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Ministry of Transport of the Russian Federation FAI “ROSDORNII”

Working Party on Transport Trends and Economics
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thirty-fourth session

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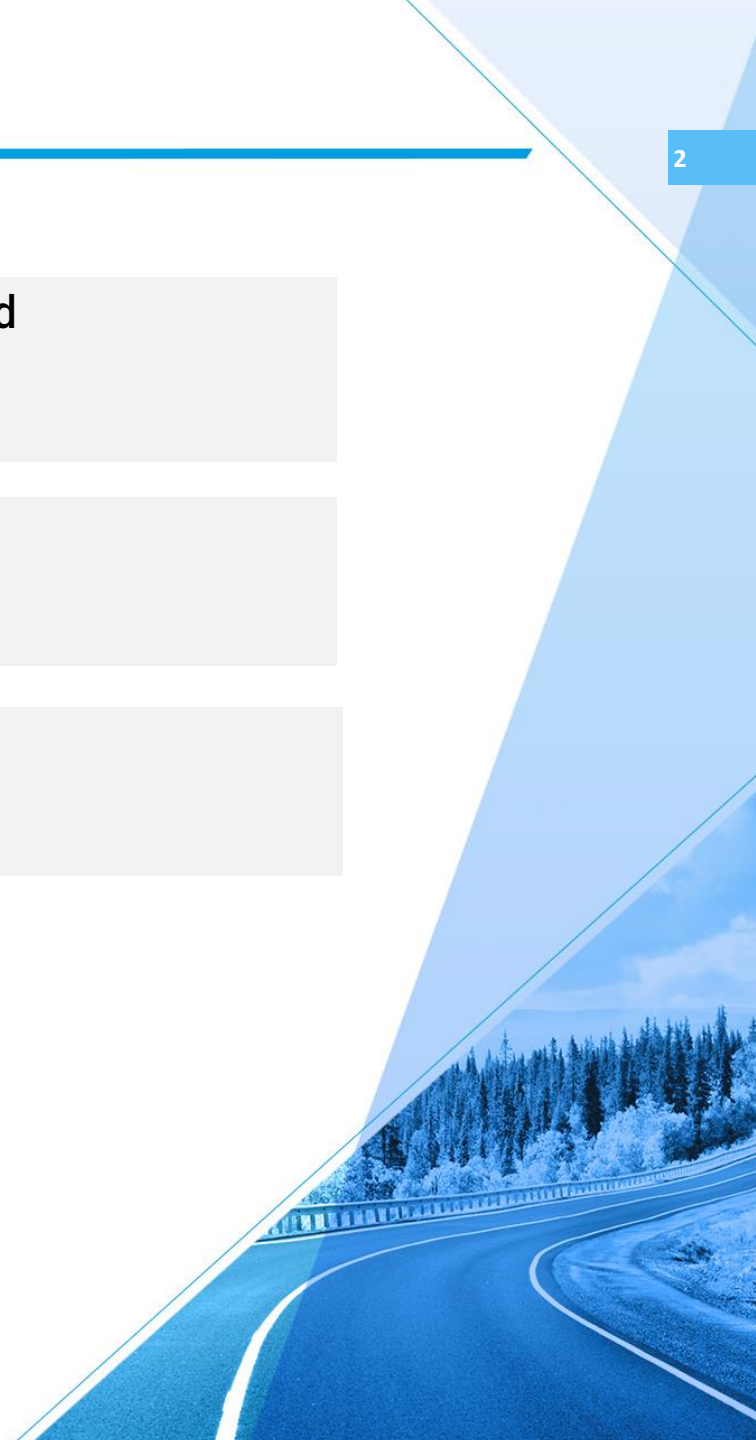
FAI «ROSDORNII»

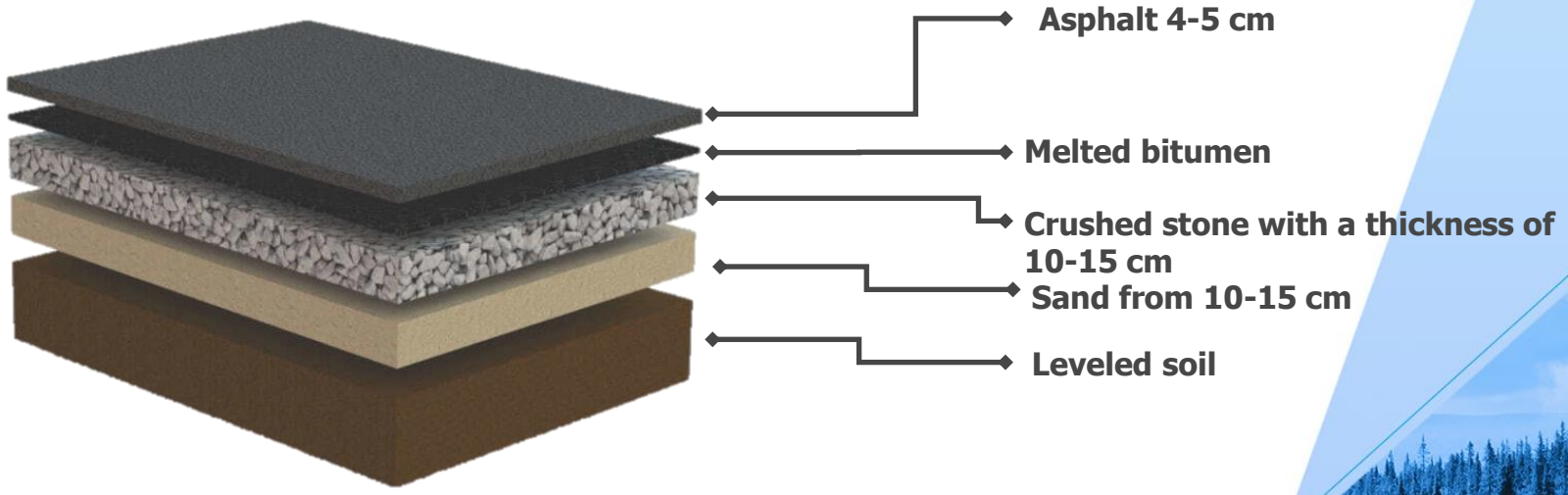
Monitoring of comparative cost analysis in the Russian Federation:

- Monitoring of the cost of construction, reconstruction, capital repairs, repair and maintenance of 1 km of public roads
- Monitoring of prices of price-forming construction resources
- Monitoring of regional resource availability

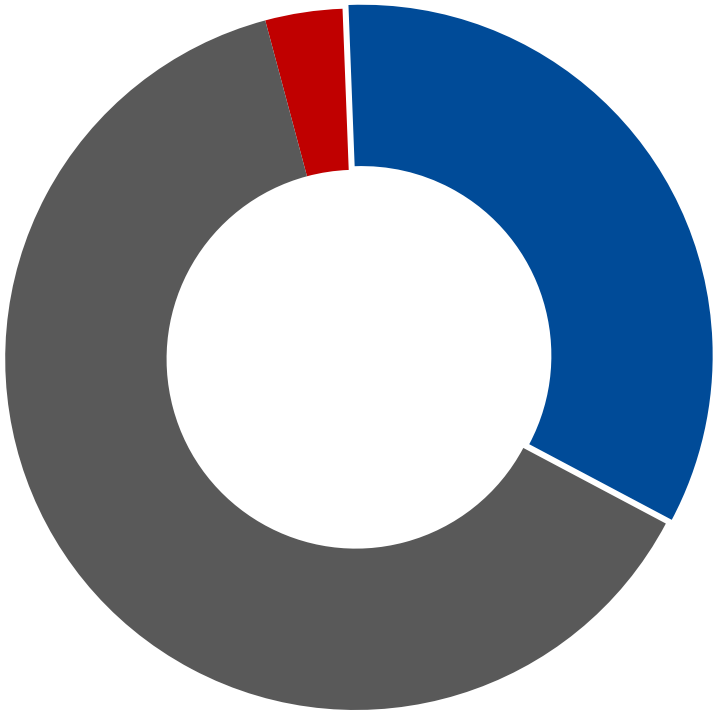


Road construction is an expensive and time-consuming process

Road clothing is a structural element of a highway that perceives the load from vehicles and transmits it to the roadbed.



Leveled soil



60 430,7 km

FEDERAL

505 454,4 km

REGIONAL

987 778,4 km

LOCAL

HIGHWAYS

they are an important part of the transport infrastructure that performs a wide variety of tasks from servicing international and interregional transportation to providing access to facilities, enterprises, institutions, and citizens 'homes

1 553 663,5 km

is the total length ofpublic roads in the Russian Federationaccording to the Federal Statistical Observation

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Monitoring the cost of 1 km of public roads

The method of calculating the cost of 1 km

To ensure comparability, the following principles should be followed when calculating the cost of 1 km of road:

- Bringing highways to 1 lane of traffic
- Excluding costs:
- to prepare the territory
- on artificial structures
- for unforeseen expenses

Development of methodological guidelines → Automation of information collection → Verification of the received information → Analysis of various sections of information (for example, by category, by type of work, etc.) → Building a model

Monitoring the cost of 1 km of public roads

Information is collected by:

by type of work:

- Construction
- reconstruction
- major repairs
- Repair
- content

by the value of the highway:

- federal highways
- regional highways
- local highways

Monitoring the cost of 1 km of public roads

Calculation of the cost of highways

Construction, reconstruction, major repairs

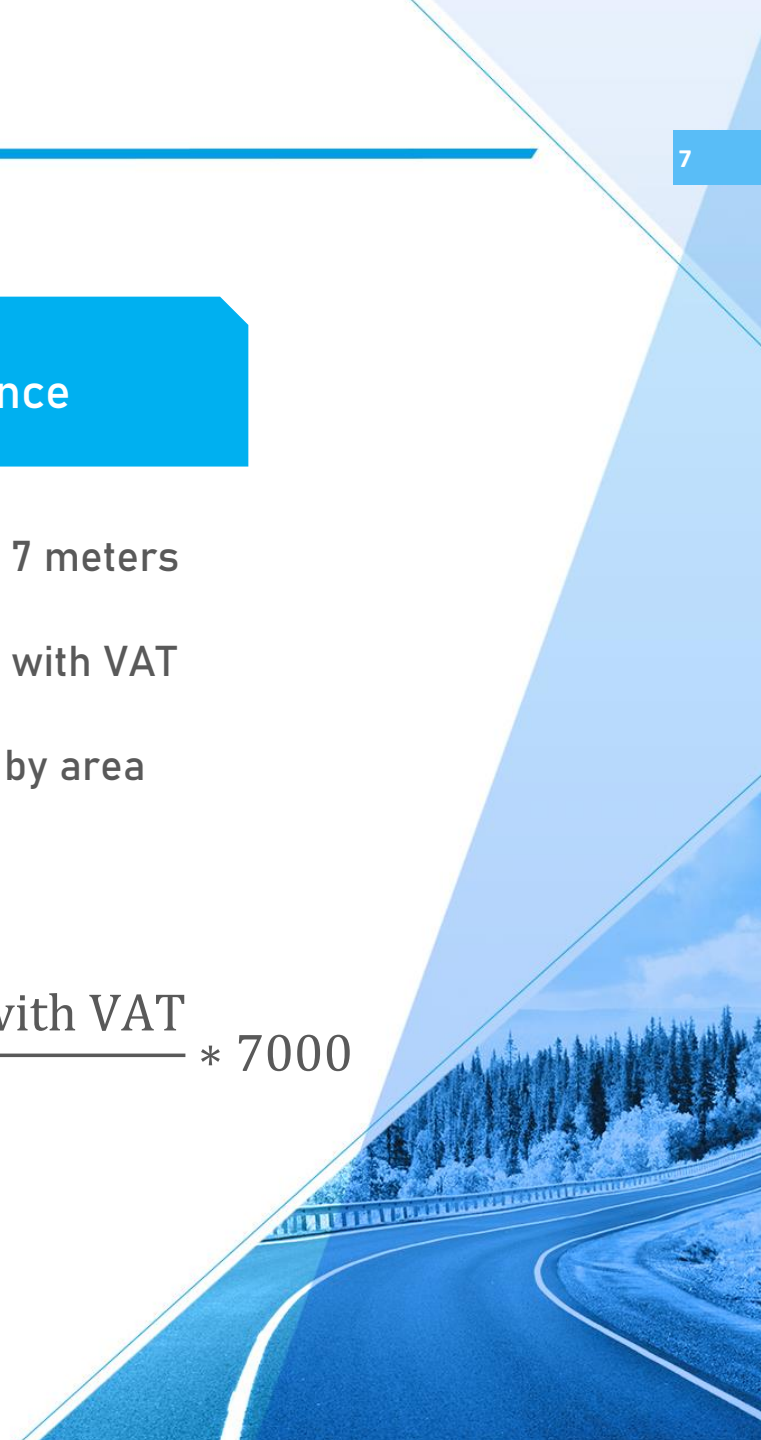
- it is brought to 1 lane of traffic
- the calculation is made without VAT

$$\frac{\begin{array}{c}(\text{chapter 1 } \textit{other costs} + \\ 2 \text{ chapter (auth. dor} + \text{other } \textit{costs}) \\ + \text{amount of expenses for other chapters}\end{array}}{\textit{length} * \text{number of traffic lanes}}$$

Repair, maintenance

- the conditional width is 7 meters
- the calculation is made with VAT
- repairs are carried out by area

$$\frac{\text{the cost of the object with VAT}}{\text{coverage area}} * 7000$$



Automating data collection

contains data of the subjects of the Russian Federation

Отчетные показатели: январь - декабрь 2019 года, Белгородская область

Импорт | Статус отчета | Приложения: Проверен | Формирование: Прил. 1 | Прил. 2 | Прил. 3 | Подтверждающий документ | Последняя версия: 16.09.20 15:11 | Проверка: Просмотр результатов | Регион: Белгородская области

Прил.1:Строительство | Прил.1:Реконструкция | Прил.1:Капитальный ремонт | **Прил.2:Ремонт** | Прил.2:Слои износа | Прил.3

Действия	Исключен из расчетов	№ п/п (01)	Субъект РФ/код (03)	Наименование (титул) объекта (04)	Стоимость работ на 1 км, тыс. руб.		Идентификатор автомобильной дороги (далее - объект) (05)	Принадлежность (значение) автомобильной дороги: федерального или регионального (межмуниципального) значения (06)	Дорожно-климатическая зона (08)	Категория автомобильной дороги (09)	Количество полос движения (10)	Фактический период проведения работ (срок реализации) в отчетный год (11)	Протяженность участка, км (12)	Площ
					Линейный (17)	Приведенный (18)								
Федеральный округ: 1. Центральный федеральный округ														
		1	Белгородская область	Валуйки-Алексеевка-Красное, км37+100 - км66+530	15 154,227	17 645,057	14.ОП.РЗ.К-10	Регионального (межмуниципального) значения	IV	III	2	июль 2018-июль 2019	29,430	
		2	Белгородская область	"Белгород-Новый Оскол-Советское" - Новосадовый км0+000 - км1+700	12 101,000	13 633,961	14.ОП.МЗ.Н-132	Регионального (межмуниципального) значения	IV	IV	2	январь-сентябрь	1,700	
		3	Белгородская область	Северо-Восточный обход г.Белгорода-Беломестное-Петропавловка-Киселево км0+020-км4+085, км4+115-км5+200	9 560,932	10 623,258	14.ОП.МЗ.Н-110	Регионального (межмуниципального) значения	IV	IV	2	февраль-август	5,150	
		4	Белгородская область	"Крым"-Комсомольский-Красиво км26+800-км45+400	11 992,947	12 287,392	14.ОП.РЗ.К-12	Регионального (межмуниципального) значения	IV	IV	2	декабрь 2018-декабрь 2019	18,600	
		5	Белгородская область	"Новый Оскол-Валуйки-Ровеньки"-Хмелевец-Фощеватово км15+700-км21+100	12 275,585	12 275,585	14.ОП.МЗ.К-58	Регионального (межмуниципального) значения	IV	IV	2	февраль 2019-август 2019	5,400	
		6	Белгородская область	"Вейделевка-Белый Колодезь"-Опытный км0+000-км0+500	13 540,400	15 713,329	14.ОП.МЗ.Н-233	Регионального (межмуниципального) значения	IV	V	1	январь 2019-август 2019	0,500	
		7	Белгородская область	"Вейделевка-Белый Колодезь"-Олейники км0+000-км1+600	12 063,313	13 775,398	14.ОП.МЗ.Н-226	Регионального (межмуниципального) значения	IV	IV	2	январь 2019-август 2019	1,600	
		8	Белгородская область	"Новый Оскол-Валуйки-Ровеньки"-Александровка-Голофеевка км0+000-км8+900	12 556,557	15 708,303	14.ОП.МЗ.Н-240	Регионального (межмуниципального) значения	IV	IV	2	январь 2019-сентябрь 2019	8,900	
		9	Белгородская область	"Новый Оскол-Валуйки-Ровеньки"-Александровка-Голофеевка км8+900-км11+400	11 659,884	13 603,198	14.ОП.МЗ.Н-240	Регионального (межмуниципального) значения	IV	V	1	январь 2019-сентябрь 2019	2,500	
		10	Белгородская область	Замостье-Доброе-Доброивановка-Тополи км0+060-км2+905	10 137,329	11 806,825	14.ОП.МЗ.Н-270	Регионального (межмуниципального) значения	IV	IV	2	ноябрь 2018-октябрь 2019	2,845	
		11	Белгородская	Головчино-Доброполье км0+810-	10 356,291	12 069,623	14.ОП.МЗ.Н-267	Регионального	IV	IV	2	декабрь 2018-ноябрь	9,650	

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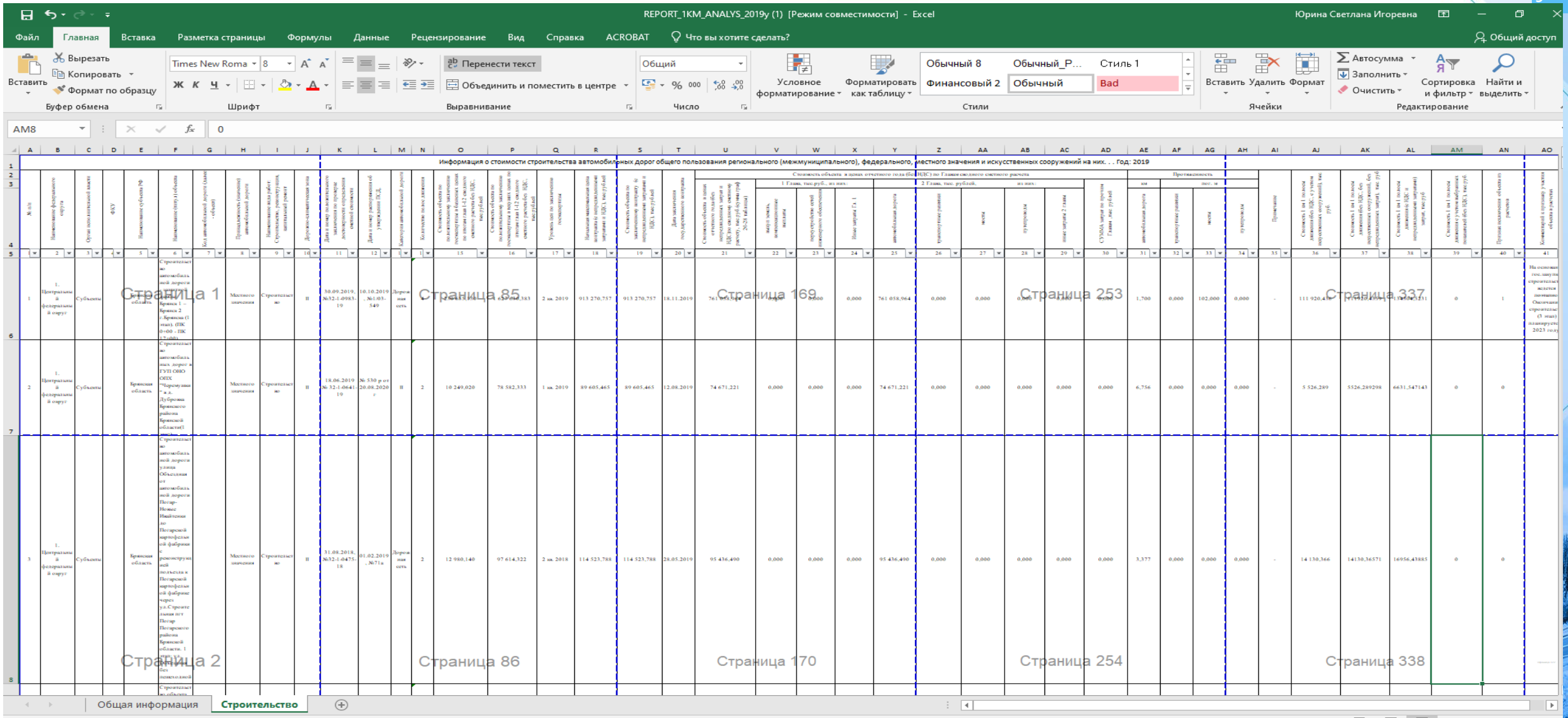
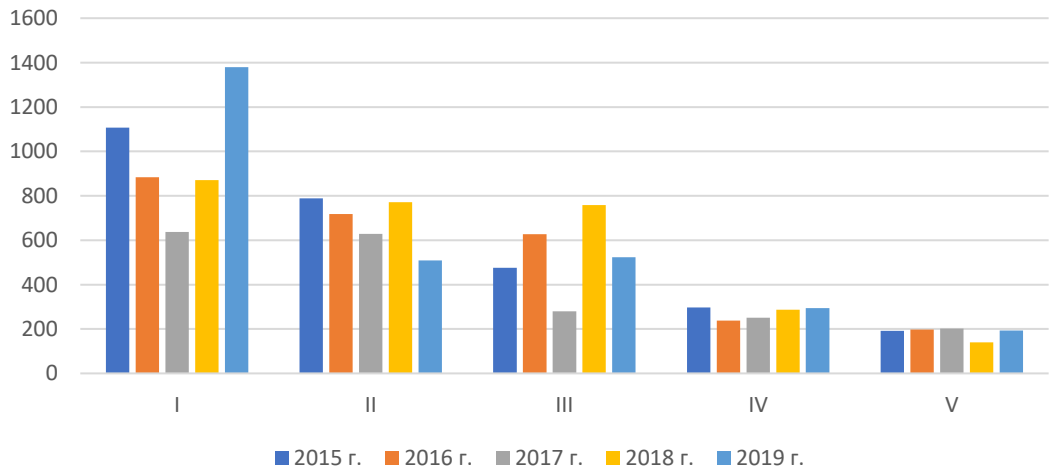
Collected data in Excel format

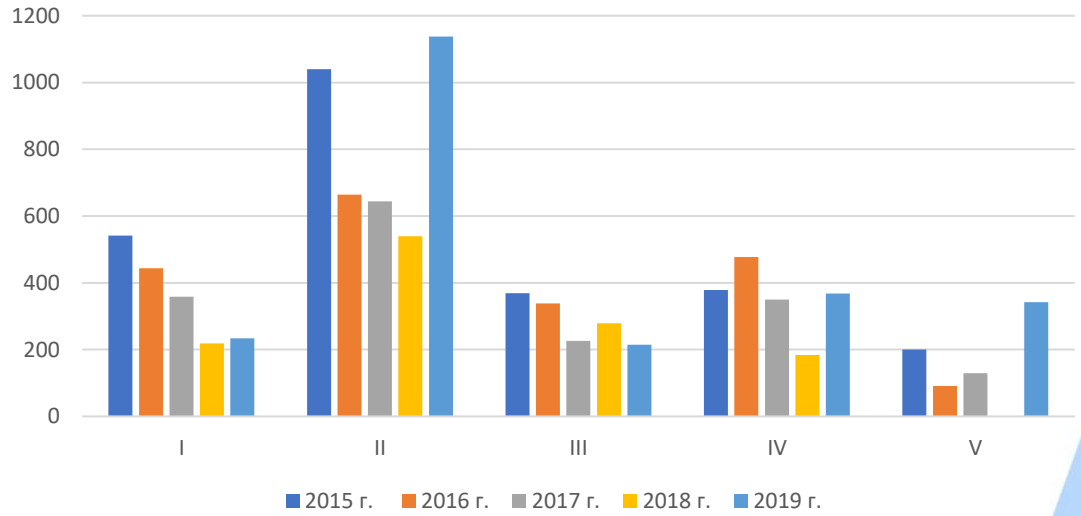


The average cost of construction of 1 km 1 lane of road

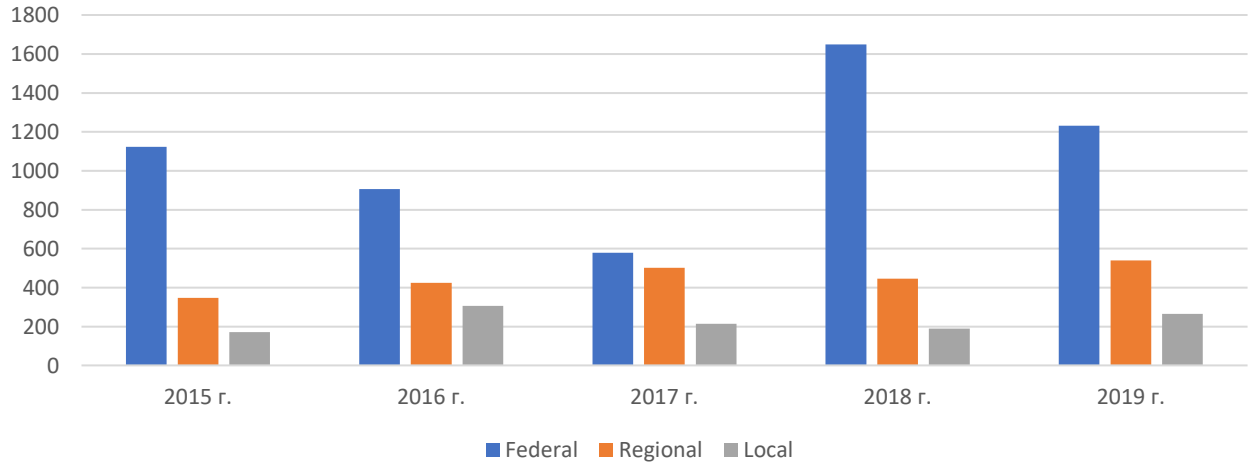
The average cost of construction of 1 km of 1 lane of a highway, depending on the category of the highway, K US dollars



The average cost of construction , depending on the road-climatic zone of the highway, K US dollars



The average cost of construction of 1 km of 1 lane of a highway, depending on the level of the highway, K US dollars



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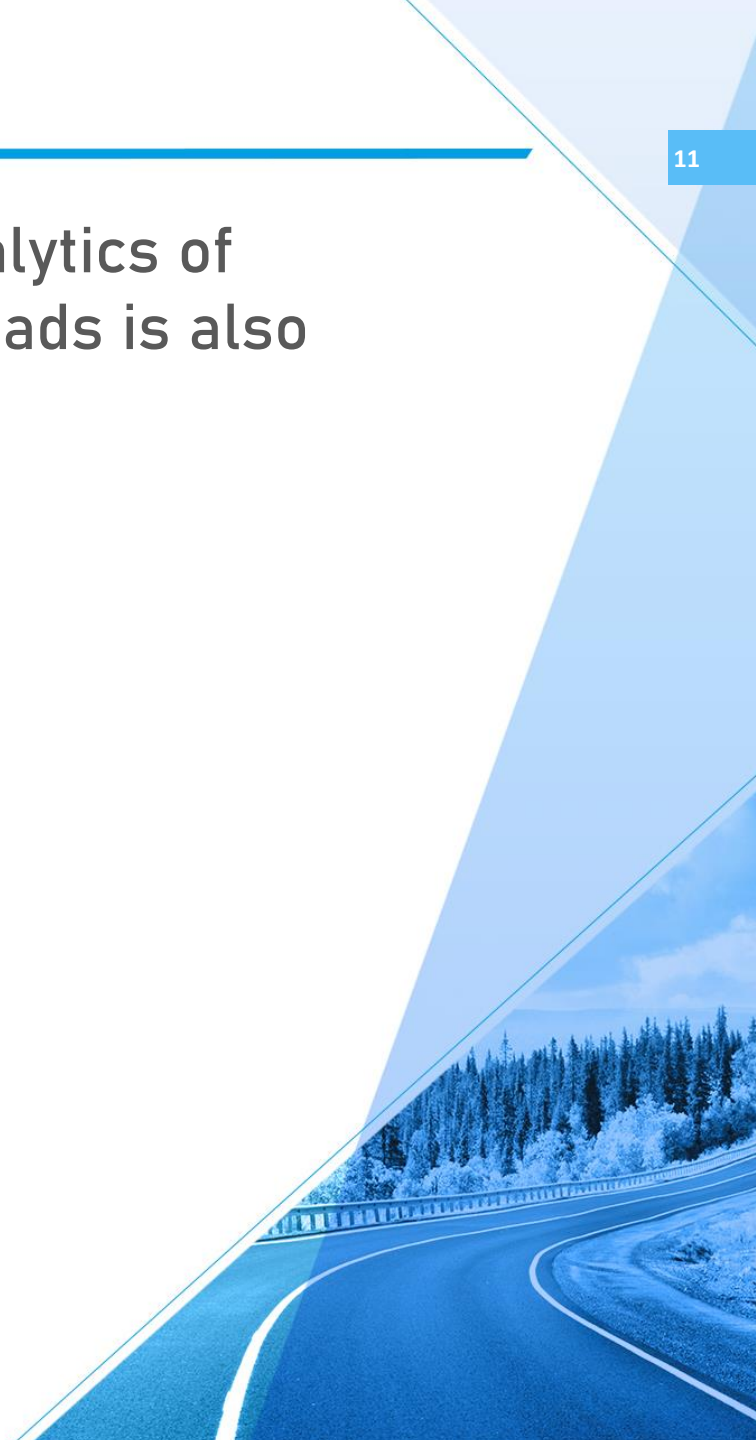
Monitoring the cost of 1 km of public roads

During the analysis of the Monitoring of the cost of 1 km, analytics of factors affecting the cost of construction of 1 km of public roads is also carried out:

- selecting deviant objects
- request for information (if necessary)
- analysis of the received information



Monitoring the cost of 1 km of public roads

Regression model:

- the primary information is converted into multidimensional arrays;
- a multidimensional regression equation is generated;
- the influence of changes in independent variables on changes in dependent variables is determined

$$y = a + b_1 x_1 + b_2 x_2 + \ldots + b_p x_p$$

It includes the collection, processing, analysis and evaluation of information about the cost of price-forming resources

Price-forming construction resources:

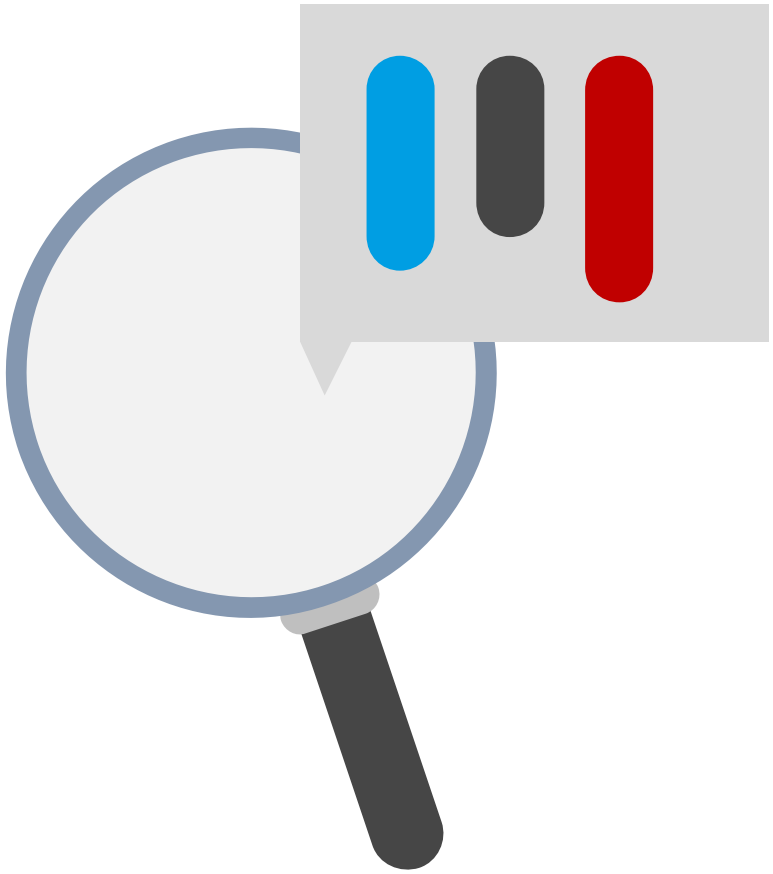
material resources
(sand, crushed stone, asphalt concrete, etc.)

technical resources
(specialized construction equipment used in road construction)

labor resources
(average monthly salary of a first-class worker employed in the construction industry)

80% of the total estimated cost of road works is made up of price-forming construction resources

Monitoring the prices of construction resources



tracking prices of price-forming construction resources by checking price lists and direct data requests from manufacturing companies and supplier companies

requests to the subjects of the Russian Federation formed in the information systems of the Ministry of Transport of the Russian Federation, as well as requests in writing

information published in open sources (Internet)

Monitoring of resource availability

Monitoring of resource availability is the process of collecting, aggregating, structuring, calculating and analyzing data and information on the volume of demand and production of price-forming road construction resources in the context of the subjects of the Russian Federation with subsequent assessment of indicators

THE PURPOSE OF MONITORING RESOURCE AVAILABILITY

monitoring the sufficiency of the main road construction resources and forming proposals and recommendations for optimizing their delivery to the subjects of the Russian Federation

MONITORING TASKS

- collection and analysis of actual and forecast data on the volume of production and consumption of the main price-forming construction resources
- assessment of the resource availability of the subjects of the Russian Federation with the main price-forming construction resources

Monitoring of resource availability

The determination of the need for price-forming resources is carried out in order to predict their necessary volume for the construction, reconstruction, capital repairs and current repairs of highways for the planned period with quarterly data clarification.

As part of the monitoring of resource availability, data is collected in the following areas:

01

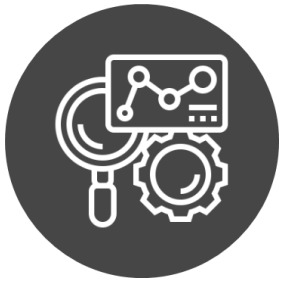
Requirement

planned and actual consumption of price-forming resources

02

Production

production capacities and production volumes of price-forming resources



03

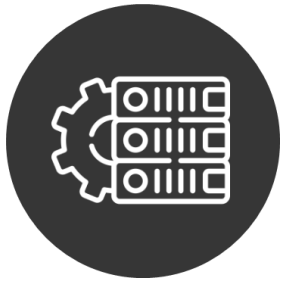
Warehouse

storage capacities used for storage and transshipment of price-forming resources

04

Machinery

equipment of road construction equipment



05

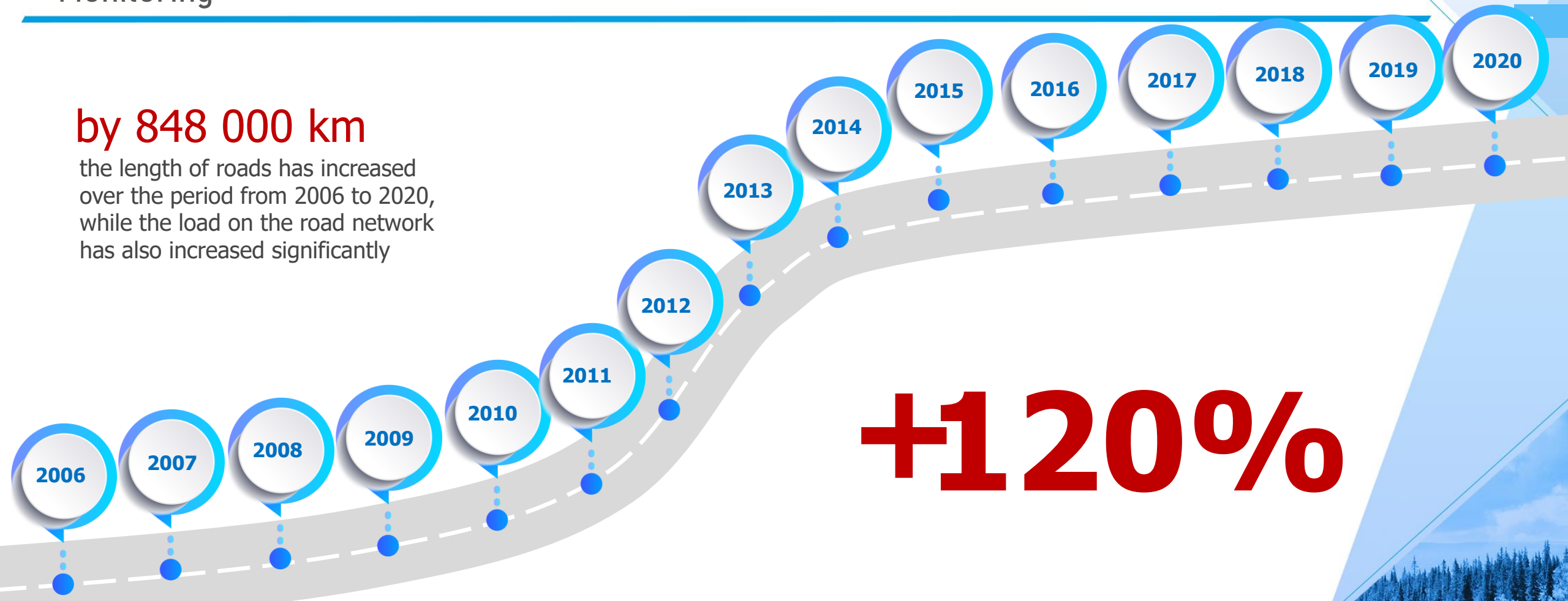
Logistics

supplies of price-forming resources between the subjects of the Russian Federation

Monitoring

by 848 000 km

the length of roads has increased over the period from 2006 to 2020, while the load on the road network has also increased significantly



+120%

In the Russian Federation, the practice of using the best technologies and modern materials in the construction, reconstruction, capital and current repairs of highways is growing every year

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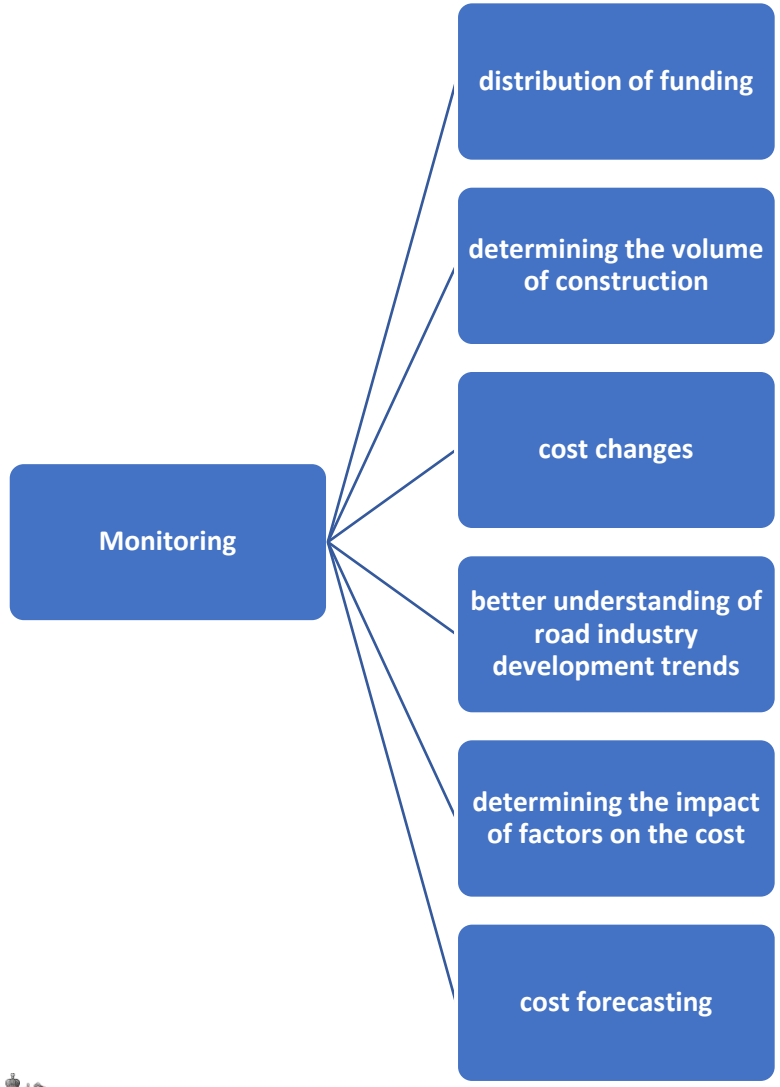
Monitoring



The results of comprehensive monitoring allow the subjects of the Russian Federation, federal executive authorities, customers, contractors to carry out more effective budget planning when implementing construction (reconstruction), capital repairs, maintenance of road industry facilities and only when interacting with the subjects and receiving timely, up-to-date and reliable information from them, the estimated cost of the objects will correspond to the actual costs of the SMR and, as a result, the work will be performed qualitatively and in a timely manner, this will lead to the successful implementation of national projects.

Implementation of a software platform for monitoring resource availability

TIM Technologies:

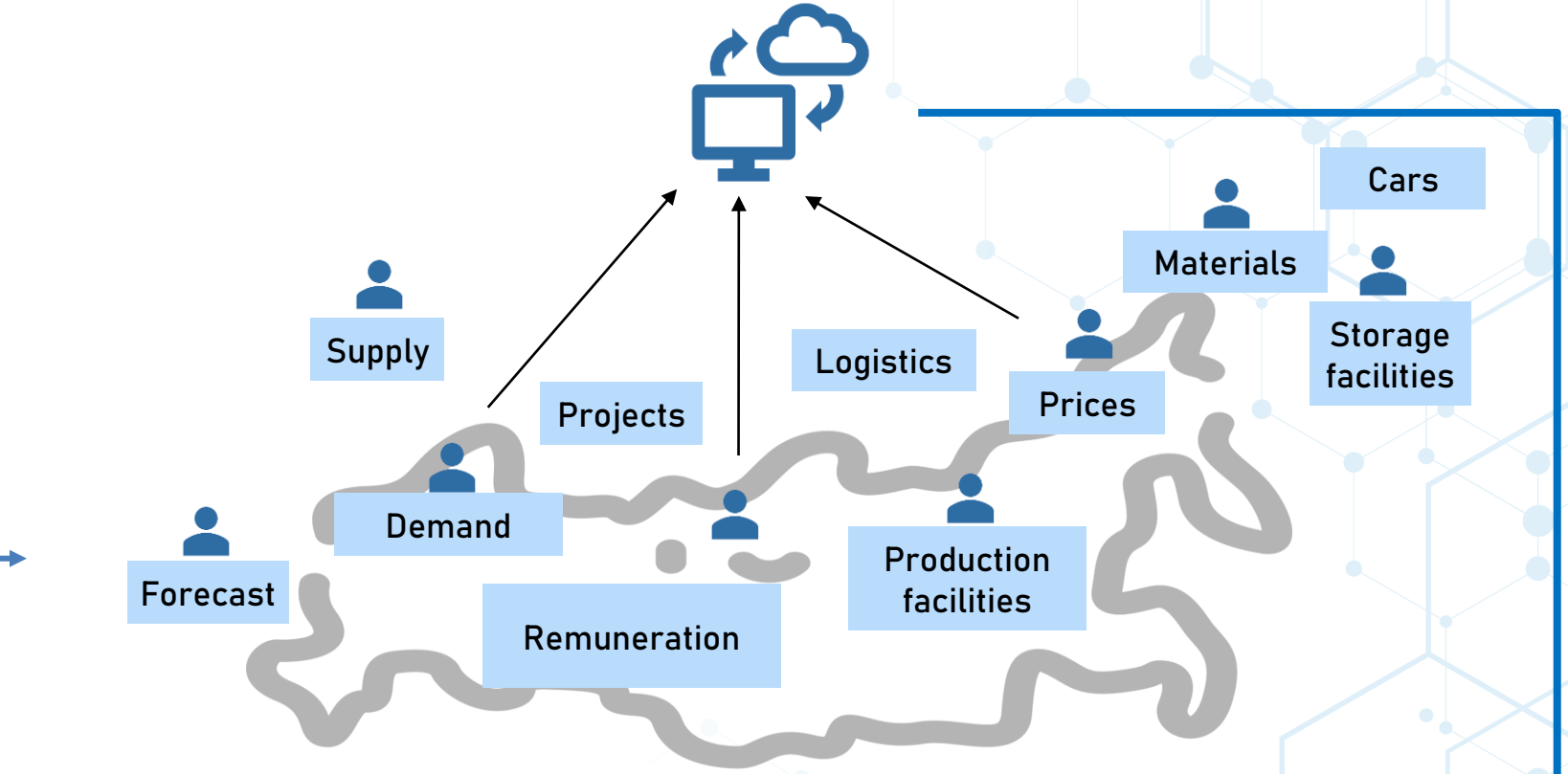
- Exchange platform
- Automation of information collection and aggregation
- Volumes and cost of construction resources
- Creating and maintaining a database

Corporate culture of the participants:

- Education
- Cooperation

Regulatory and legal regulation:

- Monitoring procedure
- Functions and responsibilities of participants, forms and frequency of providing information



FEDERAL STATE INFORMATION SYSTEM OF PRICE FORMATION IN CONSTRUCTION

Package of prices for construction resources

РОСДОРНИИ

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