

# Research of the current and development needs in the automotive industry



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## Contractor

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**Automotive cluster**  
**ANW**

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## 1. Purpose of the research

Conducting multidisciplinary applied research of the current and future (development) needs and the future professions in the automotive industry to develop educational and innovation opportunities focused on three age categories: children, students and teachers, representatives of the “third” age.

Identifying weak market signals for a technological breakthrough and expanding the range of opportunities for international cooperation in business and education.

## 2. Methodology

The research is based on a study of the automotive industry market and interviews of experts in the Russian automotive industry:

- Making an interview plan.
- Drawing up a list of expert respondents.
- Conducting interviews.
- Data processing and analysis.

## 3. Schedule of the research

The research will be done by the end of November 2020.

Task	May	June	July	August	September	October	November
<b>Research plan</b>							
<b>Data collection: market review</b>							
<b>Data collection: interviews</b>							
<b>Data analysis</b>							
<b>Report</b>							

## **4. Specialized organization of an industrial cluster Union “Autoprom North-West”**

### **4.1. General information about Union “Autoprom North-West”**

The prerequisites for the creation of the industrial cluster “Autoprom North-West” was the objective need to unite the efforts of the regional car assembly enterprises, existing and potential suppliers of auto components, executive authorities, industry associations and scientific organizations to form a multi-level supplier base in the North-West Federal District, increase the competencies of suppliers, development of effective internal communication and integration into global supply chains.

The formation of the industrial cluster “Autoprom North-West” began in 2015 at the initiative of the National Association of Automotive Component Manufactures of Russia (NAPAK) on the creation of the Cluster and the activities of the Working Group on its formation, which includes the car assembly plants Nissan Manufacturing Rus LLC. and Ford Motor Company CJSC, NAPAK, Agency for Strategic Initiatives (ASI), representatives of the authorities of St. Petersburg and the Leningrad region, as well as key participants in the automotive industry of North-West region, who actively interacted in solving organizational issues aimed at forming an Industrial Cluster before the formation of a specialized organization of an industrial cluster.

On 21 November 2016, members of the Working Group created a specialized organization of the cluster “Autoprom North-West” in the organizational and legal form - the Union, carries out the functionality of the cluster management company.

On 1 June 2017, within the framework of the St. Petersburg International Economic Forum (SPIEF-2017), an agreement was signed between the Government of St. Petersburg and the Union “Autoprom North-West” on the creation of an industrial cluster “Autoprom North-West”.

On 15 February 2018, within the framework of the Russian Investment Forum in Sochi, the government of St. Petersburg and the Union “Autoprom North-West” signed an agreement that will be included in the current agreement on the creation of an industrial cluster “Autoprom North-West” by a third party - the Government of the Leningrad region.

On 6 June 2019, within the framework of the St. Petersburg International Economic Forum (SPIEF-2019), the Governor of the Pskov region, Director of the Union “Autoprom North-West” and the acting Rector of Pskov State University agreed about cooperation. The signed tripartite agreement will contribute to the implementation of socially significant scientific, educational and research projects in the Pskov region.

On the same day, the Government of the Leningrad region, the Union “Autoprom North-West” and the St. Petersburg State Electrotechnical University “LETI” signed a cooperation agreement on the development of personnel competencies and educational programs for the regional automotive industry.

On 1 May 2020, a Race4Scale project was launched to develop of the multidisciplinary educational, business and RDI opportunities for the Finnish-Russian automotive and motorsport industry ecosystem.

The cluster participants and partners are leading car assembly enterprises, existing and promising suppliers with production, technical and research potential, which allows them not only to successfully implement their projects in Russia, but also to develop the export potential of enterprises, universities and industry partner organizations (NAPAK, Association of Russian Automakers, etc.).

#### **4.2. The main directions for the activities of the Cluster “Autoprom North-West”**

Among the priority projects and activities of the cluster:

- 1. Development of suppliers, industrial and technological infrastructure.** Formation of a multi-level automotive ecosystem in the North-West region with integration into global supply chains.
- 2. Transport-ecology-innovation.** Sustainable development of the region's transport and logistics system, introduction of innovative modes of transport with the necessary infrastructure.
- 3. Sport, science, education.** Development of motorsport, science and children's creativity within the framework of the educational trajectory “School – University (College) – Enterprise” on the basis of Cluster's structural unit – **Children's Engineering Center “Autoprom North-West”**.
- 4.** Development of professional qualifications in the automotive industry with integration into the international system of professional standards on the basis of the Cluster's structural unit – **Qualifications Assessment Center “Autoprom North-West”**.

#### **4.3. Children's Engineering Center “Autoprom North-West” (Structural unit)**

**The goal of the Children's Engineering Center “Autoprom North-West”** is to achieve a new quality of practice-oriented school education in accordance with the state policy for the preparation of a nationally-oriented personnel reserve for technological development and leadership of Russia in the context of the implementation of the “Kudrovo” School-Technopark model in cooperation with ETU “LETI” and the Union “Autoprom North-West ” in the format “School – Higher education (Vocational education and training) – Enterprise”.

#### **Project objectives:**

1. Creation of conditions for the disclosure and intensive development of the talents of schoolchildren in the environment of scientific and technical creativity, stimulating their interest in the field of innovations and high technologies and in obtaining the professions of specialist engineers in the automotive industry and in other areas of engineering and technical orientation.
2. Increasing the competitiveness of students through participation in project and research activities with the support of the scientific community and business in the context of network interaction of educational organizations in the region with the “Kudrovo” Education Center, which acts as the Regional Network Resource Center for the Development of Education in the Leningrad region.
3. Assistance in the formation of competencies among young people that contribute to increasing motivation for conscious professional self-determination when choosing a future profession of an engineering and technical orientation and successful self-realization in it.

## Subprograms:

1. **“Nissan Skill Foundation” subprogram** – for middle school students in the Northwest region.
2. **Subprogram for creating car models for international competitions** in model sports for school students and youth in St. Petersburg and the Leningrad region.
3. **ZERO EMISSION – CHILDREN** – subprogram for middle and high school students in St. Petersburg and the Leningrad region.
4. **Subprogram for the development of a design approach and children's technical creativity** on the basis of the SPbGASU test site, located in the Lomonosov district.
5. **International competition for young engineers** in the automotive industry of Cluster “Autoprom North-West”.

## Participants and partners of the Children’s Engineering Center “Autoprom North-West”:

- Nissan Manufacturing Rus LLC.,
- KAMAZ PTC.,
- Volkswagen Group Rus LLC.,
- Hyundai Motor Manufacturing Rus LLC.,
- Association of Russian Automakers (OAR),
- Association of Automotive Engineers,
- Metalloproduksia LLC.,
- MW Kingisepp LLC.,
- ETU “LETI”,
- “Kudrovo” Education Center,
- Pskov State University,
- Saint Petersburg State University of Architecture and Civil Engineering (SPbGASU).

## 5. Actual trends in the automotive industry in Russia

### 5.1. Market

#### 5.1.1. Sales of cars and light commercial vehicles in September and in Q3 2020

**New cars sales decreased by 13,9% in Q3 of the year and increased by 3,4% in September 2020.**

**In Q3 of 2020**, sales of new cars and light commercial vehicles in Russia **decreased by 13,9%** compared to the same period in 2019 or by 176 587 sold units, and amounted to **1 094 805** cars, according to the AEB Automobile Manufacturers Committee (AEB AMC).

**In September 2020**, sales of new cars and light commercial vehicles in Russia **increased by 3,4%** compared to **September 2019** or by 5 041 sold units, and amounted to **154 409 cars**, according to the AEB Automobile Manufacturers Committee (AEB AMC).

**Dr. Thomas Staertzel**, Chairman of the **AEB Automobile Manufacturers Committee** commented:

*“Traditionally September is a good month for the automotive business. Besides deferred purchase demand and weakening Ruble, lower travel activities and the state support measures led to the third*

growth month this year with an increase of 3,4% versus September 2019. For the first time this year, the biggest players could even outperform the market average and contributed to more mild YoY decrease of 13,9%.

Hoping for a relatively stable fourth quarter without serious business limitations, despite currently worsening pandemic situation, the new AEB AMC 2020 forecast is more positive with 1 522 k passenger vehicles and LCVs, which means 13,5% decrease YoY.”

### 5.1.2. New car and LCV sales in Russia by brands for September 2020/2019

Data submitted by the AEB Automobile Manufacturers Committee; retail sales of imported and locally produced vehicles. Note: The ranking is based on monthly results.

BRAND	September		
	2020	2019	%
Avtovaz (Lada)	35 264	31 516	12%
KIA	20 402	19 194	6%
Hyundai	18 380	16 050	15%
Renault	14 007	13 326	5%
VW	10 674	9 560	12%
Škoda	9 616	7 341	31%
Toyota	8 494	9 403	-10%
Nissan	5 623	7 417	-24%
GAZ LCV*	4 451	6 030	-26%
UAZ*	3 805	3 555	7%
Mitsubishi	3 094	3 774	-18%
Geely	2 178	803	171%
Mazda	1 719	2 975	-42%
Ford LCV*	1 569	1 408	11%
Datsun	1 511	1 991	-24%
Chery	1 490	602	148%
Audi	1 445	1 415	2%
Haval	1 422	1 175	21%
Lexus	1 259	2 275	-45%
Changan	1 021	309	230%
Volvo	832	975	-15%
Suzuki	789	813	-3%
Subaru	765	645	19%
Land Rover	601	699	-14%
Porsche	562	578	-3%
Peugeot*	542	451	20%
VW NFZ*	446	665	-33%
FAW	363	210	73%
Citroën*	326	266	23%
Infiniti	263	338	-22%
Cadillac	245	88	178%
FIAT*	165	116	42%
Genesis	140	204	-31%
Lifan	138	234	-41%
Jeep	137	129	6%
DFM	105	102	3%

Opel	103	0	-
Honda	85	133	-36%
Jaguar	82	137	-40%
Isuzu*	73	74	-1%
Chevrolet	52	1858	-97%
Iveco*	46	35	31%
Avtovaz (Niva)	40	0	-
Brilliance	27	38	-29%
Foton*	25	11	127%
Hyundai LCV*	17	18	-6%
Zotye	12	67	-82%
Chrysler	0	1	-100%
Ford	4	362	-99%
HTM	-	2	-
SsangYong	-	0	-
<b>Total</b>	<b>154 409</b>	<b>149 368</b>	<b>3,4%</b>

LCV sales are included into total brand's sales if exist in the product line of the brand (marked with\*); reported separately for some brands.

LCV<3,5 t (with several exceptions reaching highest range of 6t). Some updates concerning LCV data may occur.

1. Due to inclusion of JM-AvtoVAZ JV into the AVTOVAZ group in December 2019, the Niva car is accounted for in the sales of the AVTOVAZRenaultNissan-Mitsubishi group under the AVTOVAZ brand.

2. Sales of Opel cars started in Russia on 16 December 2019 through official dealerships.

3. Sales of HTM brand were stopped in December 2019.

### 5.1.3. New car and LCV sales in Russia by brands for Q3 (JANUARY-SEPTEMBER) 2020/2019

Data submitted by the AEB Automobile Manufacturers Committee; retail sales of imported and locally produced vehicles.

BRAND	January - September / Q3		
	2020	2019	%
Avtovaz (Lada)	227 661	265 200	-14%
KIA	139 477	168 141	-17%
Hyundai	114 013	131 987	-14%
Renault	88 054	102 479	-14%
VW	70 870	76 186	-7%
Škoda	65 163	61 483	6%
Toyota	66 169	74 394	-11%
Nissan	65 163	61 483	6%
GAZ LCV*	31 747	42 422	-25%
BMW	29 671	30 236	-2%
UAZ*	21 618	26 331	-18%
Mitsubishi	19 618	28 840	-32%
Mazda	18 160	21 816	-17%
Mercedes-Benz	27 497	29 632	-7%
Lexus	14 148	15 610	-9%

Datsun	12 091	16 514	-27%
Haval	11 647	7 024	66%
Audi	10 131	11 346	-11%
Geely	9 741	6 341	54%
Avtovaz (Niva)	8 811	0	-
Ford LCV*	8 816	8 675	2%
Chery	6 365	4 244	50%
Suzuki	5 396	4 734	14%
Volvo	4 944	5 896	-16%
Changan	4 809	1 306	268%
Porsche	4 301	4 200	2%
Land Rover	4 164	5 992	-31%
Subaru	4 124	5 251	-21%
VW NFZ*	3 655	5 407	-32%
Peugeot*	2 999	3 351	-11%
Citroën*	2 218	2 265	-2%
FAW	1 868	960	95%
MINI	1 820	1 854	-2%
Infiniti	1 290	2 797	-54%
Jeep	1 231	1 373	-10%
Honda	1 178	1 339	-12%
Mercedes-Benz Vans*	1 154	1 089	6%
Cadillac	1 023	669	53%
Genesis	1 007	1 563	-36%
FIAT*	914	869	5%
Lifan	1 004	3 472	-71%
DFM	714	1 166	-39%
Isuzu*	690	597	16%
Jaguar	674	1 311	-49%
Chevrolet	392	16 270	-98%
Opel	305	0	-
Iveco*	251	295	-15%
Zotye	158	1 213	-87%
Hyundai LCV*	147	261	-44%
Brilliance	136	172	-21%
Ford	93	17 294	-99%
Foton*	65	160	-59%
smart	56	611	-91%
Chrysler	22	36	-39%
HTM	-	40	-
SsangYong	-	4	-
<b>Total</b>	<b>1 094 805</b>	<b>1 271 392</b>	<b>-13,9%</b>

LCV sales are included into total brand's sales if exist in the product line of the brand (marked with\*); reported separately for some brands.

LCV<3,5 t (with several exceptions reaching highest range of 6t). Some updates concerning LCV data may occur.

1. Due to inclusion of JM-AvtoVAZ JV into the AVTOVAZ group in December 2019, the Niva car is accounted for in the sales of the AVTOVAZRenaultNissan-Mitsubishi group under the AVTOVAZ brand.
2. Sales of Opel cars started in Russia on 16 December 2019 through official dealerships.
3. Sales of HTM brand were stopped in December 2019.

#### 5.1.4. Sales of cars and light commercial vehicles in October 2020

**New cars sales increase is 7% in October 2020.**

In October 2020, sales of new cars and light commercial vehicles in Russia increased by 7% compared to October 2019 or by 10 030 sold units, and amounted to 154 164 cars according to the AEB Automobile Manufacturers Committee (AEB AMC).

Dr. Thomas Staertzel, Chairman of the AEB Automobile Manufacturers Committee commented:

*“Like every year, strong October sales performance starts the Year-end race. With 7% increase of new vehicle sales versus October 2019, the first month of Quarter VI shows highest monthly growth in 2020 so far. This strong result is mainly triggered by the success of the big market players with the domestic production that assures more flexibility in deliveries. With -12,1% YoY, the annual gap versus the last year is getting smaller, expecting two strong months coming. It seems realistic, that the updated AEB AMC year-end sales forecast of 1 522 k passenger vehicles and LCVs will be met.”*

#### 5.1.5. New car and LCV sales in Russia by brands for October 2020/2019 and January-October 2020/2019

Data submitted by the AEB Automobile Manufacturers Committee; retail sales of imported and locally produced vehicles.

Note: The ranking is based on monthly results.

BRAND	October			January - October		
	2020	2019	%	2020	2019	%
Avtovaz (Lada)	37 019	30 237	22%	264 680	295 437	-10%
KIA	21 217	20 141	5%	160 694	188 282	-15%
Hyundai	15 431	15 827	-3%	129 444	147 814	-12%
Renault	14 356	13 670	5%	102 410	116 149	-12%
Škoda	10 101	8 903	13%	75 264	70 386	7%
VW	9 770	9 253	6%	80 640	85 439	-6%
Toyota	8 052	7 887	2%	74 221	82 281	-10%
Nissan	5 873	2 832	107%	46 408	51 506	-10%
GAZ LCV*	5 032	6 530	-23%	36 779	48 952	-25%
UAZ*	3 666	3 924	-7%	25 284	30 255	-16%
Mitsubishi	3 008	3 528	-15%	22 626	32 368	-30%
Mazda	2 265	2 532	-11%	20 425	24 348	-16%
Geely	2 016	919	119%	11 757	7 260	62%
Lexus	1 806	1 927	-6%	15 954	17 537	-9%
Ford LCV*	1 647	1 050	57%	10 463	9 725	8%
Haval	1 604	1 514	6%	13 251	8 538	55%
Chery	1 490	676	120%	7 855	4 920	60%

Audi	1 371	1 503	-9%	11 502	12849	-10%
Volvo	925	844	10%	5 869	6 740	-13%
Datsun	904	1 751	-48%	12 995	18 265	-29%
Suzuki	832	869	-4%	6 228	5 603	11%
Changan	780	407	92%	5 589	1 713	226%
Land Rover	712	853	-17%	4 876	6 845	-29%
Subaru	670	701	-4%	4 794	5 952	-19%
VW NFZ*	524	743	-29%	4 179	6 150	-32%
Porsche	420	579	-27%	4 721	4 779	-1%
Peugeot*	372	405	-8%	3 371	3 756	-10%
FAW	337	161	109%	2 205	1 121	97%
Citroën*	336	283	19%	2 554	2 548	0%
Infiniti	182	217	-16%	1 472	3 014	-51%
Lifan	169	221	-24%	1 173	3 693	-68%
FIAT*	169	118	43%	1 083	987	10%
Cadillac	155	78	99%	1 178	747	58%
Jeep	144	130	11%	1 375	1 503	-9%
Honda	126	133	-5%	1 304	1 472	-11%
Isuzu*	115	88	31%	805	685	18%
Opel	97	-	-	402	-	-
Jaguar	93	148	-37%	767	1 459	-47%
DFM	89	107	-17%	803	1 273	-37%
Genesis	77	179	-57%	1 084	1 742	-38%
Chevrolet	68	2 001	-97%	460	18 271	-97%
Brilliance	41	37	11%	177	209	-15%
Iveco*	36	32	13%	287	327	-12%
Hyundai	27	14	93%	174	275	-37%
LCV*						
Foton*	26	9	189%	91	169	-46%
Avtovaz (Niva)	11	0	-	8 822	0	-
Chrysler	3	5	-40%	25	41	-39%
Ford	0	107	-	93	17 401	-99%
Zotye	0	58	-	158	1 271	-88%
HTM	-	3	-	-	43	-
SsangYong	-	0	-	-	4	-
<b>Total</b>	<b>154 164</b>	<b>144 134</b>	<b>7,0%</b>	<b>1 188 771</b>	<b>1 352 104</b>	<b>-12,1%</b>

LCV sales are included into total brand's sales if exist in the product line of the brand (marked with\*); reported separately for some brands.

LCV<3,5 t (with several exceptions reaching highest range of 6t). Some updates concerning LCV data may occur.

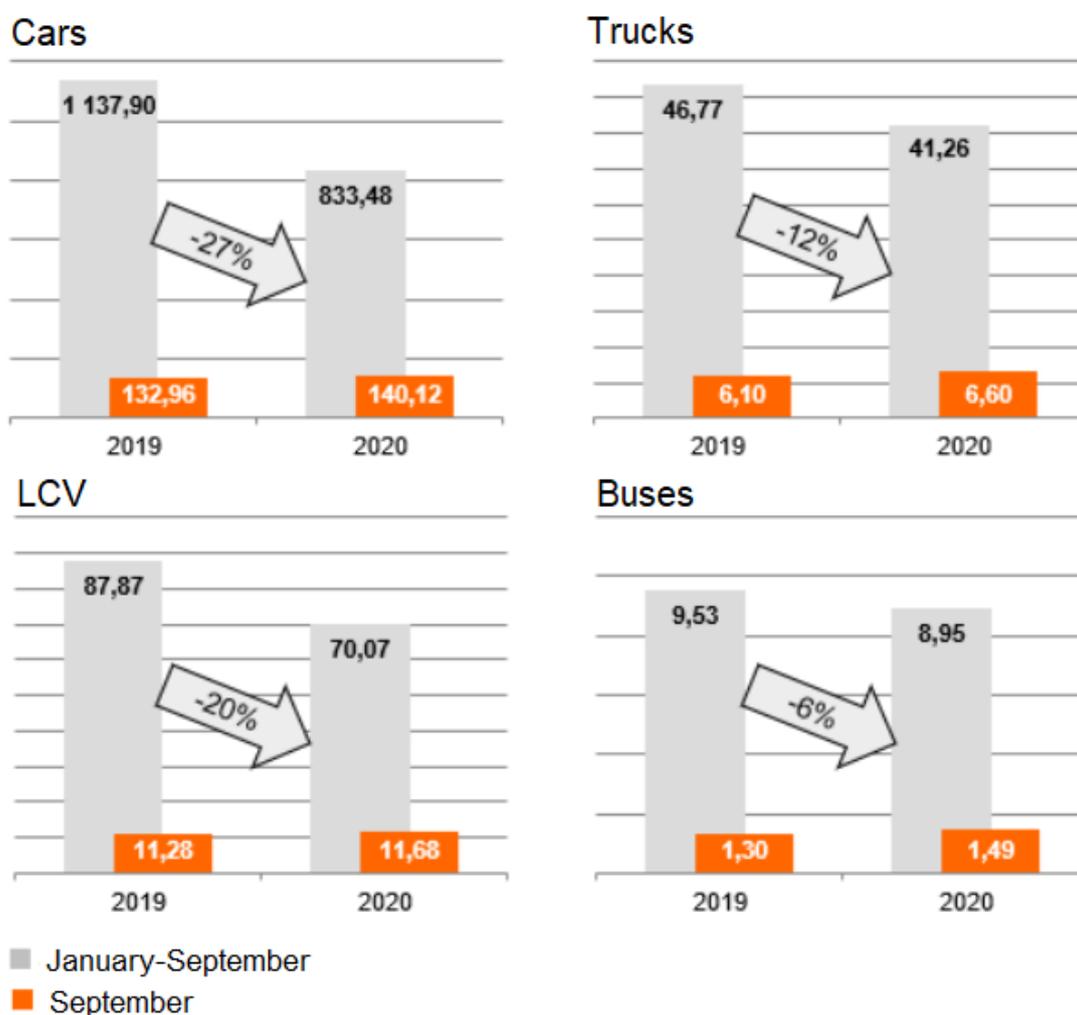
1. Due to inclusion of JM-AvtoVAZ JV into the AVTOVAZ group in December 2019, the Niva car is accounted for in the sales of the AVTOVAZRenaultNissan-Mitsubishi group under the AVTOVAZ brand.

2. Sales of Opel cars started in Russia on 16 December 2019 through official dealerships.

3. Sales of HTM brand were stopped in December 2019.

## 5.2. Production

### 5.2.1. Car and commercial vehicle production in Russia in September 2020, thousand units



Source: Russian Automotive Market Research

According to Russian Automotive Market Research, 140.1 thousand **passenger cars** were produced in Russia in September 2020, which is 5% more than the production result of September 2019. In September, the production of passenger cars of Russian brands increased by 19%, import - by 0.1%.

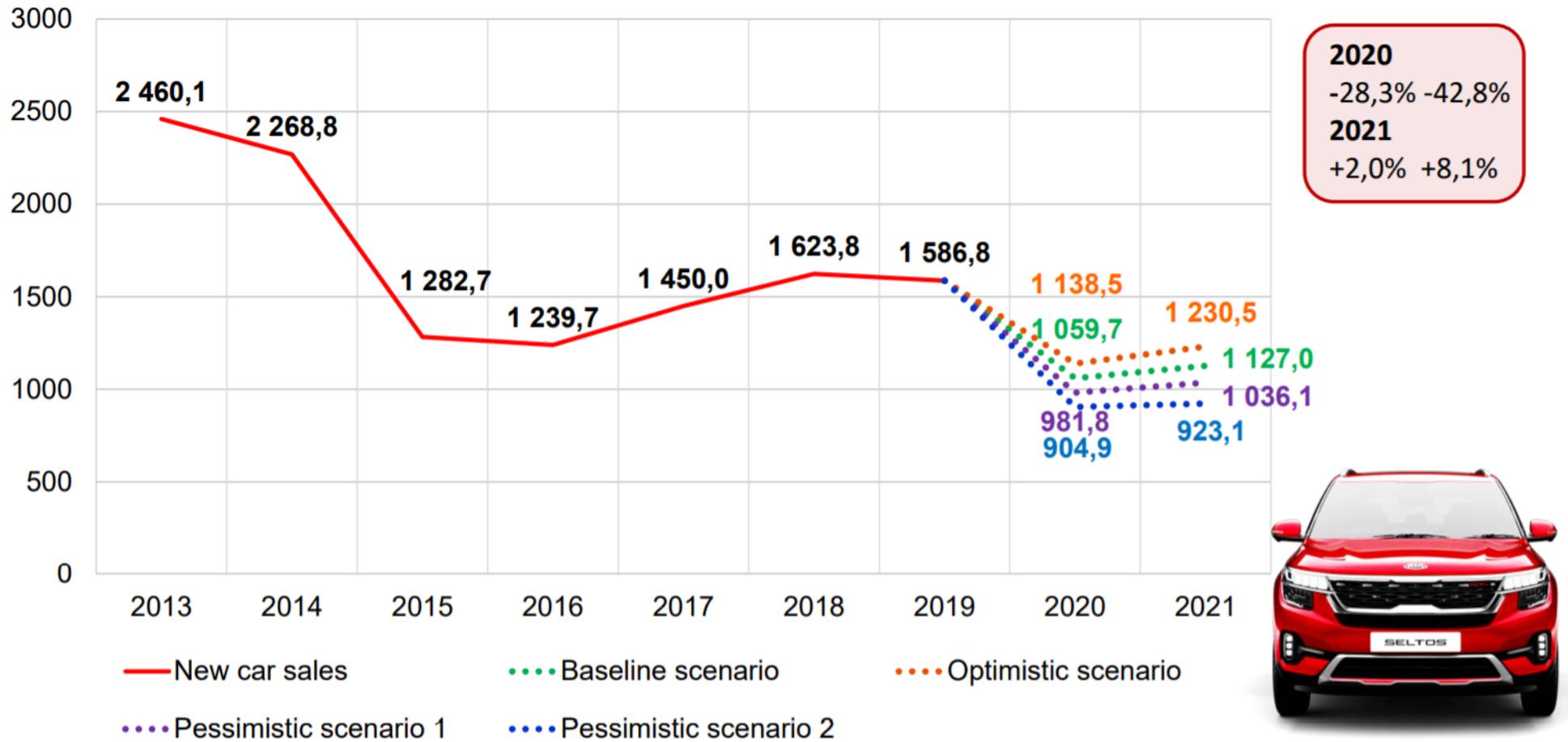
The production of **trucks** in September 2020 increased by 8% and amounted to 6.6 thousand units. At the same time, Russian brands showed an increase in production (+ 17%), while the production of foreign cars decreased by 22%.

A similar situation was observed in the segment of **light commercial vehicles**: the production of domestic equipment increased by 17%, imported - fell by 29%. In total, 11.7 thousand light commercial vehicles were produced in September 2020, which is 4% more than in September 2019.

In September 2020, 1.5 thousand **buses** were produced, which is 15% more than in September 2019. Only buses of Russian brands are produced in Russia.

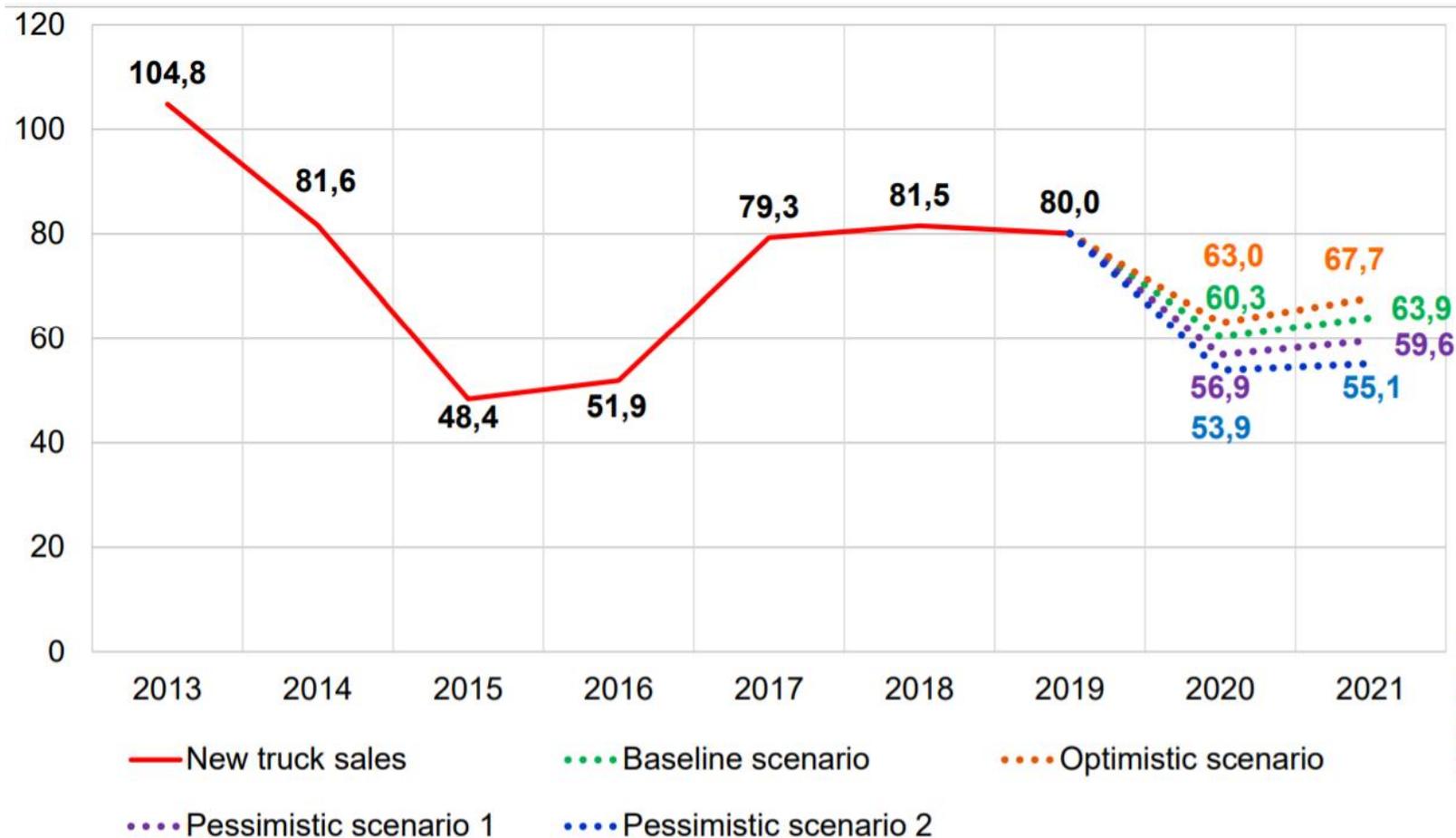
### 5.3. Sales forecast

#### 5.3.1. New car sales till 2021, thousand units



Source: Russian Automotive Market Research

### 5.3.2. New truck sales till 2021, thousand units



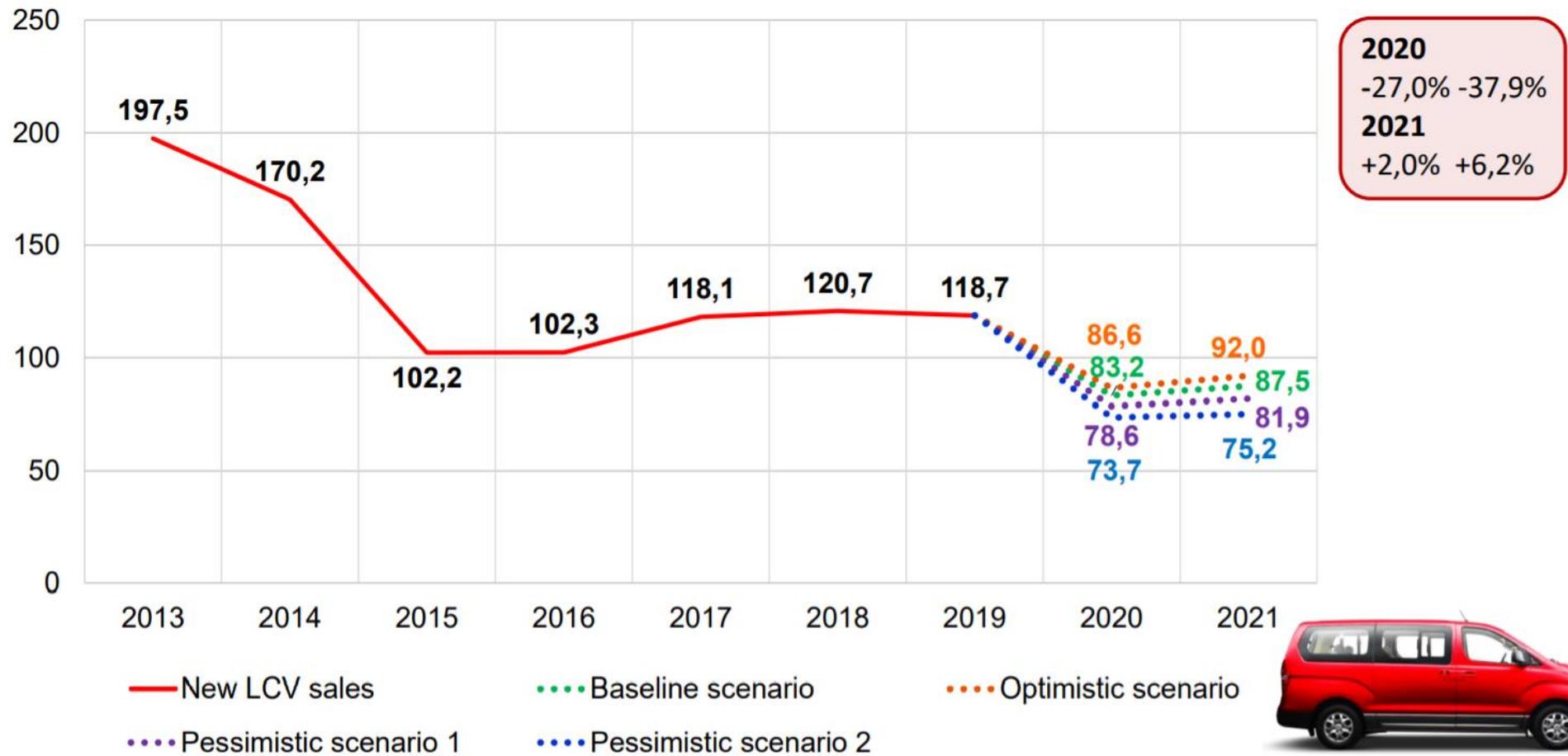
**2020**  
-21,3% -32,6%

**2021**  
+2,2% +7,5%



Source: Russian Automotive Market Research

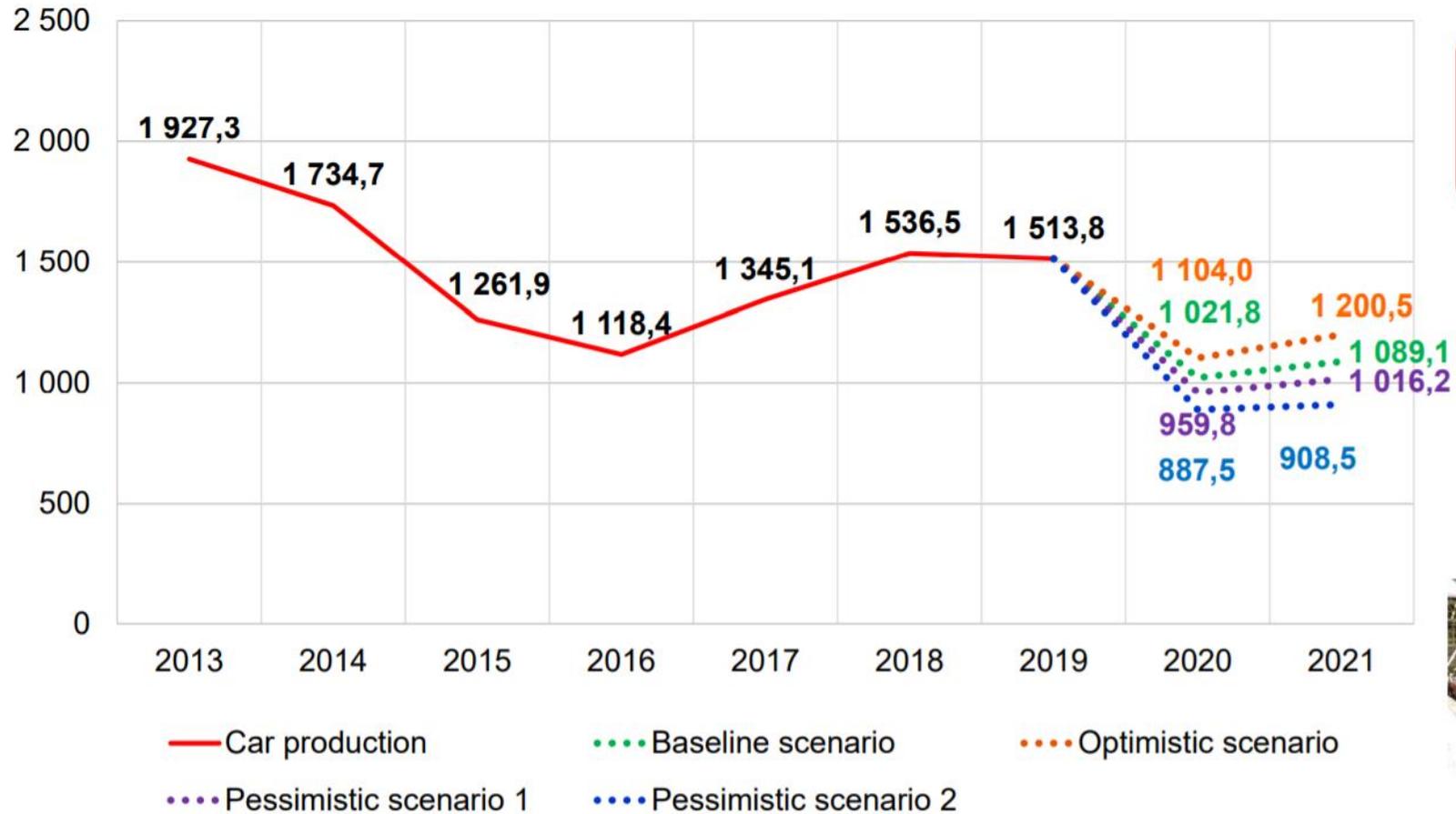
### 5.3.3. New LCV sales till 2021, thousand units



Source: Russian Automotive Market Research

## 5.4. Production forecast

### 5.4.1. New car production till 2021, thousand units

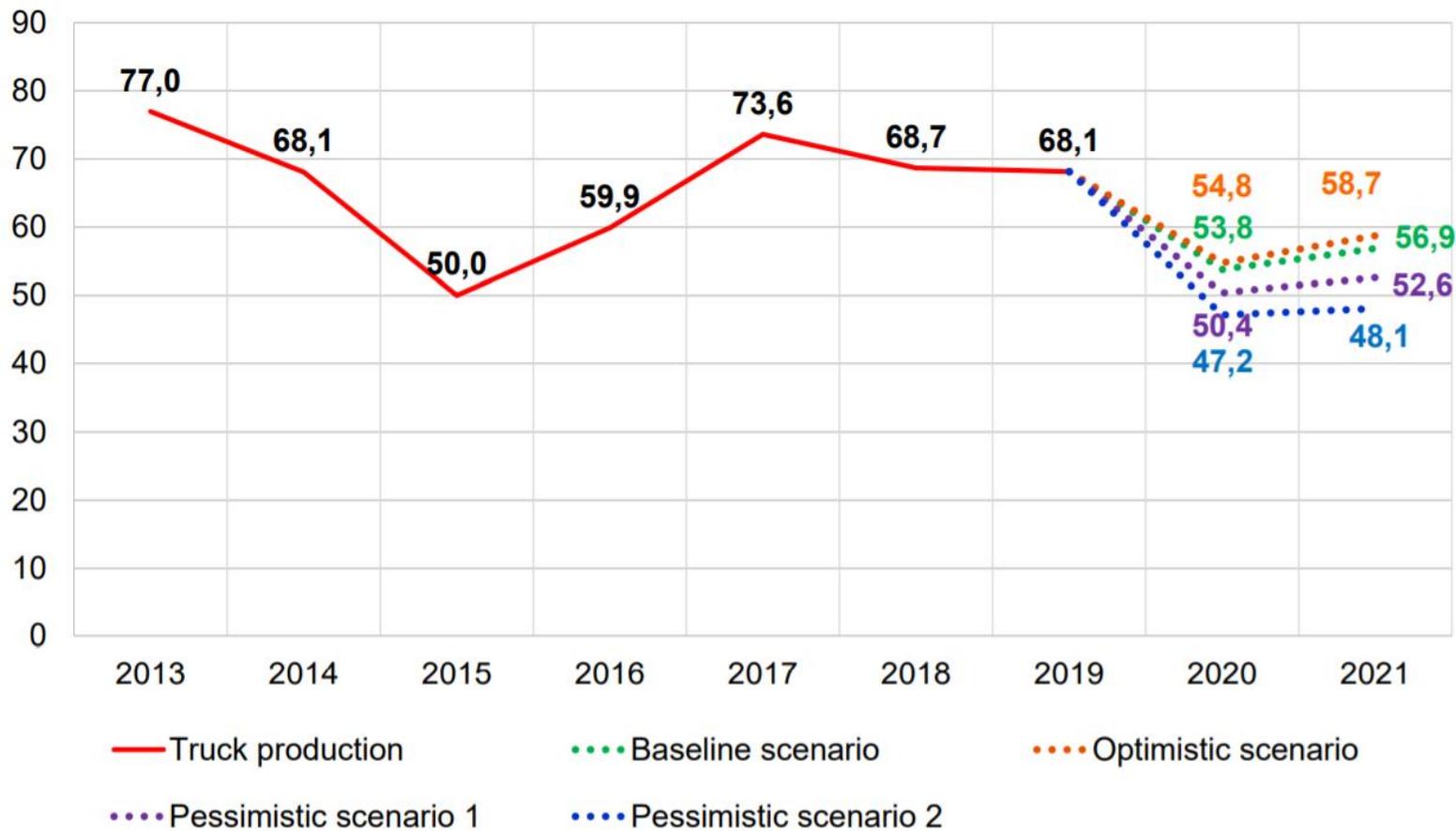


**2020**  
 -27,1% -41,4%  
**2021**  
 +2,4% +8,7%



Source: Russian Automotive Market Research

### 5.4.2. New truck production till 2021, thousand units



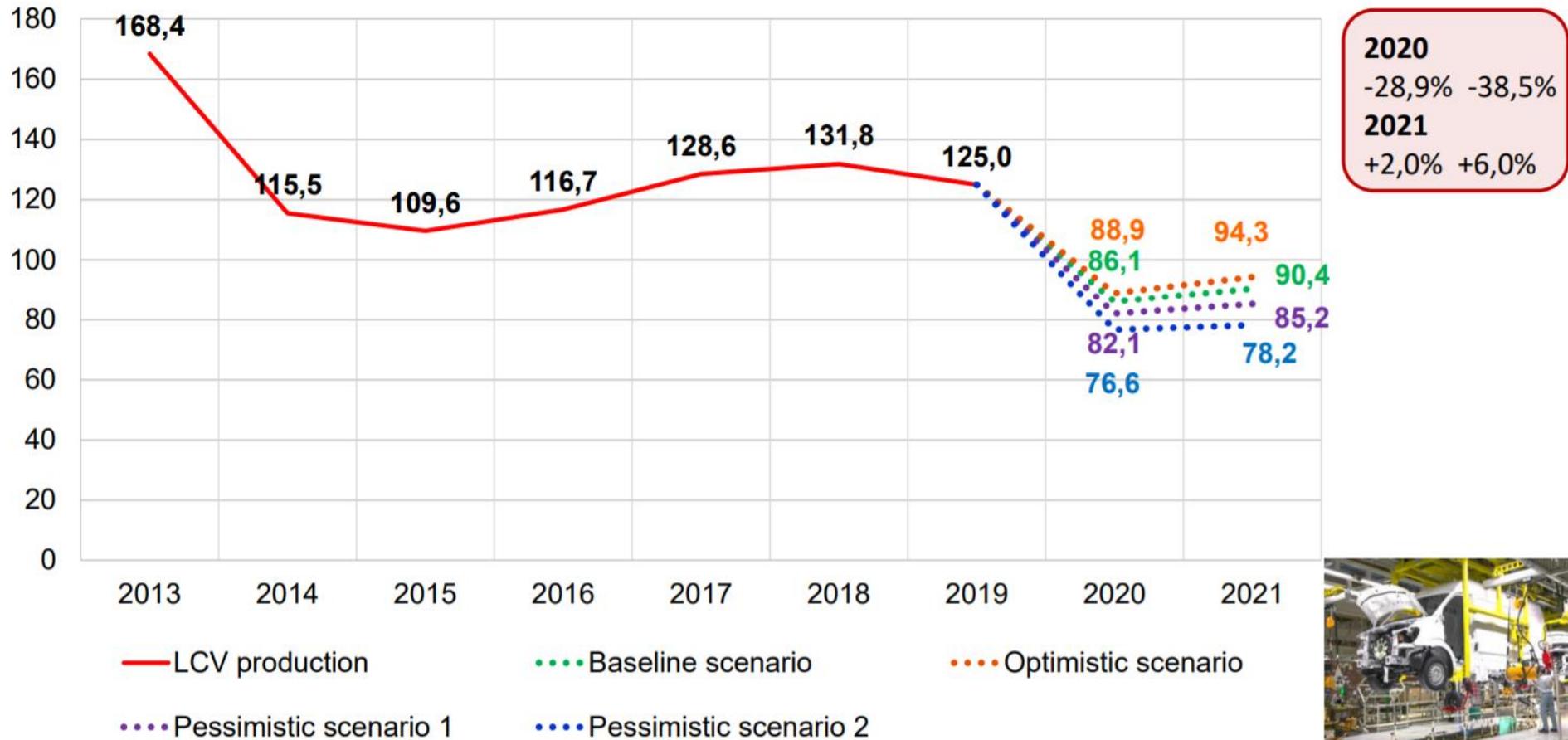
**2020**  
-19,5% -30,7%

**2021**  
+1,9% +7,1%



Source: Russian Automotive Market Research

### 5.4.3. New LCV production till 2021, thousand units

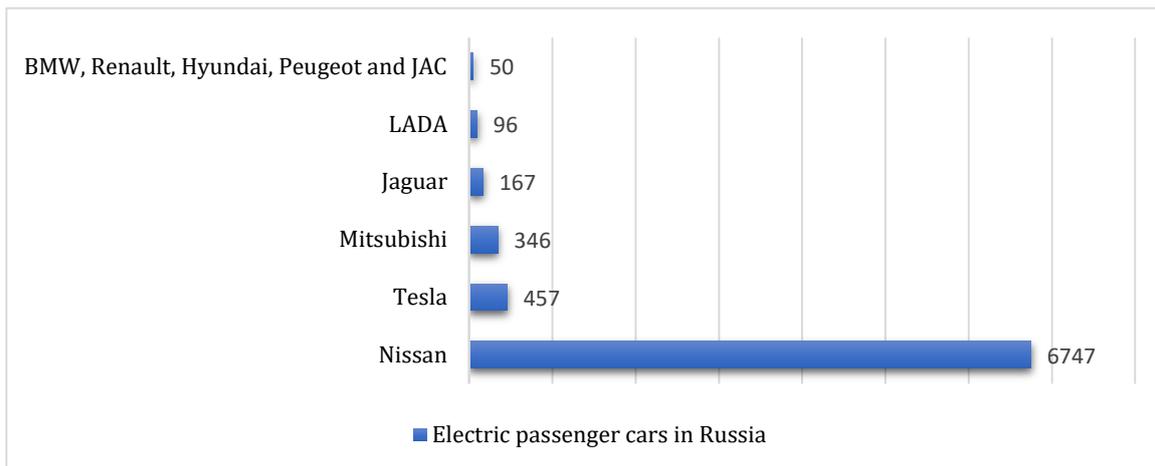


Source: Russian Automotive Market Research

## 6. Formation of an innovative transport system

### 6.1. Development of electric transport and charging infrastructure in Russia

As of July 1st, 2020, there were 7,925 electric passenger cars in Russia, represented by 10 brands. Nissan occupies the largest share in the fleet; it has more than 85% of the total. In quantitative terms, it is 6,747 units. Tesla is the second one with a share of about 6% (457 units), Mitsubishi is the third one (346 units). The top-five of leading brands also include Jaguar (167 units) and LADA (96 units). The number of the rest brands doesn't exceed 50 units (BMW, Renault, Hyundai, Peugeot and JAC).



Source: AUTOSTAT, Analytic Agency

### 6.2. Charging stations for electric vehicles

Since 2018, the number of charging stations for electric vehicles in Russia has tripled (2GIS research):

- **2018** – 56 charging stations.
- **December, 2020** – 410 charging stations.
  - Moscow – 250
  - St. Petersburg – 77
  - Chelyabinsk – 14
  - Ekaterinburg, Krasnodar, Samara, Ufa – 69

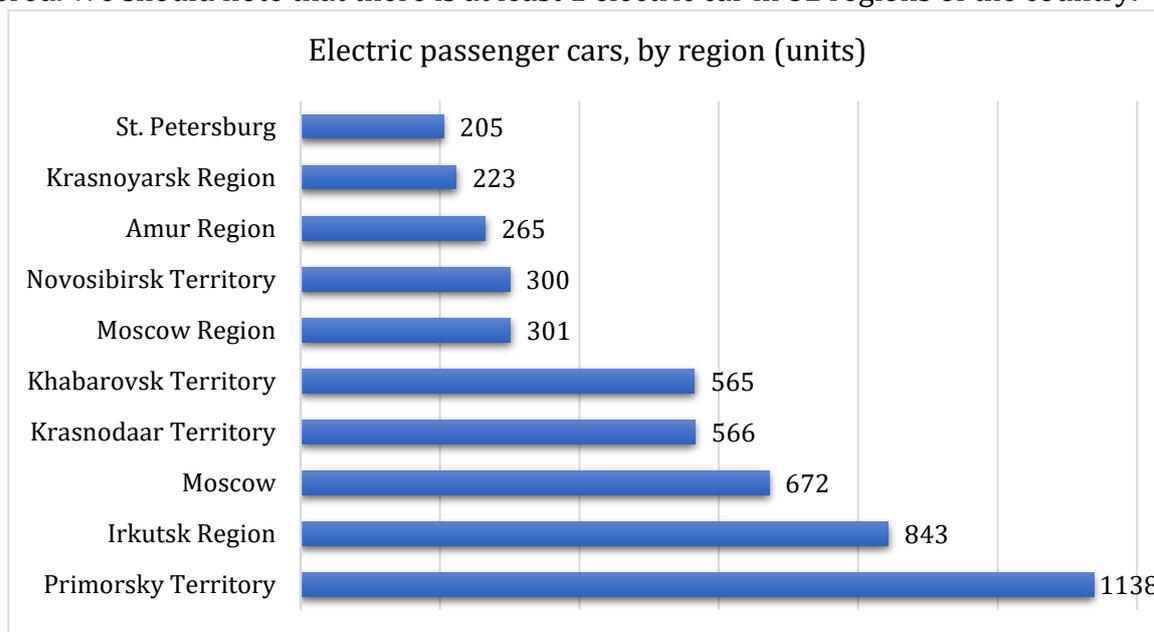
Since 2014, PJSC Rosseti, together with Lenenergo, has been developing a network of electric filling stations for cars of the future - electric cars, as part of the implementation of **the All-Russian program of charging infrastructure development for electric transport**. The creation and expansion of a network of electric charging stations is one of the priority areas of activity of PJSC Rosseti.

In November 2020, Rosseti Lenenergo PJSC together with ABB, put into operation three modern charging stations for electric vehicles on the Scandinavia federal highway running from Saint-Petersburg to the border with Finland.

By 2024, the Rosseti Group plans to expand the network of charging stations to 1,000 units.

### 6.3. Regions of use of passenger electric transport in Russia

As of July 1st, 2020, most electric cars are registered in the Primorsky Territory - 1,138 units. In the second place in terms of volume there is the electric fleet of the Irkutsk Region (843 units). Moscow is only the third one in the rating (672 units). The top-five of leaders also include Krasnodar Territory (566 units) and Khabarovsk Territory (565 units). Then Moscow region (301 units), the Novosibirsk region (300 units), the Amur region (265 units), the Krasnoyarsk region (223 units) follow, and St. Petersburg finished the TOP-10 of regions, where 205 electric cars were registered. We should note that there is at least 1 electric car in 82 regions of the country.



Source: AUTOSTAT, Analytic Agency

### 6.4. Production of electric vehicles in Russia

Electric passenger cars	Electric Buses	Electric LCV & Trucks
LADA Ellada (AVTOVAZ)	KAMAZ-6282 10	UAZ Cargo
Lada Vesta EV (AVTOVAZ)	KAMAZ-6282 12	UAZ Patriot (hybrid)
ZETTA	KAMAZ-62825 (trolleybus)	KAMAZ-53198 (truck)
	KAMAZ ("accordion") – since 2021	KamAZ unmanned tractor without a cab
	GAZ Electrobus	GAZelle e-NN (LCV)
	Volgabus Cityritm 12 ELF	
	Namibus LEV	

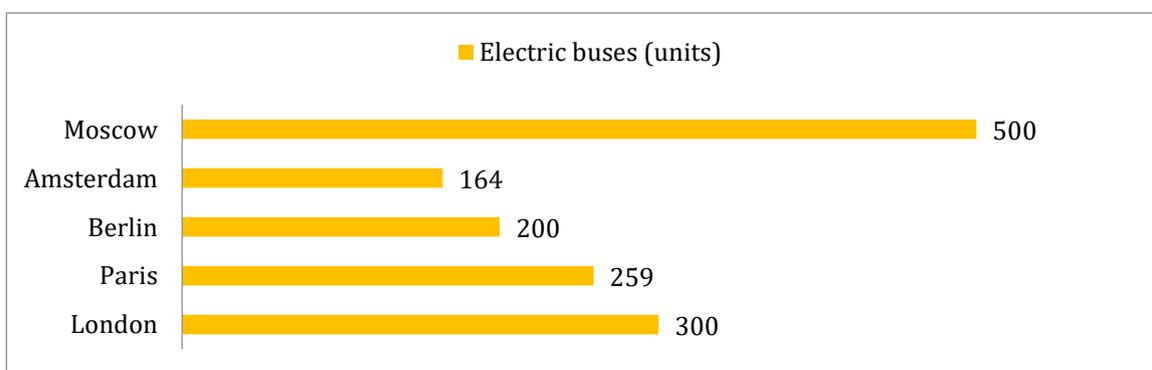
### 6.5. Examples of successful implementation of an innovative transport system in Moscow and St. Petersburg

In the capital, the 500th electric bus, purchased by the Moscow Government as a part of the Ground Transport Renewal Program, entered the route. The jubilee specimen was assembled at NEFAZ, a subsidiary of KAMAZ PTC in Bashkortostan. Recall that the first working electric buses (and not test versions), moreover, of domestic production, appeared on the streets of the city two

years ago, in September of 2018. During 2018-2019, there were 300 of them; other 200 entered the routes in 2020. By 2024, the fleet of electric buses will grow to 2.6 thousand units.

As a result, according to the official website of the Mayor of Moscow, the Moscow fleet of electric buses has become the largest in Europe. For comparison, the data on the world capitals of Europe are given: 300 electric buses run in London, 259 in Paris, 200 in Berlin, 164 in Amsterdam. The capital wants to remain at the forefront on this issue further: it is planned to deliver 400 buses on electric traction there, and by the end of 2023 - to increase their number to 2,300 units. Thus, taking into account trams, about 40 percent of Moscow's ground transport will switch to electric traction, and by 2030 it is planned to make "green" the entire fleet of Mosgortrans. The program is implemented by the volumes of production of KAMAZ (NEFAZ) and GAZ.

The Moscow Department of Transport is implementing the "Energy of Moscow" project. According to it, by 2023 the number of charging stations for electric vehicles will increase fivefold and reach 600.



*Source: AUTOSTAT, Analytic Agency*

In 2019, KAMAZ PTC opened electric bus production and development center in Moscow. KAMAZ has invested 14 million euros in the construction of a new plant for the production of electric buses in Moscow. At least 500 electric buses per year will be produced as soon as the plant will be fully operational. Also an R&D innovation center will be realized. The plant is expected to create approximately 3,500 jobs. From 2021 onwards, Russian capital will invest on electric buses only.

Currently, 10 electric buses (Volgabus) run on route No. 128 in St. Petersburg. St. Petersburg will switch to new environmentally friendly modes of public transport, represented by electric transport and gas buses, in July 2022 (Kirill Polyakov, Chairman of the City Transport Committee, announced on September 3, 2020).

According to the first deputy chairman of the Committee for Transport of St. Petersburg, Valentin Enokayev, in 2021, 54 new buses will appear on the streets of St. Petersburg, all buses are eco-friendly and run on gas fuel. More than 2,000 buses will be replaced in St. Petersburg in 2022.

## 6.6. The main problematic of electric transport in Russia

- Lack of effective platforms, from the point of view of business
- Lack of sufficient consumer demand for electric cars, taking into account the cost characteristics
- Imperfect legislation
- Lack of developed infrastructure
- Slow development of technologies, including due to different climate zones
- Low level of competence of human resources and lack of specialists

## 6.7. Basic information on government support measures

1. The Ministry of Industry and Trade of the Russian Federation implements the **“First Car”** program – the Russians buying an electric car for the first time can get a 25% discount on prepayment.
2. **From May 4, 2020, Russia has canceled import taxes for electric cars** to stimulate purchases of zero-emissions vehicles and broaden the charging infrastructure needed to keep them running. The 0% is valid until December 31, 2021 and is applied when importing electric vehicles into the Eurasian Economic Union (EAEU) by both legal entities and individuals. The 0% import duty applies to goods of the class “certain types of motor vehicles with electric motors”. There is no age limit for an electric vehicle.
3. In 2019, amendments to the 35th Federal Law on energy entered into force, which made it possible to carry out activities for the charging of electric power to batteries, including vehicles with electric motors, without being an energy sales company. Therefore, for the construction and opening of a charging station for electric vehicles, **it is not necessary to obtain a license for the wholesale and retail “trade” of electric energy.**
4. From November 2019 to 2024, in Moscow and the Moscow Region, **owners of electric cars are completely exempt from transport tax.**
5. **Free parking on the streets of Moscow.** It is not necessary to take a special permit for this. All brands of electric vehicles are included in a special list, which is in the traffic police.
6. In order to expand the use of natural gas as a motor fuel in St. Petersburg, **the “Program for the introduction of gas motor fuel in the motor transport complex of St. Petersburg for 2014-2023”** has been approved and is in effect. Now there are only 7 CNG filling stations in St. Petersburg. According to the agreement between GAZPROM PJSC and the Government of St. Petersburg, 25 CNG stations are to appear in the city by 2023.
7. In St. Petersburg, **developers were legally obliged to equip parking lots with charging stations for electric vehicles.**
8. All major market participants (OEM, Tier-n) are interested in localizing new projects of suppliers under **Special Investment Contracts (SPIC 2.0)** that they signed with the Government (Ministry of Industry and Trade of the Russian Federation).
9. The Ministry of Industry and Trade has supported a project to create **an experimental base for testing “smart cars”** at the test site of the Automotive Research Institute (NAMI) by the fall of 2022. The implementation will cost 599.7 million rubles.
10. **National project “Safe and high-quality roads” (2019-2024).**
11. Interdepartmental state support programs for the development of human resources competencies within the **National Qualifications System.**

*All support measures applied in the pilot regions (Moscow and St. Petersburg) in the long run will be applied in other regions of Russia.*

## **7. Prospective directions of the labor market development**

### **7.1. National Qualifications System (NQS)**

At the moment, there are gaps in the functioning of the personnel system of the industry due to the lack of a prepared infrastructure that informs the business community about the effectiveness and benefits of applying the system of professional standards. There is also a lag and discrepancy between labor skills and knowledge obtained in the framework of educational programs of secondary and higher education, the lack of a full-fledged infrastructure for conducting an independent assessment of qualifications in the form of professional expertise.

The formation of a NQS in high-tech industries implements the “**School – Higher education (Vocational education and training) – Enterprise**” staffing trajectory and promotes the updating of educational programs in accordance with market requirements.

**The purpose of introducing a system of professional standards** is to improve the quality of labor resources, increase the professionalism of workers and, as a result, increase the competitiveness of the country's economy as a whole. Professional standards are created with the involvement of employers, i.e. reflect the actual needs of employers in training specialists.

#### **Benefits of qualified professionals:**

- documentary confirmation by an independent organization of the qualifications and professional skills of a specialist;
- personal advantage for career growth;
- improving the image, rating and competitiveness of a specialist in the field of services provided;
- meeting the needs of organizations and private clients for qualified specialists;
- confidence of specialists in their own abilities, psychological comfort, trust of the organization's management and respect of colleagues.

#### **Employer benefits:**

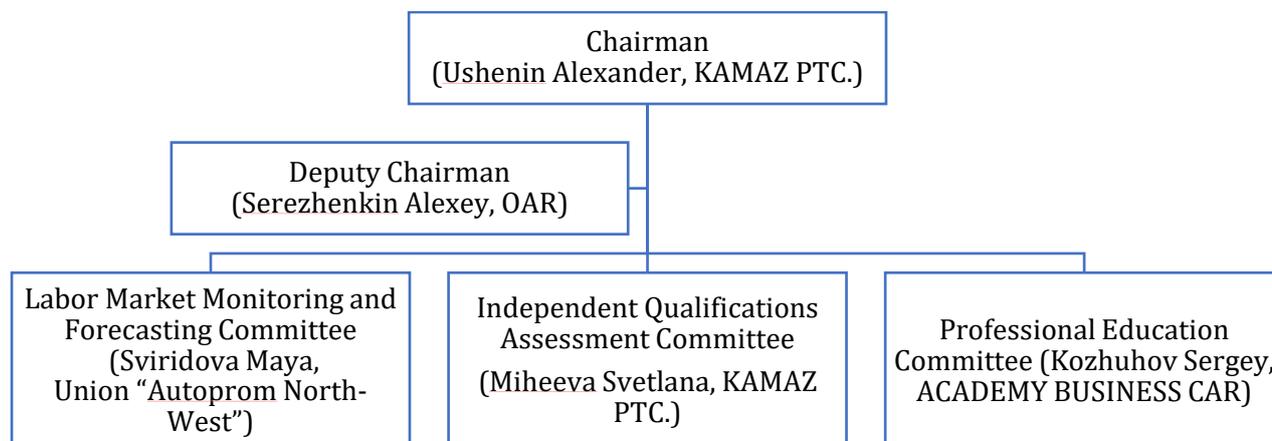
- significant time savings for searching, selecting and evaluating candidates for vacancies;
- hiring only competent and motivated employees;
- regular diagnostics of employees 'competencies in accordance with the content of professional standards developed by employers' associations.

### **7.2. Council for professional qualifications in the automotive industry**

**The Council for professional qualifications in the automotive industry** was created by the decision of the Presidential National Council for Professional Qualifications on 23 July 2015, on the basis of the Association of Russian Automakers (OAR) and has the following powers:

1. monitoring the labor market, the need for qualifications, the emergence of new professions, changes in the names and lists of professions;
2. development and updating of professional standards, sectoral qualifications framework and qualification requirements;

3. organization, coordination and control of the professional qualifications in accordance with professional standards;
4. participation in determining the needs for education and training.



**The Council includes following representatives of:**

- car assembly plants: KAMAZ PTC., GAZ GROUP, VOLKSWAGEN Group Rus ltd., AVTOVAS PJSC, Avtotor Holding ltd.;
- industry associations and unions: Association of Russian Automakers (OAR), the National Association of Automotive Component Manufactures of Russia (NAPAK), the National Automotive Service Association (ASA), industrial cluster “Autoprom North-West”, Association of Mechanical Engineering Enterprises “Automotive Industry Cluster of the Samara Region”;
- educational and scientific organizations;
- others.

Councils for professional qualifications empower Qualifications Assessment Centers.

### 7.3. Qualifications Assessment Centers (QAC)

There are three Qualifications Assessment Centers (QACs) in the automotive industry in Russia:

- Business Service Center LLC. (subsidiary of KAMAZ PJSC) in Naberezhnye Chelny (Republic of Tatarstan);
- ACADEMY BUSINESS CAR in Moscow;
- Union "Autoprom North-West" in St. Petersburg.

The Qualifications Assessment Center “Autoprom North-West” (QAC) is a structural unit of the management company of the industrial cluster Union “Autoprom North-West” and has been operating since 1 June 2020 in accordance with the Federal Law “On the independent assessment of qualifications” dated 03.07.2016 No. 238-FZ. Registration number of the QAC in the Federal Register of information on conducting an independent assessment of qualifications: **78.033**. The QAC is empowered by **the Council for professional qualifications in the automotive industry** to conduct an independent assessment of qualifications for the following qualifications (Minutes No. 30 dated 25.04.2020):

1. PS 31.00700.01 " Locksmith of mechanical assembly works in the automotive industry" (3 qualification level).
2. PS 31.00400.02. "Automechatronic for the repair of vehicles" (5 qualification level).
3. PS 31.00400.03. "Master of acceptance of vehicles for maintenance, repair and delivery of vehicles to the consumer" (5 qualification level).
4. PS 31.00400.04. "Master of the repair area for maintenance, repair of vehicles and their components" (6 qualification level).

## **8. Research results of current needs and development needs of the automotive industry**

### **8.1. Interviewing**

As part of this study, interviews were conducted among enterprises and organizations of the automotive industry in order to:

- determine the prospects for the development of the labor market in the automotive industry;
- identify competencies;
- new and promising professions for the next 5 years.

The survey involved 62 responding companies, the main activity of which is the production of cars and components for them.

<b>No.</b>	<b>Company name</b>	<b>Main Activity</b>
1.	Renault Russia CJSC	Motor vehicle production
2.	KAMAZ PTC.	Motor vehicle production
3.	Nissan Manufacturing Rus ltd.	Motor vehicle production
4.	GAZ Automobile Plant ltd.	Motor vehicle production
5.	VOLKSWAGEN Group Rus ltd.	Motor vehicle production
6.	AVTOVAZ PJSC	Motor vehicle production
7.	Avtotor Holding ltd.	Motor vehicle production
8.	Ulyanovsk Automobile Plant ltd.	Motor vehicle production
9.	SIMAZ ltd.	Motor vehicle production
10.	Volvo East JSC	Motor vehicle production
11.	Hyundai Motor Manufacturing Rus ltd.	Motor vehicle production
12.	Toyota Motor ltd.	Motor vehicle production
13.	GM-AVTOVAZ CJSC	Motor vehicle production
14.	ZMZ PJSC	Manufacture of automobile engines and spare parts for them
15.	LADA Izhevsk Automobile Plant ltd.	Motor vehicle production
16.	Mercedes-Benz Manufacturing Rus ltd.	Motor vehicle production
17.	Truck Production Rus ltd.	Motor vehicle production
18.	Caterpillar Tosno ltd.	Tire manufacturer
19.	PETERFORM ltd.	Manufacture of machinery and equipment
20.	Nokian Tyres ltd.	Tire manufacturer
21.	Metalloproduksia ltd.	Development and production of auto accessories and auto components
22.	Optima Engineering Systems Rus ltd.	Manufacture of metalworking equipment
23.	MW Kingisepp ltd.	Manufacture of steel rims

24.	Bee Pitron ltd.	Mechanical engineering, electronics and instrumentation, fiber optic manufacturing, engineering services
25.	Eberspaecher Exhaust Systems Rus ltd.	Manufacture of auto components (exhaust systems)
26.	Production Association "Auto-Radiator"	Manufacture of prefabricated aluminum engine cooling radiators and interior heating radiators
27.	Orange Drive Engineering ltd.	Resource tests of cars
28.	Rakurs ltd.	Engineering solutions
29.	LTO-Plast ltd.	High pressure injection molding
30.	PLP Polifas ltd.	Thermal insulation materials
31.	EuroAuto Autocomplex ltd.	Maintenance and repair services for passenger cars and light commercial vehicles
32.	Autocomplect ltd.	Production of soundproofing products for motor vehicles
33.	Benteler Automotive ltd.	Automotive suspension components and modules manufacturing, cold stamping, welding, cataphoresis primer coating
34.	Vlankas Plus ltd.	Services in the field of quality assurance of automotive components, audit, consulting
35.	Gestamp Severstal Vsevolozhsk ltd.	Body and structural elements, metal parts and assemblies
36.	Group Polyplastic ltd.	Composite materials production
37.	Dinex Rus ltd.	Exhaust systems
38.	DMA-Detal ltd.	Brackets, shrouds, mufflers and exhaust pipes
39.	Euromolding ltd.	Plastic components for the automotive industry and household appliances
40.	Volna Plant JSC	Electrical connectors
41.	ZIAS Machinery ltd.	Metalworking, contract manufacturing of metal parts
42.	Metroprom ltd.	Car couplings, shafts, wheels, gears, escalator traction chains
43.	Metroesk ltd.	Engineering production
44.	URAL NPO	Manufacture of auto components. Production of parts for the engineering industry
45.	SS20	Suspension and steering components
46.	"Exmash" Wholesale production ltd.	Metalworking, mechanical engineering
47.	Petroplast ltd.	Production of auto components, logistics containers
48.	Plastik CJSC	Production of plastic products by injection molding and rotational molding
49.	SOATE JSC	Manufacture of auto components, parts for household appliances
50.	CHETMASH CJSC	Manufacture and sale of auto components and cash registers
51.	TIIR JSC	Development, production and sale of automotive components and parts for braking systems
52.	Tissan Ltd.	Production of polyamide tubes, plastic parts
53.	HORS TD ltd.	Production of polyamide tubes, plastic parts
54.	TSK Milda ltd.	Supply of spare parts, repair of vehicles, sale of TATRA vehicles
55.	DSK-Group ltd.	Products of medium and small stamping. Floor, trunk carpets, car soundproofing.
56.	Forte Prom GmbH ltd.	Radiator production

57.	Frost ltd.	Climate system production
58.	Center of Repair Technologies Co. Ltd.	Provision of services for the production of products by powder metallurgy
59.	Scherdel Kaluga ltd.	Production of rear backrest and seat frames, bending of wires (diameter from 2mm to 10mm) in 2D and 3D planes, bending of pipes (diameter up to 30mm) in 2D and 3D planes of the dashboard holder, resistance welding, MAG welding, manual resistance welding, soldering, installation.
60.	Europartner ltd.	Production of high-precision plastic parts, production of tooling and molds
61.	Namibus ltd.	Design and manufacture of electric commercial vehicles
62.	GS-Group (Innovative technologies Concern JSC)	Electronics contract manufacturing

Regions of respondents: Moscow, St. Petersburg, Leningrad region, Naberezhnye Chelny, Tolyatti, Kaluga, Nizhny Novgorod, etc.

The number of personnel in the responding companies varies from 15 people to 36 thousand, which indicates that small, medium and large enterprises took part in the survey.

## 8.2. Implemented activities

One of the promising directions for the implementation of the state personnel policy is the development of the **National Qualifications System (NQS)** in the region. As part of the implementation of the state personnel policy and in accordance with the *Federal Law "On the independent assessment of qualifications" dated 03.07.2016 No. 238-FZ*, the leading companies of various industries and trade pay special attention to the development of an independent NQS in the region, contributes to the provision of industries highly qualified personnel, contributes to the development of personnel competencies, optimization of business processes, helps to more dynamically enter the next phase of the new technological order.

The automotive industry has always been a leader in the implementation of innovative solutions in production and business processes, so it was one of the first to actively participate in the implementation of professional standards in industry enterprises and shares its practice with representatives of other industries on the examples of successful projects.

### 8.2.1. Webinar "National Qualification System. The practice of introducing professional standards"

**On October 28, 2020**, to prepare a study "Research of the current and development needs in the automotive industry" within the framework of the international Russian-Finnish project Race4Scale, Union "Autoprom North-West" held [webinar "National Qualification System. The practice of introducing professional standards"](#). The event opened a series of webinars on the formation of NQS in the region and was held for cluster members and the business community in online and offline formats with the support of ETU "LETI", the Cluster Development Centre (Technopark of St. Petersburg JSC).

A series of webinars dedicated to the development of the NQS will be of interest to all participants in industry business communities. Based on the example of successful projects in the automotive industry and the organization of an approach to the implementation and development

of a system of professional standards, each member of the cluster community will be able to successfully apply the tools of the National Qualifications System to ensure the effective development of the human resources of a particular enterprise or organization. The introduction of elements of the qualification system will allow to more dynamically introduce new technologies, optimize the personnel structure, reduce the costs of the company's personnel and at the same time implement the processes of developing additional competencies among employees, as well as increase the motivational component for the company's personnel.

### 8.2.2. Round table "Autoprom - for children"

**On November 19, 2020**, within the framework of the XIII St. Petersburg International Innovation Forum (SPIIF-2020), [a round table "Autoprom - for children"](#) was held.

**The main purpose** of the round table was to identify current and future (developing) needs and future professions in the automotive industry for the preparation of a study within the framework of the international Russian-Finnish project of cross-border cooperation Race4Scale.

**The main topics** of the round table were the possibilities of involving schoolchildren and youth in socially significant projects, creating conditions for the disclosure and intensive development of schoolchildren's talents in the environment of scientific and technical creativity, stimulate their interest in the field of innovation and high technology, acquisition of the professions of specialist engineers in the automotive industry and other areas of engineering and technical orientation, practice-oriented education in the context of the implementation of the model "School – Higher education (Vocational education and training) – Enterprise".

The discussion took place among **the main market participants** (Nissan Manufacturing Rus LLC., Metalloproduksia LLC., MGBOT LLC., etc.) and **educational organizations**: Saint Petersburg State University of Architecture and Civil Engineering (SPbGASU), Petrovsky College, etc.). Among **the participants of the Race4Scale project**, the round table was attended by representatives of ETU "LETI", St. Petersburg secondary school "Kudrovo Education Center".

**As a result of the round table**, weak signals of the market in the field of education were identified, directions for the development of educational programs were discussed, taking into account the list of competencies necessary for an engineer in the automotive industry. The engineer of the future must have competencies in project management, have the skills of a systems approach, know foreign languages and basic design programs (AutoCAD, CATIA, SolidWorks, etc.). Such an engineer must not only develop new solutions, but also understand the project's profitability, market application and improvement opportunities.

Market participants spoke about the system of training specialists directly at the enterprises, the development of personnel competencies of employees. Basically, companies conduct internal training for employees and implement their own educational programs. Enterprises interact with educational organizations in different age categories. High school students are involved in solving business-cases from leading market participants, visiting enterprises with excursions. Students visit production sites with excursions to the assembly line, implement production practices at enterprises and conduct joint R&D.

### 8.2.3. Webinar: "Practical aspects of application of professional standards in organizations"

**On December 17, 2020**, to prepare a study "Research of the current and development needs in the automotive industry" within the framework of the international Russian-Finnish project

Race4Scale, Union "Autoprom North-West" held the second webinar on the topic: "[Practical aspects of application of professional standards in organizations](#)". The webinar was supported by the Cluster Development Centre (Technopark of St. Petersburg JSC) and Saint-Petersburg Electrotechnical University ETU "LETI".

Participants of the webinar, representing various industries and industrial clusters, discussed the main preferences and economic efficiency of using the National Qualifications System (NQS) based on successful examples of implementation and practical use in the automotive industry and other industries. They also discussed the possibilities of companies and enterprises to integrate into the infrastructure of the NQS, financial and non-financial measures of state support.

The need to bridge the gap between the education system and market needs was noted by educational organizations and enterprises of various industries. They also noted the need for closer cooperation between market participants and academic structures to adapt and improve educational programs to the requirements of industry communities.

**Summing up the results of the webinar**, the participants noted the fragmentation and autonomy of the industries in the development of the qualifications system. Each industry builds its own segment of the development and application of the NQS. At the same time, among the development trajectories in the region, the abolition of sectoral allocation and the trend of intersection of professional qualifications and resources stand out. Most industry professional qualifications are cross-cutting. For example, an "electronic engineer" is present in almost all industries.

## 9. Summary

### 9.1. Interview results

#### 9.1.1. Demanded professions

##### **List of in-demand professions:**

- Design Engineer
- Quality Engineer
- Engineer - Technologist (mechanic, chemist)
- Tooling Engineer
- Logistics Specialist
- Locksmith
- Mechanic assembly works
- Body straightener
- Electrician for the repair and maintenance of electrical equipment
- Painter
- Operator of automatic and semi-automatic lines of machines and installations.

**Career guidance of young people and development of professional skills in enterprises:** in most companies, professional competitions and competitions among employees are not held. Employees of the enterprises do not take part in industry, regional, republican and international contests and competitions. This practice is common mainly in large enterprises.

#### 9.1.2. Competence of the engineer of the future

**The engineer of the future must have competencies in the following areas:**

- Project management
- Communication Skills
- Foreign languages
- Creativity and systems thinking to see possible improvement in the final consumer product
- High level of education and software (AutoCAD, SolidWorks, Catia, etc.)
- Production management
- Marketing
- Time management
- Logistics and supply chain management
- Understanding the economic efficiency of the project
- Interpersonal and intercultural communication
- New technologies of production and management

### **9.1.3. Promising professions (for the next 5 years)**

#### **List of promising professions (for the next 5 years):**

- Design Engineer
- Engineer - Technologist
- Industrial design specialist in the automotive industry (general system solutions)
- Mechatronics Specialist
- Electronic Engineer
- Circuit Engineer
- Human-machine interface specialist
- Specialist in the field of wireless communication of information computer networks
- Industrial Design Specialist
- Mechanic
- Psychologist, psychophysicologist, neurophysiologist
- Locksmith
- Car Logist
- IT engineer (for developing software for driver assistance systems. At the moment, such specialists are only in Yandex staff)
- Welders
- Pipe benders fitters
- Architect of intelligent control systems
- Smart Materials Designer
- Designer of new technologies
- System Engineer
- Information Systems Architect
- Big Data Model Designer
- Designer-developer of human-machine interfaces
- Automotive Electronics Software Developer
- Specialist in Design Intellectual Property Programming and Cybersecurity.

## **9.2. Cluster approach as an effective example of the implementation of the “School - HE (VET) -Enterprise” trajectory**

### **Children / schoolchildren in the framework of Children’s Engineering Center “Autoprom North-West”:**

- business cases from leading market participants;
- excursions to enterprises;
- career guidance activities;
- international competitions in model sports for school students and youth in the region on the basis of the SPbGASU test site;
- development of a project approach and children's technical creativity.

### **Students (HE, VET) in the framework of interaction with educational partners of Cluster “Autoprom North-West”:**

- targeted training;
- conducting vocational excursions and master classes for students;
- implementation of student practice programs at enterprises;
- joint R&D.

### **Specialists, representatives of the "third age" in the framework of interaction with the enterprises of the Cluster “Autoprom North-West” and participants in the automotive market (auto industry, motorsport):**

- participation of employees of the enterprise in the development and updating of educational programs;
- participation of employees of the enterprise in consulting and accompanying graduate qualification works (diplomas) of students;
- implementation at the enterprise of training programs for teachers and (or) methodologists and (or) foremen;
- industrial training of an educational organization;
- pedagogical activity of employees of the enterprise in an educational organization;
- equipping the material base to develop the competencies of employees.