators to boilers and dishwashing machines. Home appliances production is further accompanied by production of components such as heaters produced by Italian Zoppas Industries and Ariston Thermo Group.

Next large group of products revolves around electric motors or vice versa electric generators. This part is led by German giant Siemens which has a large factory for production of motors for wind generators in most northern Serbian city of Subotica. In addition, two more companies specialize in electric motors in the same city, American Ametek and Austrian ATB, making Subotica something like Serbian capital of electric motor production.

Following this lighting equipment comes as significant product group, represented by Austrian Zumtobel Group and German Vossloh-Schwabe while in the domain of products like switches, fuses, relays and connectors American Eaton Corporation is the most significant name.

Largest companies - Electrical Machines and Appliances





SIEMENS

Present in Serbia for more than 133 years, SIEMENS has remained the symbol of innovations, quality, reliability and engineering excellence. The company employs more than 2,000 people, out of which 1,800 employees work in Siemens factory of wind generators in Subotica.

As a part of Siemens portfolio, Smart Infrastructure intelligently connects energy systems, buildings and industries to adapt and evolve the way people live and work. Digital Industries is an innovation and technology leader in industrial automation and digitalization.

**SYMBOL OF INNOVATIONS, QUALITY,
RELIABILITY AND ENGINEERING EXCELLENCE**



gorenje

Gorenje d.o.o. Valjevo was established in 2006. The expansion in 2013 and two production plants operating, led to 800,000 devices exported worldwide yearly. With the export of 90 percent of production worth €140 million, Gorenje is on the list of the largest exporters in Serbia. The factory employs over 1,200 people and cooperates with more than 60 local suppliers. So far, the factory has produced more than 7 million appliances.

The High-Level technology process of appliance production, the production of No Frost appliances and appliances with the highest energy classes is represented. With a new project started in February 2020, Gorenje has developed appliances that meet the latest energy class standard.

LIFE SIMPLIFIED

SME Segment

Speaking about SME part of Serbian electronics industry, unlike the segment of the large companies that is dominated by multinational brands, here companies are mostly in local ownership and are true Serbian brands. The origin of these companies is either in spin-offs or privatization of parts of former state owned companies or in development of entrepreneurship projects.

As such this segment represents the backbone of electronics sector in Serbia, even though their visibility is often not as prominent as with the large companies.

Typical product groups can vary a lot.

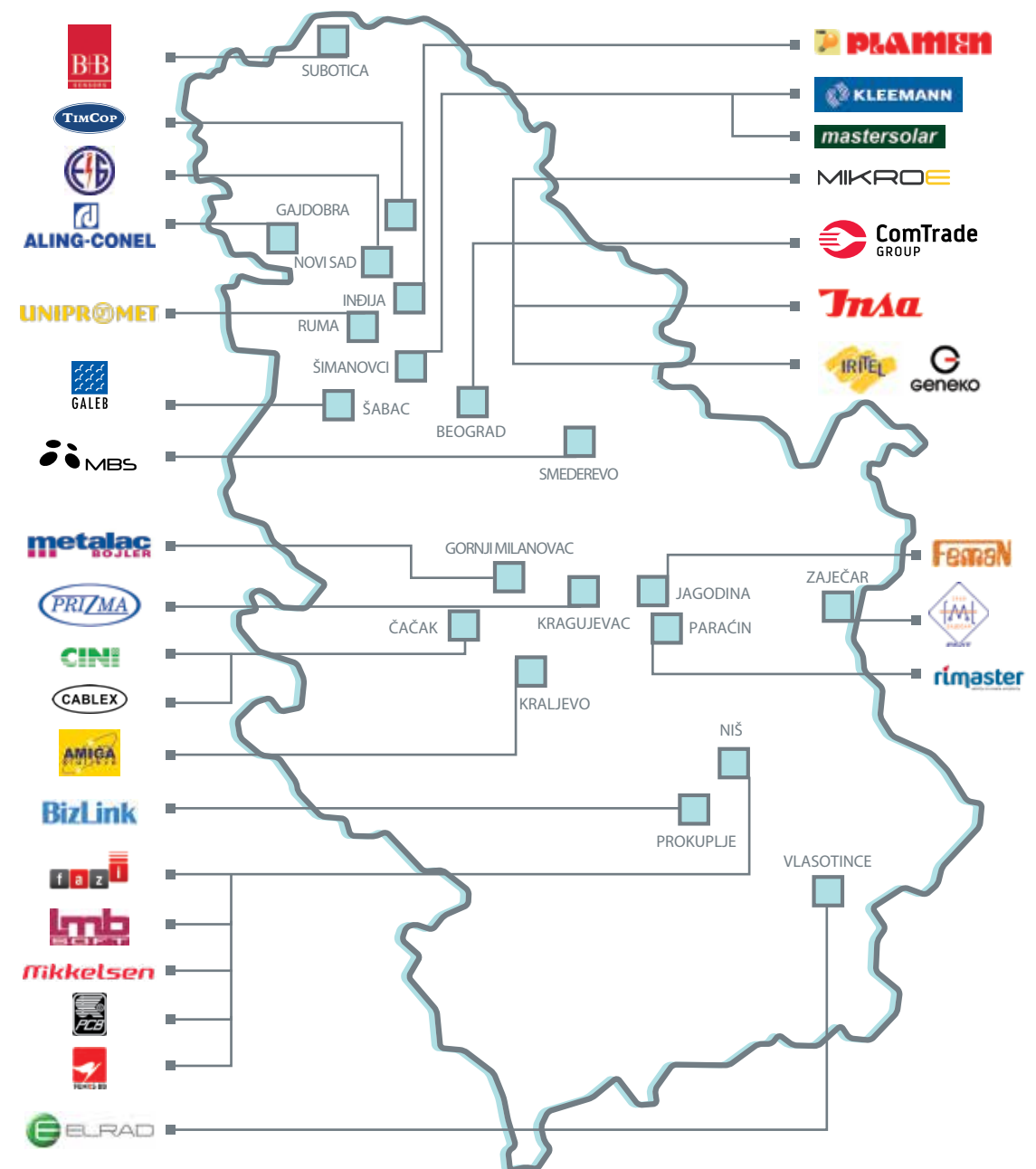
One characteristic group are companies that works on sophisticated electronics such as design and production of embedded electronics, microcontrollers, PCB, wireless connectivity devices etc. These include companies like Mikroelektronika, Tagor, Geneco, Iritel, EI PCB and more.

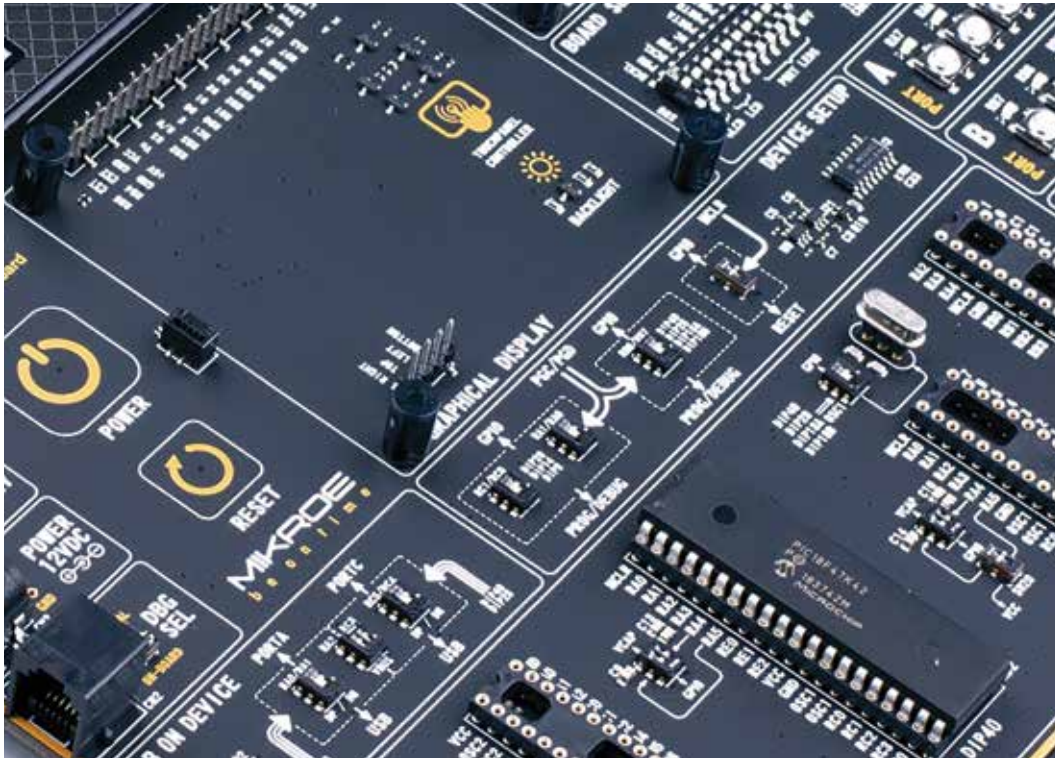
On the other hand many companies are operating in the segment of wiring, connectors and switches such as TF Kabel, Wieland Electric, Feman, Bizlink, Aling Conel, Elrad.

Small local producers of home appliances are in a way larger part of the smaller group and these include companies like MBS or Metalac Bojleri.

Finally, there is an interesting segment of companies that work in niche fields like medical devices, optics, signaling equipment or measuring devices. Companies such as Prizma, LMB Soft, INSA or Harder Digital are typical representatives of this segment.

Largest companies - SME Sector





MIKROE

Mikroe is a fast-growing company that produces entire development toolchains for all major microcontroller architectures. Product lines are designed to speed up the development processes, helping with reaching the proof of concept, fast prototype, or MVP in an extraordinary short time.

Mikroe has mapped all the key elements that are helping the engineers constantly advance. Exceeding the design of excellent software and hardware tools, Mikroe invested in nurturing the community and its education. Keep seeing the world a more human, advanced, and efficient place.

CONTROL AND FREEDOM



ALFA PLAM

METALNA INDUSTRIJA VRANJE

The company Alfa-Plam from Vranje is leading manufacturer of solid fuel heaters in Europe. The complete production process takes place in the factory, from the sheet metal coil to the final product. The annual production volume is 185,000 units. The 70% of the total production exports in over 40 countries around the world.

In the last five years, several significant investments have been made in favor of modernizing and increasing the volume of production, while the numerous awards such as "Best Buy", "Super Brands", "Best of Serbia" and "Protected Consumer" are the proof of quality.

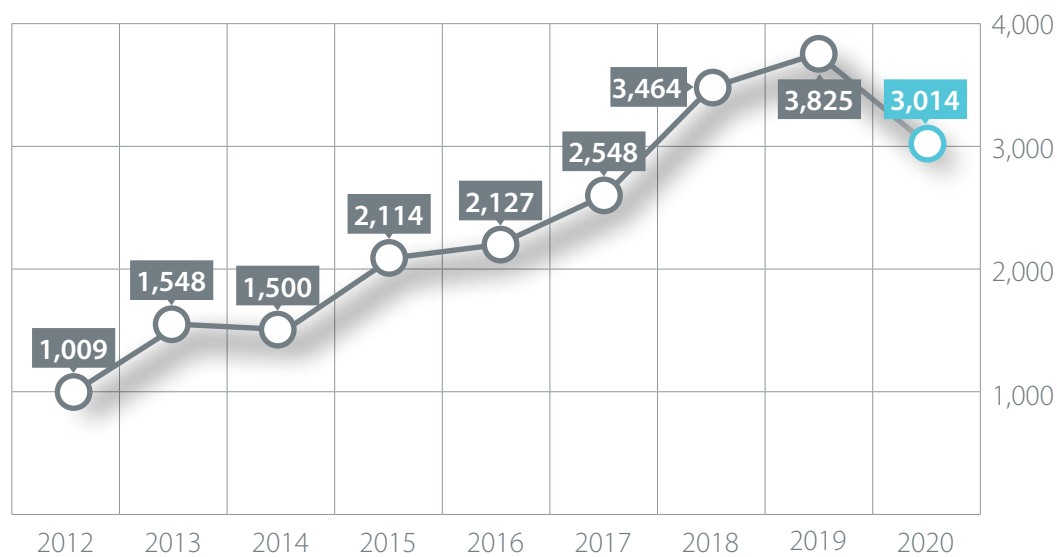
**LEADING MANUFACTURER OF
HEATERS AND STOVES IN SOUTHEASTERN EUROPE**

“INCENTWERE”

Economic Indicators

On WB Doing Business List, Serbia moved up by 47 places over the past 5 years and is now ranked 44th globally.

INFLOW OF FDI IN SERBIA (MILLION EUR)



MACROECONOMIC INDICATORS 2020



9.9%
UNEMPLOYMENT RATE



-1.1%
GDP GROWTH



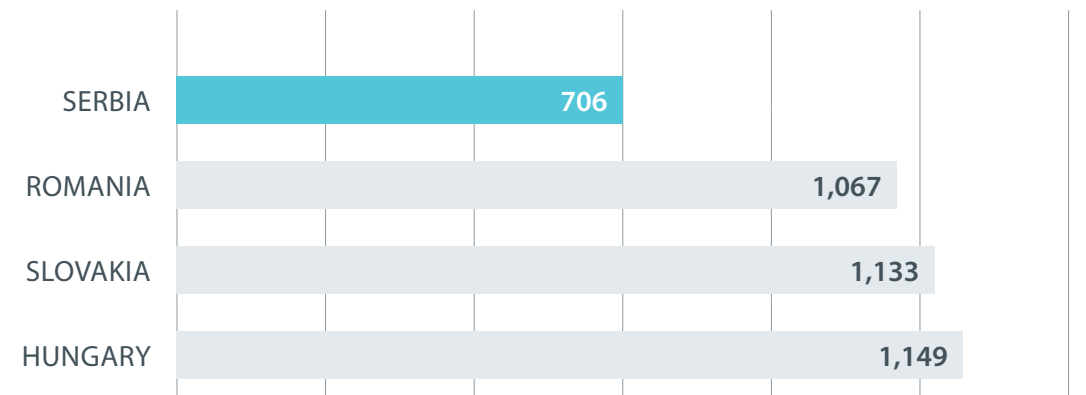
1.3%
INFLATION

SERBIA RANKS FIRST - Serbia took first place in Europe based on the number and size of Greenfield investment projects relative to the country's GDP

fDi Intelligence - Greenfield FDI Performance Index 2020

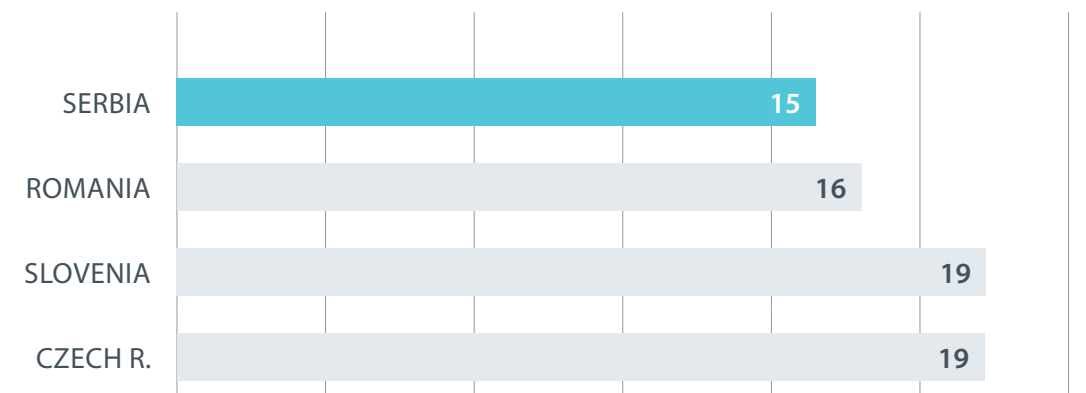
LABOUR COST GROSS AVERAGE MONTHLY SALARIES (€)

Source: The Vienna Institute for International Economic Studies, 2020



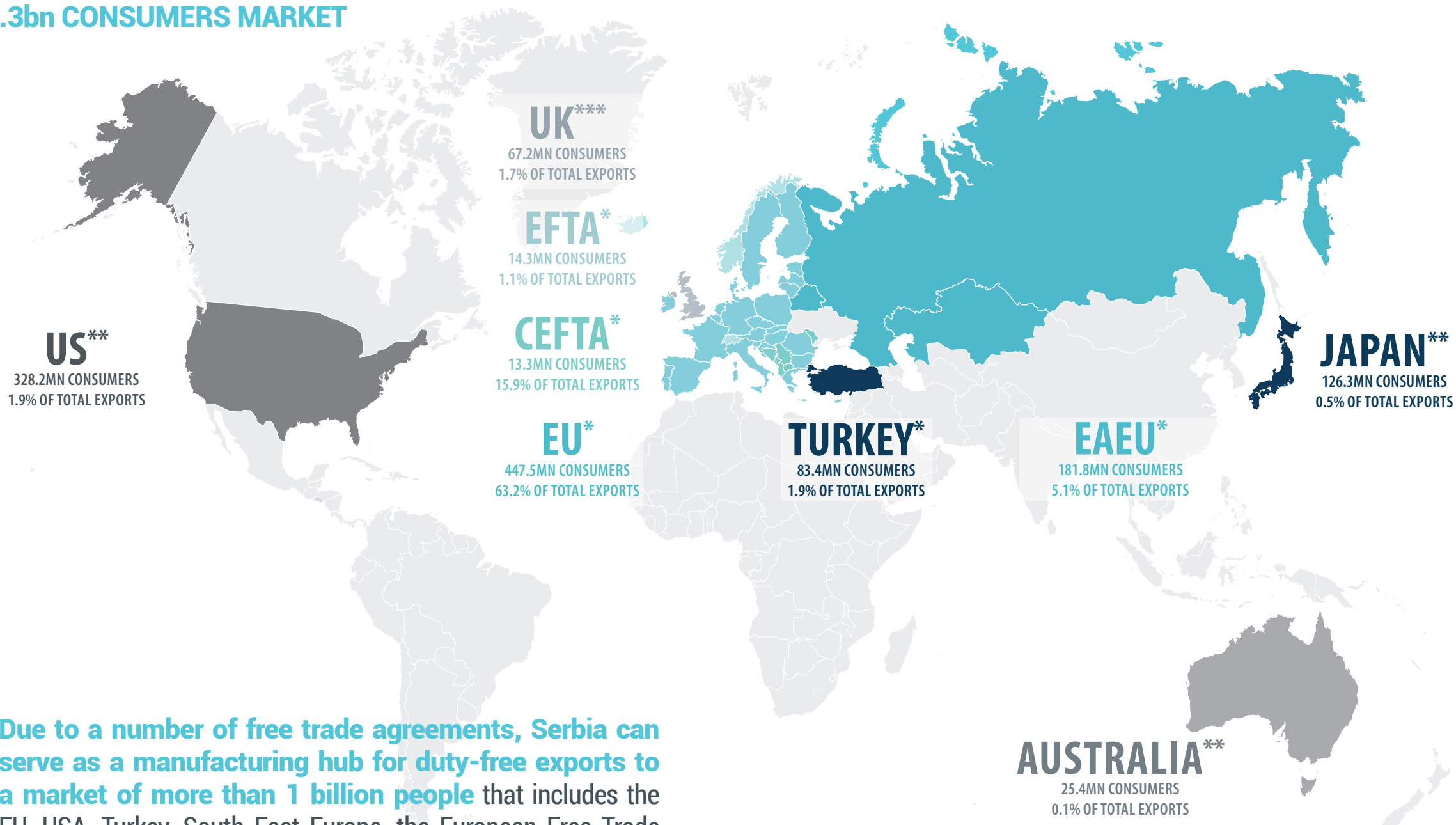
CORPORATE PROFIT TAX (%)

Source: KPMG, 2020



Trade Unlimited

1.3bn CONSUMERS MARKET

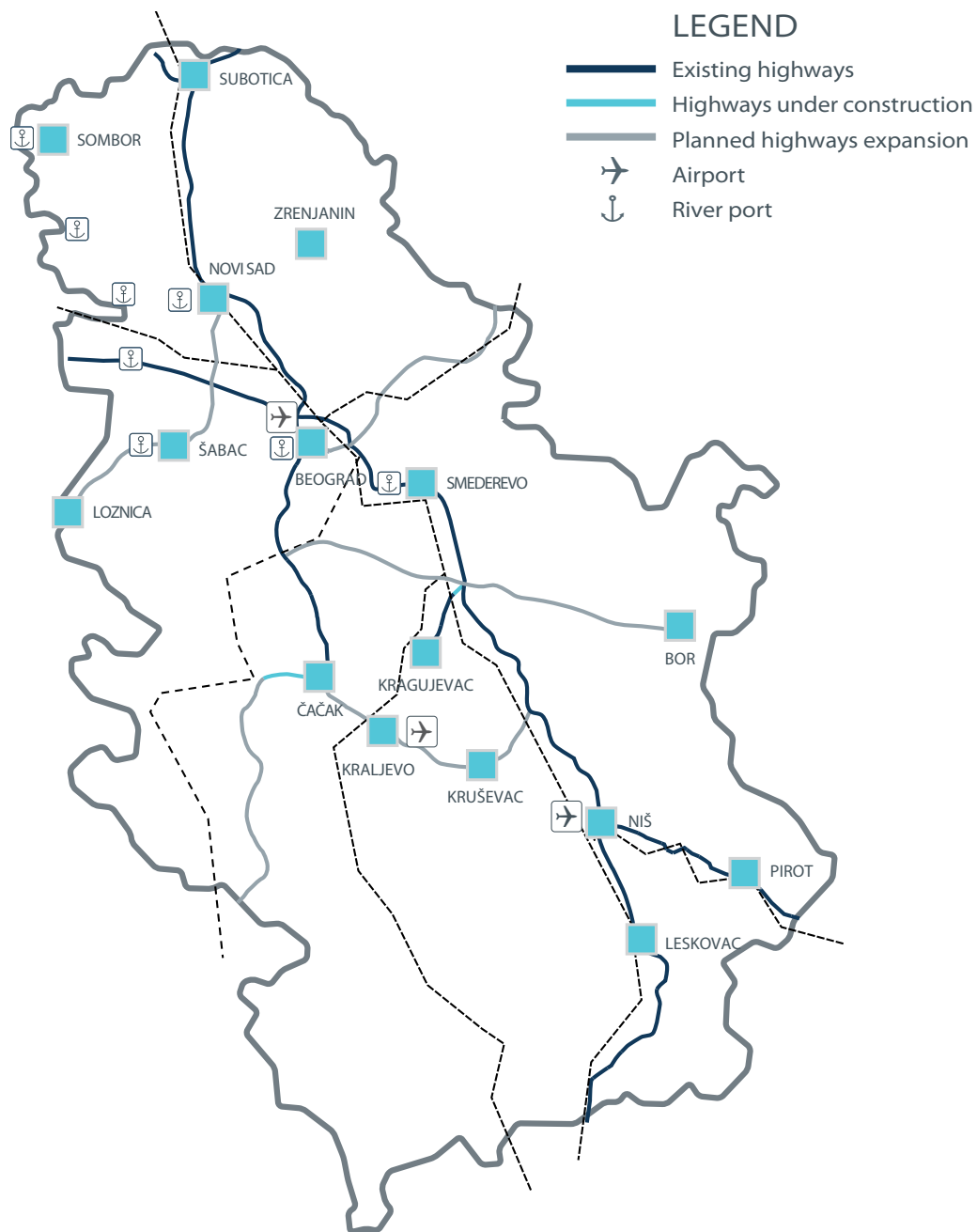


Due to a number of free trade agreements, Serbia can serve as a manufacturing hub for duty-free exports to a market of more than 1 billion people that includes the EU, USA, Turkey, South East Europe, the European Free Trade Agreement members, as well as Russian Federation and Eurasian Economic Union (EAEU) member states.

*FTA - Free Trade Agreements
 **GSP - Generalized System of Preferences
 *** Partnership, Trade and Cooperation Agreement
 Source: Statistical Office of the Republic of Serbia, 2020; World Bank

Connectivity and Infrastructure

Financial Incentives



A lavish system of incentives is offered to all investors in the sector in order to further boost its development. The incentives are set up to offer the highest grants to most undeveloped municipalities, which are in Serbia divided into five categories. The subsidies are calculated as percentage of the two year salary expenses or percentage of investment. So far, more than fifty foreign investment projects have successfully participated in the incentives program, with names that include: Michelin, Bosch, Aptiv, Continental, Lear and many more.

LEVEL OF DEVELOPMENT OF THE LOCAL MUNICIPALITY	PERCENTAGE OF 2-YEAR TOTAL SALARIES COST	PERCENTAGE OF INVESTMENT IN FIXED ASSETS (OPTIONAL)
I	20%	+ UP TO 10%
II	25%	+ UP TO 15%
III	30%	+ UP TO 20%
IV	35%	+ UP TO 25%
V	40%	+ UP TO 30%
BONUS FOR LABOR INTENSIVE PROJECT		
For more than 200 employees +10% of the sum of 2-year gross salaries	For more than 500 employees +15% of the sum of 2-year gross salaries	For more than 1,000 employees +20% of the sum of 2-year gross salaries

CORPORATE INCOME TAX RELIEF
 A 10-year Corporate Profit Tax Holiday is available for investors who hire more than 100 employees and invest more than 8.5 million euros (1 billion RSD). Tax holiday begins once the company starts making a profit.

PAYROLL TAX INCENTIVES
 Employment of people who were registered with the National Unemployment Agency for more than 6 months entitles employers to a sizable relief of taxes paid on net salary from the moment of employment:

- 1-9 new jobs: 65% reduction
- 10-99 new jobs: 70% reduction
- 100+ new jobs: 75% reduction

(payroll tax incentives can't be combined with Financial Incentives)



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