

EAP Task Force



JOINT MEETING OF

**THE EAP TASK FORCE'S GROUP OF SENIOR OFFICIALS ON THE REFORMS OF THE WATER
SUPPLY AND SANITATION SECTOR IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA**

THE EU WATER INITIATIVE'S EECCA WORKING GROUP

**MONITORING OF THE SYSTEM OF WATER SUPPLY AND
WASTEWATER IN THE RUSSIAN FEDERATION**

DOCUMENT 2

PARIS 2007

TABLE OF CONTENTS

INTRODUCTION	8
SUMMARY OF THE REPORT. THE STATE OF THE WATER SUPPLY AND WASTEWATER SECTOR IN RUSSIA AND THE BASIC TRENDS IN ITS DEVELOPMENT IN 2000-2005	10
1. GENERAL INFORMATION ABOUT THE WATER SUPPLY AND WASTEWATER SECTOR IN THE RUSSIAN FEDERATION	13
1.1 THE STRUCTURE OF THE WATER SUPPLY AND WASTEWATER SECTOR BY THE FORMS OF PROPERTY.....	14
1.2 TARIFF REGULATION OF WATER SUPPLY AND WASTEWATER ENTERPRISES	16
1.2.1 Tariff regulation before 2006	16
1.2.2 Present tariff regulation	17
1.3 SOURCES OF INFORMATION ABOUT THE RESULTS OF OPERATION OF WATER SUPPLY AND WASTEWATER ENTERPRISES.....	18
2. CHARACTERIZATION OF INDICATORS OF ECONOMIC ACTIVITIES OF THE RUSSIAN FEDERATION WATER SUPPLY AND WASTEWATER ENTERPRISES.....	19
2.1 COVERAGE OF POPULATION BY SERVICES.....	19
2.1.1 Coverage by water supply services	19
2.1.2 Coverage by wastewater services.....	24
2.2 WATER USE AND PRODUCTION	27
2.2.1 Water production.....	27
2.2.2 Water use.....	29
2.3 WATER GIVING NO INCOMES	40
2.4 USING THE WATER METERS	45
2.5 THE CONDITION OF NETWORKS	46
2.5.1 The condition of water supply networks	46
2.5.2 The condition of sewerage networks.....	49
2.6 OPERATIONAL COSTS AND STAFF	50
2.6.1 Operational costs	50
2.6.2 Structure of expenses.....	53
2.6.3 Staff	57
2.7 QUALITY OF SERVICES.....	64
2.7.1 Uninterruptible services.....	64
2.7.2 Quality of supplied water	66
2.7.3 Complaints about quality of services provided by the water supply and wastewater facilities	67
2.7.4 Quality of wastewater treatment.....	67
2.8 BILLING AND COLLECTION OF FEES	69
2.8.1 Incomes of enterprises.....	69
2.8.2 Comparison of tariffs for individual categories of users.....	78

2.8.3 Period and level of collection of fees	85
2.9 FINANCIAL OUTCOMES	86
2.10 ASSETS OF THE ENTERPRISES	89
3. DESCRIPTION OF IDENTIFIED AND POTENTIAL DRAWBACKS OF THE COLLECTED DATA.....	91
4. RECOMMENDATIONS FOR ENSURING STABLE MONITORING OF OPERATION OF COMMUNAL ENTERPRISES	92

TABLE OF FIGURES

Fig. 1. Structure of water supply to all categories of users by the forms of ownership in the water supply organizations	15
Fig. 2. Structure of water supply to population by the forms of ownership in the water supply organizations	15
Fig. 3. Structure of wastewater received from all categories of users by the forms of ownership in the sewerage organizations	16
Fig. 4. Structure of wastewater received from population by the forms of ownership in the sewerage organizations	16
Fig. 5. Indicator 1.1. Coverage by water supply services	20
Fig. 6. Indicator 1.1. Coverage by water supply services	21
Fig. 7. Indicator 1.2. Coverage by water supply services (connected population)	21
Fig. 8. Indicator 1.3. Coverage by water supply services (common water supply points)	22
Fig. 9. Additional indicator. The share of population centres with water pipelines, in the total number of population centres	22
Fig. 10. Additional indicator. The share of the housing facilities, equipped with water pipelines, generally for the Russian Federation	23
Fig. 11. Grouping of the Russian Federation regions by the indicator “The share of the housing facilities, equipped with water pipelines, 2003	23
Fig. 12. Russian regions with the highest indicator “The share of the housing facilities, equipped with water pipelines”, 2003	24
Fig. 13. Russian regions with the highest indicator “The share of the housing facilities, equipped with water pipelines”, 2003	24
Fig. 14. Indicator 2.1. Coverage by sewerage systems	25
Fig. 15. Indicator 2.1. Coverage by sewerage systems	25
Fig. 16. Additional indicator. The share of the population centres, equipped with sewerage systems [reports]	26
Fig. 17. Additional indicator. The share of the housing facilities, equipped with sewerage systems	26
Fig.18. Grouping of the Russian Federation regions by the indicator “The share of the housing facilities, equipped with sewerage systems, 2003	27
Fig. 19. Indicator 3.1. Water production	28

Fig. 20. Indicator 3.1. Water production	28
Fig. 21. Indicator 3.2. Water production	29
Fig. 22. Indicator 4.1. Water use	29
Fig. 23. Indicator 4.1. Water use	30
Fig. 24. Indicator 4.2. Water use	30
Fig. 25. Indicator 4.3. The share in the total water use: population	31
Fig. 26. Indicator 4.3. The share in the total water use: population	31
Fig. 27. Indicator 4.4. The share in the total water use: commercial enterprises	32
Fig. 28. Indicator 4.4. The share in the total water use: commercial enterprises	32
Fig. 29. Indicator 4.5. The share in the total water use: budgetary organizations	33
Fig. 30. Indicator 4.5. The share in the total water use: budgetary organizations	33
Fig. 31. Indicator 4.6. The share in the total water use: supply to outside organizations	34
Fig. 32. Indicator 4.6. The share in the total water use: supply to outside organizations	34
Fig. 33. Indicator 4.7. Water use by population	35
Fig. 34. Indicator 4.7. Water use by population	35
Fig. 35. Grouping of the Russian Federation regions by the indicator 4.7 “Water use by population”	36
Fig. 36. Russian regions with the highest decrease of the actual water use by population	36
Fig. 37. Russian regions where the volume of actual water use by population in 2005 exceeded the level of 2000	37
Fig. 38. Additional indicator. Standardized water use rate	37
Fig. 39. Additional indicator. The ratio between the actual water use and the set water use rate	38
Fig. 40. Grouping of the Russian Federation regions by the additional indicator “The ratio between the actual water use and the set water use rate”	39
Fig. 41. Indicator 4.8. Water use by population: connected population	39
Fig. 42. Indicator 4.9. Water use by population: common water supply points	40
Fig. 43. Indicator 6.1. Water giving no incomes: the share of the total amount of water supplied to the network	41
Fig. 44. Grouping of the regions by the indicator “The share of water giving no incomes, from the total amount of water supplied to the network”	41
Fig. 45. Regions with the highest indicator “The share of water giving no incomes, from the total amount of water supplied to the network”, 2005	42
Fig. 46. Grouping of capitals of the Russian Federation subjects by the indicator “The share of water giving no incomes, from the total amount of water supplied to the network”	42
Fig. 47. Indicator 6.1. Water giving no incomes: the share of the total amount of water supplied to the network	43
Fig. 48. Indicator 6.2. Water giving no incomes: per km of the network per day	43
Fig. 49. Indicator 6.2. Water giving no incomes: per km of the network per day	44
Fig. 50. Indicator 6.3. Water giving no incomes: per connection point per day	44
Fig. 51. Indicator 7.1. Level of measurement	45
Fig. 52. Indicator 8.1. The share of measured sold water	45
Fig. 53. Additional indicator. The share of networks requiring replacement from the total length of water pipelines and street water supply network	46
Fig. 54. Grouping of the Russian Federation regions by the indicator “The share of networks requiring replacement from the total length of water pipelines and street water supply network”	47
Fig. 55. Indicator 9.1. Accidents in the water supply networks	48

Fig. 56. Indicator 9.1. Accidents in the water supply networks	48
Fig. 57. Indicator 10.1. Accidents in sewerage networks	49
Fig. 58. Indicator 10.1. Accidents in sewerage networks	49
Fig. 59. Indicator 11.1. Operational costs per unit of production: for supply	50
Fig. 60. Indicator 11.2. Operational costs per unit of production: for production	50
Fig. 61. Indicator 11.2. Operational costs per unit of production: for production	51
Fig. 62. Indicator 11.3. Operational costs per unit of production: water supply	51
Fig. 63. Indicator 11.4. Breakdown of operational costs: % of water supply	52
Fig. 64. Indicator 11.5. Breakdown of operational costs: % of sewerage	52
Fig. 65. Indicator 11.6. Operational costs per unit of production: sewerage	53
Fig. 66. Indicator 13.1. Share of salary expenses	54
Fig. 67. Indicator 13.1. Share of salary expenses	54
Fig. 68. Indicator 13.2. Share of electricity expenses	55
Fig. 69. Indicator 13.2. Share of electricity expenses	55
Fig. 70. Indicator 14.1. Share of expenses related to subcontracts	56
Fig. 71. Indicator 14.1. Share of expenses related to subcontracts	57
Fig. 72. Indicator 12.1. Water supply employees per 1000 connection points to water supply networks	57
Fig. 73. Indicator 12.2. Water supply and wastewater employees: per 1000 connection points to water supply and sewerage systems	58
Fig. 74. Indicator 12.3. Water supply employees per 1000 serviced persons	58
Fig. 75. Indicator 12.3. Water supply employees per 1000 serviced persons	59
Fig. 76. Indicator 12.4. Water supply and wastewater employees: per 1000 persons serviced by water supply and wastewater enterprises	59
Fig. 77. Indicator 12.4. Water supply and wastewater employees: per 1000 persons serviced by water supply and wastewater enterprises	60
Fig. 78. Indicator 12.5. Wastewater employees: per 1000 connection points to sewerage systems	60
Fig. 79. Indicator 12.6. Wastewater employees: per 1000 serviced persons	61
Fig. 80. Indicator 12.7. Water supply employees: % of the total number of employees of the water supply and wastewater facilities	61
Fig. 81. Indicator 12.7. Water supply employees: % of the total number of employees of the water supply and wastewater facilities:	62
Fig. 82. Indicator 12.8. Wastewater employees: % of the total number of employees of the water supply and wastewater facilities	63
Fig. 83. Indicator 12.8. Wastewater employees: % of the total number of employees of the water supply and wastewater facilities	63
Fig. 84. Indicator 15.1. Uninterruptible services	64
Fig. 85. Grouping of the Krasnodar Territory enterprises by the period of uninterrupted water supply	65
Fig. 86. Indicator 15.2. % of users with interrupted water supply [sample]	65
Fig. 87. Indicator 15.3. Quality of supplied water: number of checks for residual chlorine	66
Fig. 88. Indicator 15.4. Quality of supplied water: tests complying with to the residual chlorine standard	66
Fig. 89. Indicator 16.1. Complaints about quality of services provided by the water supply and wastewater facilities	67
Fig. 90. Indicator 17.1. The share of treated wastewater	68

Fig. 91. Indicator 17.2. Wastewater: primary treatment	68
Fig. 92 . Indicator 17.3. Wastewater: secondary and in-depth treatment	69
Fig. 93. Indicator 18.1. Average incomes of water supply and wastewater enterprises per cubic metre of water	69
Fig. 94. Indicator 18.1. Average incomes of water supply and wastewater enterprises per cubic metre of water	70
Fig. 95. Indicator 18.2. Average incomes of water supply and wastewater enterprises per connection to the water supply network	70
Fig. 96. Indicator 18.3. Average incomes from water supply per cubic metre of water	71
Fig. 97. Indicator 18.3. Average incomes from water supply per cubic metre of water	71
Fig. 98. Indicator 18.4. Share of incomes from water supply	72
Fig. 99. Indicator 18.4. Share of incomes from water supply	72
Fig. 100. Indicator 18.5. Share of incomes from sewerage	73
Fig. 101. Indicator 18.5. Share of incomes from sewerage	73
Fig. 102. Indicator 18.6. Share of incomes from population in the total incomes from water supply	74
Fig. 103. Indicator 18.6. Share of incomes from population in the total incomes from water supply	74
Fig. 104. Indicator 18.7. Share of incomes from commercial users in the total incomes from water supply	75
Fig. 105. Indicator 18.7. Share of incomes from commercial users in the total incomes from water supply	75
Fig. 106. Indicator 18.8. Share of incomes from budgetary organizations in the total incomes from water supply [reports]	76
Fig. 107. Indicator 18.8. Share of incomes from budgetary organizations in the total incomes from water supply	76
Fig. 108. Indicator 18.10. Incomes from sewerage services	77
Fig. 109. Indicator 18.10. Incomes from sewerage services	77
Fig. 110. Indicator 19.2. Water bill Share of incomes from budgetary organizations in the total incomes from water supply	78
Fig. 111. Additional indicator. The average Russian tariffs for water supply services	79
Fig. 112. Additional indicator. The average Russian tariffs for water supply services	80
Fig. 113. Additional indicator. The ratio of the tariff for population and the economically justified tariff for water supply and wastewater collection, average for Russia	80
Fig. 114. Grouping of regions by the ratio of tariffs for water supply for commercial users and population	81
Fig. 115. Grouping of regions by the ratio of tariffs for wastewater collection for commercial users and population	81
Fig. 116. The maximum ratio between tariffs for commercial users and population, all regions of Russia	82
Fig. 117. Indicator 21.1. The ratio between tariffs for industrial users and population	83
Fig. 118. Indicator 21.1. The ratio between tariffs for industrial users and population	83
Fig. 119. Indicator 21.2. The ratio between tariffs for industrial users and population: water supply	84
Fig. 120. Indicator 21.3. The ratio between tariffs for industrial users and population: wastewater collection	84
Fig. 121. Indicator 23.1. Period of fee collection	85

Fig. 122. Indicator 23.1. Period of fee collection	85
Fig. 123. Indicator 23.2. Collection of fees	86
Fig. 124. Indicator 24.1. Compensation of operational costs	87
Fig. 125. Indicator 24.1. Compensation of operational costs	87
Fig. 126. Additional indicator “The ratio between incomes and expenditures related to the basic type of activities”	88
Fig. 127. Grouping of the regions by the indicator “The ratio between incomes and expenditures related to the basic type of activities”	88
Fig. 128. Indicator 27.1. Gross value of fixed assets: water supply and sewerage	89
Fig. 129. Indicator 27.2. Gross value of fixed assets: water supply	89
Fig. 130. Indicator 27.3. Gross value of fixed assets: sewerage	90

INTRODUCTION

This report is prepared by the outcomes of the project “Monitoring of the System of Water Supply and Wastewater in the Russian Federation and Tajikistan”, implemented by the Foundation “Institute for Urban Economics” from October 2006 through February 2007 on request of the Organization for Economic Cooperation and Development.

The goal of the project was to improve the system of monitoring of water supply and wastewater collection services in the project countries by making a comparative analysis of water supply and wastewater organizations and dissemination of the methods developed by the World Bank using a set of indicators.

The main task of the project was monitoring and comparative analysis of performance efficiency of water organizations in the Russian Federation and Tajikistan through:

- collection and processing of technical and financial data on the performance of water supply and wastewater organizations which took part in the previous surveys in this field; and
- building the capacity for collection of technical and financial data and ensuring their reliability within companies, operating in the water supply and wastewater sector in the specific country of this project by transferring to them the methods developed by the World Bank based on a set of indicators.

According to terms and conditions of the Technical Assignment for the project, monitoring and comparative analysis of performance efficiency were made in relation to water supply and wastewater organizations, located in the Krasnodar Territory and Perm Territory. This monitoring covered 48 Russian organizations, including 14 water supply and wastewater organizations of the Perm Territory and 34 water supply and wastewater organizations of the Krasnodar Territory. By the results of 2005, the monitored organizations provided 3.0% of the total amount of water to users and 3.1% of the total wastewater collection in Russia. These organizations employ 3.8% of the total staff working in the Russian water supply and wastewater sector. The length of the operated water supply and wastewater networks makes 3.4% and 3.1%, respectively, of the total Russian network. The organizations provide services to 4% of the population which has access to water supply services and 3.6% of the population which has access to wastewater services in Russia.

Given the fact that the task to characterize the Russian water supply and wastewater sector based on the information obtained only for one-thirtieth part of the sector was specified incorrectly, the Foundation “Institute for Urban Economics” supplemented the report, including information on the state and outcomes of operation of all water supply and wastewater organizations of the Russian Federation during 2000–2005, which was obtained as a result of

processing the official outcomes of the federal state statistical observations using forms 1-water supply, 1-wastewater collection and 22-zhkh (total for the water supply and wastewater sector).

Illustrations prepared by the results of processing of the above official statistical information for the Russian Federation in general include the word “reports” in their headings. Illustration prepared by the results of monitoring of water supply and wastewater organizations in the Perm Territory and Krasnodar Territory include the word “sample” in their headings.

SUMMARY OF THE REPORT. THE STATE OF THE WATER SUPPLY AND WASTEWATER SECTOR IN RUSSIA AND THE BASIC TRENDS IN ITS DEVELOPMENT IN 2000-2005

1. At the beginning of 2006, the water supply and wastewater sector of the Russian Federation provided water supply and wastewater collection services to 78% and 62% of the population, respectively. Centralized water supply was organized in 100% of the cities and towns, 97% of urbanized localities, and 38% of rural localities. Centralized wastewater collection was organized in 100% of the cities and towns, 79% of urbanized localities, and 5% of rural localities.
2. The bulk of communal resources and services produced in the Russian water supply and wastewater sector were provided by public and municipal enterprises. By the results of 2005, 61.4% of the total amount of water was provided to its users by municipal enterprises; the share of enterprises with other forms of property included only 12.7% of the water provided to users, of which 9.7% was provided by private enterprises. Compared to other communal sectors in Russia, the water supply and wastewater sector is characterized by a minimal participation of enterprises with private capital in the production and provision of communal resources and services.
3. The average amount of water production and use in Russia decreased by about one-third over 2000 to 2005, down to 402 litres per day and 328 litres per day per capita, respectively.
4. The main user of communal services and resources of the Russian water supply and wastewater sector is its population: the share of this category in the total amount of water used stably exceeds 60%, while the share of the budgetary users went down by more than 1/5, i.e. down to 12%, and the share of commercial users makes about 15%.
5. The average volume of water used by the population in Russia decreased by almost one-third, to 222 litres per day per capita; however, it still exceeds, rather stably, the similar indicator in most European countries. In 7 Russian regions the amount of water used by population does not exceed 100 litres per day, in 44 regions it makes from 100 to 2000 litres per day, in 36 regions it is from 200 to 300 litres per day, and only in one region, the federal city of Moscow, the amount of water use makes 391 litres per day per capita.
6. Over 2000–2005, expenditures of the Russian water supply and wastewater enterprises increased 3 times, from \$0.16 to \$0.44 per cubic metre of supplied water and from \$0.11 to \$0.32 per cubic metre of produced water. As regards the total amount of expenditures of the Russian water supply and wastewater enterprises, the basic share is constituted by expenditures related to water production and supply (57.9% by the results of 2005). As regards the structure of expenditures related to production and provision of water supply

and wastewater collection services, substantial changes have taken place, connected, *inter alia*, with the increased share of wages from 20% to 29%. The share of expenditures related to payment for electricity decreased insignificantly; the by the results of 2005 it made 16% of the total expenditures for production and provision of water supply and wastewater collection services.

7. The Russian water supply and wastewater sector is not devoid of some drawbacks; the main drawback is a stable deterioration of the condition of the enterprise fixed assets.
 - In 2005, 35% of the water supply networks and 29% of the wastewater collection networks used up their resources and needed replacement; in towns which are capitals of the Russian regions 41% of water supply networks needed replacement. Only in 4 regions of Russia, less than 15% of the water supply networks required replacement by the results of 2005; in 7 regions, from 15% to 25% of such networks were totally depreciated; in 71 regions the depreciation rate was from 25% to 50%; and in 2 regions half of the water supply networks required replacement.
 - Over 2000–2005, the loss of water in the water supply networks increased from 15.3% to 18.5% of the total amount of water supplied to the network; the number of Russian regions where the share of losses did not exceed 15% decreased from 49 to 29 over the same period of time, whereas the number of regions where the losses exceeded 25% increased from 6 to 18. In the Russian regional capitals, the situation is even more critical: only in 21 towns the losses did not exceed 15%, while in 26 capital cities the losses in the networks exceeded 25% of the total amount of water supplied to the water supply networks.
 - The high depreciation rate of the fixed assets in the water supply and wastewater sector resulted in a high level of accidents. Generally in Russia, 0.38 to 0.42 accidents were reported per kilometre of the water supply networks; the average accident rate in the regional capitals varied from 0.46 to 0.63 accidents/km of the network. As regards the wastewater collection networks, the accident rate increased from 0.18 to 0.22 accidents/km of the network.
8. Nevertheless, a number of positive changes were observed in the Russian water supply and wastewater sector during the analyzed period.
 - The amount and levels of cross subsidies of population by commercial users of communal services and resources decreased. While in 2000 the average tariff for population in Russian was a little more than 50% of the economically justified tariff (EJT), then by the results of 2005 the tariff for population increased to 87% of the EJT, whereas the ratio of tariffs for commercial users to the population decreased from 3.9 to 1.7. By the results of 2005, in 6 regions the tariff for water supply and in 7 regions the tariff for wastewater collection was made uniform for all categories of users. Over 2000–2005, the number of Russian regions where the tariff for commercial users is more than 3 times higher than for the population decreased from 51 to 4 for water supply and from 58 to 9 for wastewater collection. The minimal ratio of tariffs for commercial users and for the population in all Russian regions decreased from 13.75-fold to 3.9-fold for water supply and from 24.05-fold to 9.21-fold for wastewater collection.

- The period of collection of fees for water supply and wastewater services in Russia generally decreased from 151 days in 2000 to 89 days in 2005. The rate of fee collection over the last three years has always been about 97%–98% of the total amount of bills.
- Over 2000–2005, the ratio of receipts and expenditures for the basic activities of the water supply and wastewater enterprises increased from 84.9% to 96.6%. The number of Russian regions where receipts from the basic activities exceeded the expenditures related to basic activities of enterprises increased from 3 in 2000 to 23 by the results of 2005.
- The operation efficiency of water supply and wastewater enterprises' staff increased, hence, the number of workers at such enterprises decreased from 2.7 to 2.7 persons per 1000 users of water supply and wastewater collection services.
- The number of water meters increased too: by the results of 2006, water meters were installed at 61% of connections to water supply networks operated by all enterprises, and the indications of these meters were used to calculate bills for 80% of the water supplied to users.
- The level of users' satisfaction with quality of water supply and wastewater collection services also increased: in particular, over 2000–2005, at enterprises of the Krasnodar Territory and Perm Territory, which took part in the indicative surveys, the indicator, characterizing the number of complaints because of water supply and wastewater collection services quality per connection to the water supply and wastewater collection networks, decreased almost 3-fold, from 1.4% to 0.5%.

Undoubtedly, a positive change has been the approval and putting into force, as of 1 January 2006, of the federal law “On Principles of Regulation of Tariffs for Communal Sector Organizations”. This regulatory document specified the following at the federal level:

- Equality of access for enterprises of all forms of property to the market of production and provision of water supply and wastewater collection services;
- The uniform tariff regulations conditions for the communal sector enterprises of all forms of property;
- Mandatory monitoring of implementation of production and investment programmes by the organizations; and
- Mandatory checking by regulatory authorities of access to commodities and services provided by the communal sector to all categories of users.

1. GENERAL INFORMATION ABOUT THE WATER SUPPLY AND WASTEWATER SECTOR IN THE RUSSIAN FEDERATION

The water supply and wastewater facilities of the Russian Federation represent a complicated set of technological and engineering works, serviced by enterprises with different forms of property.

By the results of 2005, the centralized water supply services were provided in 68,414 population centres, including:

- 1,072 towns (100% of the total number of towns in the Russian Federation),
- 1,276 urbanized population centres (97%),
- 66,067 rural population centres (38%).

The coverage of population centres by wastewater collection services is smaller; by the results of 2005 9,059 population centres had access to these services, including:

- 1072 towns (100% of the total number of towns in the Russian Federation),
- 1088 urbanized population centres (79%),
- 6899 rural population centres (5%).

At the beginning of 2006, the total length of water supply networks in the Russian Federation was 511,124 km, including:

- 124,378 km of water lines (24.3% of the total length of the network)
- 325,733 km of street water lines (63.7%)
- 61,013 km of networks located within residential quarters and courtyards (11.9%).

For the same date, the length of wastewater collection networks reached 174,688 km, including:

- 45,164 km of main sewers (25.9%),
- 75,149 km of street sewerage networks (43%),
- 54,375 km of sewerage networks located within residential quarters and courtyards (31.1%)

The total installed production capacity of first stage pumping stations reached 111.3 million m³/day, the capacity of relift pumping stations reached 93.7 million m³/day, the capacity of water

treatment plants reached 45.87 million m³/day, and the capacity of water supply lines reached 84.53 sewerage networks.

The capacity of wastewater treatment plants made 59.18 million m³/day, including:

- 25.7 million m³/day of mechanical treatment plants, and
- 52.3 million m³/day of biological treatment plants.

By the results of 2005, the total amount of water supplied to the water supply networks made 17.651 billion m³. In the period the amount of received wastewater exceeded 14.394 billion m³.

The total average annual balance sheet value of production water supply and wastewater collection facilities reached 480.35 billion roubles (€ 13.96 billion), including 242.37 billion roubles (€ 7.05 billion) for the water supply sector and 237.98 billion roubles (€ 6.91 billion) for the wastewater sector.

Expenditures of water supply and wastewater collection enterprises related to the production and provision of services and resources to the users made 149.1 billion roubles (€ 4,33 billion), whereas their receipts over the same period made 144.1 billion roubles (€ 4,19 billion)

In 2005, the number of basic employees at the water supply and wastewater enterprises in the Russian Federation exceeded 469,000 persons, including 262,940 employees in the water supply sector and 206,160 in the wastewater sector. The Russian water supply and wastewater sector employees 0.33% of the total Russian population, or 0.70% of the average annual number of people employed in the national economy.

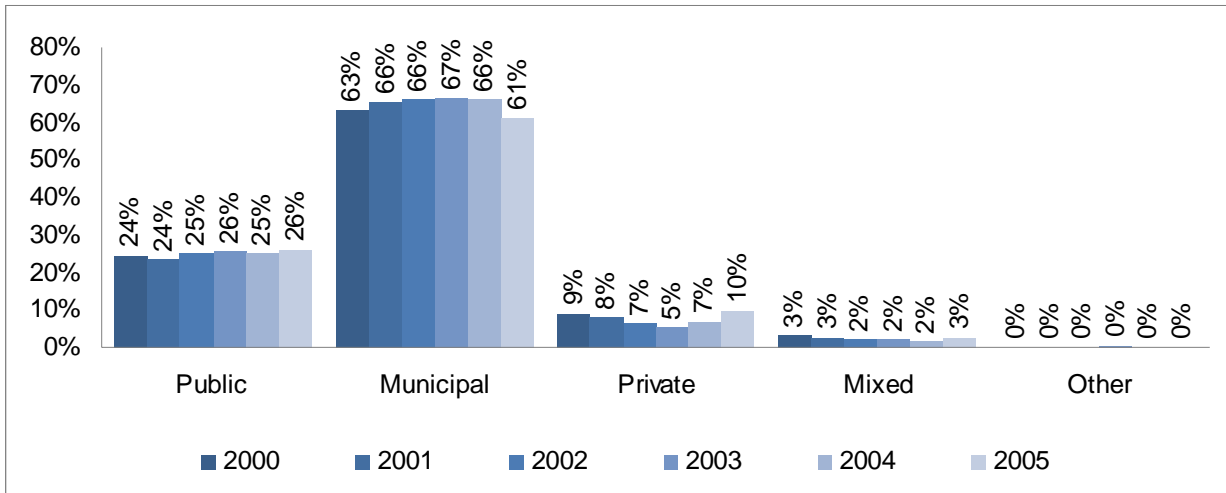
1.1 THE STRUCTURE OF THE WATER SUPPLY AND WASTEWATER SECTOR BY THE FORMS OF PROPERTY

The Russian Federation water supply and sewerage sector is represented basically by municipal enterprises. In particular, over 60% of the total amount of water supplied to all categories of users was provided by enterprises owned by local municipal authorities. The second place is taken by enterprises owned by the State; their share makes about one-fourth of the total amount of water supplied to all categories of users.

The role of the private water supply and sewerage enterprises remains insignificant; their share makes about one-tenth of the total amount of water supplied to all categories of users. Enterprises of mixed ownership (joint-stock companies) provide only 2-3% of the total amount of water. The share of enterprises with other forms of ownership (foreign enterprises, consumer cooperation enterprises, enterprises owned by civil organizations) makes less than 0.5% of the total amount.

In general, the structure of the sewerage sector corresponds to the structure of the water supply sector by the amount of services provided.

Fig. 1. Structure of water supply to all categories of users by the forms of ownership in the water supply organizations



Characterizing changes occurring in the structure of the water supply and sewerage sector of the Russian Federation in 2000-2005, it is necessary to note, above all, some increase of the role played by private enterprises, though rather insignificant. While in 2000-2003 the share of private enterprises was constantly decreasing, reaching by the results of 2003 the level of 5.3% of the total amount of water supplied to all categories of users and 5.6% of the total water supplied to population, then in the following 2 years the share of private enterprises increased almost 2 times, reaching 9.7% and 10.3%, respectively, in 2005.

In general, by the results of 2005, the share of enterprises with private capital (private enterprises and enterprises with mixed property) was 12.4% of the total amount of water supplied to all categories of users and 13.3% of the total water supplied to population. In the sewerage sector, by the results of 2005, the share of enterprises involving private capital was 12.4% of total amount of received wastewater and 12.3% of the amount of wastewater received from population.

Fig. 2. Structure of water supply to population by the forms of ownership in the water supply organizations

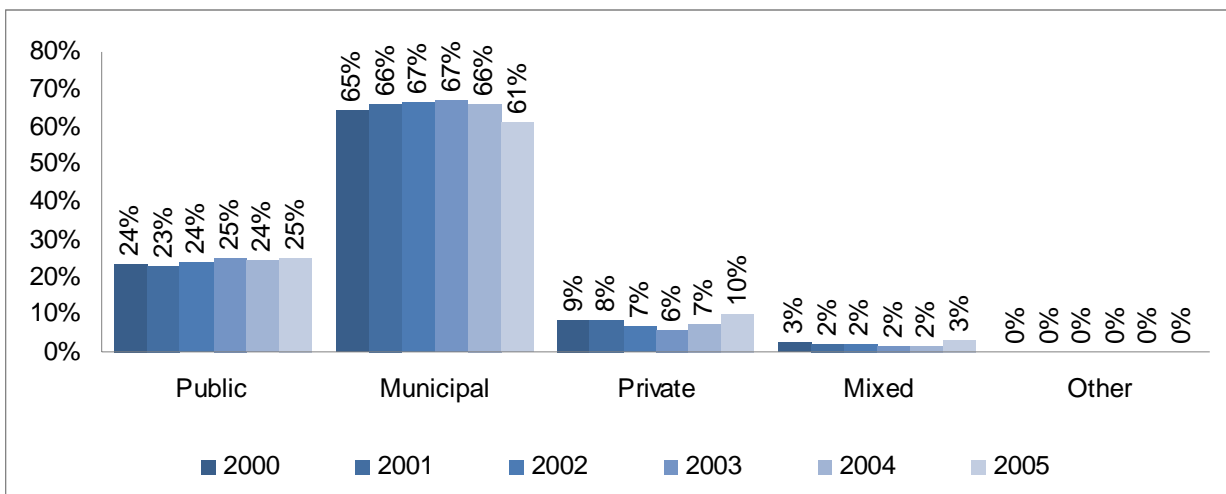


Fig. 3. Structure of wastewater received from all categories of users by the forms of ownership in the sewerage organizations

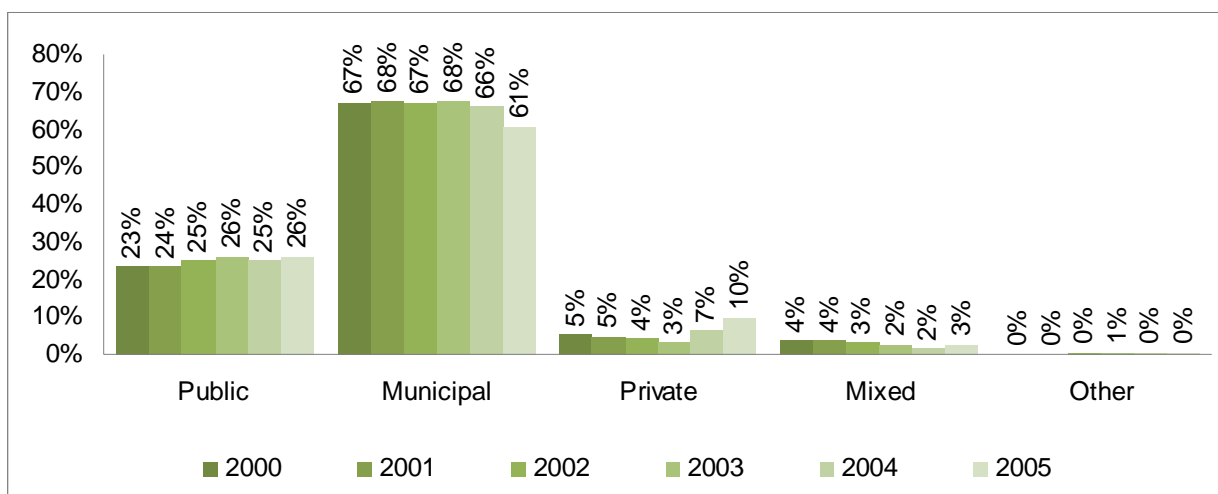
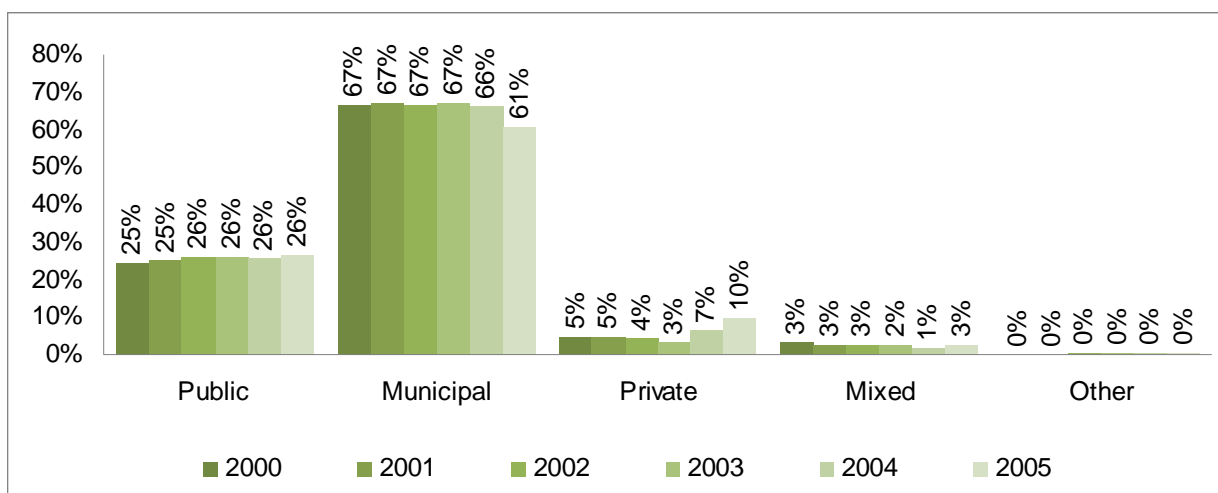


Fig. 4. Structure of wastewater received from population by the forms of ownership in the sewerage organizations



1.2 TARIFF REGULATION OF WATER SUPPLY AND WASTEWATER ENTERPRISES

1.2.1 Tariff regulation before 2006

The main principles of regulation of tariffs for commodities and services provided by the communal sector organizations, which were in force at the beginning of this decade and affected the results of operation of enterprises included into the indicative survey in 2000–2005, were defined by the Ordinance of the Russian Federation Government “On the Subprogram “The Reformation and Update of the Housing and Communal Sector in the Russian Federation”, integrated into the Federal Targeted Programme “Housing” for 2002–2010, as well as by the federal law “On Natural Monopolies”.

Tariffs were regulated at the federal, sub-federal and municipal levels. At the federal level, the main regulating authority was the Russian Federation Federal Service on Tariffs. At the regional level, tariffs were regulated by the executive authorities of the federation subjects, while at the municipal level they were regulated by the local self-government authorities.

It should be noted that the level of regulation in respect of water supply and wastewater enterprises was defined depending on the form of property of the regulated enterprise. Thus, tariffs for commodities and services of a municipal enterprise, operating on the right of economic management, were regulated by the local self-government authorities. If an enterprise had a form of property different from municipal property, then tariffs were regulated by executive authorities of the Russian Federation subject. This created serious, sometimes unsolvable, problems for involvement of private businesses into management of municipal facilities belonging to the communal infrastructure, since in such situation the local self-government authority could not undertake any tariff policy; if a municipal unitary enterprise was replaced by a private management company, then the powers were transferred to the executive authority of the subject of the Russian Federation.

1.2.2 Present tariff regulation

Today, tariffs of the Russian Federation water supply and sewerage enterprises are regulated according to the Federal Law of 30 December 2004, No. 210-FZ, “On the Principles of Tariff Regulation for Communal Sector Organizations” (with amendments dated 26 December 2005 and 29 December 2006), which came into force on 1 January 2006.

The general principles of tariff regulation, as specified by this Law, are:

- Uniformity of principles, methods and procedures of tariff regulation for the communal sector organizations, irrespective of their forms of ownership;
- Balancing the interests of users of commodities and service provided by the communal sector organizations with the interests of the mentioned organizations so as to ensure accessibility of these commodities and services for their users and effective operation of the communal sector organizations;
- Setting tariffs so as to ensure financial needs of the communal sector organizations, required for implementation of their production and investment programmes;
- Full reimbursement of costs of the communal sector organizations, related to implementation of their production and investment programmes;
- Specifying the conditions for mandatory changing of tariffs for commodities and services provided by the communal sector organizations;
- Ensuring accessibility of information on tariff regulation for users and other persons;
- Mandatory monitoring of outcomes of implementation of production and investment programmes by the communal sector organizations;
- Observing the procedures for determining the scope of work within the production and investment programmes, based on the demand for services, and subsequent determination of financial needs of the communal sector organizations for implementation of the mentioned production and investment programmes.

1.3 SOURCES OF INFORMATION ABOUT THE RESULTS OF OPERATION OF WATER SUPPLY AND WASTEWATER ENTERPRISES

Statistical observation over activities performed by the Russian Federation water supply and wastewater enterprises is made by collecting information using the following forms of statistical reporting:

- 1-water supply
- 1-wastewater collection
- 22- zhkh (total for the water supply and wastewater sector).

The first two forms were developed during Soviet time and since then their content has not practically changed. They present information characterizing respective engineering infrastructure facilities (the length of networks, including networks requiring replacement, the power of pumping stations and treatment plants), the scope of provided services and their structure by the types of users, the number of accidents in networks, the number of basic staff, etc. The above forms of statistical reporting are filled by the enterprises using the results of performance for the entire year.

The form of statistical reporting 22- zhkh (total) was introduced at the end of 1990-s and contains information characterizing economic outcomes of the water supply and wastewater enterprises by each type of services. *Inter alia*, the above form of statistical reporting contains information about the quantity and structure of receipts and expenditures of enterprises, the amount of budgetary funding and the volumes of provided services. Form 22-zhkh (total) is filled by the water supply and wastewater enterprises every three months (every quarter).

Until 2006, this form included information characterizing the tariffs for different categories of users, the norms of use of communal services by population, as well as the established and the actual level of payment for the housing and communal services by the population. Currently, this information is collected using a new form of governmental federal statistical reporting, 1-tariffs.

The indicators characterizing the access to communal resources for the housing facilities, in particular, the number of houses equipped with water lines and sewers, are included into the form of statistical reporting 1-housing facilities, filled by enterprises every 2 years.

Additional information characterizing the number of persons who receive preferences and subsidies when paying for housing and communal services, as well as budgetary expenditures related to such preferences and subsidies is included into forms 26-zhkh (preferences) and 22-zhkh (subsidies), filled by enterprises every quarter.

2. CHARACTERIZATION OF INDICATORS OF ECONOMIC ACTIVITIES OF THE RUSSIAN FEDERATION WATER SUPPLY AND WASTEWATER ENTERPRISES

2.1 COVERAGE OF POPULATION BY SERVICES

2.1.1 Coverage by water supply services

According to statistical reporting data, over 2000–2005 the general coverage of population by water supply services (**indicator**) in Russia increased from 72% to 78%. The main increase of population coverage by water supply services occurred in 2000–2001 (3% per annum), whereas in the subsequent years this indicator remained stable (see *Fig. 5*).

The centralized water supply services fully cover people living in urban population centres: according to form 1-water supply for 2005, 100% of towns had water pipelines (see *Fig. 9*). The centralized water supply coverage rate is smaller in urbanized population centres; however, the growth rate of coverage by this water supply service of people living in such population centres was more significant: over 1995–2000, the share of urbanized population centres which had water pipelines increased by 10%, from 83% to 93%, and the following years this indicator further increased by 1%, so, according to data of 2003 water pipelines were available in 94% of urbanized population centres. According to the statistical data for 2005, the coverage of urbanized population centres by water pipelines increased during 2004–2005 by additional 3%, reaching the level of 97%. People living in rural population centres have the lowest access to centralized water supply services: according to the results of 2005, these services were accessible only for 225 of villages, and, despite a significant growth in such services for rural population centres, the results of 2003 show that water pipelines were available only in 29% of such population centres. According to the statistical form 1-water supply, in 2005 water pipelines were available in 38% of rural population centres.

As regards access to water pipelines for housing facilities of the Russian Federation during the period of analysis, it was at a lower level. Generally, over 1993–2003, access to water pipelines by the housing facilities located in Russian population centres increased 71% to 75%; in 2003, the availability of water pipelines for the urban housing facilities was 87% and for rural housing facilities, 41% (see *Fig. 10*).

As regards Russian regions, according to the results of 2003 the majority of its regions (48 out of 88 regions) had the rate of access to water pipelines for housing facilities varying from 50% to 75%; in 20 regions this rate was from 75% to 90%, and only in 9 regions of Russian the rate of access to water pipelines for housing facilities exceeded 90%. These regions included federal cities of Moscow and St. Petersburg as well as two regions of the North-western Federal District (Kaliningrad and Murmansk Oblasts), two republics of the Southern Federal District (Ingushetia and North Ossetia) and one region in Siberia (Yamal-Nenets Autonomous Area) (see *Fig. 12*).

On the other side, there are regions where the rate of access to water pipelines for housing facilities is minimal. They include most of the autonomous areas of the Russian Federation, as well as regions of Siberia (Republic of Tyva, Republic of Altai, Chita Oblast) and the Russian South (Republic of Dagestan and Republic of Kalmykia) (see *Fig. 13*).

In the Krasnodar Territory and Perm Territory, where the indicative survey was organized, the coverage of population by water supply services (**indicator 1.1**) was higher than the average Russian level throughout all period of analysis, as shown by statistical reports (see *Fig. 5*). Thus, in the Krasnodar Territory this indicator reached 84% already by the results of 2001 (the average Russian indicator was 75%), while in subsequent years it went up to 93%. In the Perm Territory the coverage of population was less significant; however, it exceeded the average Russian level by 1%-2%, and by the results of 2003–2005 was at the level of 80%-81%. In general, for all enterprises included into the sample the coverage of population by water supply services was at the level of 88%-89% (*Fig. 6*). The coverage of population by centralized water supply services (**indicator 1.2**) for the enterprises included into the sample increased to 85% (*Fig. 11*), whereas the share of population receiving water through common water supply points (**indicator 1.3**) decreased from 6.8% to 5.6% (*Fig. 8*).

Fig. 5. Indicator 1.1. Coverage by water supply services (reports)

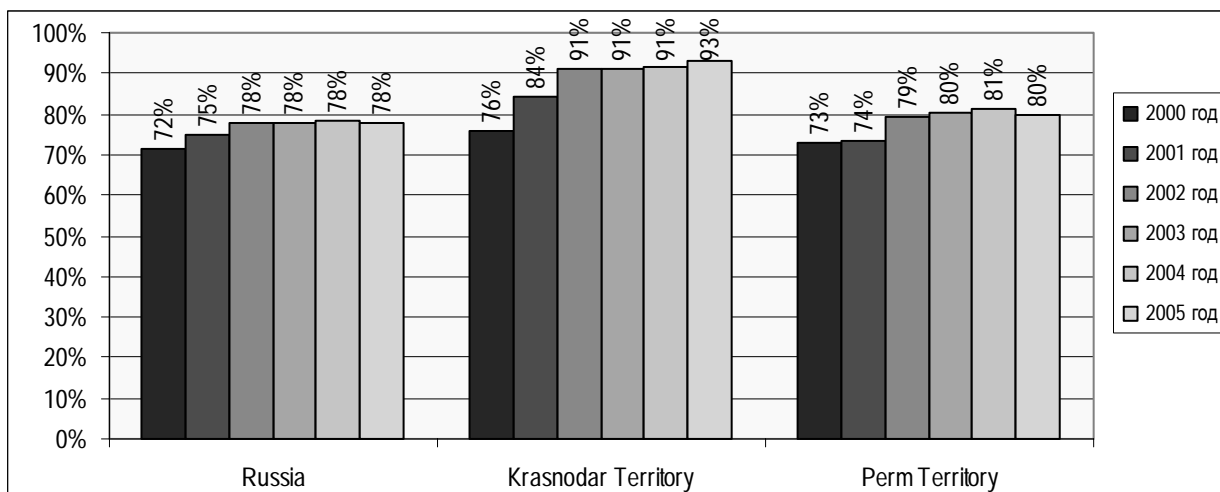


Fig. 6. Indicator 1.1. Coverage by water supply services [sample]

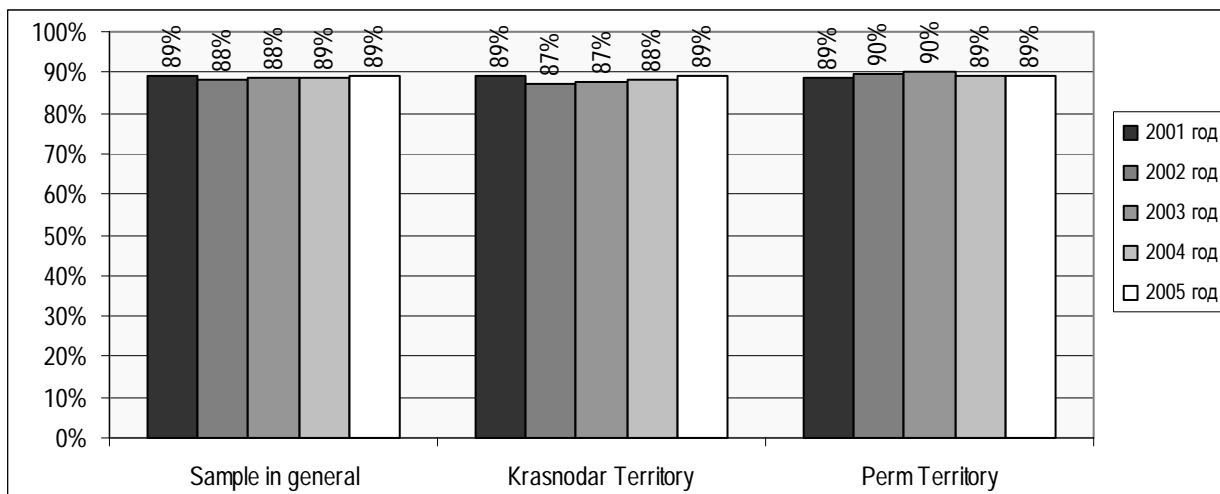


Fig. 7. Indicator 1.2. Coverage by water supply services (connected population) [sample]

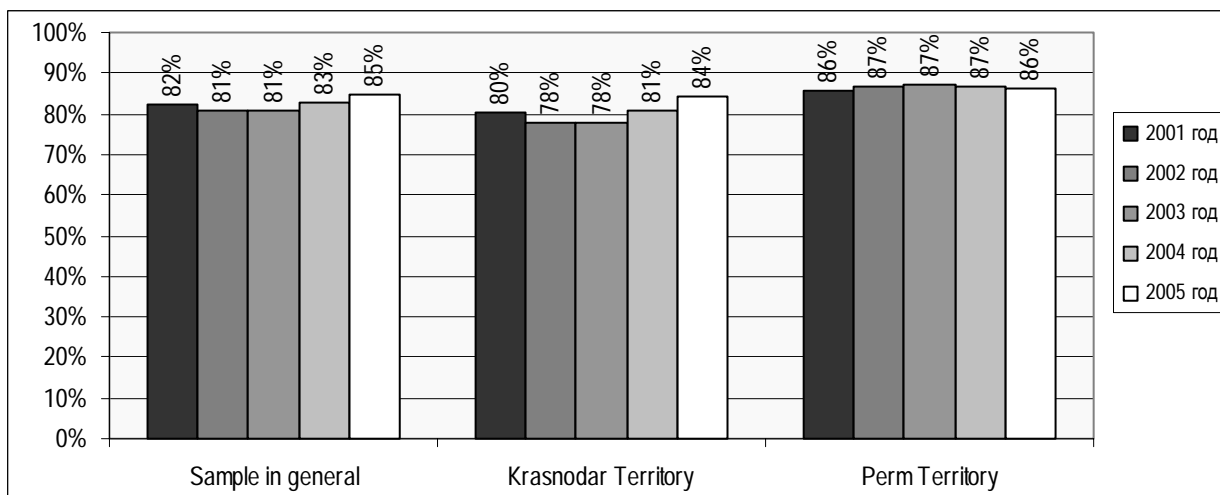


Fig. 8. Indicator 1.3. Coverage by water supply services (common water supply points) [sample]

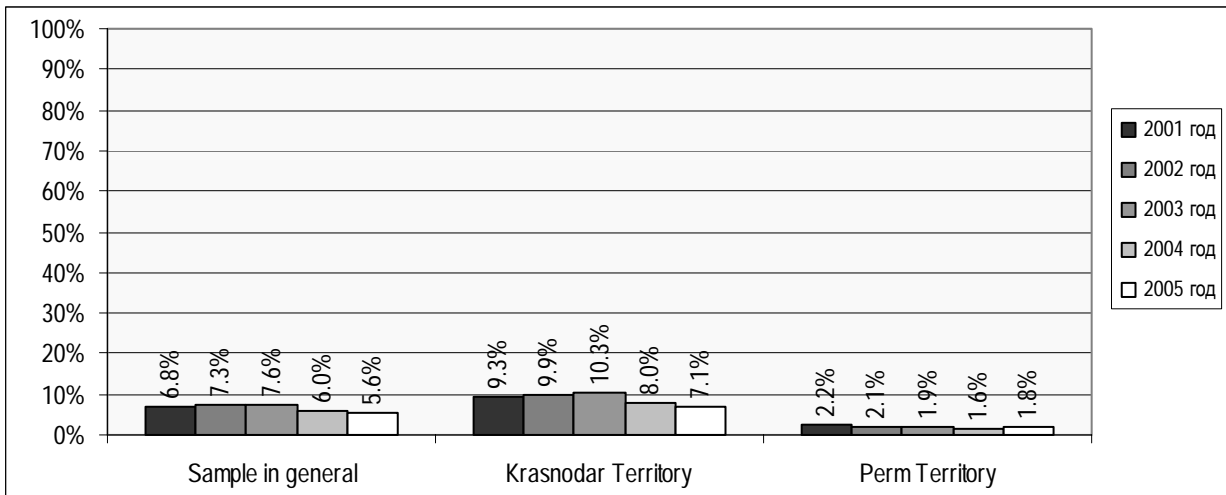
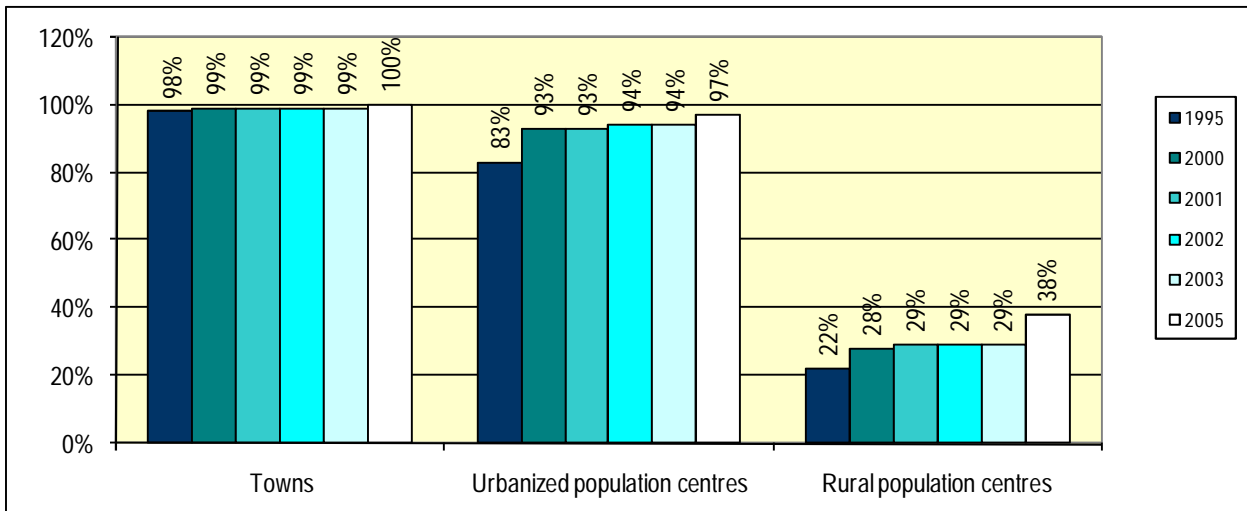
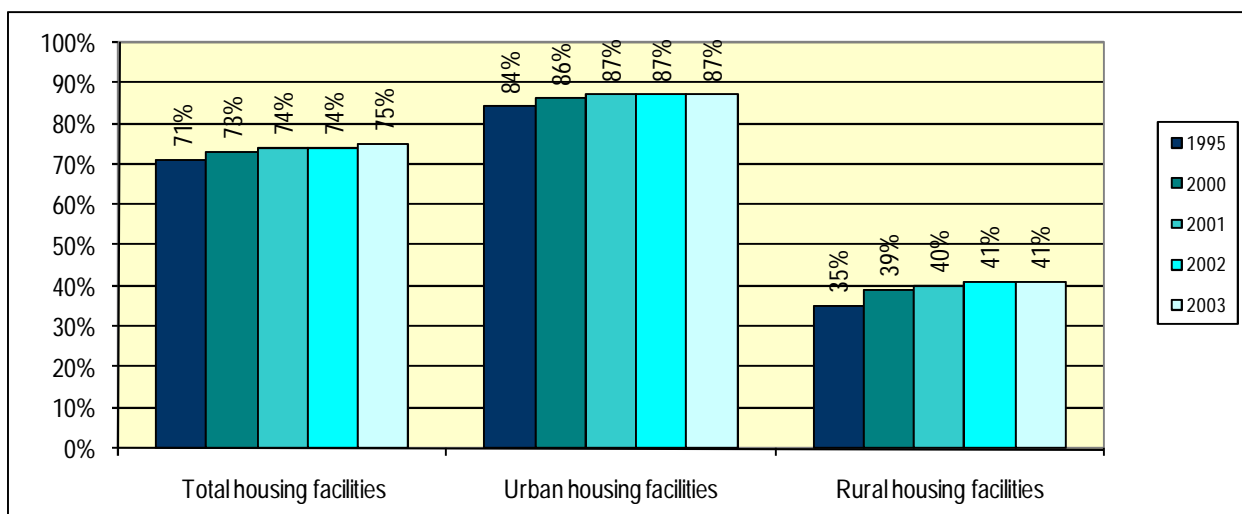


Fig. 9. Additional indicator. The share of population centres with water pipelines, in the total number of population centres [reports]



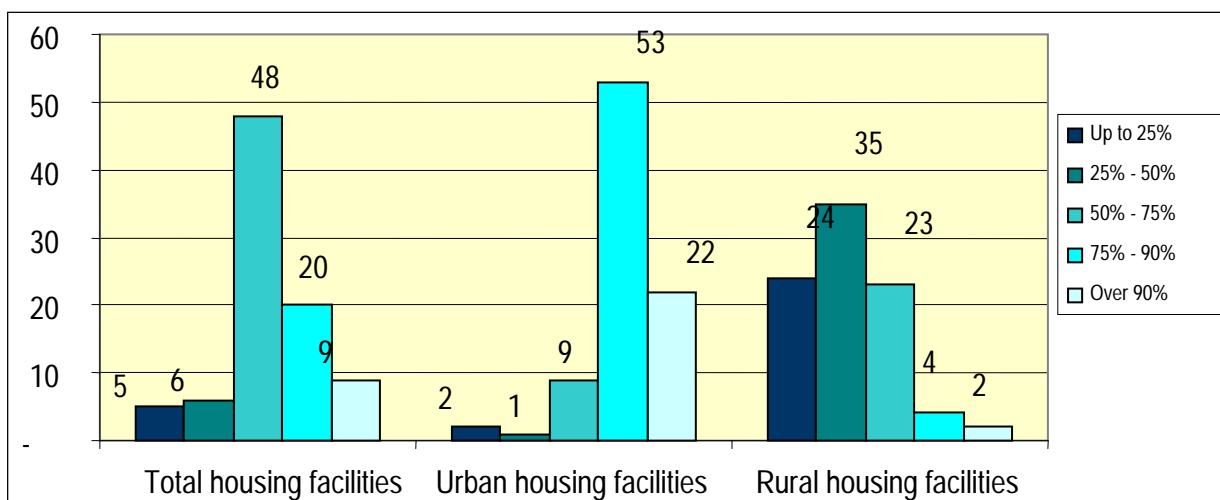
Source: Data for 1995–2003. Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.; Data for 2005: results of federal statistical observations according to form 1-water supply.

Fig. 10. Additional indicator. The share of the housing facilities, equipped with water pipelines, generally for the Russian Federation [reports]



Source: Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.

Fig. 11. Grouping of the Russian Federation regions by the indicator “The share of the housing facilities, equipped with water pipelines, 2003 [reports]



Source: Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.

Fig. 12. Russian regions with the highest indicator “The share of the housing facilities, equipped with water pipelines”, 2003 [reports]

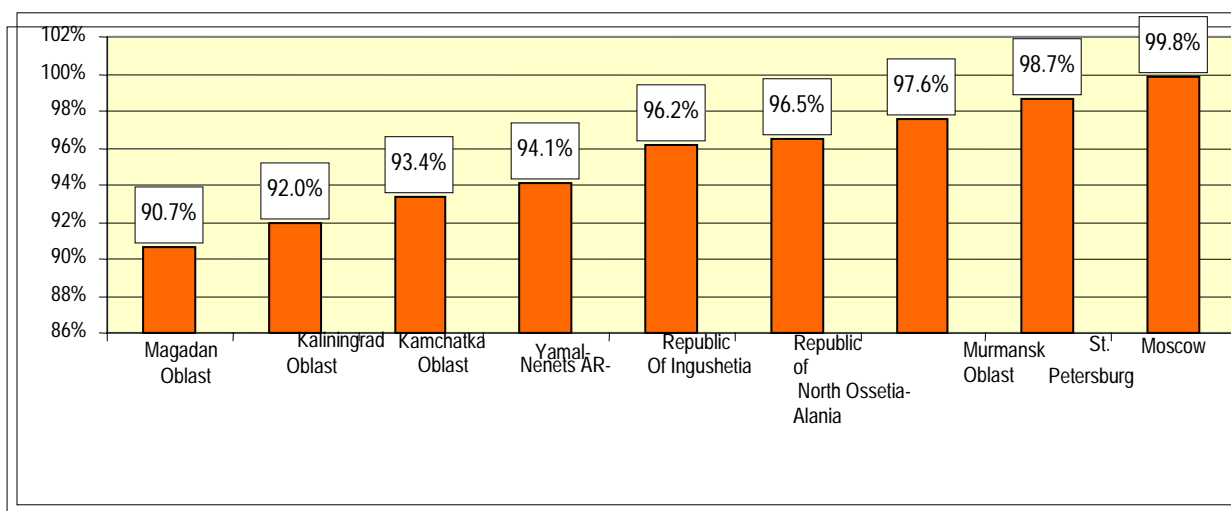
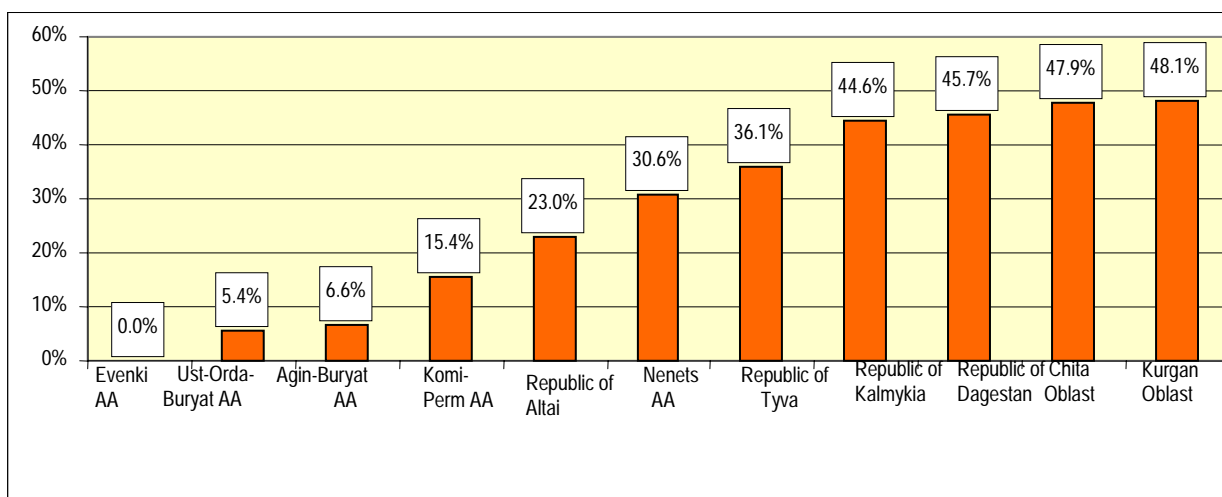


Fig. 13. Russian regions with the highest indicator “The share of the housing facilities, equipped with water pipelines”, 2003 [reports]



2.1.2 Coverage by wastewater services

Unlike water supply services, the coverage of population by wastewater collection services in Russia is at a very low level. According to statistical reporting data, the coverage of Russian population by wastewater collection services over 2000–2005 increased by 4%, reaching the level of 62% (see *Fig. 14.*).

By the results of 2003, sewerage systems were organized in 97% of towns (+2% against 2000), 76% of urbanized population centres (+11% against 2000) and only 4% of rural population centres (+1% against 2000) (see *Fig. 16.*).

According to statistical reporting data, in 2003, only 70% of the total housing facilities in Russia had access to sewerage systems; while in the urban housing facilities this indicator reached 85%, the in the rural areas only 32% of housing facilities had sewerage systems (see *Fig. 17.*).

As regards different regions, in 2003 the majority of regions (54 out of 88) had the indicator “The share of the population centres, equipped with sewerage systems” varied from 50% to 75% (see *Fig. 18*). In 15 regions, sewerage systems were available only for less than half of the housing facilities, and in 5 regions (Komi-Perm Autonomous Area, Evenki Autonomous Area, Agin-Buryat Autonomous Area, Ust-Orda-Buryat Autonomous Area and the Republic of Altai) less than one-quarter of rural housing facilities had access to sewerage systems. By the results of 2003, in 70 out of 88 Russian regions less than 50% of rural housing facilities had access to sewerage systems, and there was no any single region in which access to sewerage systems in rural housing facilities exceeded 90%. The minimum level of access to sewerage systems for rural housing facilities was recorded in 2003 in the Republic of North Ossetia and Murmansk Oblast (90.0% and 86.8% of rural housing facilities, respectively).

Fig. 14. Indicator 2.1. Coverage by sewerage systems [reports]

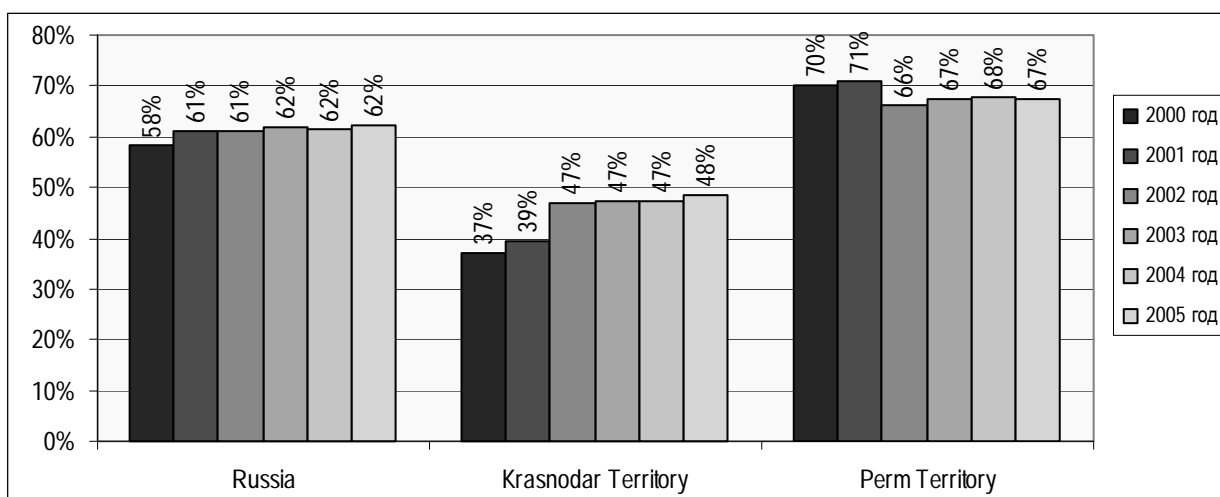


Fig. 15. Indicator 2.1. Coverage by sewerage systems [sample]

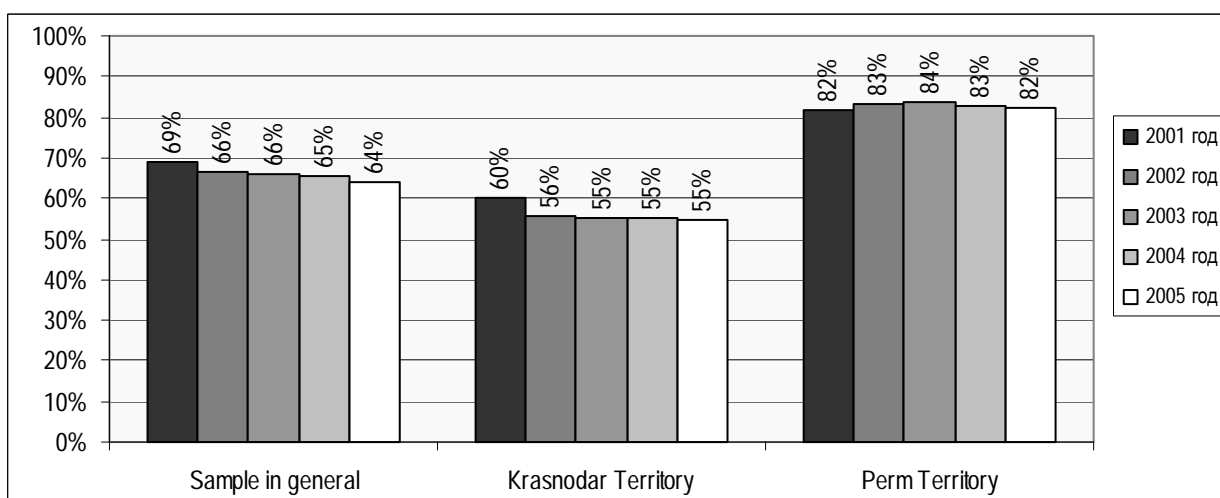
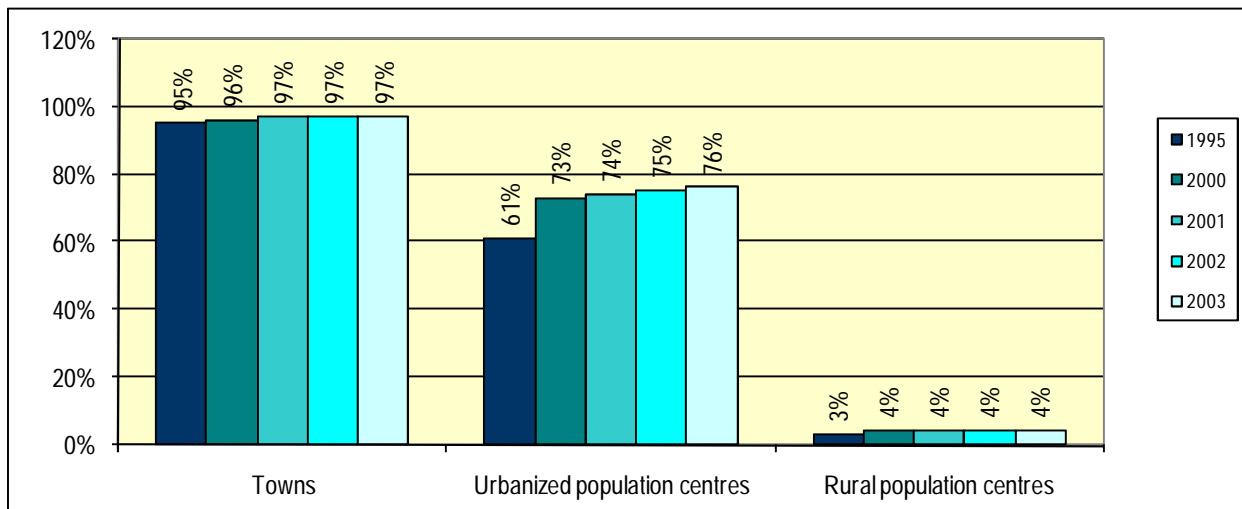
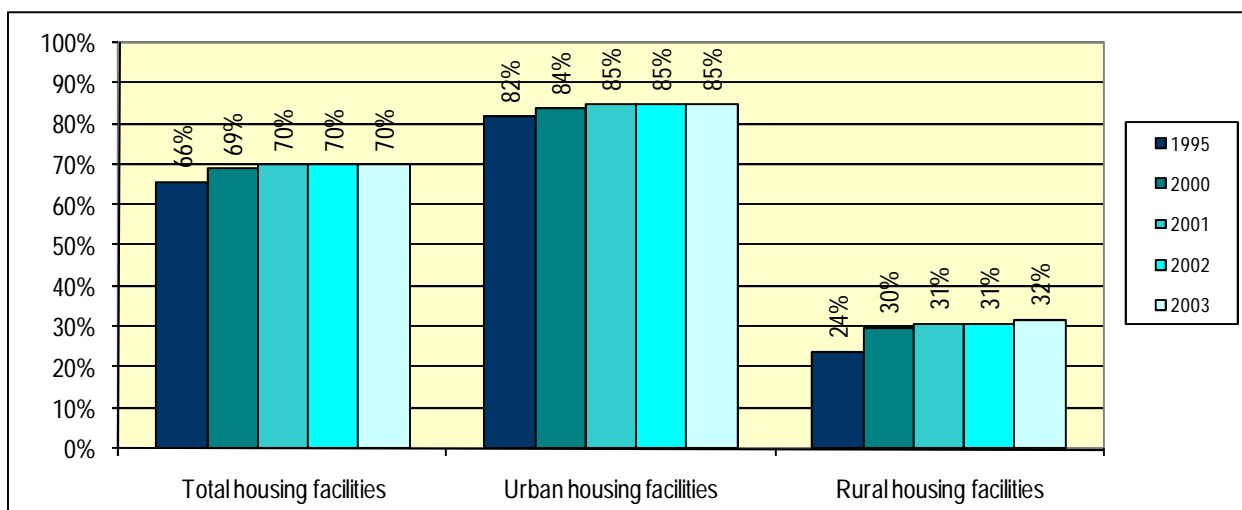


Fig. 16. Additional indicator. The share of the population centres, equipped with sewerage systems [reports]



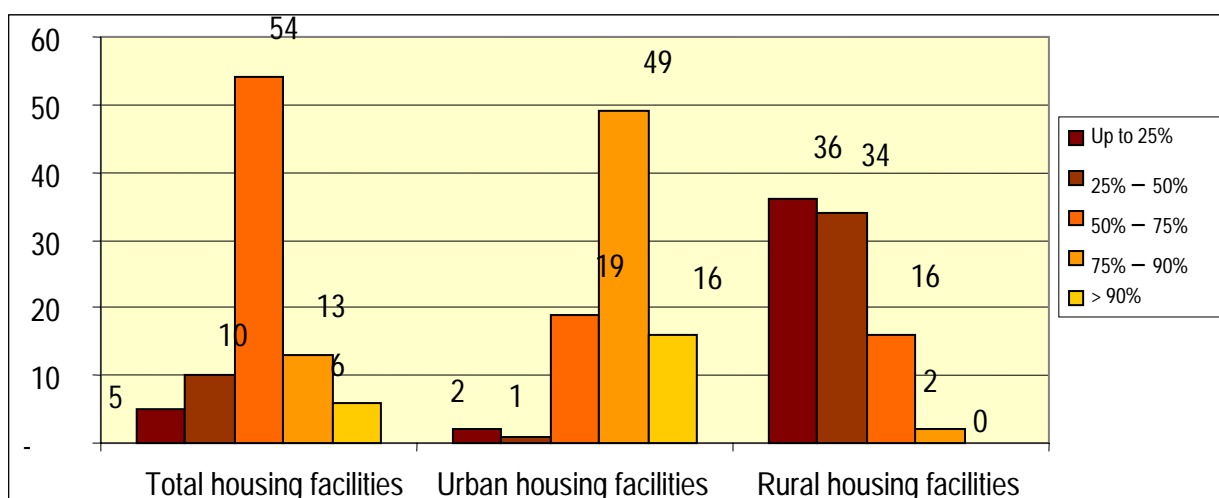
Source: Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.

Fig. 17. Additional indicator. The share of the housing facilities, equipped with sewerage systems [reports]



Source: Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.

Fig.18. Grouping of the Russian Federation regions by the indicator “The share of the housing facilities, equipped with sewerage systems, 2003 [reports]



Source: Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.

2.2 WATER USE AND PRODUCTION

2.2.1 Water production

Both the official statistical reports and the results of the indicative survey point to a stable decrease of water production rates by the Russian water supply and wastewater enterprises. According to official statistical reports, the water production volume (**indicator 3.1.**), in general for all Russian enterprises decreased over the period of analysis from 489 to 402 litres per day per capita; by the results of the indicative survey the analyzed indicator reduced from 464 to 390 litres per day per capita (see *Fig. 19.* and *Fig. 20.*). This trend is similar for the regions whose enterprises were included into the indicative survey: according to official statistical reports, the indicator 3.1 for the Krasnodar Territory decreased from 355 to 264, while by the results of the survey it went down from 444 to 357 litres per day per capita. For enterprises of the Perm Territory, this decrease was less significant: according to the official statistical reports it went down from 406 to 336, while the results of the indicative survey point that enterprises, included into the sample, decreased their water production rate from 491 to 461 litres per day per capita.

Fig. 19. Indicator 3.1. Water production [reports] (litres per day per capita)

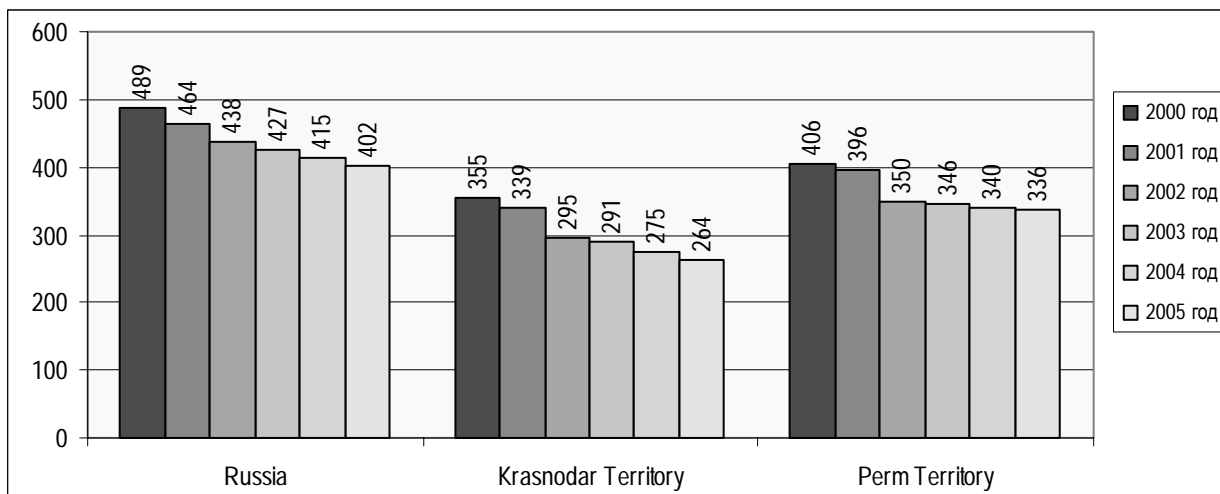


Fig. 20. Indicator 3.1. Water production [sample] (litres per day per capita)

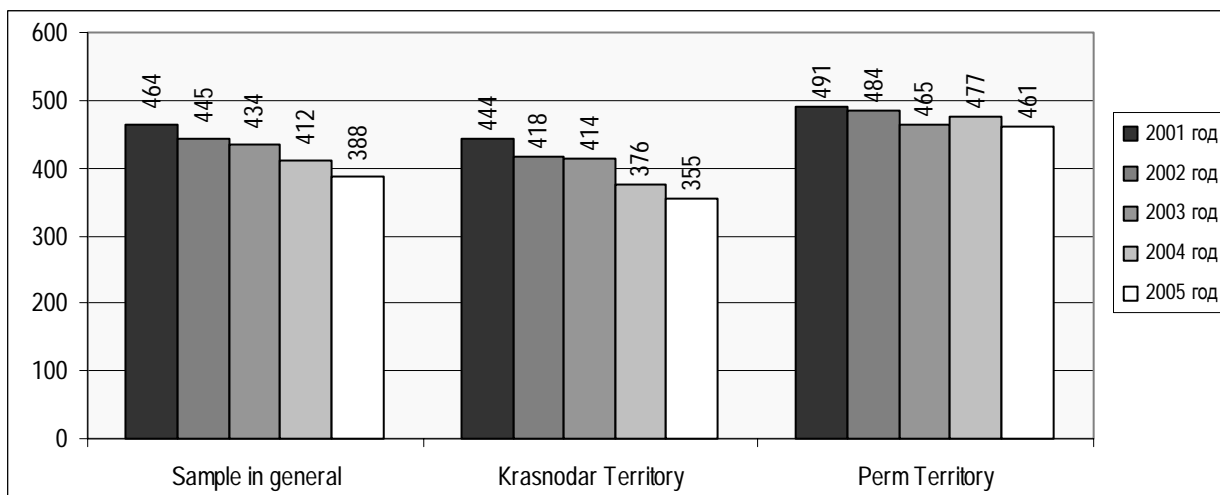
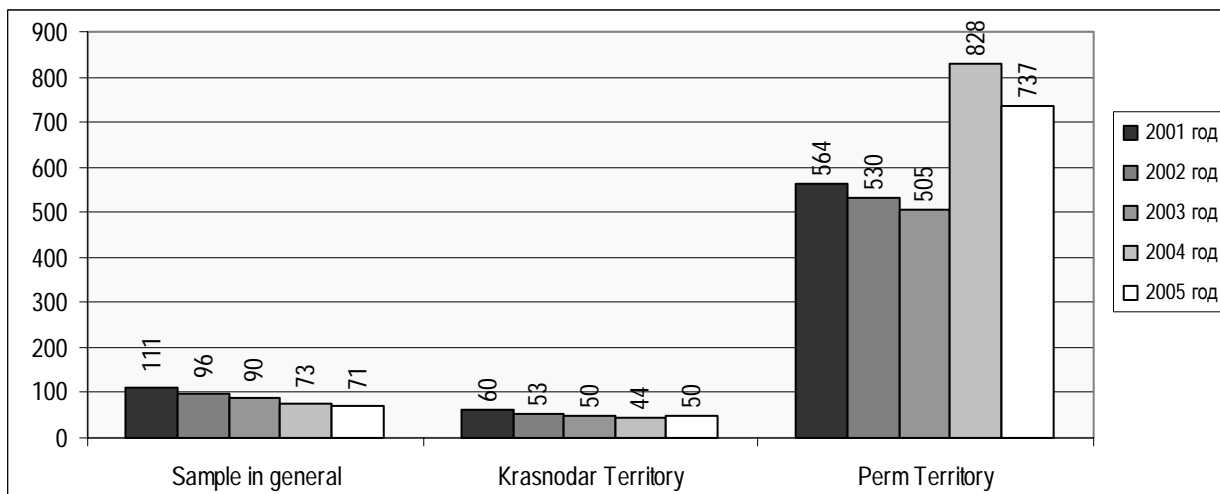


Fig. 21. Indicator 3.2. Water production [sample] (m³ per connection per month)



2.2.2 Water use

The amount of water production decreased due to reduced use of water by population and other categories of users. According to official statistical data, the water use for Russia in general (**indicator 4.1**) decreased from 414 to 328 litres per day per capita (see [Fig. 22](#)), while by the results of enterprise survey made in two Russian regions the amount of water use for all enterprises, included into the sample, decreased from 330 to 245 litres per day per capita (see [Fig. 23](#)).

Fig. 22. Indicator 4.1. Water use [reports] (litres per day per capita)

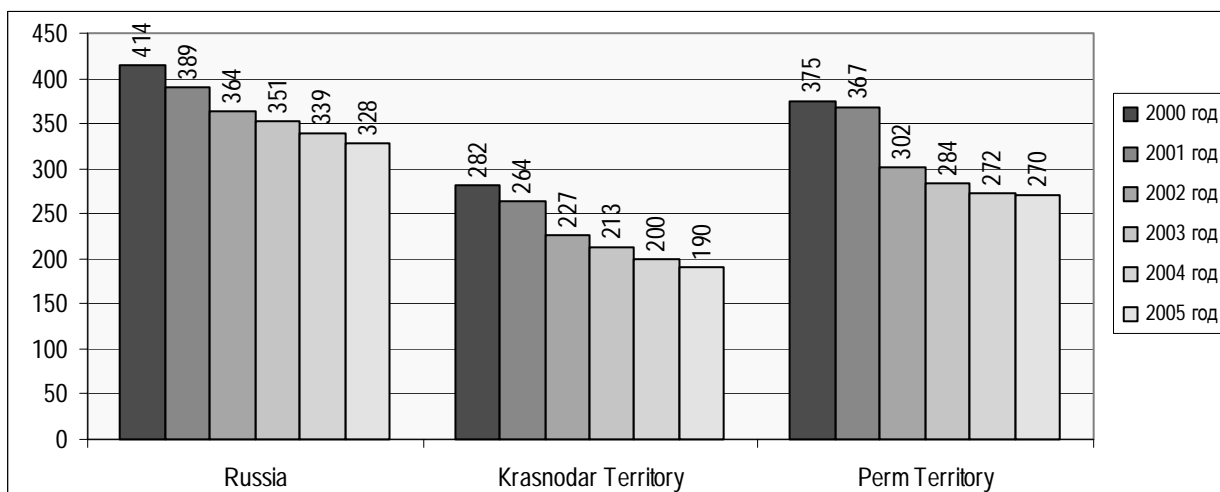
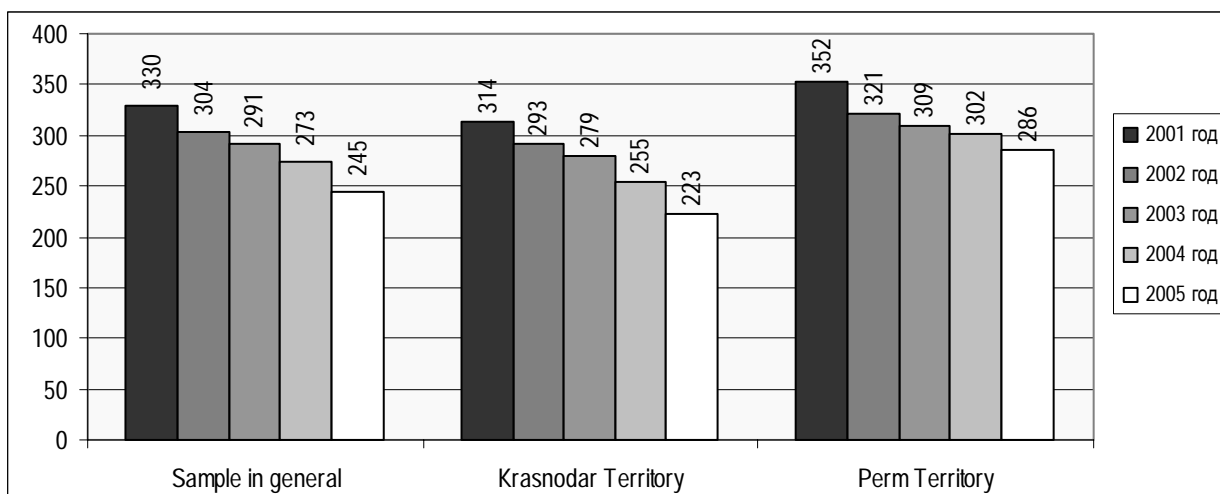
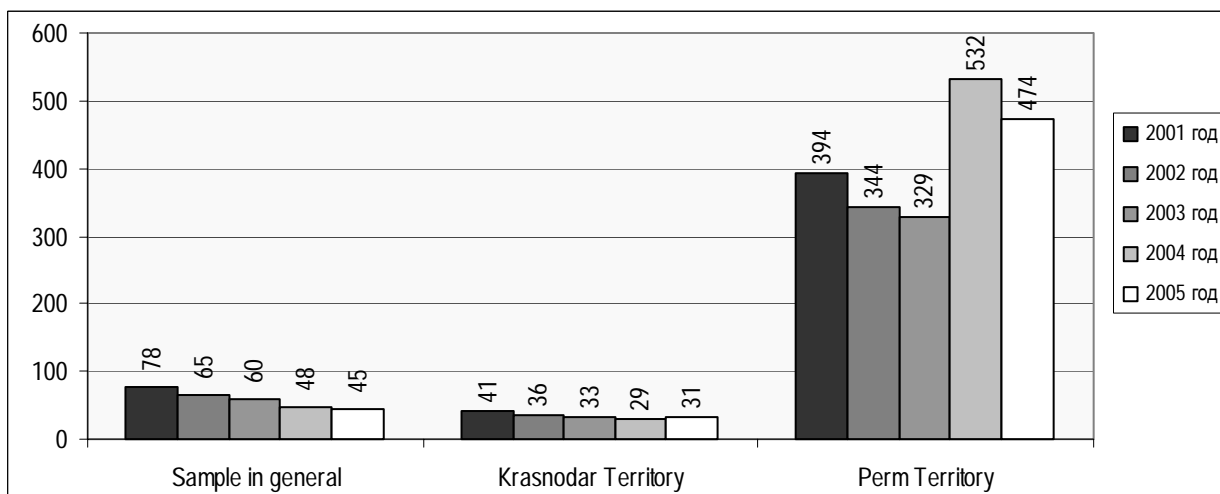


Fig. 23. Indicator 4.1. Water use [sample] (litres per day per capita)



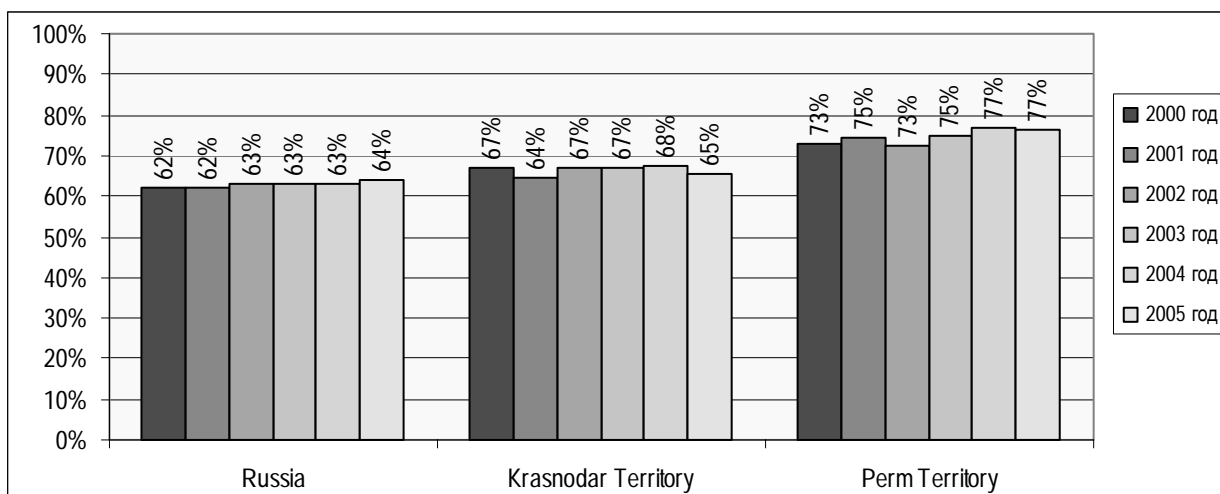
Indicator 4.2, characterizing the water use per connection, also had a clear trend to decrease: over the period of analysis its value for all enterprises, included into the sample, decreased almost by 40%, from 78 to 45 m³ per connection per month (see *Fig.24*). It should be noted that because of different approaches used for determining the number of connection points in the Krasnodar Territory and Perm Territory, the indicator value for these regions differed by more than a factor of 10. Thus, while by the results of 2001 the indicator value for the enterprises of the Krasnodar Territory made 41 m³/connection, then for the enterprises of the Perm Territory the indicator reached 394 m³/connection.

Fig. 24. Indicator 4.2. Water use [sample] (m³ per connection per month)



The main user of water supply services provided by the Russian enterprises is population: generally for Russia, the share of population in the total water use was stably above 60%, based on the results of statistical observations (see *Fig. 25*). It should be noted that over 2001–2005 the role of the population as the main user of water supply services increased: while in 2001 the **indicator 4.3** was 62%, then by the results of 2005 this indicator increased to 64%.

Fig. 25. Indicator 4.3. The share in the total water use: population [reports]



The results of the indicative survey for the enterprises of the Krasnodar Territory and Perm Territory fully correspond to the official statistical data. Generally for the enterprises, included into the sample, the share of the population in the total water use by the results of 2005 made 67%, going up by 1% compared to 2001; the respective increase reported for the enterprises of the Krasnodar Territory and Perm Territory was from 60% to 61% and from 74% to 76% (see [Fig. 26](#)).

Generally for Russia, the share of commercial users, based on the official statistical data, increased by 1% over 2002–2005 and made 15% (see [Fig.27](#)), whereas by the results of the indicative survey the value of the **indicator 4.4** measured for the period 2001-2005 for all enterprises in the sample was 16%-17% (see [Fig. 28](#)). The share of budgetary organizations (**indicator 4.5**), on the contrary, decreased from 15% to 12% according to statistical data (see [Fig. 29](#)) and from 18% to 16% by the results of the indicative survey (see [Fig. 30](#)).

Fig. 26. Indicator 4.3. The share in the total water use: population [sample]

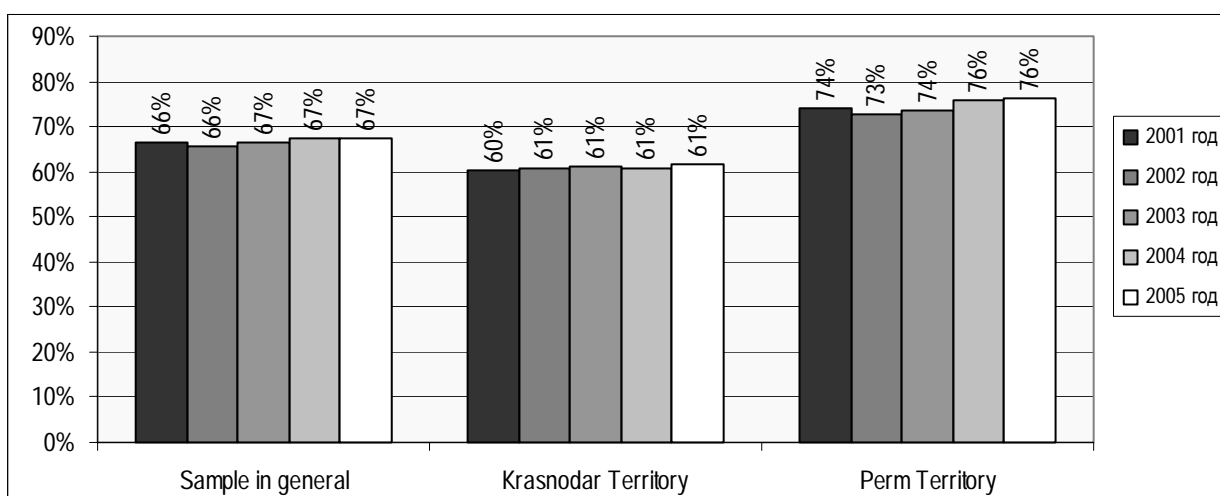


Fig. 27. Indicator 4.4. The share in the total water use: commercial enterprises [reports]

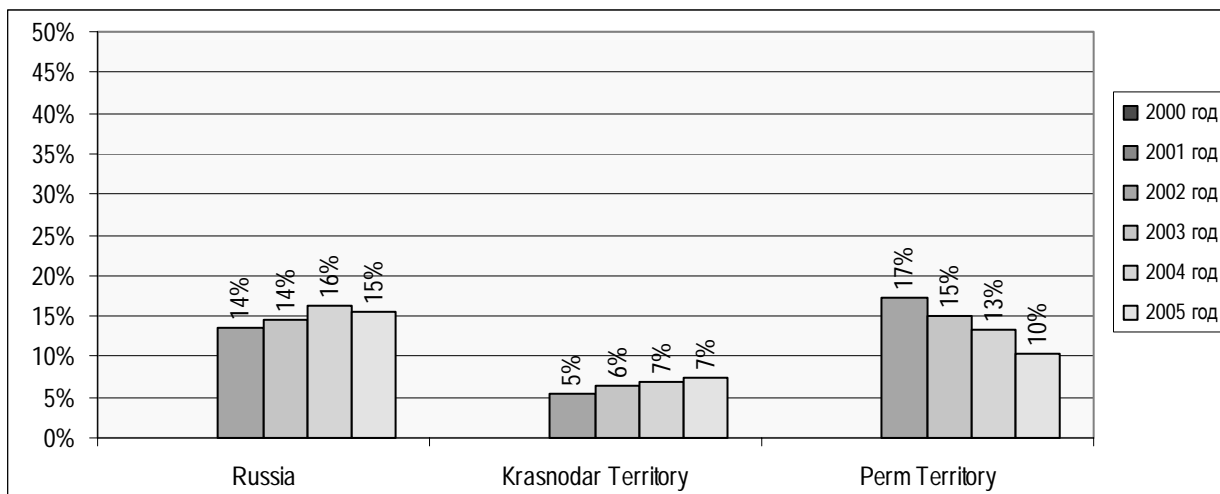


Fig. 28. Indicator 4.4. The share in the total water use: commercial enterprises [sample]

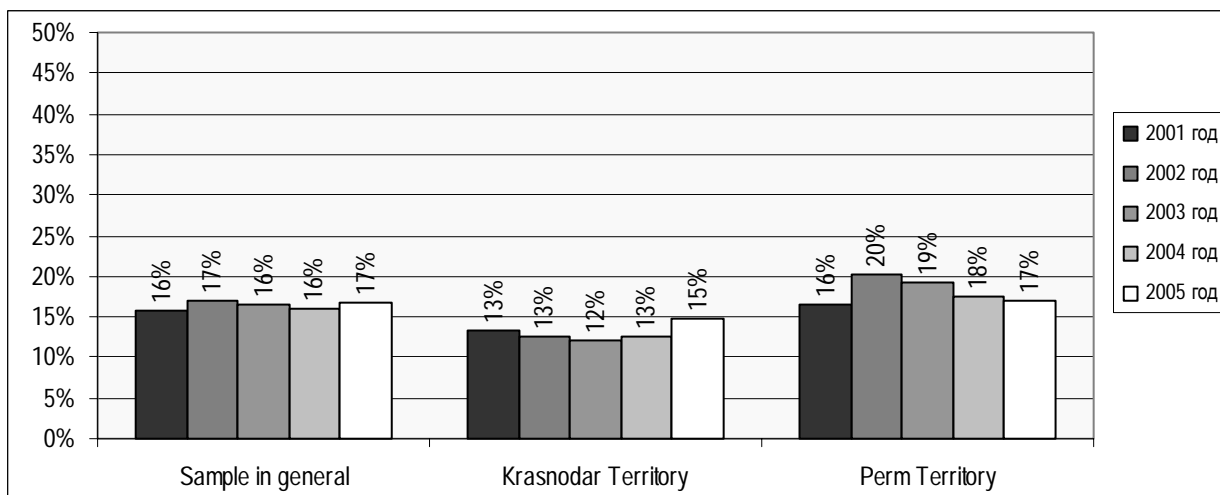


Fig. 29. Indicator 4.5. The share in the total water use: budgetary organizations [reports]

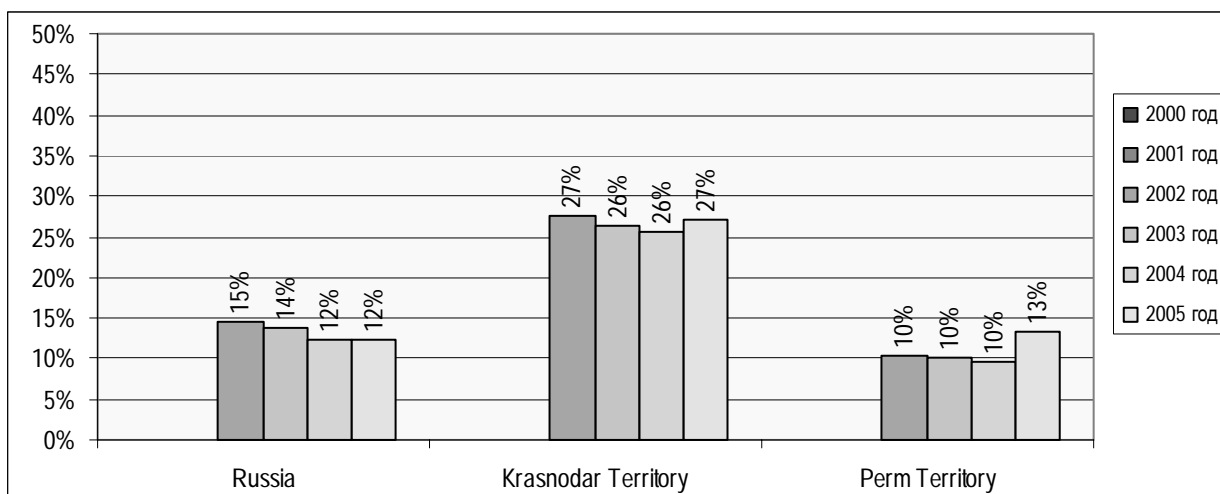
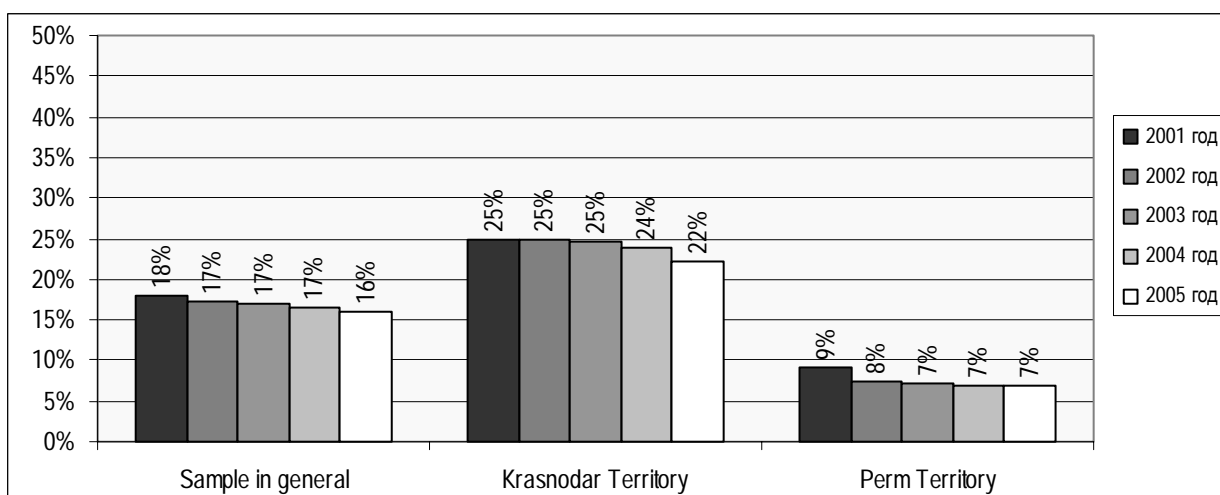


Fig. 30. Indicator 4.5. The share in the total water use: budgetary organizations [sample]



A substantial difference between the official statistics and the indicative survey results was reported for **indicator 4.6**, characterizing the share in the total water used by outside organizations. Thus, received for the Perm Territory in 2001-2005 the share of water supplied to outside organizations decreased more than 4-fold, reaching the level of 2% (see [Fig. 31](#)), whereas the results of the indicative survey made for enterprises of the Perm Territory, included into the sample, showed that they did not supply water to outside organizations (see [Fig. 32](#)). As regards enterprises of the Krasnodar Territory, the difference was also substantial: according to statistical data in 2001 and 2005 this indicator was 15%, while according to the indicative survey this indicator did not exceed 2%, and according to the results of 2005 it decreased to 1% of the total amount of water use.

Fig. 31. Indicator 4.6. The share in the total water use: supply to outside organizations [reports]

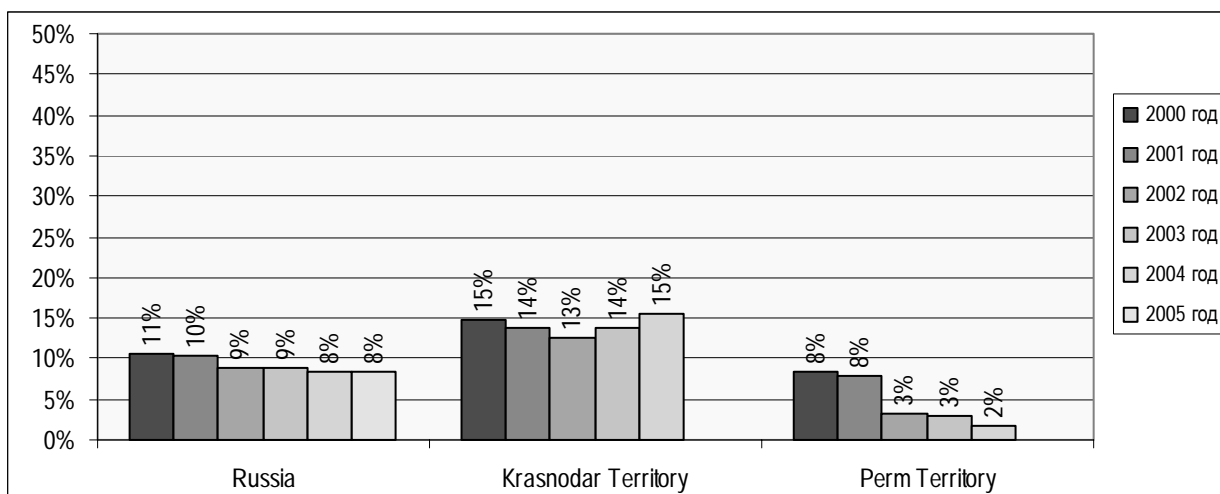
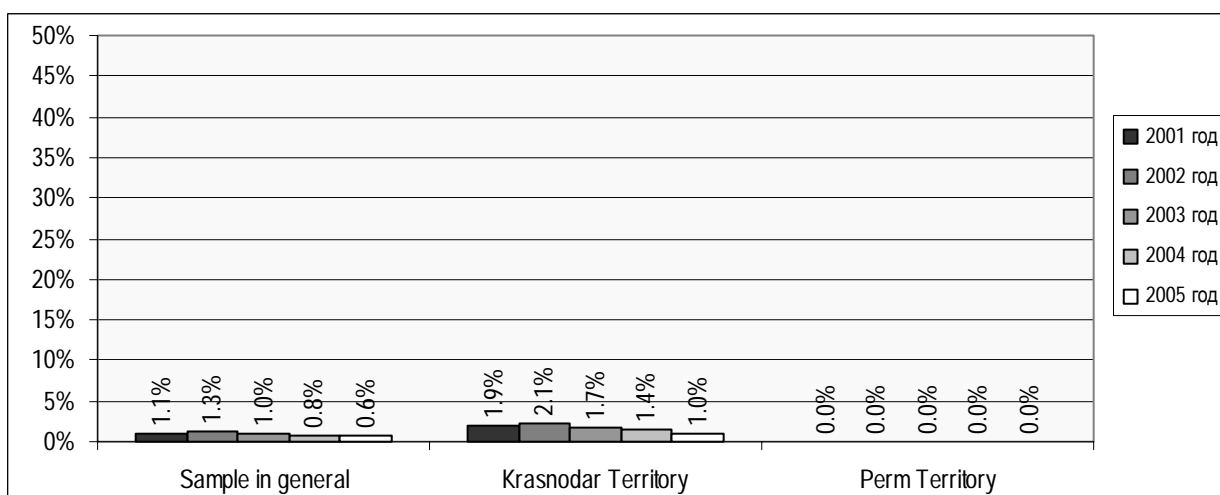
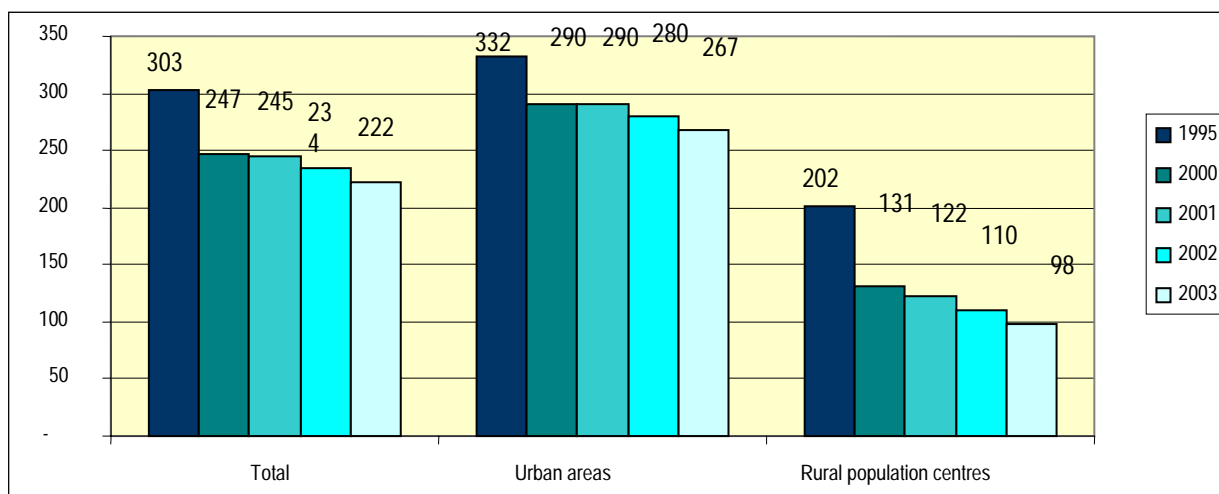


Fig. 32. Indicator 4.6. The share in the total water use: supply to outside organizations [sample]



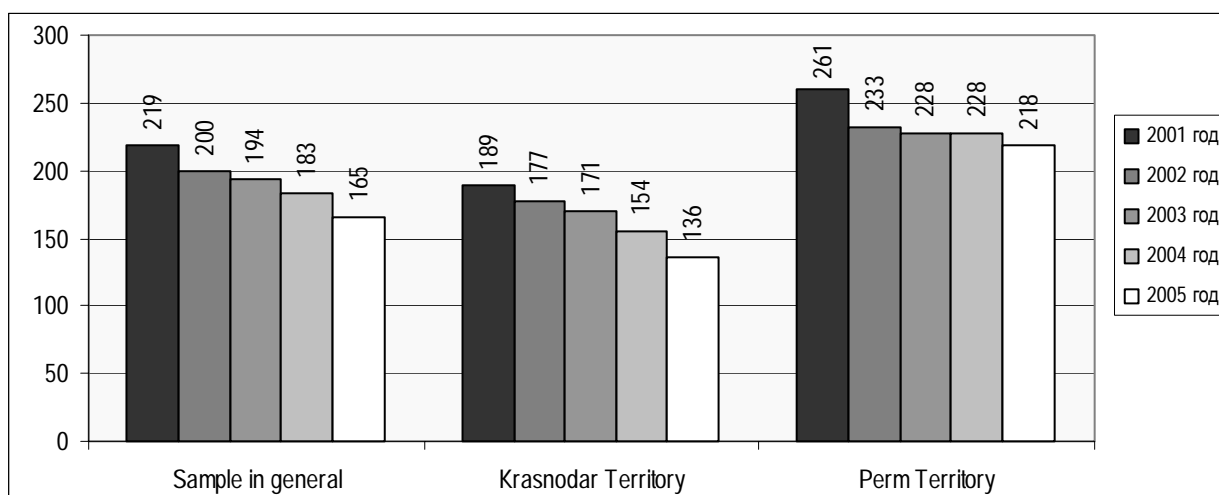
The amount of water used by the Russian population gradually comes closer to the level of European countries. According to official statistical data, during the period of analysis the **indicator 4.7**, for Russia as a whole, decreased by almost one-fourth, from 303 to 222 litres per day per capita (see *Fig. 33*). According to the indicative survey results, the indicator for all enterprises, included into the sample, decreased, in fact, in the same proportion (-30% in 2005 compared to 2001), however the value of this indicator was lower: 219 litres per day per capita in 2001, and 165 litres per day per capita by the results of 2005 (see *Fig. 34*).

Fig. 33. Indicator 4.7. Water use by population [reports] (litres per day per capita)



Source: Housing facilities and communal services in Russia (Жилищное хозяйство и бытовое обслуживание населения в России). 2004: Statistical Book / Russian Committee of Statistics, Moscow, 2004, 325 p.

Fig. 34. Indicator 4.7. Water use by population [sample] (litres per day per capita)



As regards different regions, the trend characterized by the reduced amount of actual water use by population is very clear (see *Fig. 35*). Over 2000–2005, the number of regions where the average actual water use did not exceed 100 litres per day per capita increased from 2 to 7¹, while the number of regions where this indicator was from 200 to 330 litres per day per capita decreased from 53 to 36. The most significant decrease took place in the group of regions where the average actual volume of water use by population exceeded 300 litres per day: while by the results of 2000 this group included 16 regions, then by the results of 2005 only one region, i.e., the federal city of Moscow, had the volume of actual water use over 300 litres, namely 391 litres per day per capita.

¹ By the results of 2005 these regions included Republic of Ingushetia, Republic of Altai, as well as almost all autonomous areas of Russia (Nenets AA, Komi-Perm AA, Evenki AA, Ust-Orda AA and Agin-Buryat AA)

In 10 Russian regions, the volume of actual water use by population in 2005 decreased 2-fold or more compared to 2000 (see *Fig. 36*). In 11 regions, the volume of actual water use in 2005 increased compared to 2000 (see *Fig. 37*).

Fig. 35. Grouping of the Russian Federation regions by the indicator 4.7 “Water use by population” [reports]

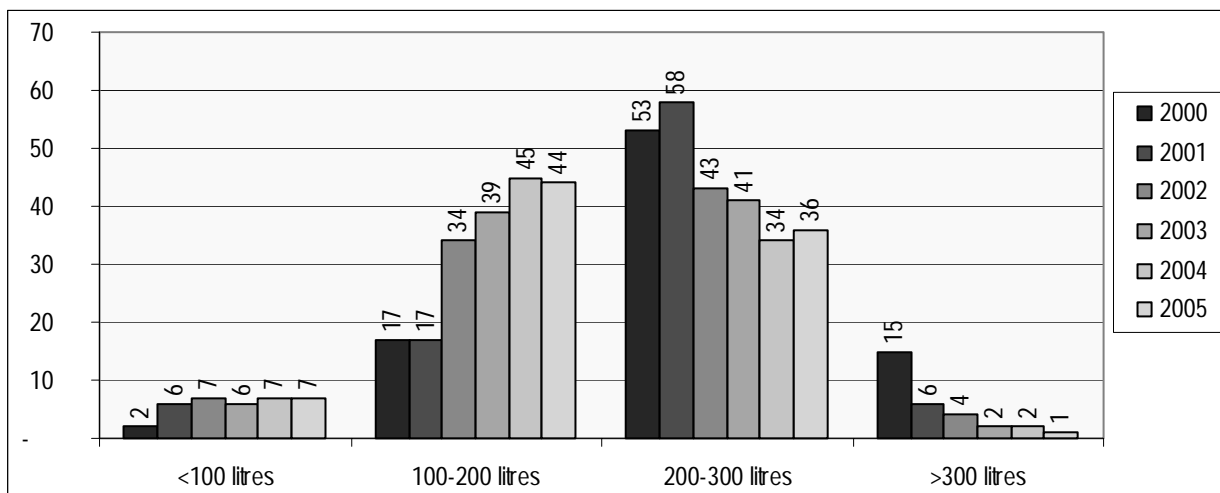


Fig. 36. Russian regions with the highest decrease of the actual water use by population [reports]

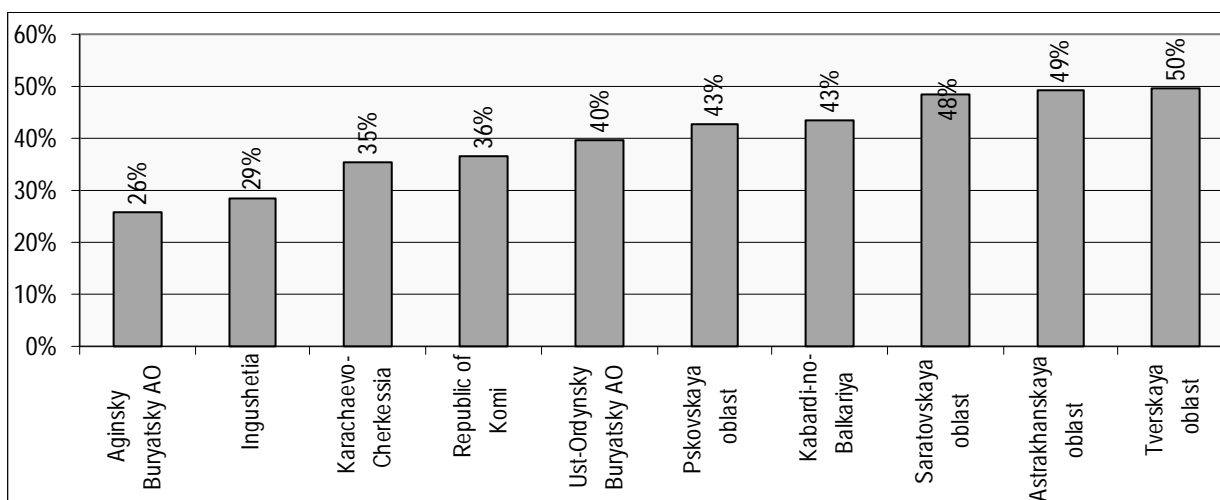
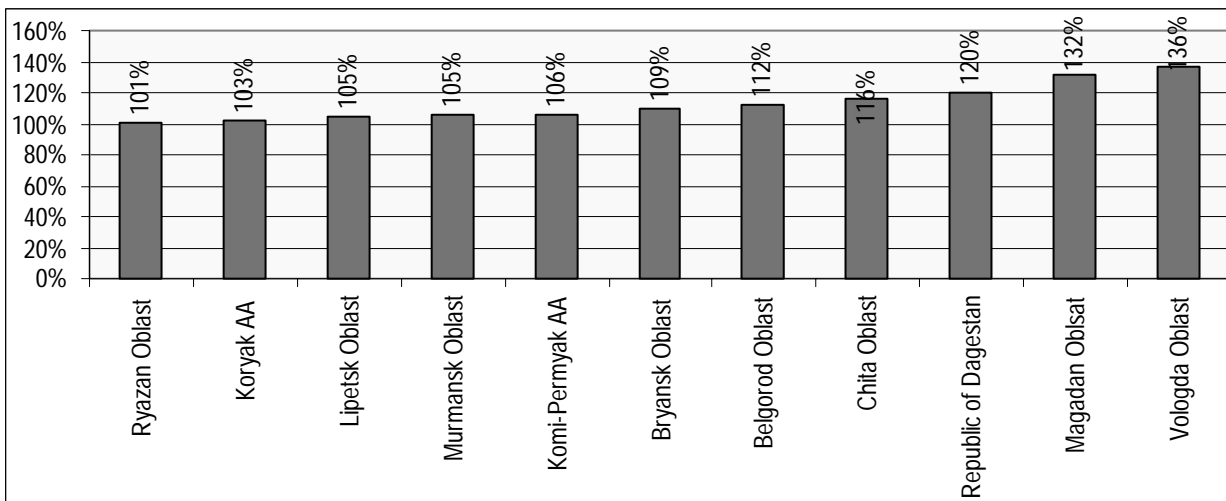


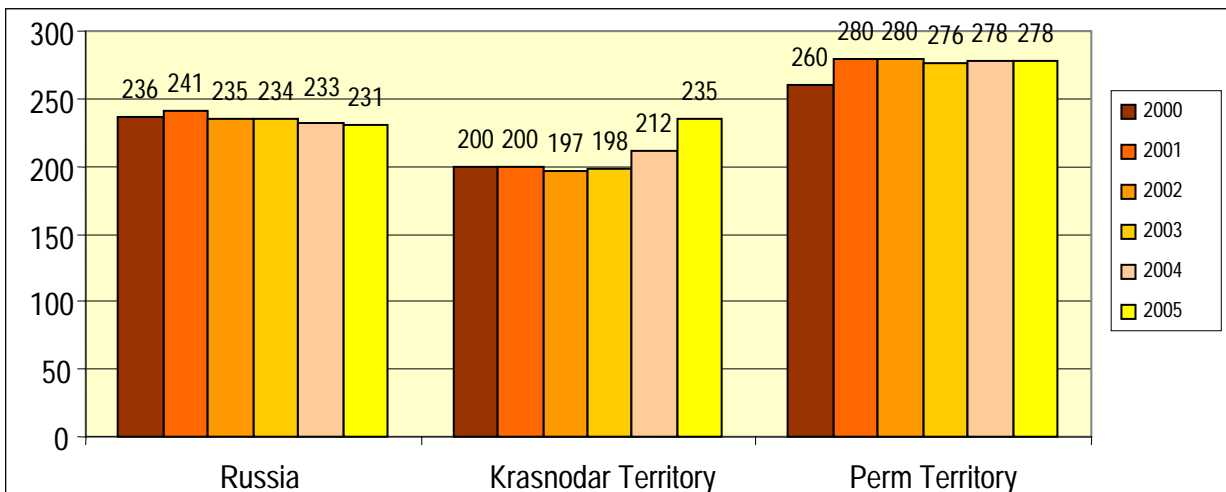
Fig. 37. Russian regions where the volume of actual water use by population in 2005 exceeded the level of 2000 [reports]



Given the fact that today the overwhelming majority of the Russian population pay for water supply services not according to water meters, but according to the water use rate set by the local self-government authorities, it is expedient to compare the volumes of actual water use by population and the set water use rate.

Despite the obvious decrease of volumes of actual water use by population in Russia over the last decade, the water use rates set for population by authorities in Russia remain in fact invariable during 2001–2005 (see *Fig. 38*). In 2000, its value for Russia as a whole made 236 litres per day per capita on the average, and after its slight increase to 241 litres per day in 2001 it went down to 231 litres per day by 2005 (decrease by 2.2%).

Fig. 38. Additional indicator. Standardized water use rate [reports]



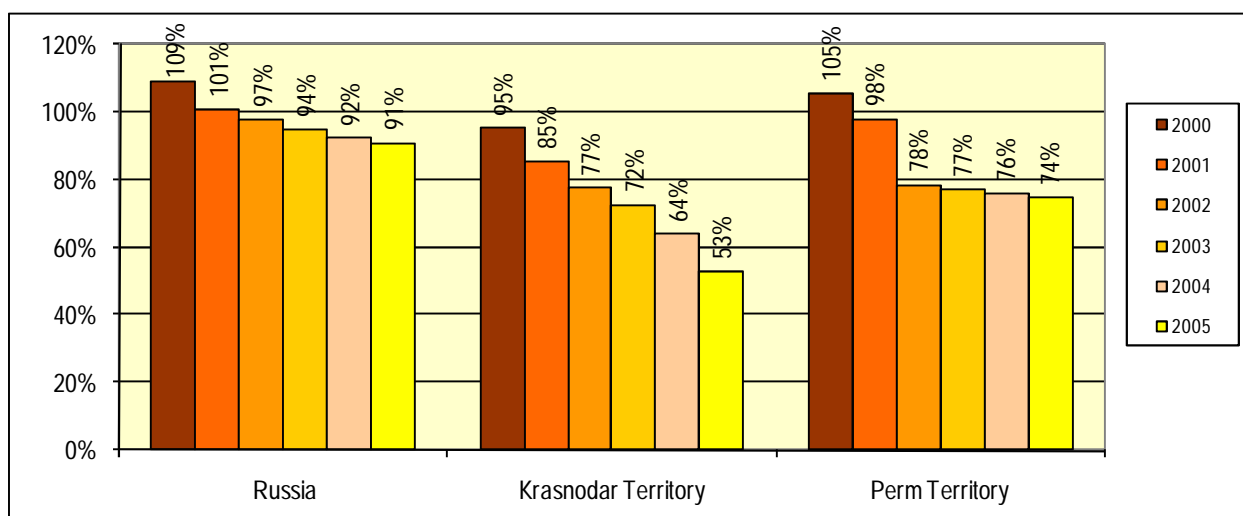
It should be noted that in the region, whose enterprises were included into the indicative survey, the set water use rate did not decrease either: in the Krasnodar Territory, after stabilization

of this standard in over 2000–2003 at the level of 198-200 litres per day, this indicator increased to 235 litres per day by the results of 2005. In the Perm Territory, the set water use rate increased in 2001, when it went up in the region by almost 10%, from 260 to 280 litres per day, and in the subsequent years this standard rate stabilized at the level of 276-280 litres per day.

Opposite trends in the volume of actual water use by population and the set water use rate resulted in a principal change of the ratio between these indicators. While in 2000, the volume of actual water use by population for Russia in general exceeded the set water use rate by 9% (see *Fig. 39.*), then, already by the results of 2001, this exceeding made only 1%, and in the following years the actual water use by population was stably below the specified standard (97% in 2002 and 91% by the results of 2005). The difference between the volumes of actual water use by population in the regions, which took part in the indicative survey, was even higher. In the Perm Territory, the ratio of the actual water use and the set water use rate reduced from 105% to 98% in 2001; then in 2001 it reduced down to 78%, and in the following years this indicator went down further, reaching 74% by the results of 2005. In the Krasnodar Territory, this indicator was below 100% already in 2000 and went down to 53% by 2005.

Thus, over 2000–2005, the Russian population paid for more water than it actually consumed.

Fig. 39. Additional indicator. The ratio between the actual water use and the set water use rate [reports]



As regards different regions, the difference between the actual water use and the set water use rate is as significant as it is for the country as a whole (see *Fig. 40.*). Over 2000–2005, the number of regions where the set water use rate corresponded to, or exceeded the volume of actual water use by population decreased almost 2-fold, from 50 to 27. Over the period of analysis, the number of regions where the actual water use was from 50% to 100% of the set water use rate increased from 33 to 58. In 2 Russian regions (Republic of Ingushetia and Kabardino-Balkarian Republic) the set water use rate exceeded the actual water use more than 2-fold.

Fig. 40. Grouping of the Russian Federation regions by the additional indicator “The ratio between the actual water use and the set water use rate” [reports]

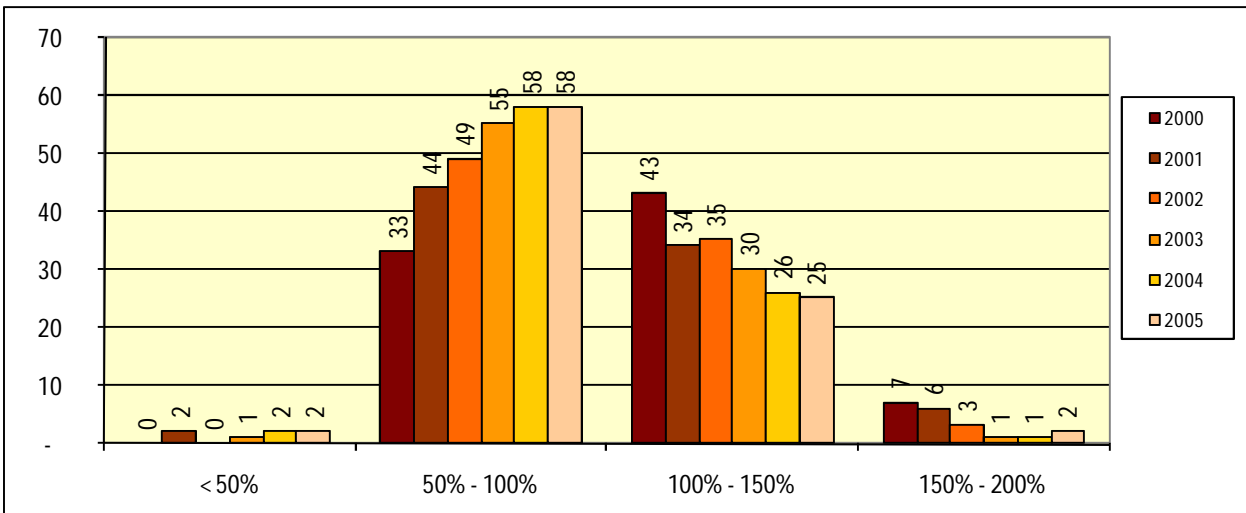


Fig. 41. Indicator 4.8. Water use by population: connected population [sample] (litres per day per capita)

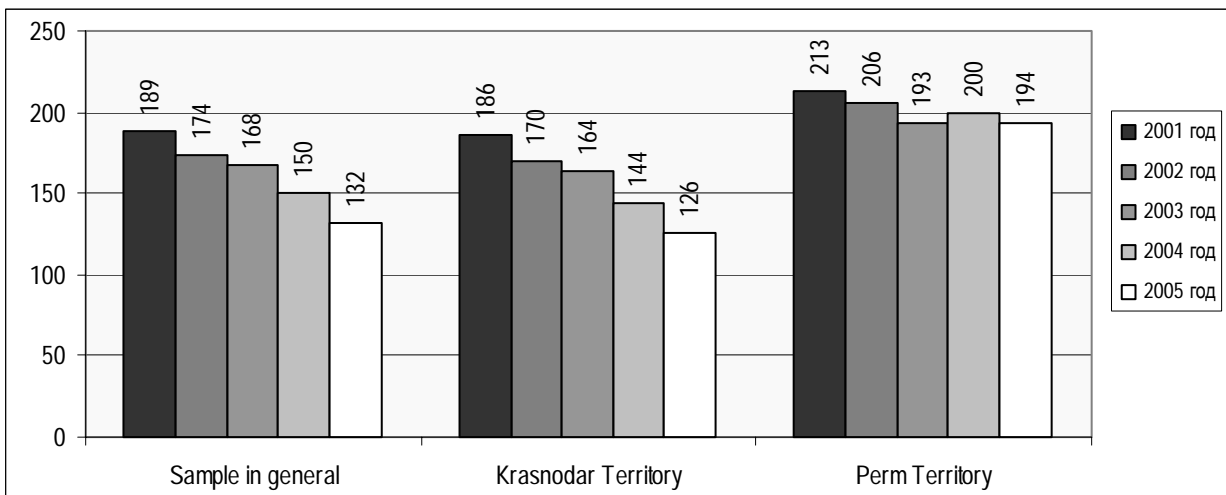
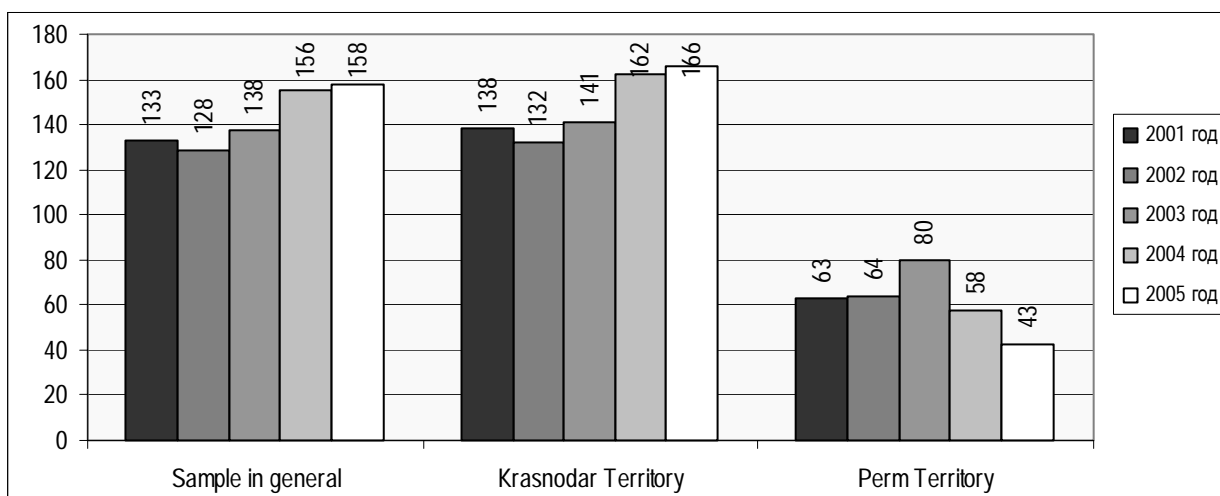


Fig. 42. Indicator 4.9. Water use by population: common water supply points [sample] (litres per day per capita)



2.3 WATER GIVING NO INCOMES

According to statistical data, the share of leaks and unaccounted water use in Russia during the period of reporting increased from 15% to 19% of the total amount of water supplied to the networks (see *Fig. 43.*). The main reason for the growth of this indicator was the persistent trend towards a significant deterioration of the water networks (see *Section 2.5 State of networks* of this report).

Over the period of analysis, the number of Russian regions, where the value of the **indicator 6.1** did not exceed 15%, decreased from 49 to 29 (see *Fig. 44*); thus, by the results of 2005 only one-third of Russian regions had water losses at the level of developed European countries. The number of Russian regions, where the value of the **indicator 6.1** exceeded 25%, on the contrary, increased exactly three times, and by the results of 2005 eighteen Russian regions reported a high level of water losses (see *Fig. 45.*). The maximum value of this indicator among all Russian regions, recorded by the results of 2005, was in Sakhalin Oblast (43.7% of the total amount of water supplied to the network).

Fig. 43. Indicator 6.1. Water giving no incomes: the share of the total amount of water supplied to the network [reports]

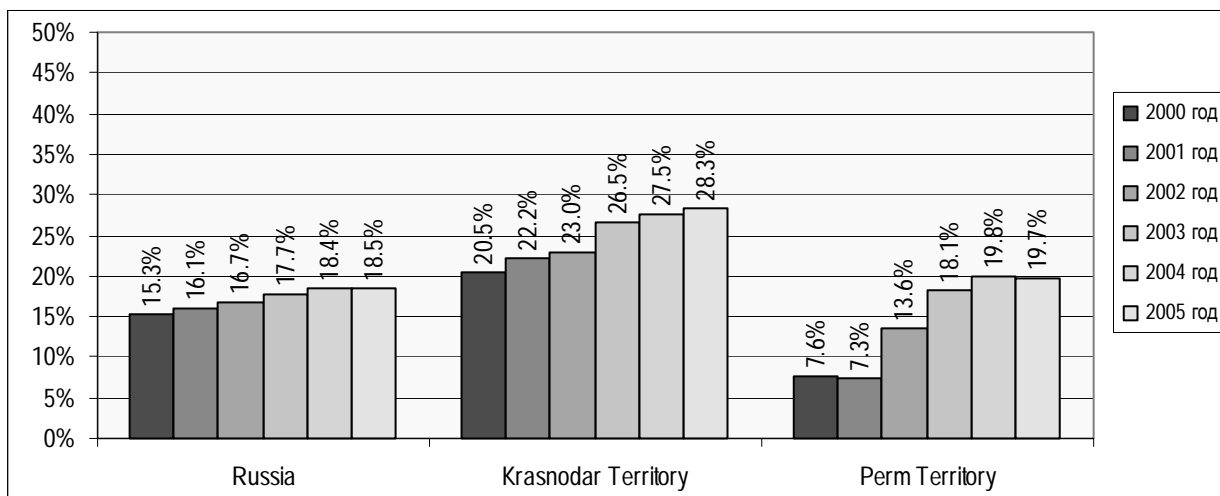


Fig. 44. Grouping of the regions by the indicator “The share of water giving no incomes, from the total amount of water supplied to the network” [reports]

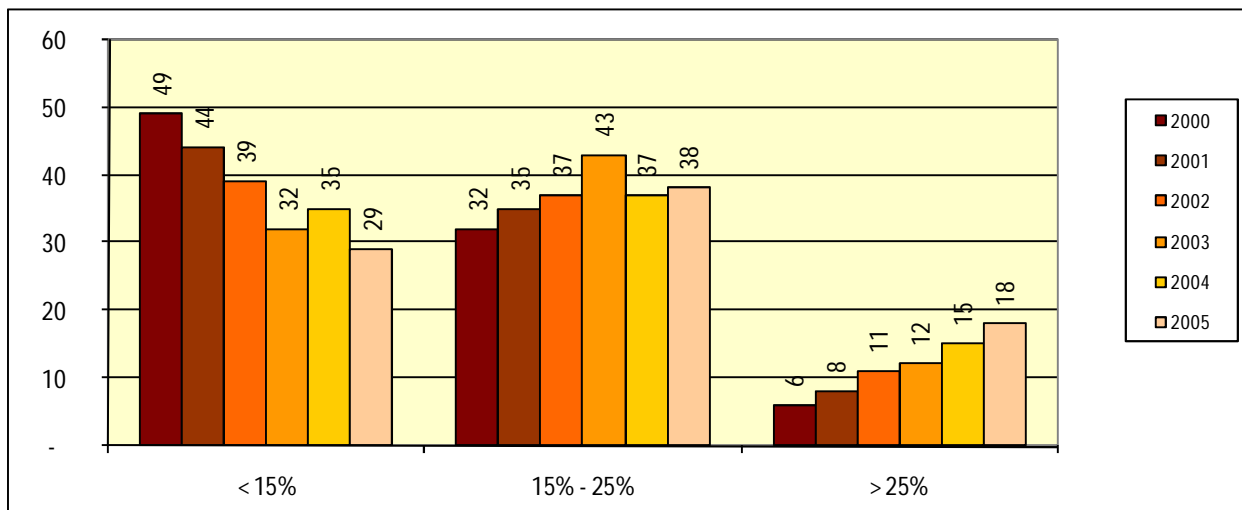
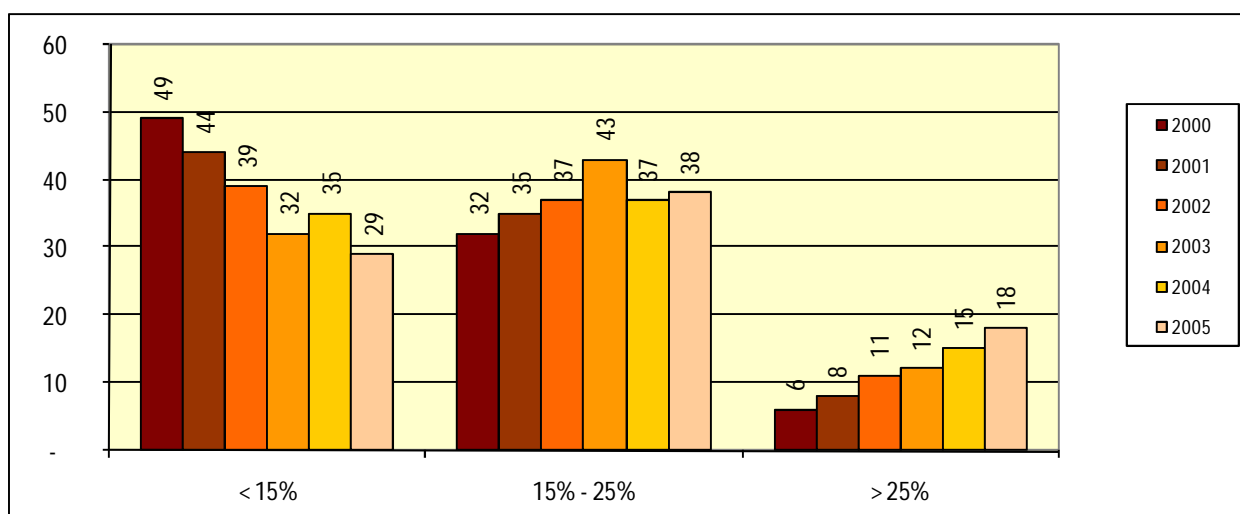
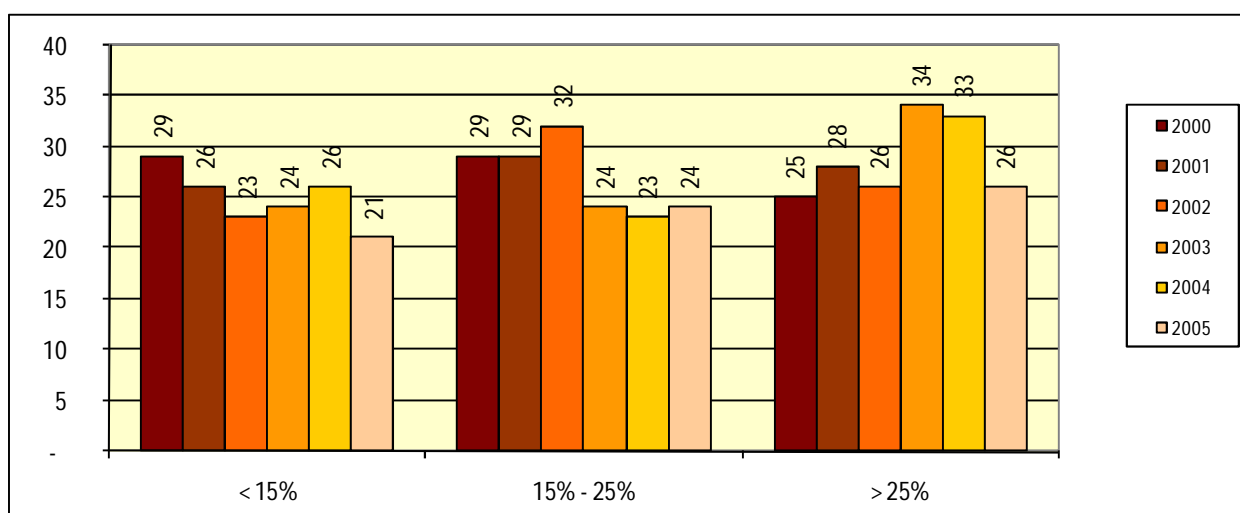


Fig. 45. Regions with the highest indicator “The share of water giving no incomes, from the total amount of water supplied to the network” [reports], 2005



As regards capital centres of the Russian regions, the situation is even more critical: by the results of 2005 only 21 capital cities had the share of water giving no incomes not higher than 15% of the total amount of water supplied to the network, while 26 capital cities had this share over 25% (see *Fig. 46.*).

Fig. 46. Grouping of capitals of the Russian Federation subjects by the indicator “The share of water giving no incomes, from the total amount of water supplied to the network” [reports]



By the results of the indicative survey, including enterprises of the Krasnodar Territory and the Perm Territory, the share of water losses stably exceeded the level reported by the official statistics: over the period of analysis this indicator for the entire sample increased from 29% to 31%; it should be noted that while for the Perm Territory enterprises this indicator decreased from 27% to 23%, then for the Krasnodar Territory enterprises this indicator increased from 30% to 37% (see *Fig. 47.*).

Over the period of analysis, the total water losses per kilometre of networks (**indicator 6.2**) in Russia as a whole increased from 14.8 to 16.2 m³ per day (see *Fig. 48.*); the results of the indicative survey for the enterprises, included into the sample, showed that this indicator was more than 2 times higher the official statistical data (see *Fig. 49.*)

Fig. 47. Indicator 6.1. Water giving no incomes: the share of the total amount of water supplied to the network [sample]

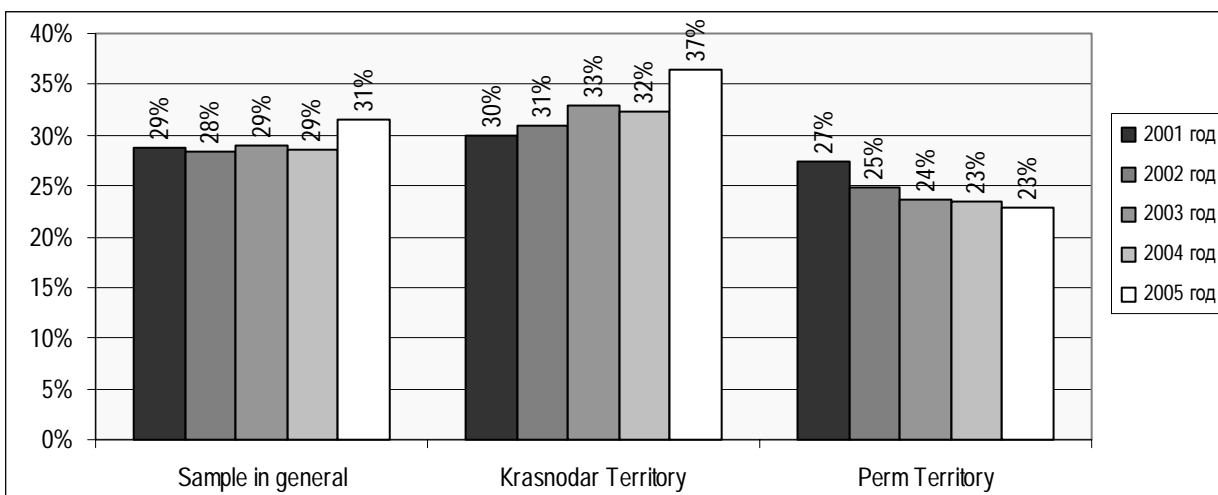


Fig. 48. Indicator 6.2. Water giving no incomes: per km of the network per day [reports] (m³ of water per day per km of the water supply network)

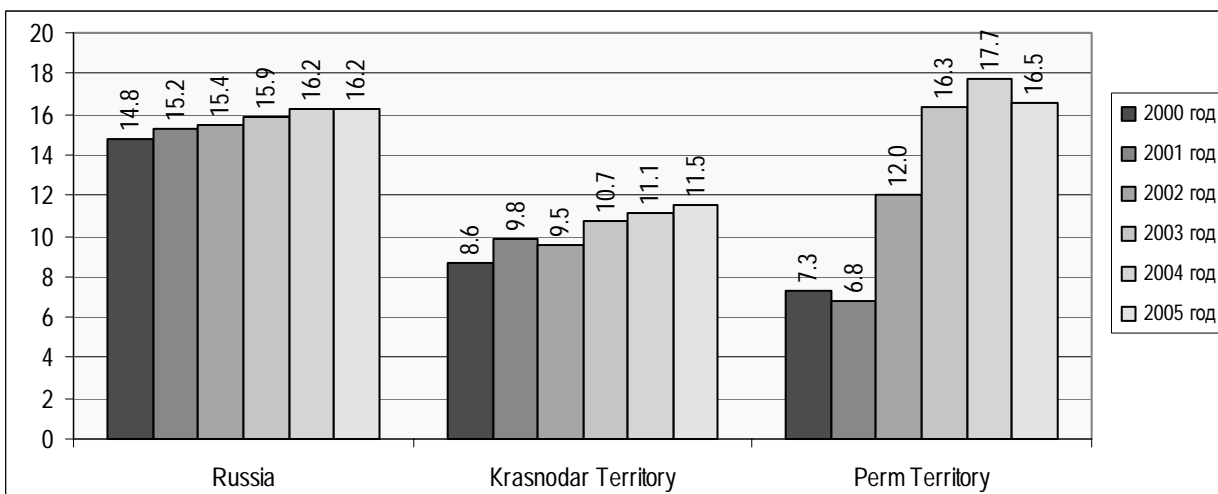


Fig. 49. Indicator 6.2. Water giving no incomes: per km of the network per day [sample] (m^3 of water per day per km of the water supply network)

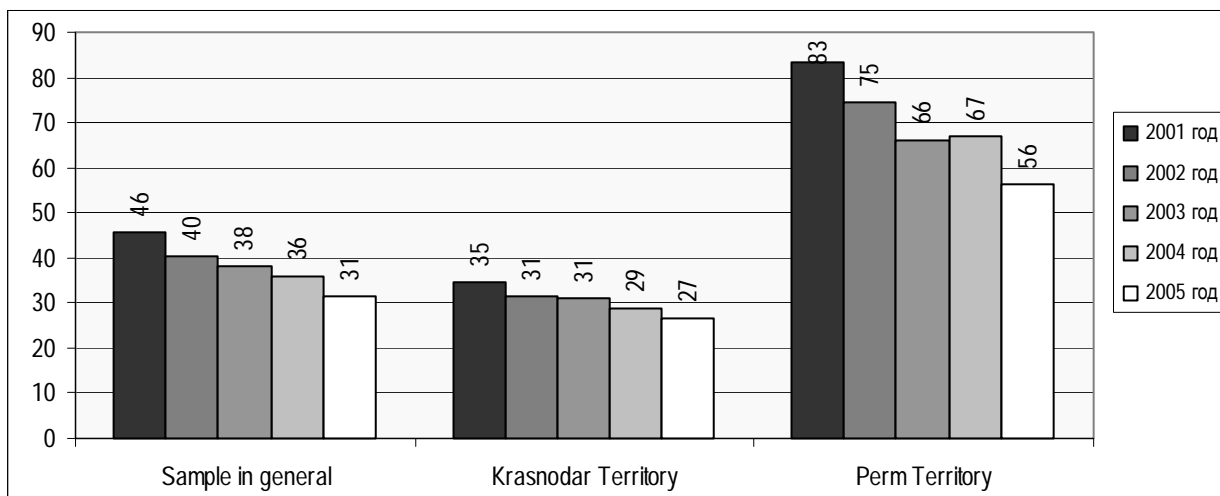
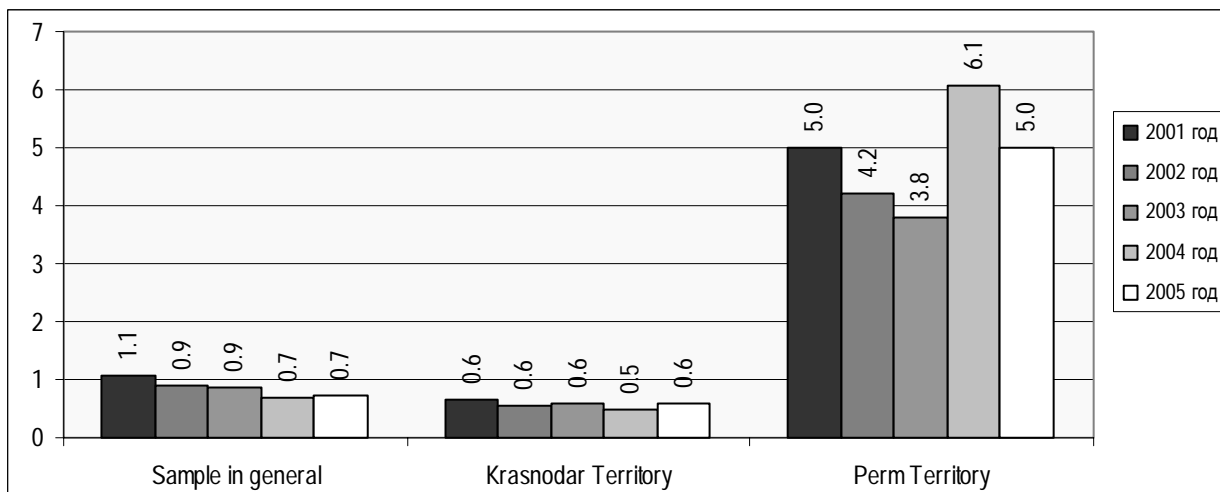


Fig. 50. Indicator 6.3. Water giving no incomes: per connection point per day [sample] (m^3 of water per day per connection point to the network)



2.4 USING THE WATER METERS

The official statistical data do not include information about the use of water meters; hence, the source of information for indicators 7.1 and 8.1 are the results of indicative survey of enterprises in the Krasnodar Territory and the Perm Territory.

Characterizing the results of the indicative survey, it should be kept in mind that water meters are not widely used in Russian Federation by water users, above all, by the population who are the main users. As noted before, most of the population pays for water according to the set water use rates, and the bills are filled according to the water meter readings, basically, for commercial users and budgetary organizations.

By the results of the indicative survey, in 2005 water meters were connected to 61% of water connection points; over the period of analysis **indicator 7.1** increased by 10% (see *Fig. 51*).

Fig. 51. Indicator 7.1. Level of measurement [sample]

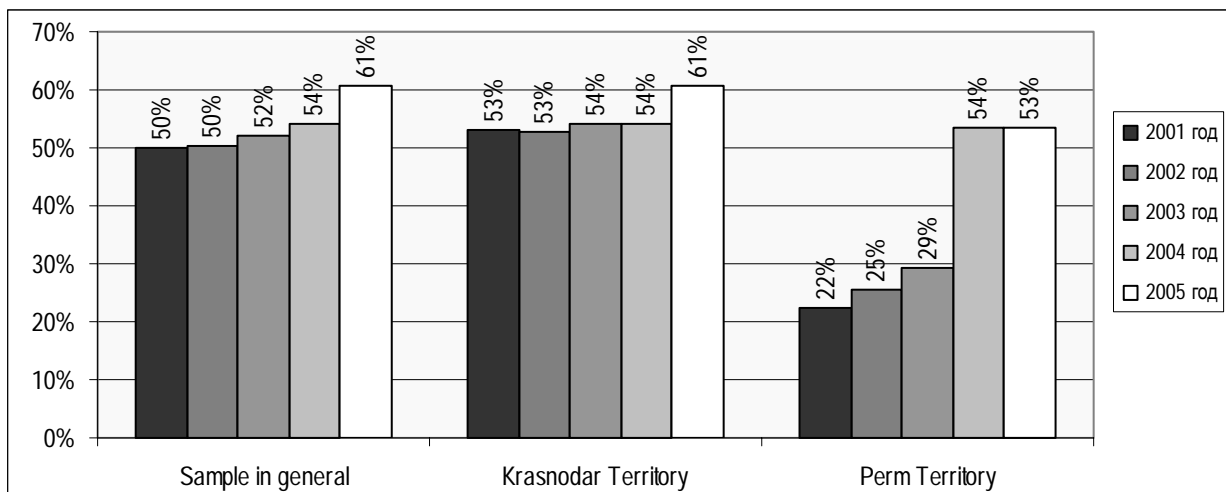
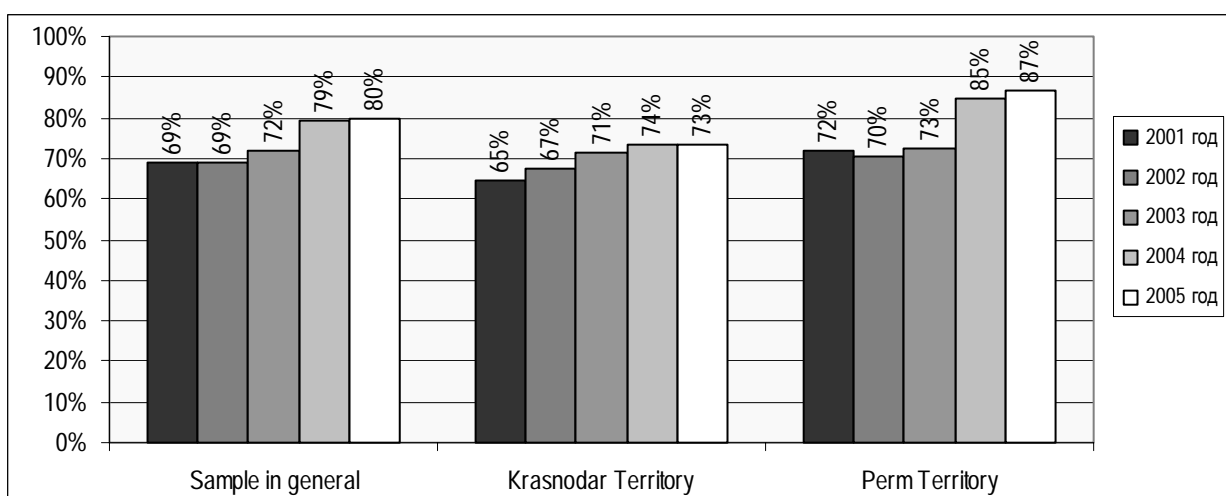


Fig. 52. Indicator 8.1. The share of measured sold water [sample]



2.5 THE CONDITION OF NETWORKS

2.5.1 The condition of water supply networks

Chronic insufficient funding of water supply and wastewater facilities in Russia resulted in stable deterioration of water supply and sewerage networks. The most obvious confirmation of this fact is the information on the additional indicator “The share of networks requiring replacement from the total length of networks” (this indicator is among the indicators, specified in the forms of Russian statistical reports: 1-water supply and 1-wastewater).

Taking all enterprises of the Russian water supply and wastewater sector, the share of water supply networks that require replacement increased more than 1.2-fold, i.e., from 29% to 35% over 2001-2005 (see *Fig. 53.*). This indicator is still higher in the capitals of the Russian regions: over the same period of time this indicator increased from 36.5% to 41.1%.

Fig. 53. Additional indicator. The share of networks requiring replacement from the total length of water pipelines and street water supply network [reports]

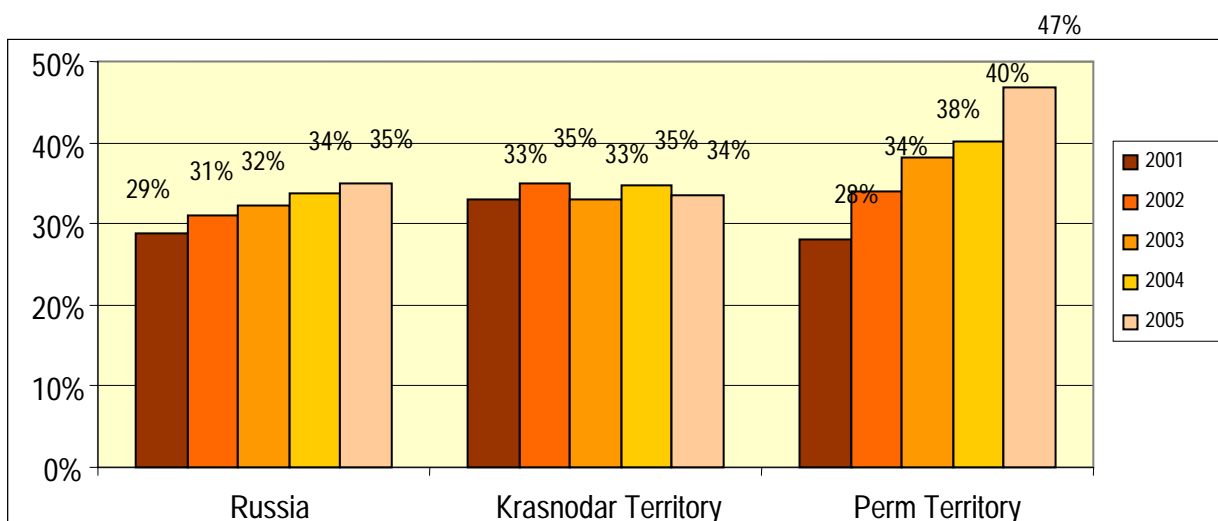
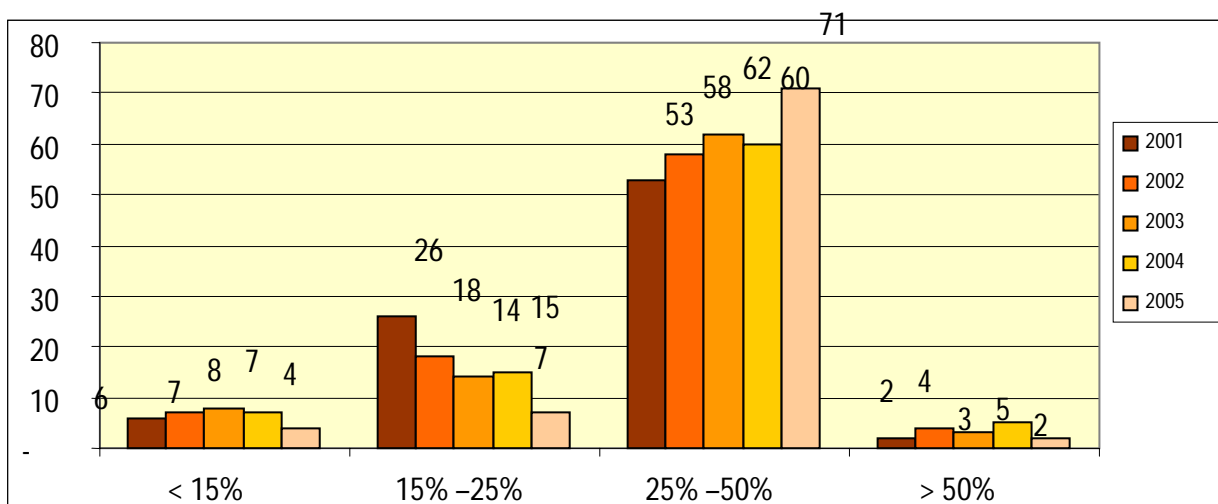


Fig. 54. Grouping of the Russian Federation regions by the indicator “The share of networks requiring replacement from the total length of water pipelines and street water supply network” [reports]



As regards different regions, the number of regions where less than 15% of water supply networks required replacement decreased from 6 to 4 (see *Fig. 54.*), the number of regions where 15%-25% of water supply networks required replacement decreased from 26 to 7, whereas the number of regions with the share of water supply networks requiring replacement varying from 25% to 50% increased from 53 to 71. It should be especially noted that during the period of 2001–2005 from 2 to 6 Russian regions required replacement of over 50% of water supply networks. By the results of 2005, this group included regions of the Russian South: Republic of Kalmykia (54.1%) and Karachayevo-Cherkess Republic (50.4%). Besides the above regions, throughout 2001–2004 this group included Nenets Autonomous Area, Republic of North Ossetia – Alania, Astrakhan Oblast and Kemerovo Oblast.

It is quite clear that depreciation of the fixed assets resulted in a high rate of accidents reported in the water supply networks. For Russia as a whole, the accidents rate measured per kilometre of the water supply networks was from 0.38 to 0.42, whereas for the capitals of Russian regions this indicator varied from 0.46 to 0.63. For the entire sample, this indicator increased from 1.22 to 1.92 accidents/km of the network; for the Krasnodar Territory enterprises, included into the sample, this indicator was always above 2 accident/km over 2001–2005.

Fig. 55. Indicator 9.1. Accidents in the water supply networks [reports]

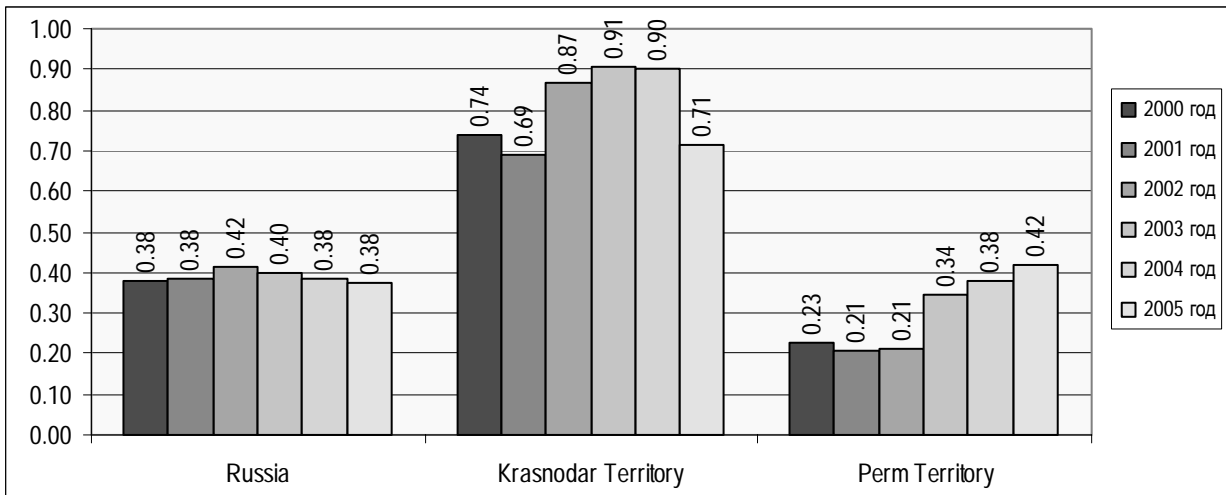
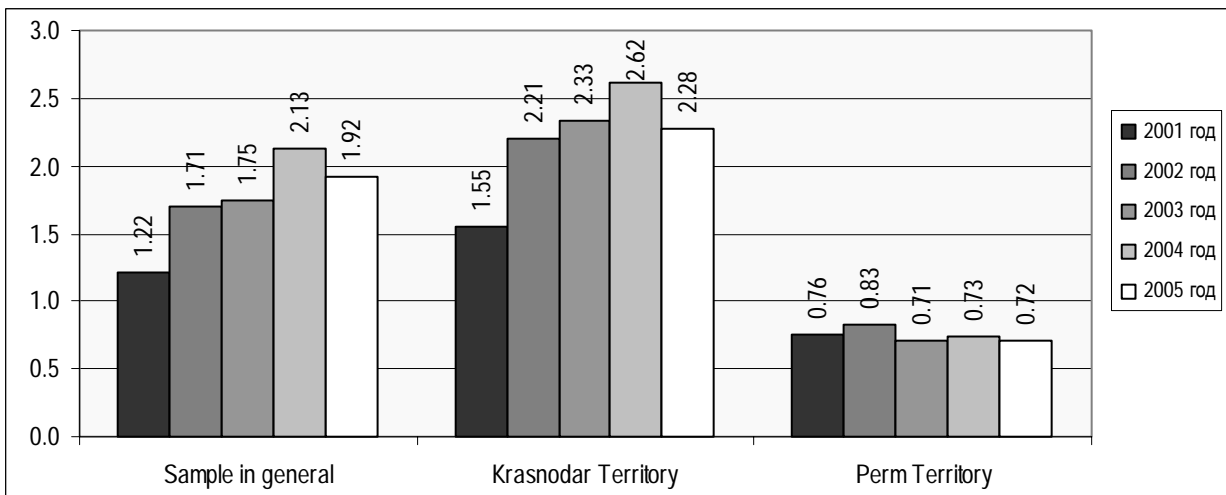


Fig. 56. Indicator 9.1. Accidents in the water supply networks [sample]



2.5.2 The condition of sewerage networks

As regards sewerage networks, there is an obvious trend towards increased accident rates. Over 2000–2005, the accident rate per kilometre of networks in Russian in general increased from 0.18 to 0.22 (see Fig. 57.). For the enterprises, included into indicative survey, the accident was almost one order higher (2.03 accident rate per kilometre of networks in 2001, 2.93 accident rate 2004, though by the results of 2005 this indicator decreased to 1.99 accident rate per kilometre of networks). This significant difference between the statistical data and the indicative survey can be explained by the use of different methods of account: the statistical data include only accidents, whereas methods used by the World Bank account both accidents and sewerage networks clogging.

Fig. 57. Indicator 10.1. Accidents in sewerage networks [reports]

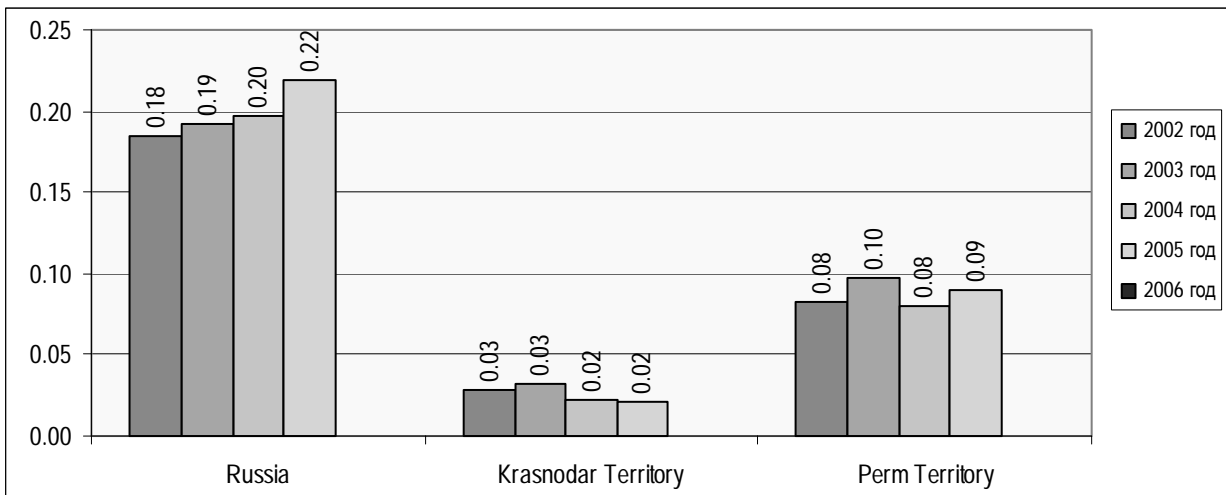
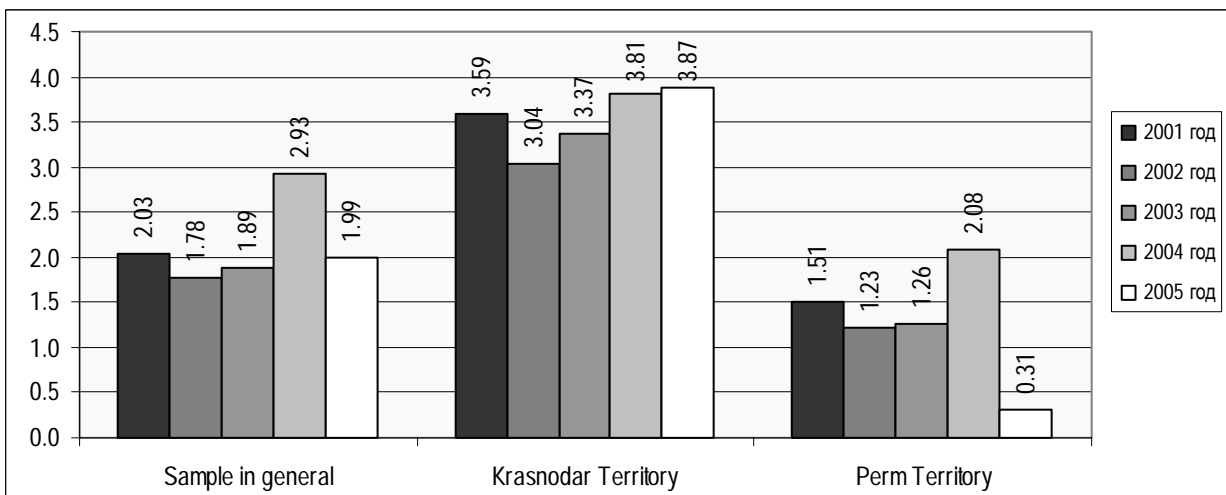


Fig. 58. Indicator 10.1. Accidents in sewerage networks [sample]



2.6 OPERATIONAL COSTS AND STAFF

2.6.1 Operational costs

By the results of 2005, operational costs calculated per unit of production for all water supply and wastewater facilities of Russia were \$0.32, going up 3 times compared to 2000 (see *Fig. 60.*). In the general operational costs, the operational costs related to water supply in 2005 were 57.9%, and compared to 2000 this indicator decreased by 1.4% (see *Fig. 62.*).

Fig. 59. Indicator 11.1. Operational costs per unit of production: for supply [sample] (USD/m³ of water)

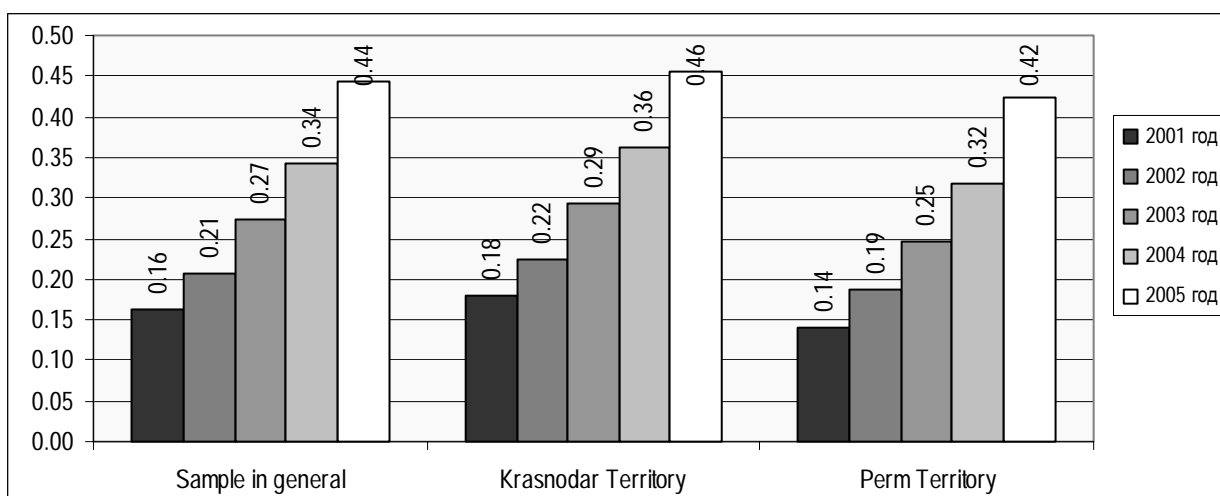


Fig. 60. Indicator 11.2. Operational costs per unit of production: for production [sample] (USD/m³ of water)

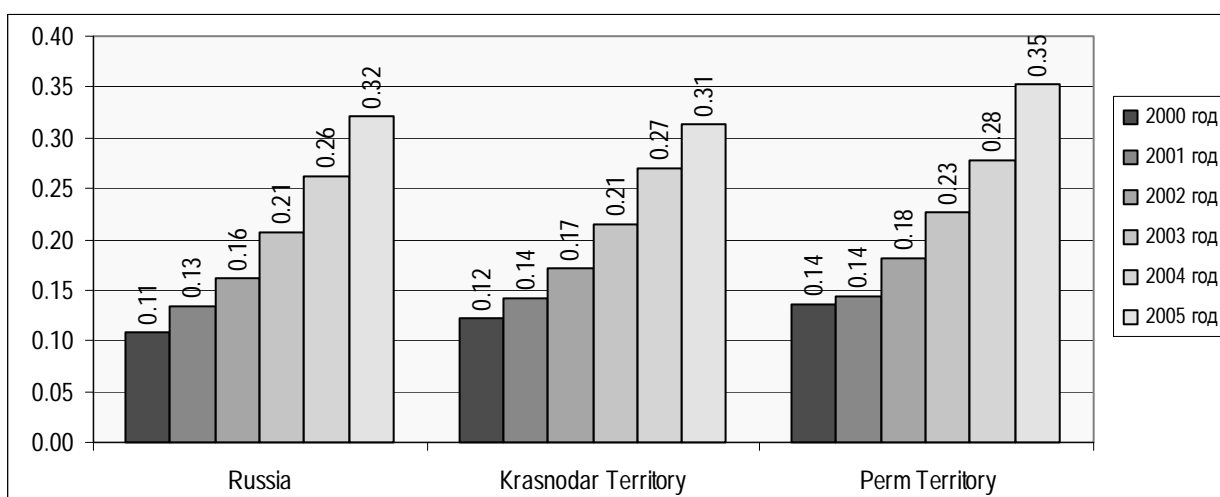


Fig. 61. Indicator 11.2. Operational costs per unit of production: for production [sample] (USD/m³ of water)

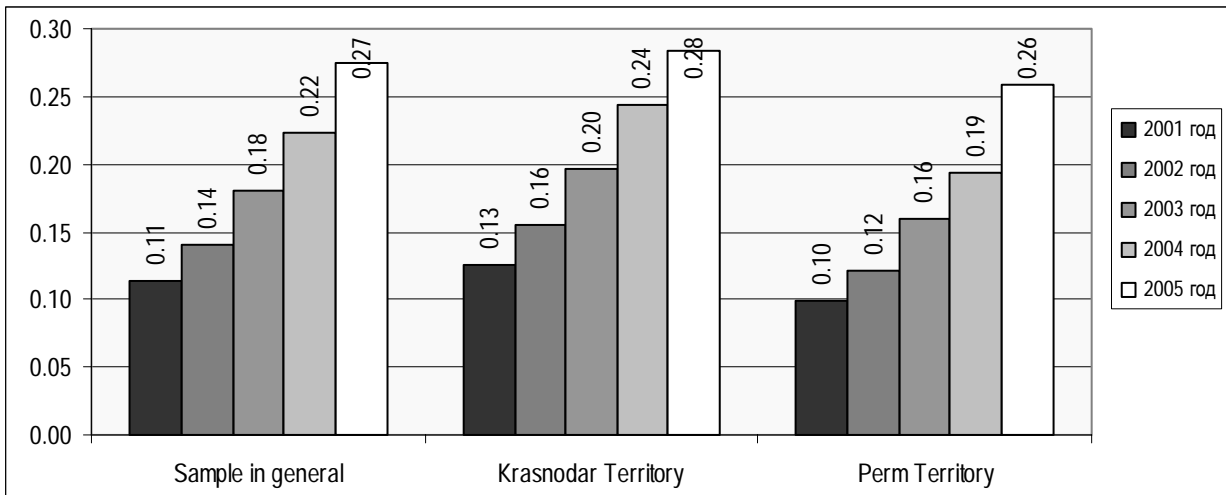


Fig. 62. Indicator 11.3. Operational costs per unit of production: water supply [reports] (USD/m³ of water)

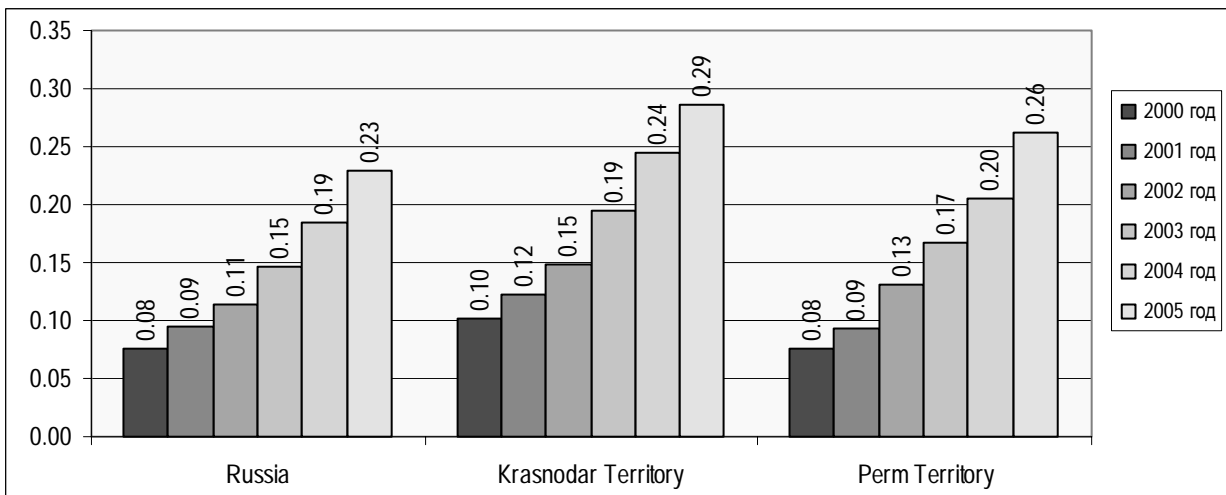


Fig. 63. Indicator 11.4. Breakdown of operational costs: % of water supply [reports]

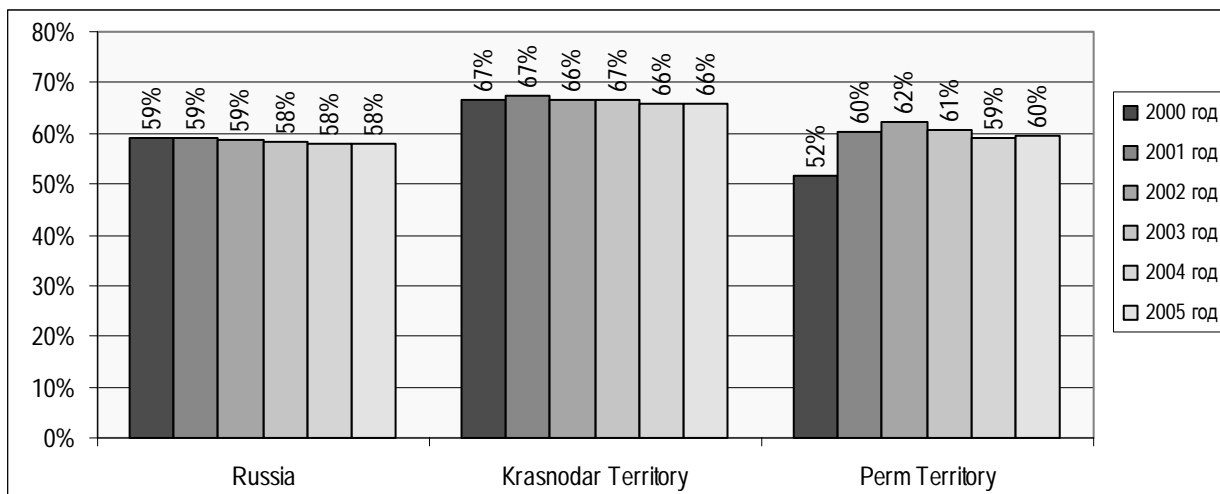


Fig. 64. Indicator 11.5. Breakdown of operational costs: % of sewerage [reports]

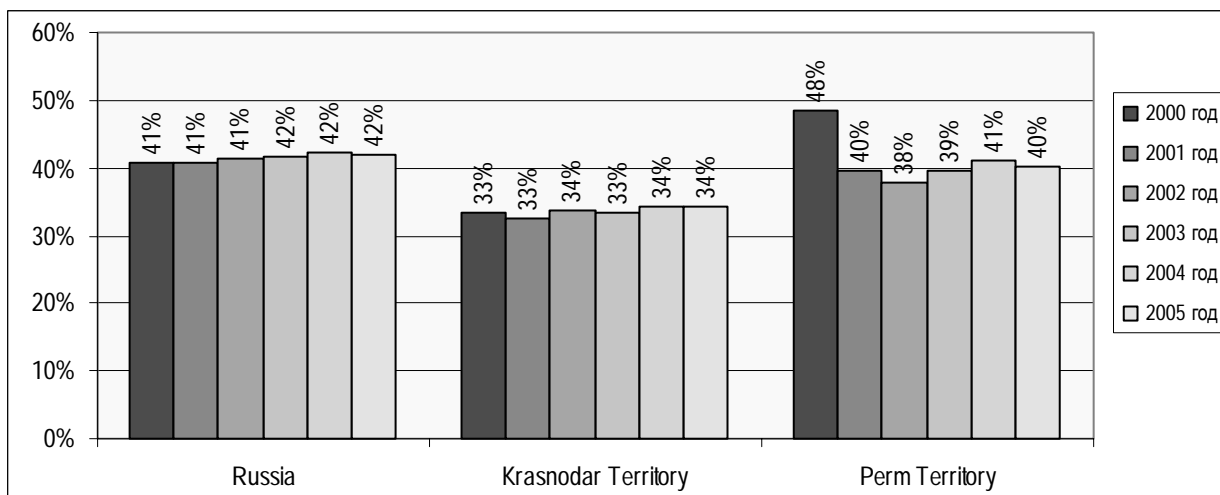
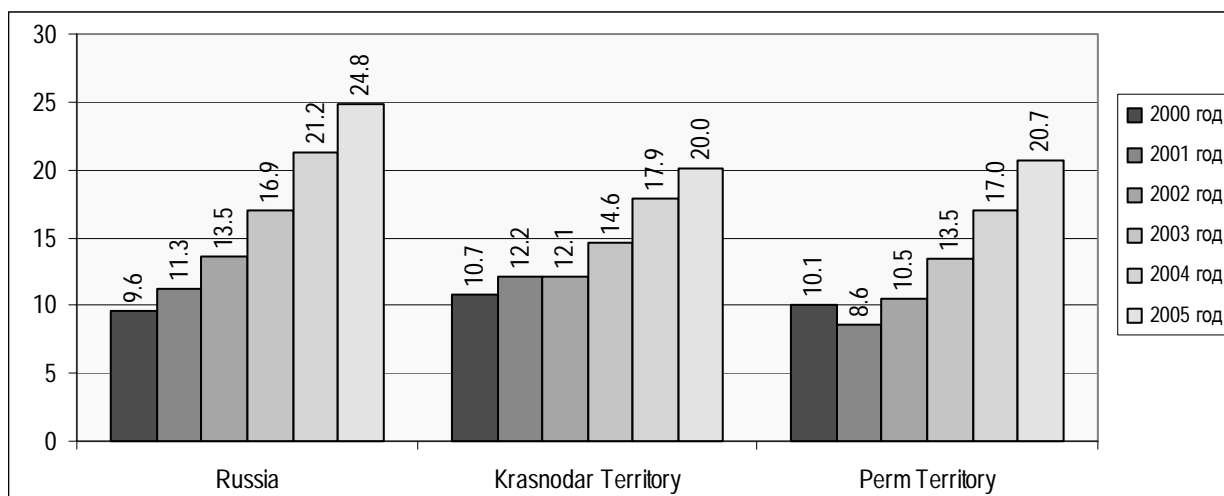


Fig. 65. Indicator 11.6. Operational costs per unit of production: sewerage [reports]



2.6.2 Structure of expenses

Over 2000–2005, the structure of expenses of Russian water supply and wastewater enterprises changed radically. The main changes were related to a stable increase of wages and salaries, whose growth rates exceeded the growth rate of some expenses components pertaining to basic operation activities of enterprises. As a consequence, while in 2000 the share of salary expenses of these enterprises in Russia in general was 20%, then by the results of 2005 **indicator 13.1** was 29% of the total expenses related to main operation activities of the water sector enterprises (see *Fig. 66.*). Similar changes in the costs structure were reported by the results of the indicative survey; however, the share of salary expenses for the enterprises, included into the sample, initially was at a higher level, and over the period of analysis it increased from 26% in 2001 to 32% by the results of 2005 (see *Fig. 67.*).

As regards the average indicator for all enterprises, included into the sample, the growth of average salary expenses per unit (per worker engaged in the basic operation activities) was 226% for the period of over 2001–2005; including 219% for the Perm Territory enterprises and 234% for the Krasnodar Territory enterprises. The minimum growth of specific costs per unit for these enterprises was 148%, whereas the maximum growth was 469%.

Fig. 66. Indicator 13.1. Share of salary expenses [reports]

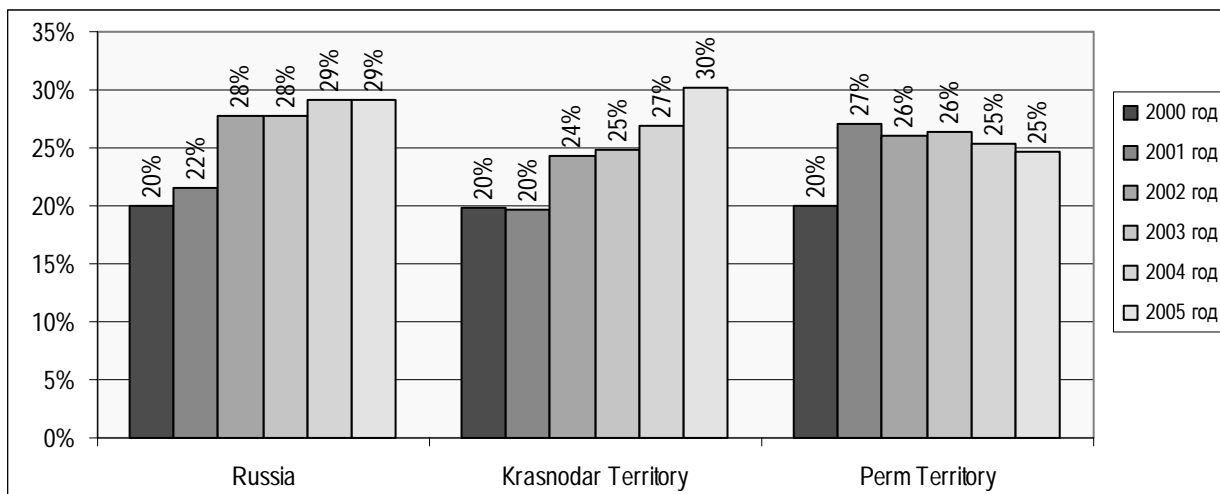
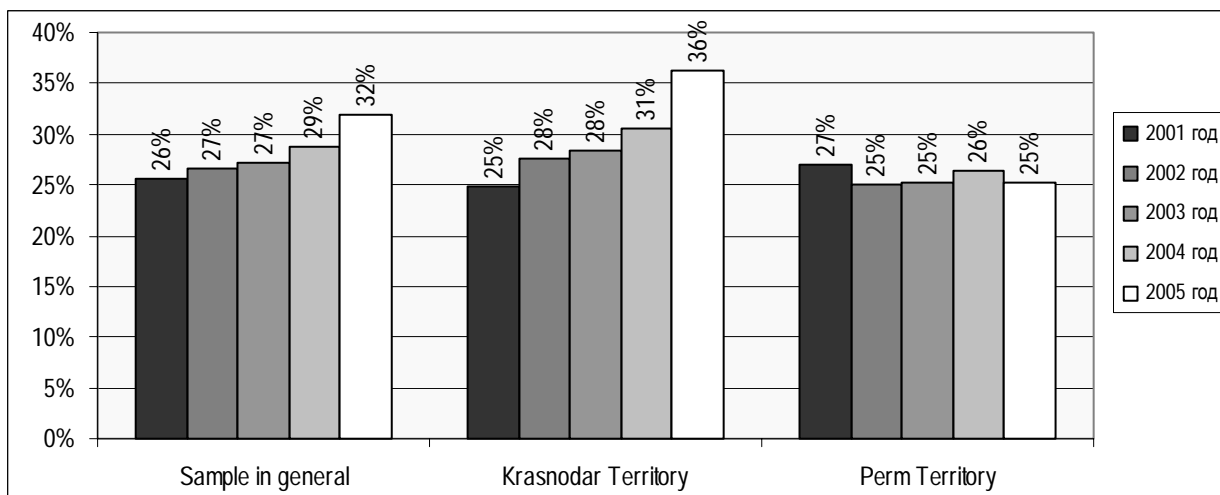
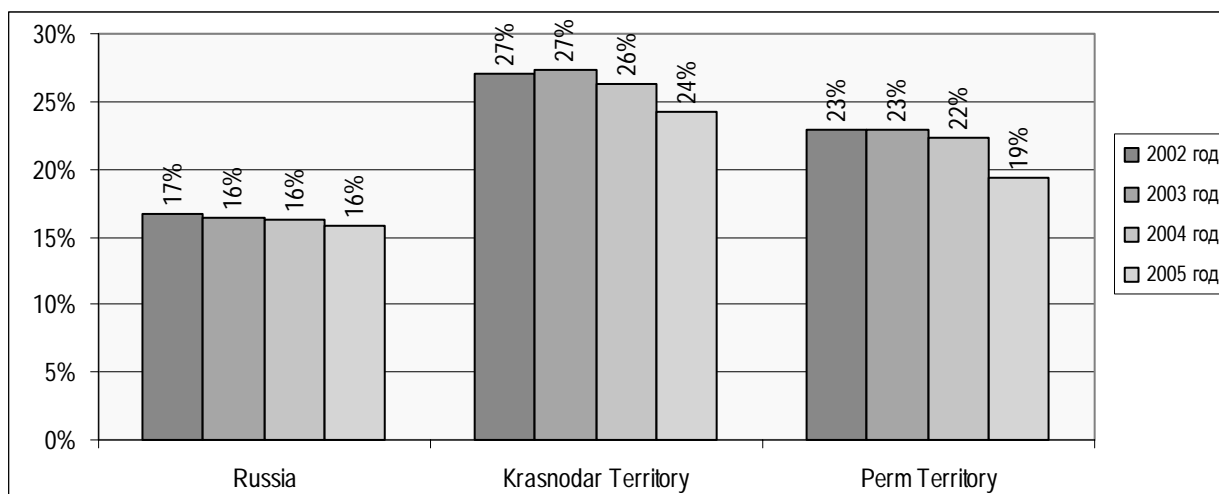


Fig. 67. Indicator 13.1. Share of salary expenses [sample]



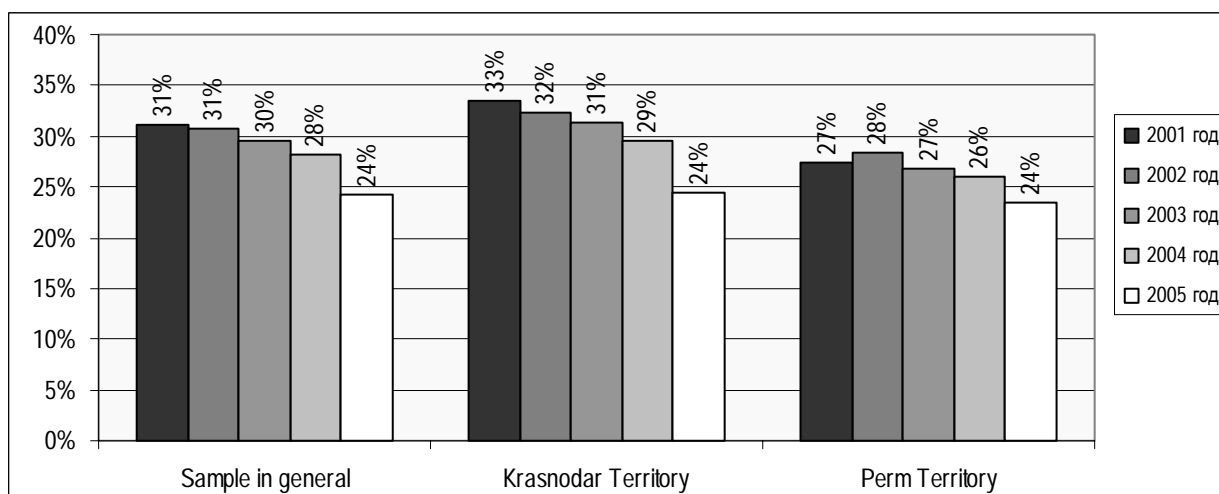
The share of electricity expenses, on the contrary, decreased throughout the entire period of analysis. For Russia as a whole, according to official statistics, the value of **indicator 13.2** decreased from 17% to 16%; for all enterprises of the Krasnodar Territory this indicator decreased from 27% to 24%, and in the Perm Territory it went down from 23% to 19% (see *Fig. 68.*)

Fig. 68. Indicator 13.2. Share of electricity expenses [reports]



The indicative survey among the enterprises of the Krasnodar Territory and the Perm Territory also showed some decrease of the share of electricity expenses of these enterprises; it should be noted that this decrease was even more substantial: for all enterprises, included into the sample, this indicator decreased from 31% to 24%; for the Krasnodar Territory it decreased from 33% to 24% and for the Perm Territory from 27% to 24% (see *Fig. 69.*).

Fig. 69. Indicator 13.2. Share of electricity expenses [sample]



According to the official statistics, the share of expenses related to subcontract for the Russian water supply and wastewater enterprises in the period of 2000-2001 (information for the later period is not available) was 7%-9% (see *Fig. 70.*), while the indicative survey showed a much higher **indicator 14.1** (see *Fig. 71.*): generally, during this period, the share of contractual expenses of all enterprises, included into the sample, decreased from 15% to 11%, whereas in the Krasnodar Territory this indicator, after some years of stabilization at the level of 10%-11%, increased to 14% by the results of 2005. For the entire Perm Territory, this indicator decreased during the period of analysis almost three times, from 20% to 6%; a sharp increase of this indicator in 2003 to 51% was related to the fact that water supply and wastewater enterprises in

the Perm Territory were switched over to a private operator, “NOVOGOR-Prikamye” Ltd., for which wastewater receiving and treatment operations were initially provided by the MUE “Permvodocanal”. In the subsequent years, the municipal wastewater sector was taken on lease, which resulted in the decrease of the indicator to 14% in 2000 and to 6% by the results of 2005.

Fig. 70. Indicator 14.1. Share of expenses related to subcontracts [reports]

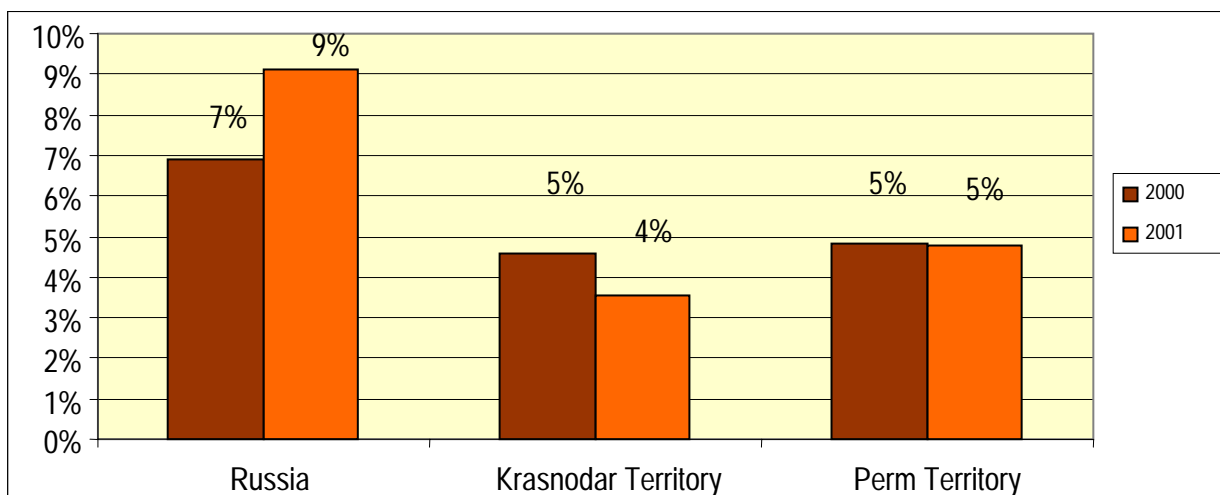
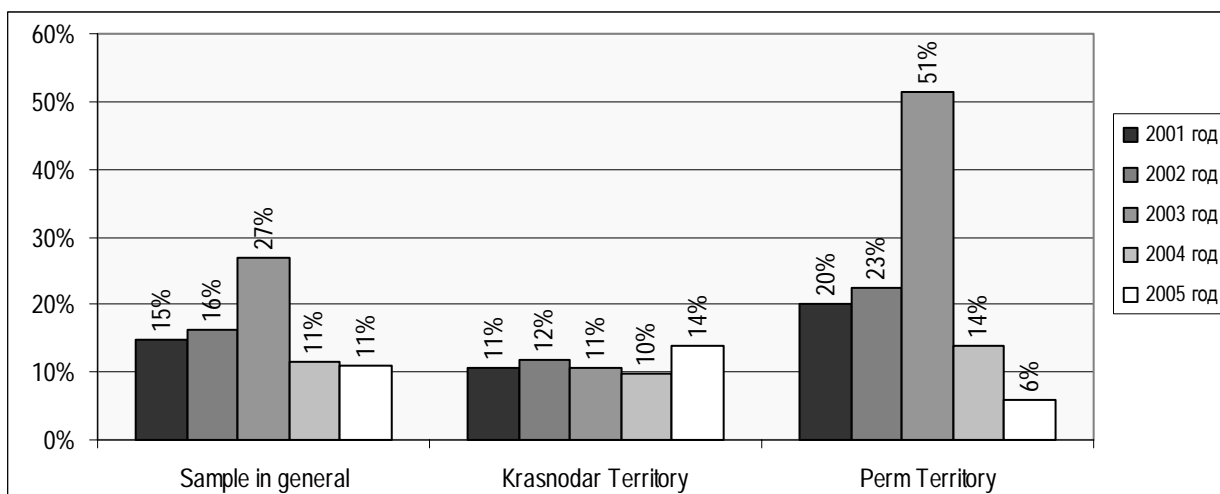


Fig. 71. Indicator 14.1. Share of expenses related to subcontracts [sample]



2.6.3 Staff

Over the period of analysis, the number of staff employed by the Russian water supply and wastewater sector per 1000 of persons receiving services (**indicator 12.4**) changed very slightly, from 2.47 employees in 2002 to 2.34 employees in 2005. As regards different sectors, these changes were more noticeable and diverse. Over 2000–2005, the number of staff in the water supply sector per 1000 serviced persons (**indicator 12.3**), generally for all Russian enterprises, decreased from 2.7 to 2.4 employees, while the share of these employees in the total staff (**indicator 12.7**) decreased from 59% to 56%.

Fig. 72. Indicator 12.1. Water supply employees per 1000 connection points to water supply networks [sample] (employees/1000 connection points)

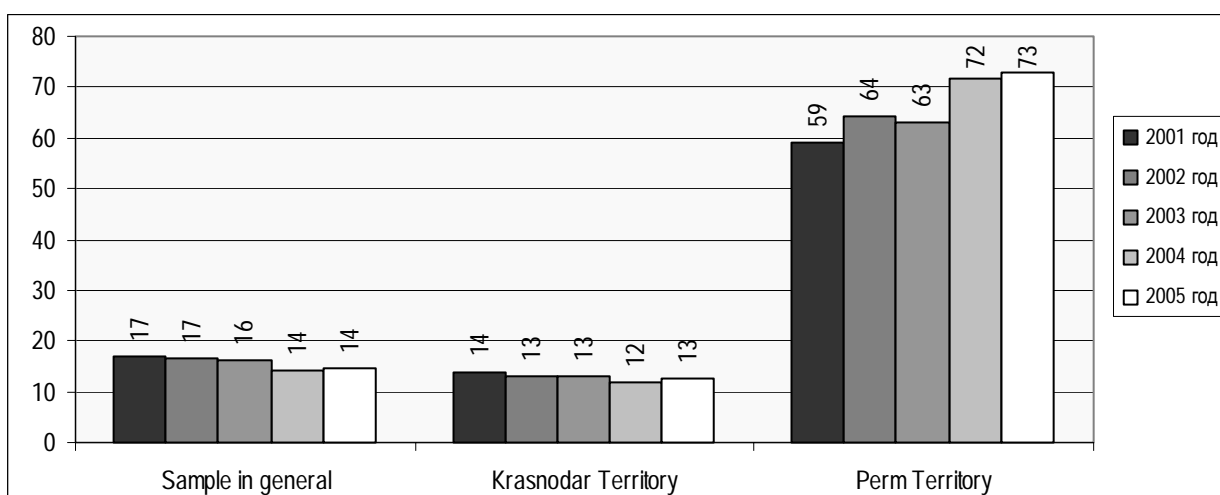


Fig. 73. Indicator 12.2. Water supply and wastewater employees: per 1000 connection points to water supply and sewerage systems [sample] (employees/1000 connection points)

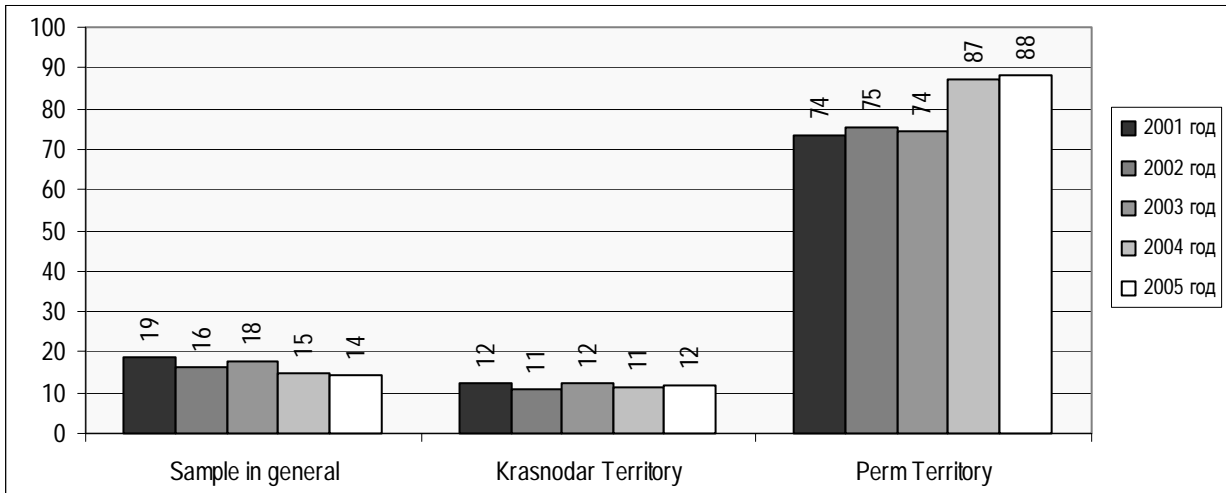


Fig. 74. Indicator 12.3. Water supply employees per 1000 serviced persons [reports] (employees /1000 serviced persons)

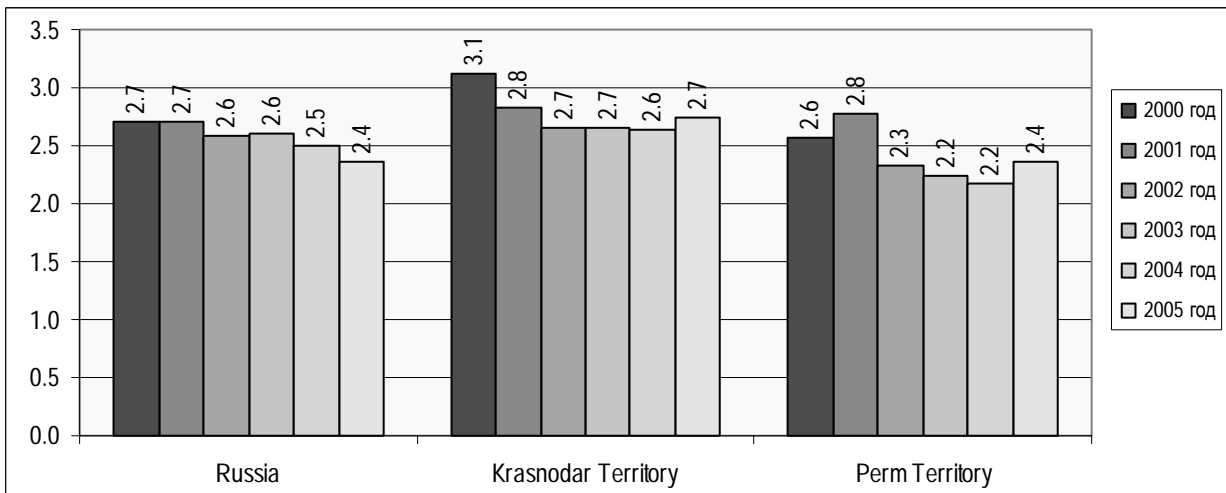


Fig. 75. Indicator 12.3. Water supply employees per 1000 serviced persons [sample] (employees /1000 serviced persons)

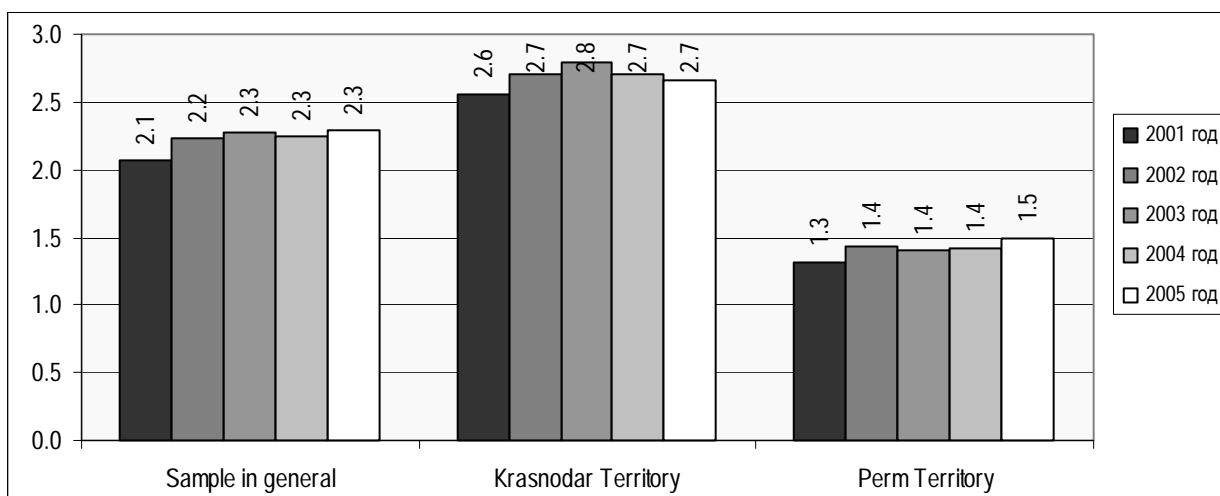


Fig. 76. Indicator 12.4. Water supply and wastewater employees: per 1000 persons serviced by water supply and wastewater enterprises [sample] (employees /1000 serviced persons)

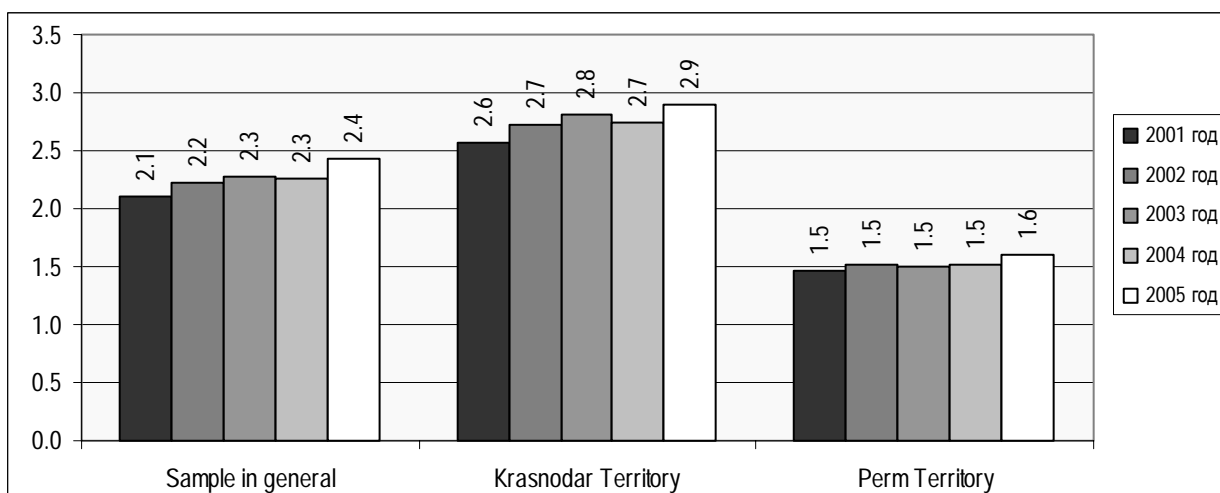


Fig. 77. Indicator 12.4. Water supply and wastewater employees: per 1000 persons serviced by water supply and wastewater enterprises [reports] (employees /1000 serviced persons)

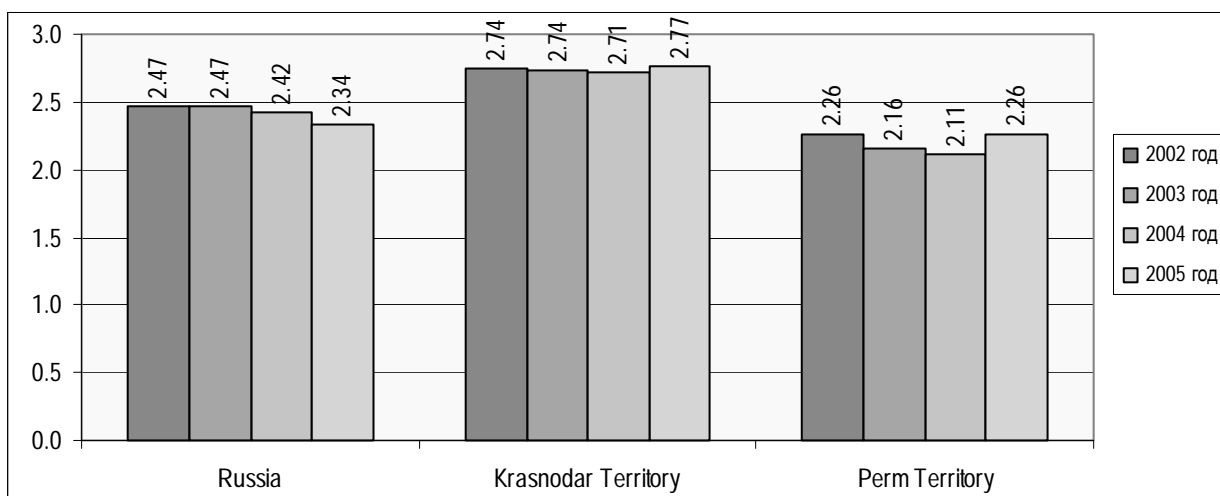


Fig. 78. Indicator 12.5. Wastewater employees: per 1000 connection points to sewerage systems [sample] (employees /1000 serviced persons)

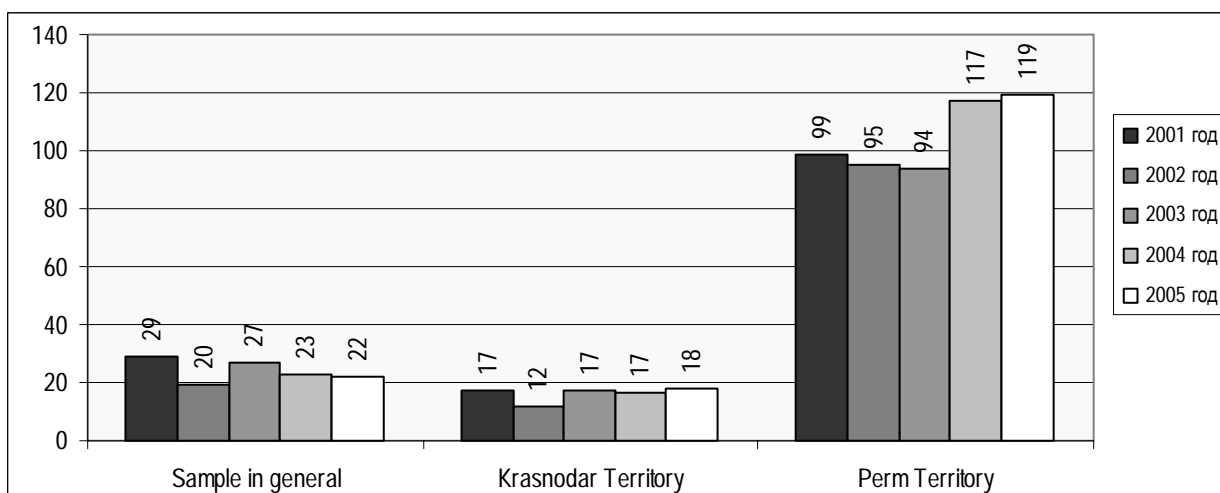


Fig. 79. Indicator 12.6. Wastewater employees: per 1000 serviced persons [sample] (employees /1000 serviced persons)

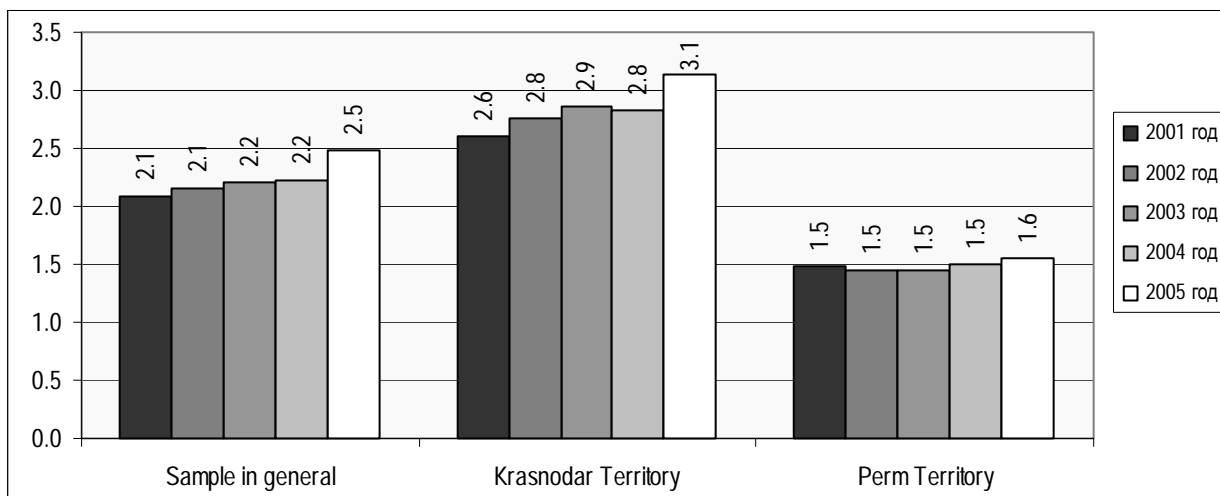


Fig. 80. Indicator 12.7. Water supply employees: % of the total number of employees of the water supply and wastewater facilities [reports]

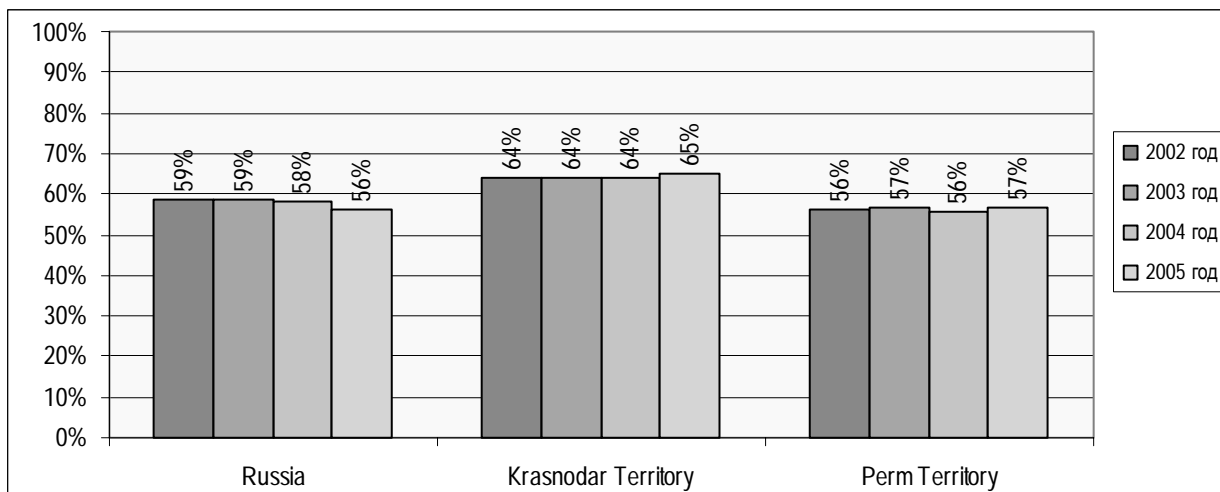


Fig. 81. Indicator 12.7. Water supply employees: % of the total number of employees of the water supply and wastewater facilities: [sample]

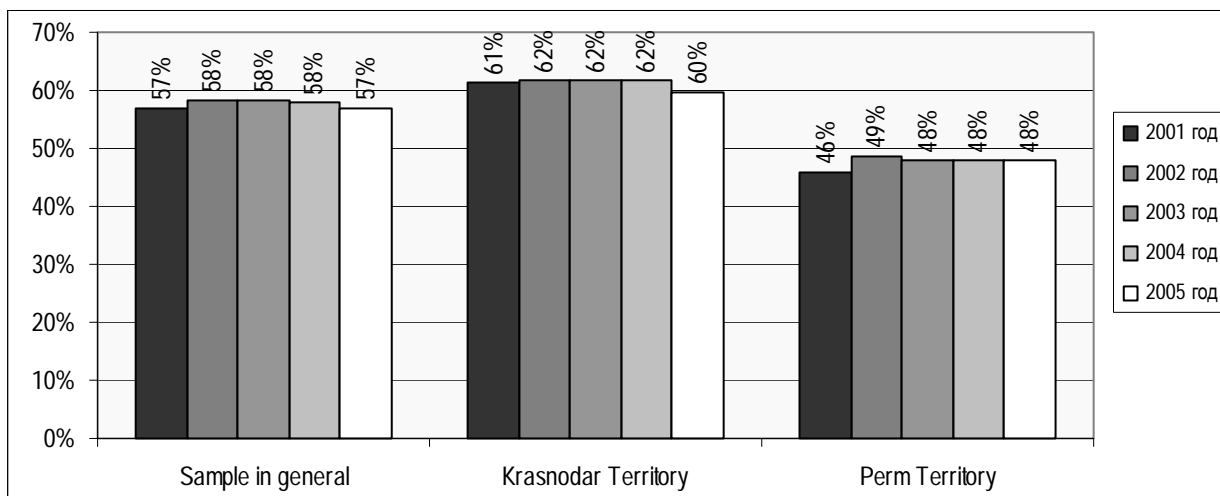


Fig. 82. Indicator 12.8. Wastewater employees: % of the total number of employees of the water supply and wastewater facilities [reports]

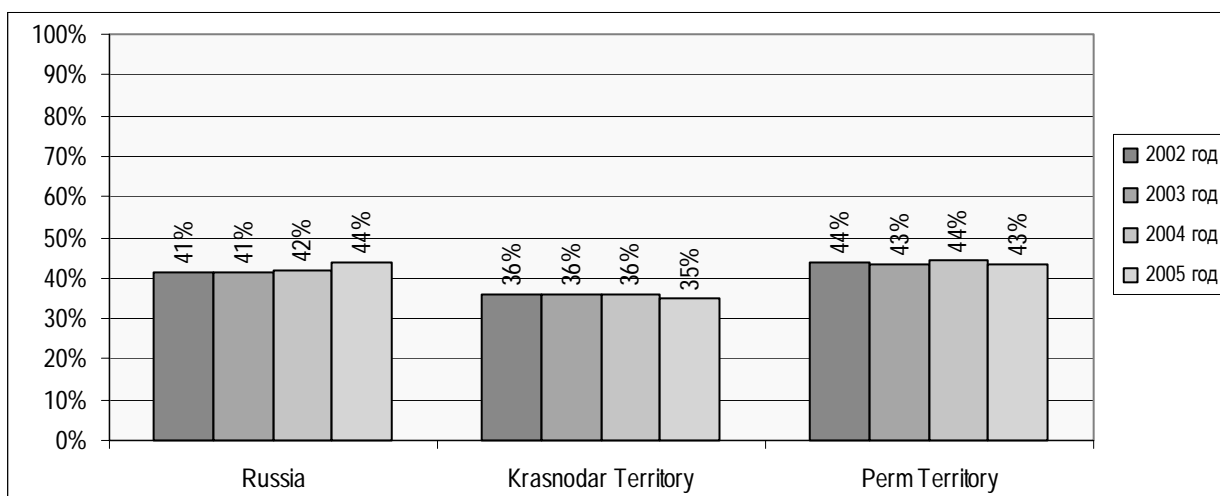
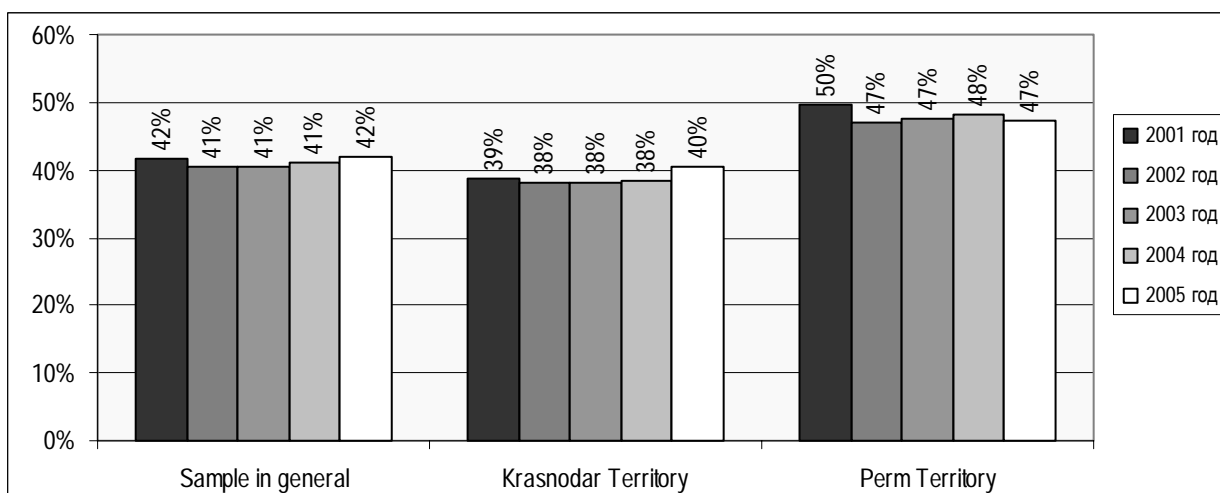


Fig. 83. Indicator 12.8. Wastewater employees: % of the total number of employees of the water supply and wastewater facilities [sample]



2.7 QUALITY OF SERVICES

2.7.1 Uninterruptible services

The results of the indicative survey organized at enterprises of the Krasnodar Territory and the Perm Territory show that over the period of analysis the quality of water supply services was not optimal, but at a rather high level.

For example, the period of uninterrupted water supply for all enterprises, included into the sample, increased from 21.2 to 22.1 h/day; for the Perm Territory enterprises this indicator was close to the maximum value (23.9 h/day in 2001 and 2003, and 23.6 h/day in 2004-2005). The low level of this indicator for the Krasnodar Territory enterprises was stipulated by a small period of uninterrupted water supply in the town of Abinsk (11 h/day in 2001–2004 and 13 ч h/day in 2005), the town of Apsheronsk (9 h/day in 2002-2003 and 8 h/day in 2004–2005), the station of Novokubanskaya (10 h/day in 2001–2004 and 16 h/day in 2005), town of Belorechensk (9 h/day in 2002–2003 and 18 h/day in 2004–2005). The determining impact on the level of this indicator in 2001–2002 was made by the special conditions of water supply in the city of Krasnodar (14 h/day). In 2003, these special water supply conditions were abolished, and the level of the total indicator in the territory increased from 19.3 h/day to 22.6 h/day.

Fig. 84. Indicator 15.1. Uninterruptible services [sample]

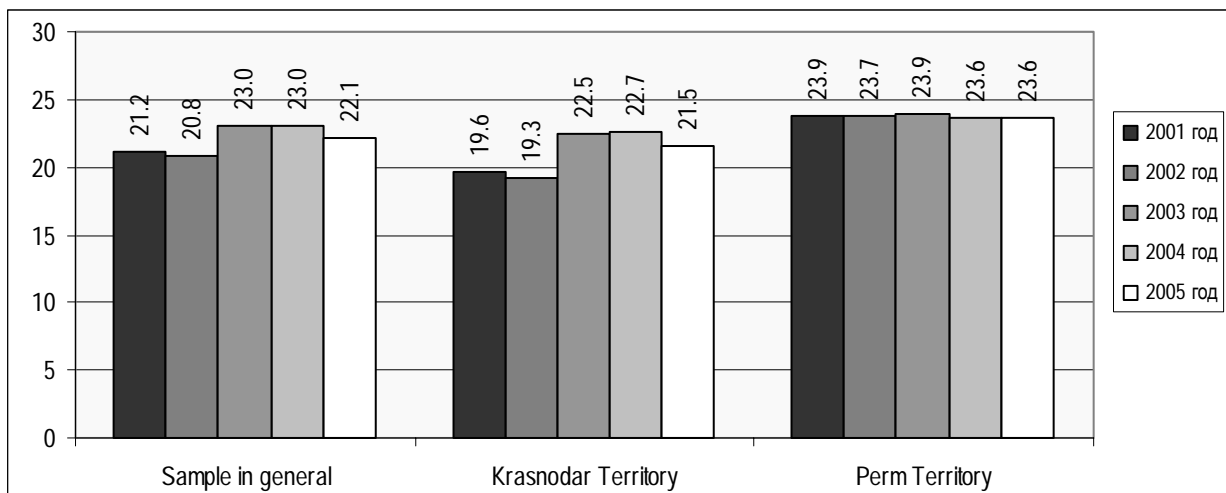
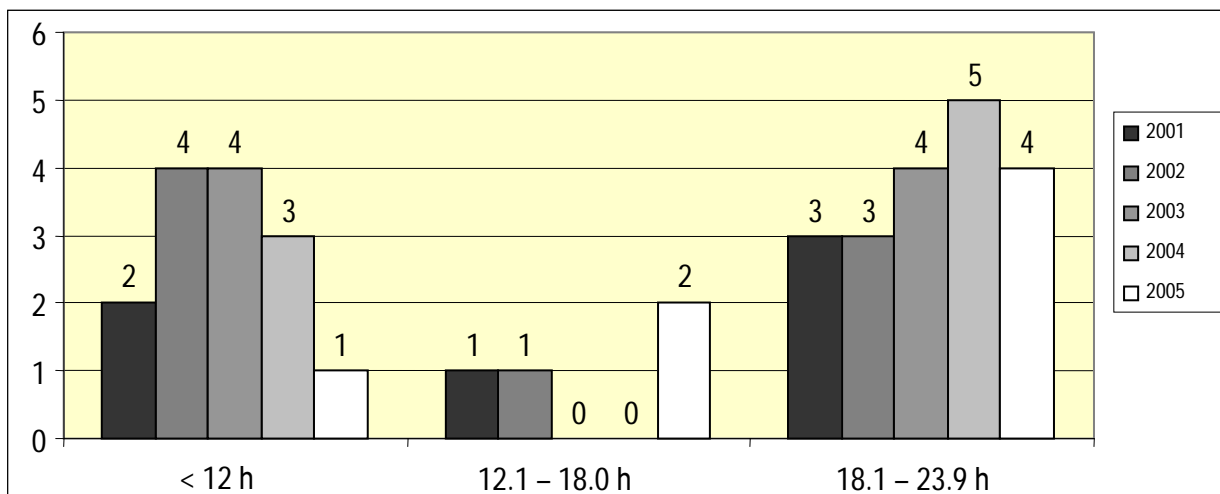


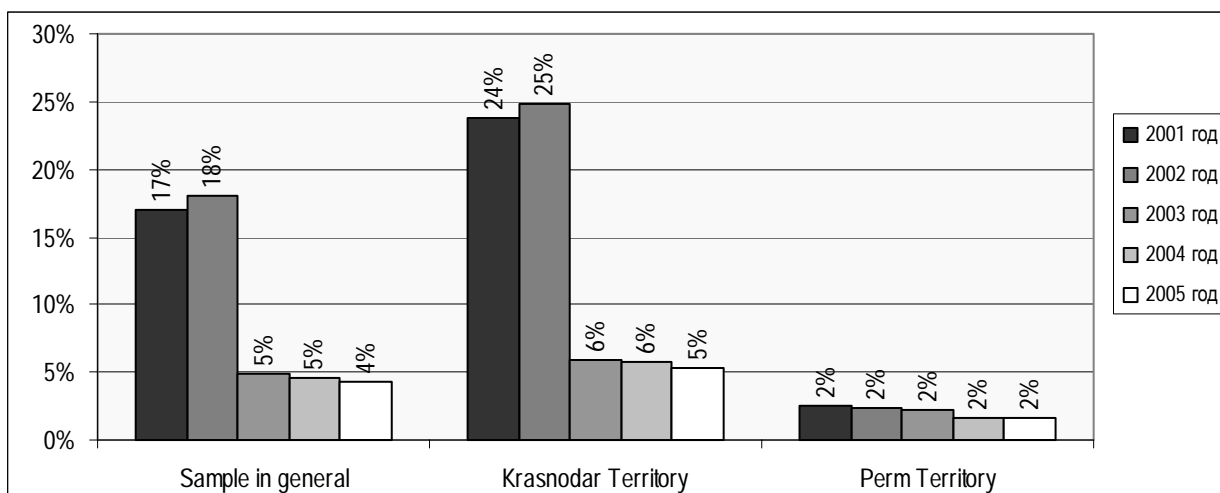
Fig. 85. Grouping of the Krasnodar Territory enterprises by the period of uninterrupted water supply



Note: Information is given for enterprises which provided water supply services less than 24 hours per day.

Because of special water supply conditions introduced in the city of Krasnodar in 2001–2002, the level of **indicator 15.2**, characterizing the share of users who receive water with interruptions from the total number of serviced population, was low (see *Fig. 86*). Given that Krasnodar is a big port city in the Krasnodar Territory, it is quite easy to see the reason why the analyzed indicator for the Krasnodar Territory reached 24-25% in 2001-2002. After abolishing of the special water supply conditions, this indicator decreased immediately more than 4 times, from 25% in 2002 to 6% by the results of 2003, and the following period it gradually decreased to 5%. In the Perm Territory, the analyzed indicator was lower at the beginning (2% by the results of 2001), therefore, during the period of analysis this value decreased only by a fraction of a percent.

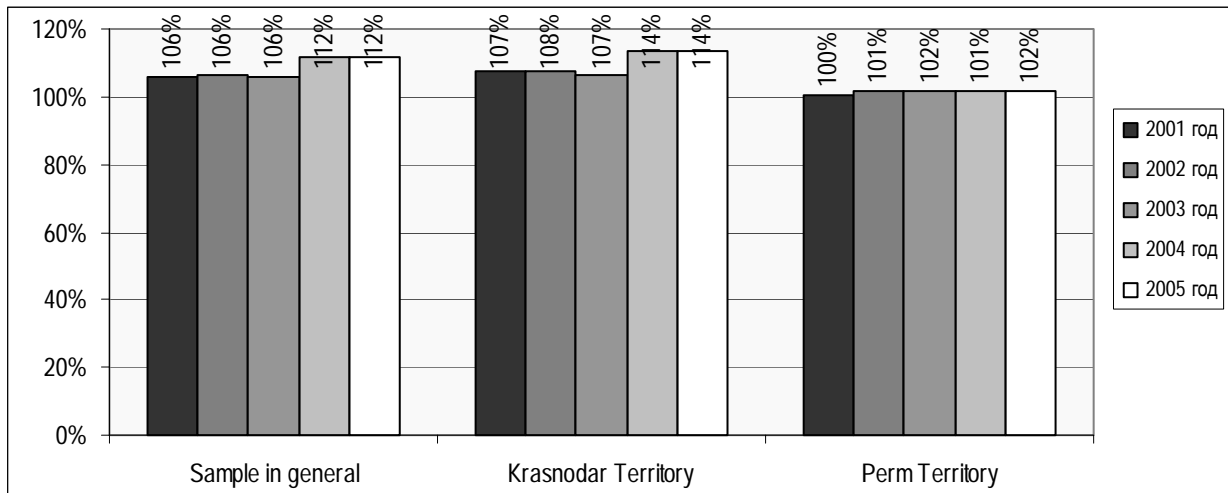
Fig. 86 Indicator 15.2. % of users with interrupted water supply [sample]



2.7.2 Quality of supplied water

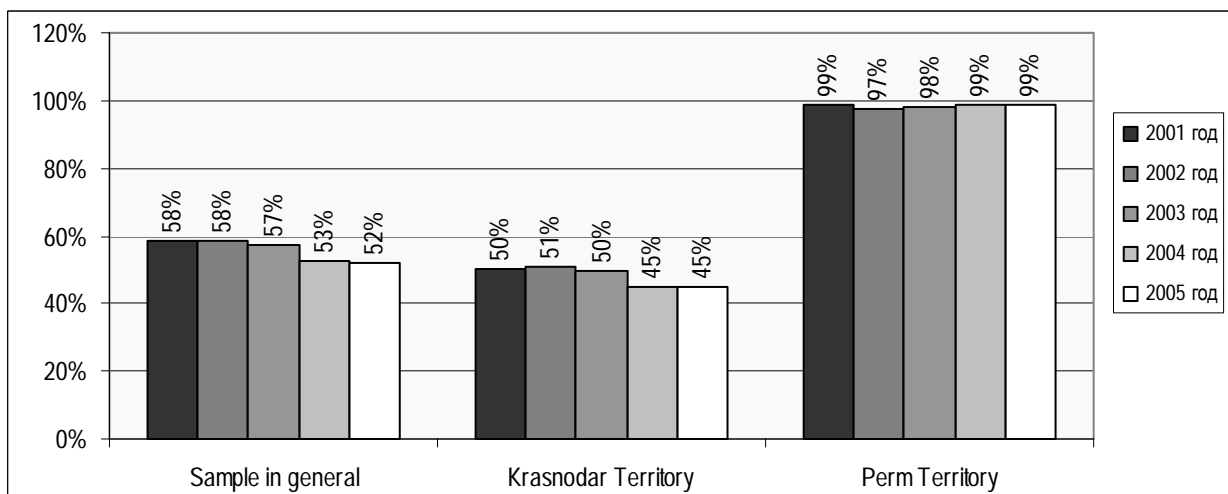
The number of residual chlorine checks at the Krasnodar Territory and Perm Territory enterprises, taking part in the indicative survey, was stably over 100%; thus, the actual number of checks exceeded the required number of checks (see *Fig. 87*).

Fig. 87. Indicator 15.3. Quality of supplied water: number of checks for residual chlorine [sample]



In 2001, of the total number of checks made by all enterprises, included into the sample, 58% of tests were found to meet the standards on the residual chlorine; in the following years this indicator decreased to 52% (see *Fig. 88*). The decrease of this indicator was related to a very low quality of waster, supplied by the Krasnodar Territory enterprises: over the period of analysis the share of tests meeting the standard on the residual chlorine decreased from 50% to 45%. As a result, despite the fact that the indicator for the Perm Territory enterprises was close to optimal (99% in 2001 and in 2004-2005.), **indicator 15.4** was small for all enterprises, included into the sample.

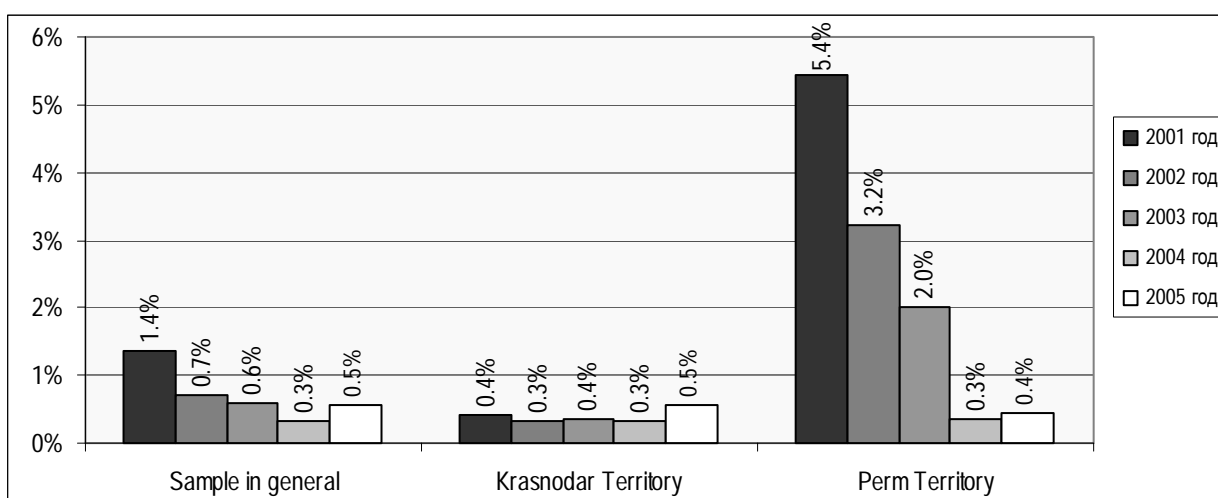
Fig. 88. Indicator 15.4. Quality of supplied water: tests complying with to the residual chlorine standard [sample]



2.7.3 Complaints about quality of services provided by the water supply and wastewater facilities

The number of complains about quality of water supply and wastewater services per connection point, taken for all enterprises, included into the indicative survey, decreased from 1.4% in 2001 to 0.5% by the results of 2005 (see *Fig. 89.*) For the Krasnodar Territory enterprises, this indicator was low at the beginning, and its value over the period of analysis varied within 0.3%-0.5%. Quite different level of the indicator was reported for the Perm Territory enterprises.

Fig 89. Indicator 16.1. Complaints about quality of services provided by the water supply and wastewater facilities [sample]



In many respects, this is related to the characteristic features of determination of the number of connections to the water supply and sewerage networks, under the impact of which this indicator was at the level of 5.4% by the results of 2001. In the following years, both the absolute increase of the number of complaints and a change in the number of connection points were reported; therefore, the value of the indicator for the Perm Territory enterprises decreased to 0.3%-0.4% (see *Fig. 89.*).

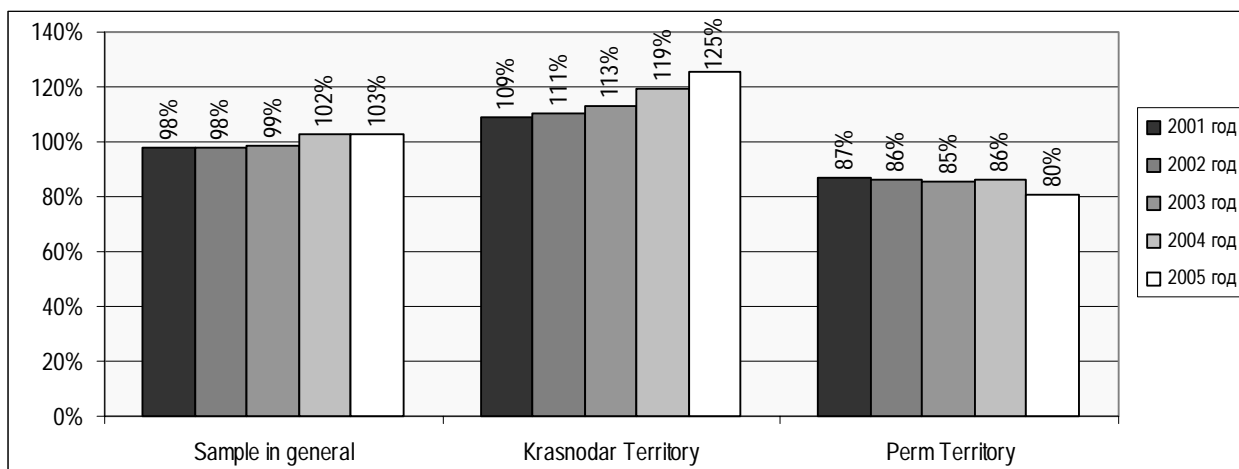
2.7.4 Quality of wastewater treatment

Russian enterprises, taking part in the indicative survey, in the recent years have reported as high level of the **indicator 17.1**, characterizing the share of treated wastewater (see *Fig. 90.*).

For all enterprises, included into the survey, the value of the indicator in 2004–2005 exceeded 100% due to a high share of wastewater treated in the Krasnodar Territory (109% in 2001; by 2005 there was a growth to 125% of the total amount of received wastewater). The fact that this indicator exceeded 100% can be explained by the fact that some enterprises received wastewater for treatment from other sewerage networks.

On the contrary, for the Perm Territory enterprises the value of this indicator had a trend towards decrease, going down over the period of analysis from 87% in 2001 and reaching 80% by the results of 2005.

Fig. 90. Indicator 17.1. The share of treated wastewater [sample]



The share of wastewater sent for primary (mechanical) treatment over the period of analysis decreased from 41% to 35% (see [Fig. 91.](#)).

The share of wastewater sent for secondary (in-depth) treatment increased from 94% to 101% (see [Fig. 92.](#)).

Fig. 91. Indicator 17.2. Wastewater: primary treatment [sample]

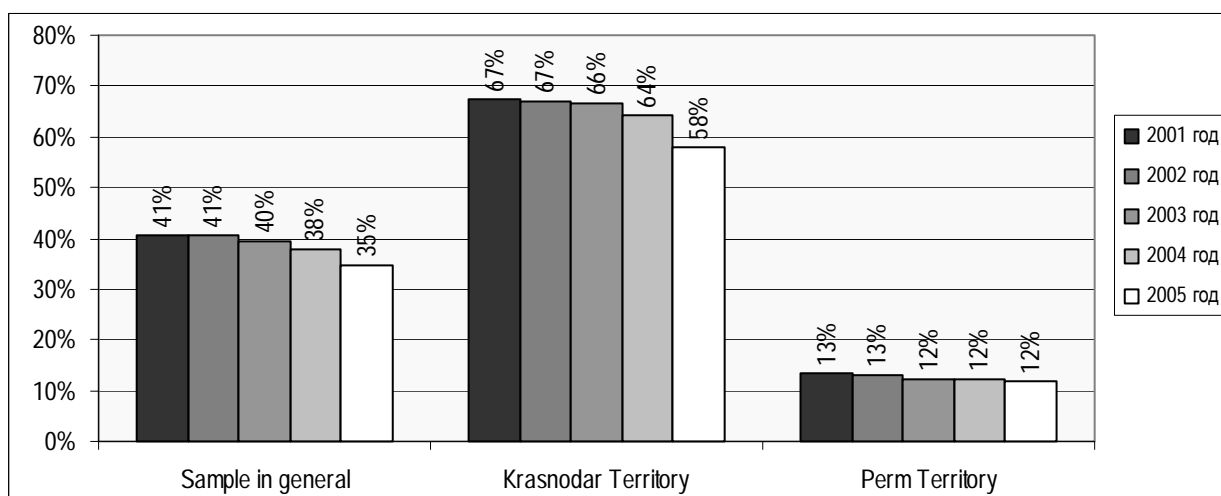
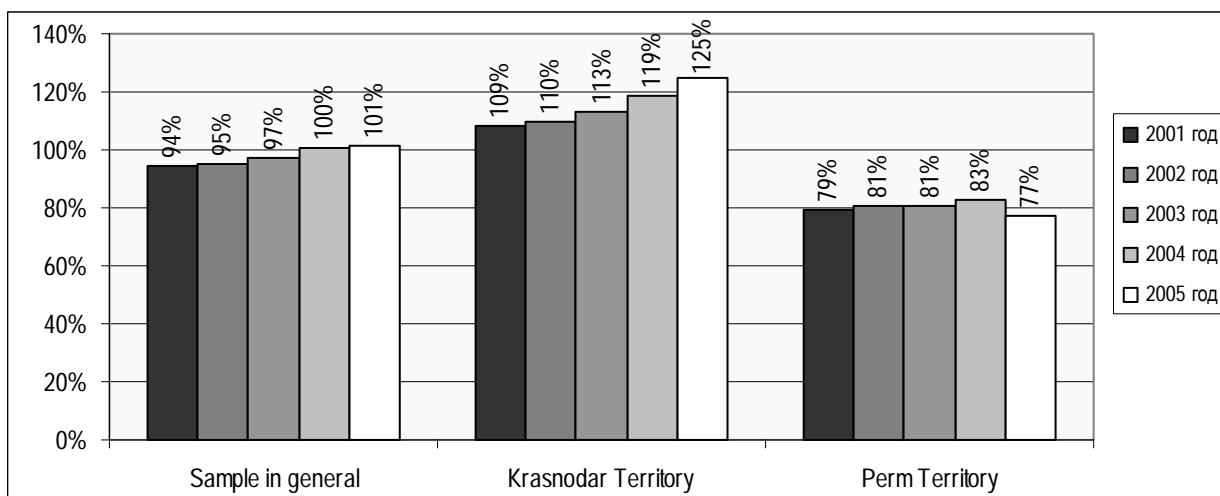


Fig. 92 . Indicator 17.3. Wastewater: secondary and in-depth treatment [sample]



2.8 BILLING AND COLLECTION OF FEES

2.8.1 Incomes of enterprises

Over the period of analysis, the average incomes of the Russian water supply and wastewater enterprises increased more than 2-fold, according to official statistics, from \$0.23 to \$0.50 per cubic metre of water (see [Fig. 93.](#)); for the enterprises, included into the sample, incomes increased from \$0.16 to \$0.44 per cubic metre of water (see [Fig. 94.](#)).

Fig. 93. Indicator 18.1. Average incomes of water supply and wastewater enterprises per cubic metre of water [reports] (USD/m³)

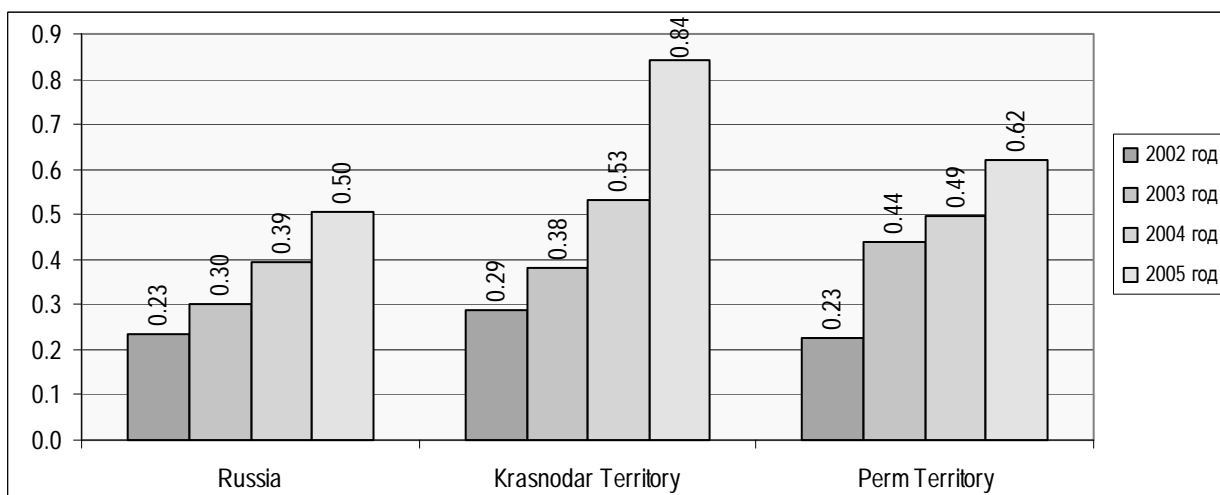
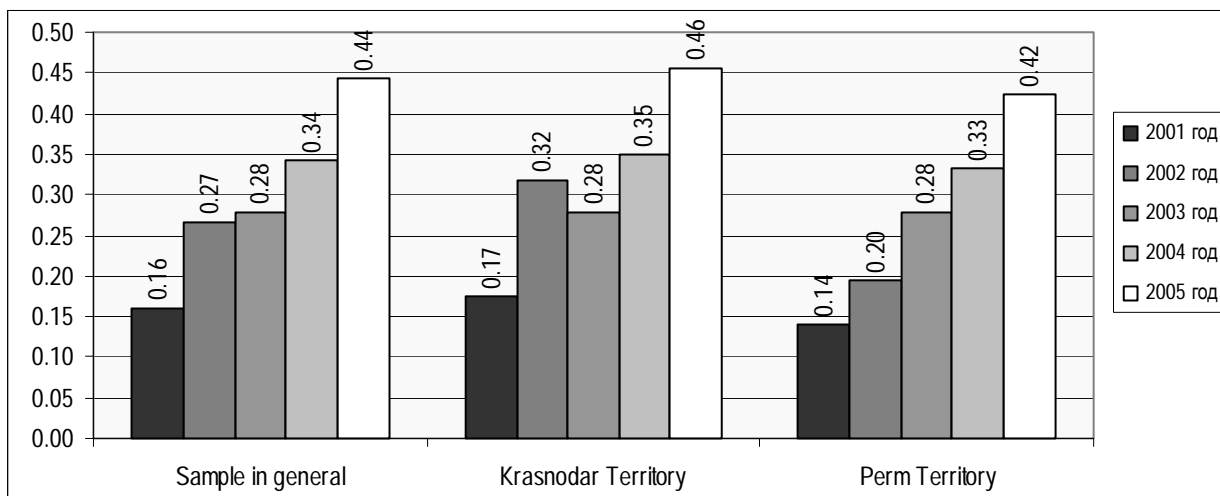


Fig. 94. Indicator 18.1. Average incomes of water supply and wastewater enterprises per cubic metre of water [sample] (USD/m³)



The share of incomes for water supply in the total amount of incomes, gained by the Russian water supply and wastewater enterprises, decreased insignificantly, though it still exceeds 50 % (58.3% in 2000 and 56.7% in 2005) (see *Fig. 98.*).

Fig. 95. Indicator 18.2. Average incomes of water supply and wastewater enterprises per connection to the water supply network [sample] (USD/m³)

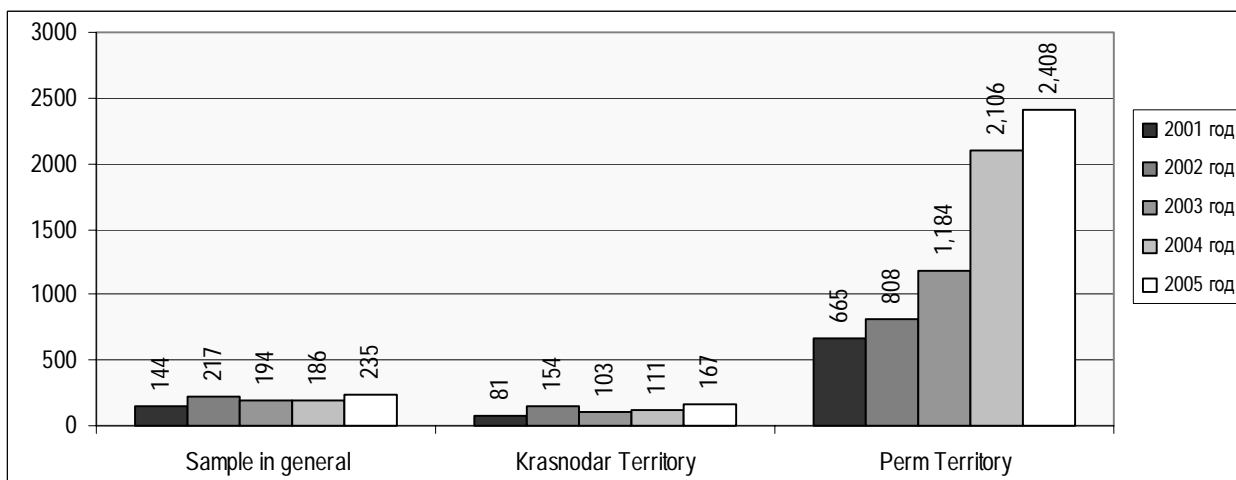


Fig. 96. Indicator 18.3. Average incomes from water supply per cubic metre of water [reports] (USD/m³)

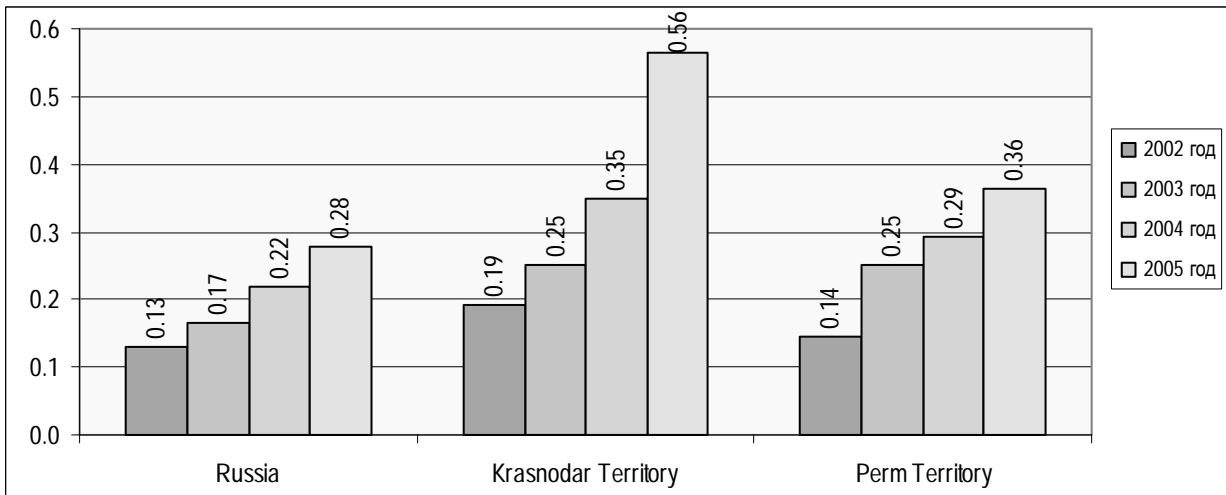


Fig. 97. Indicator 18.3. Average incomes from water supply per cubic metre of water [sample] (USD/m³)

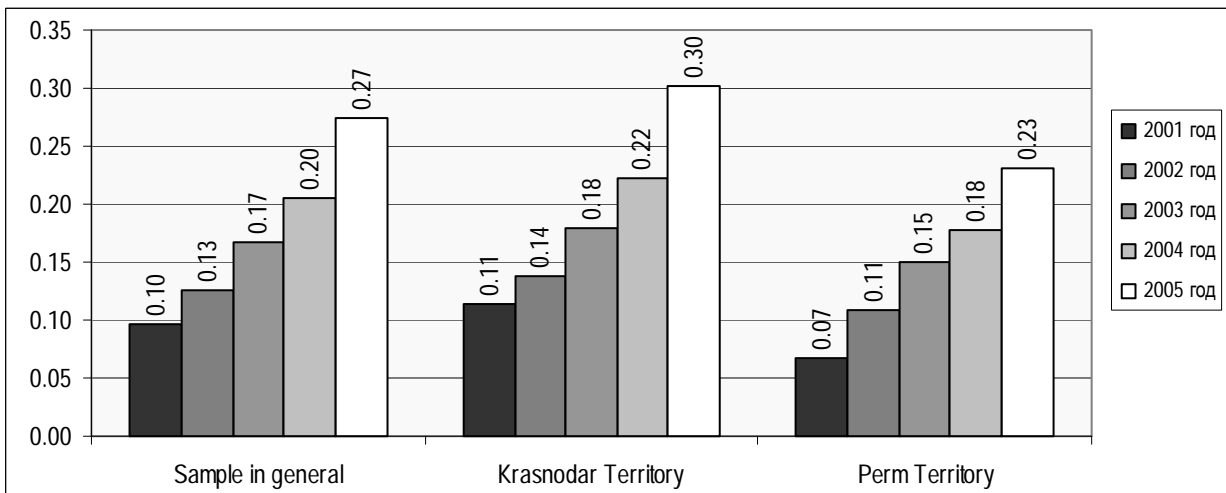


Fig. 98. Indicator 18.4. Share of incomes from water supply [reports]

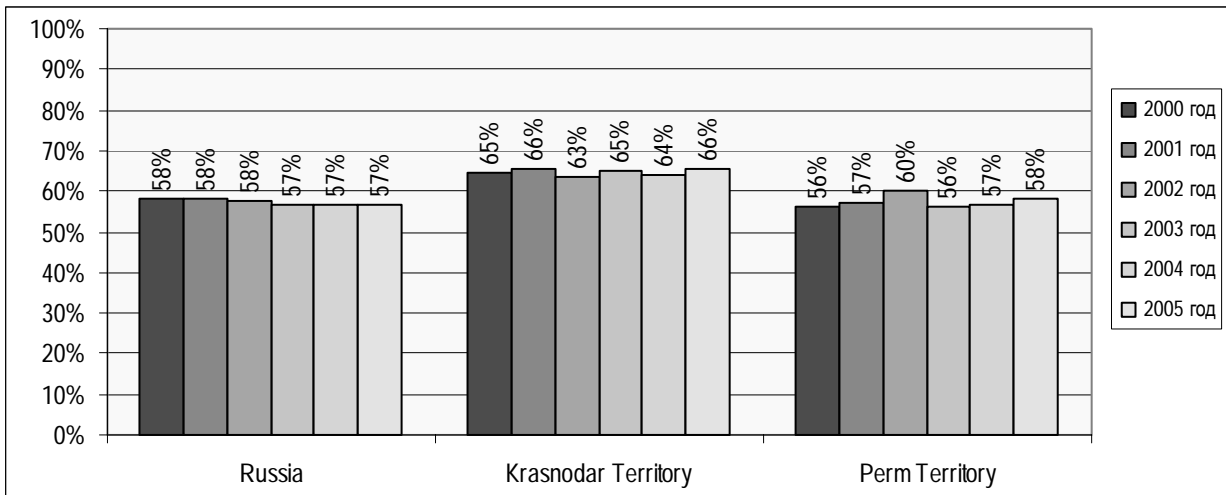


Fig. 99. Indicator 18.4. Share of incomes from water supply [sample]

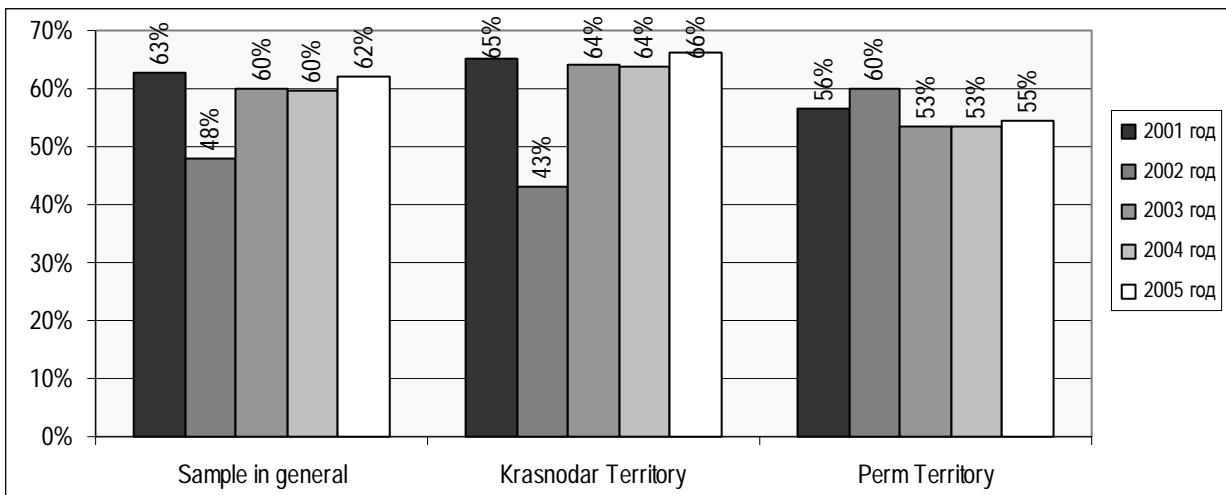


Fig. 100. Indicator 18.5. Share of incomes from sewerage [reports]

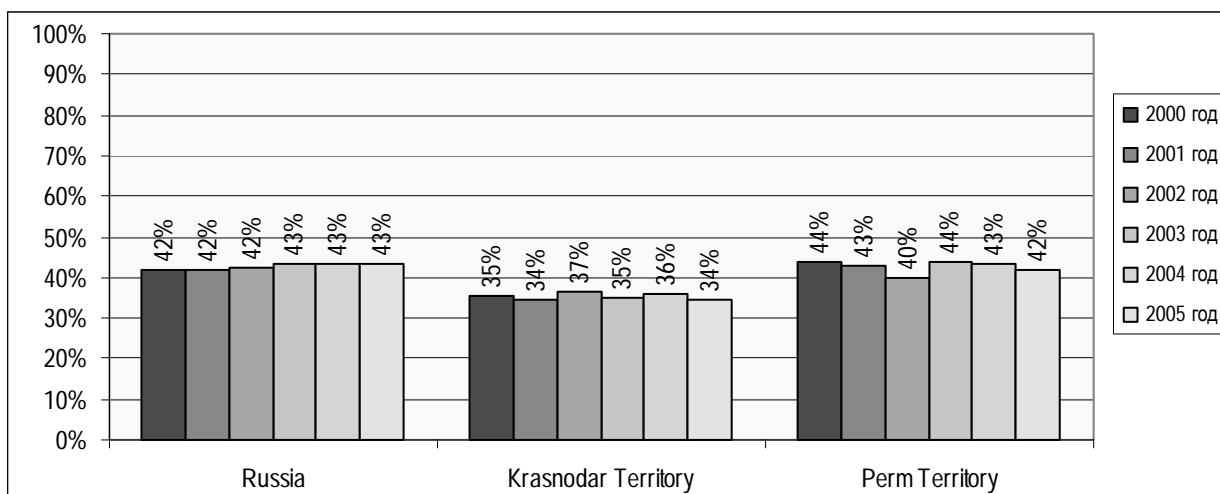
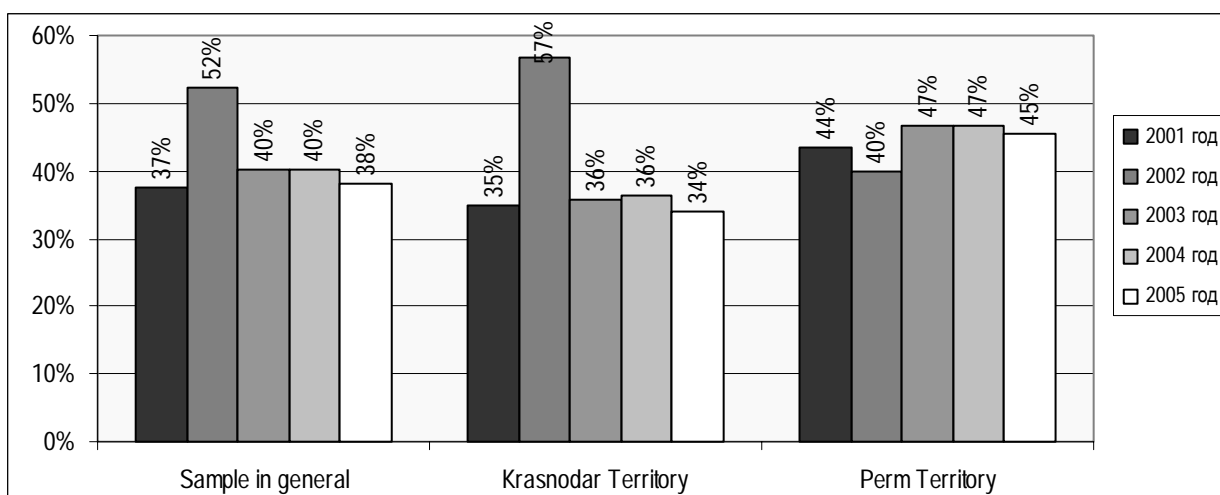


Fig. 101. Indicator 18.5. Share of incomes from sewerage [sample]



In the recent years, the role of population as the main source of incomes of water supply and wastewater enterprises has significantly increased: in 2000, the share of incomes received from population in the total incomes from water supply was 30.9%, and by the beginning of 2006 it increased to 55.1% (see *Fig. 102.*). As a result, the share of other users decreased: according to statistical data, the share of budgetary organizations in the total incomes from water supply decreased from 20% by the results of 2002² to 14.3% in 2005, while the share of commercial users decreased from 39.1% to 30.6% (in 2002 and 2005, respectively).

² Official statistical reports for 2000 and 2001 contain information only about the share of population and other users in the incomes of water supply and wastewater enterprises; therefore, it is not possible to differentiate separately commercial users and budgetary organizations from the group “Other users”.

Fig. 102. Indicator 18.6. Share of incomes from population in the total incomes from water supply [reports]

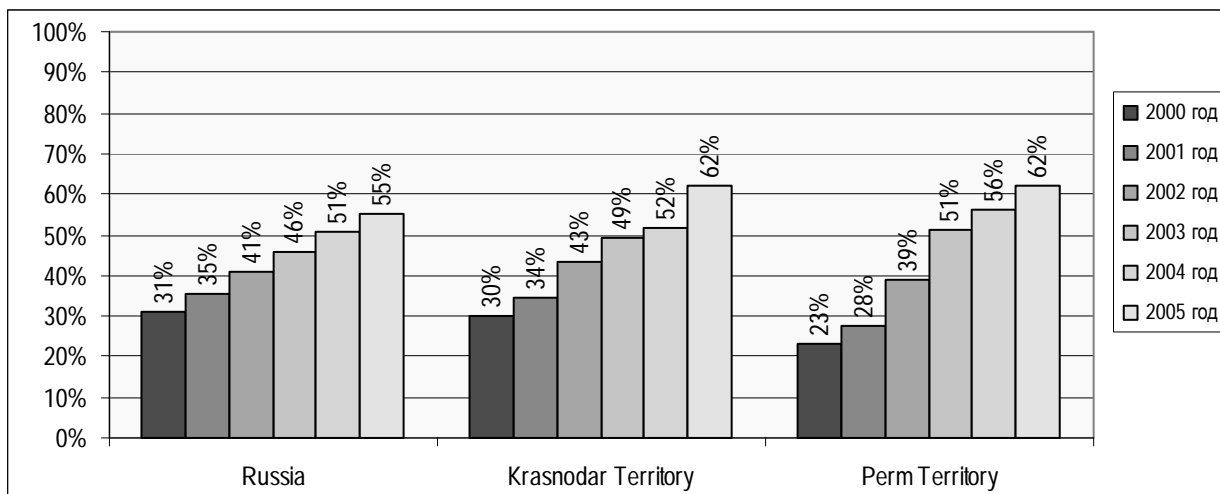


Fig. 103. Indicator 18.6. Share of incomes from population in the total incomes from water supply [sample]

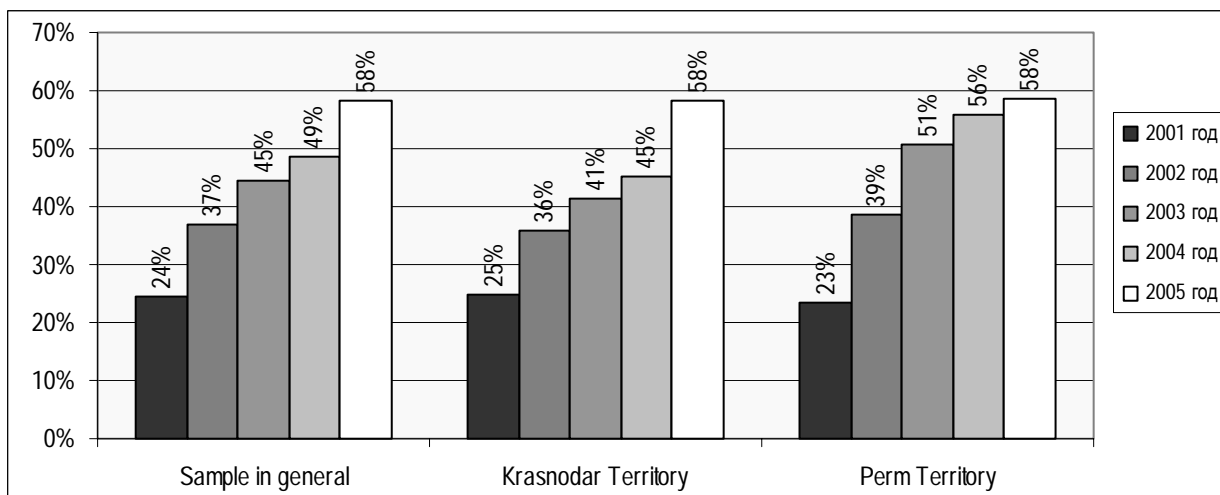


Fig. 104. Indicator 18.7. Share of incomes from commercial users in the total incomes from water supply [reports]

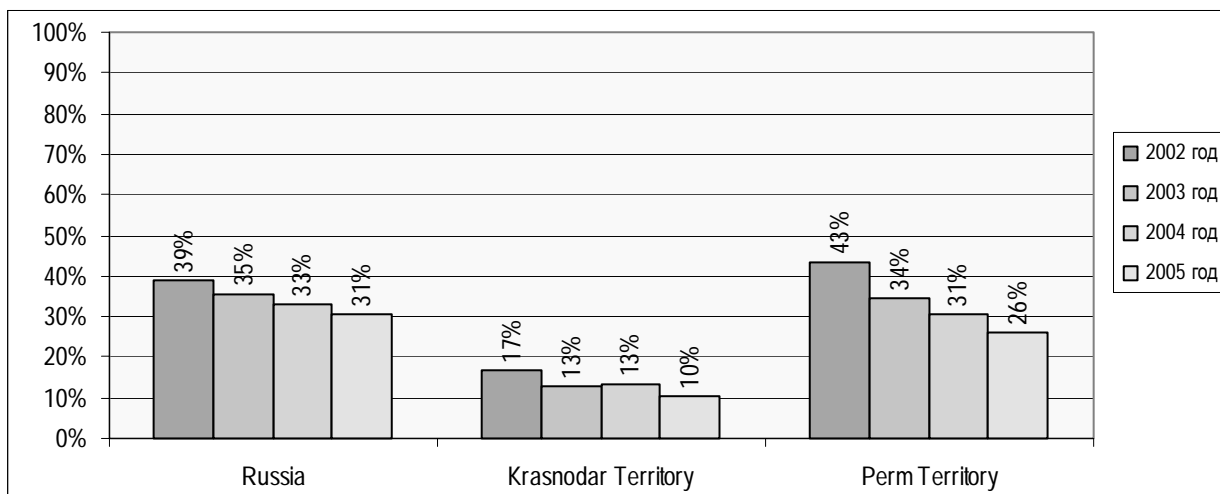


Fig. 105. Indicator 18.7. Share of incomes from commercial users in the total incomes from water supply [sample]

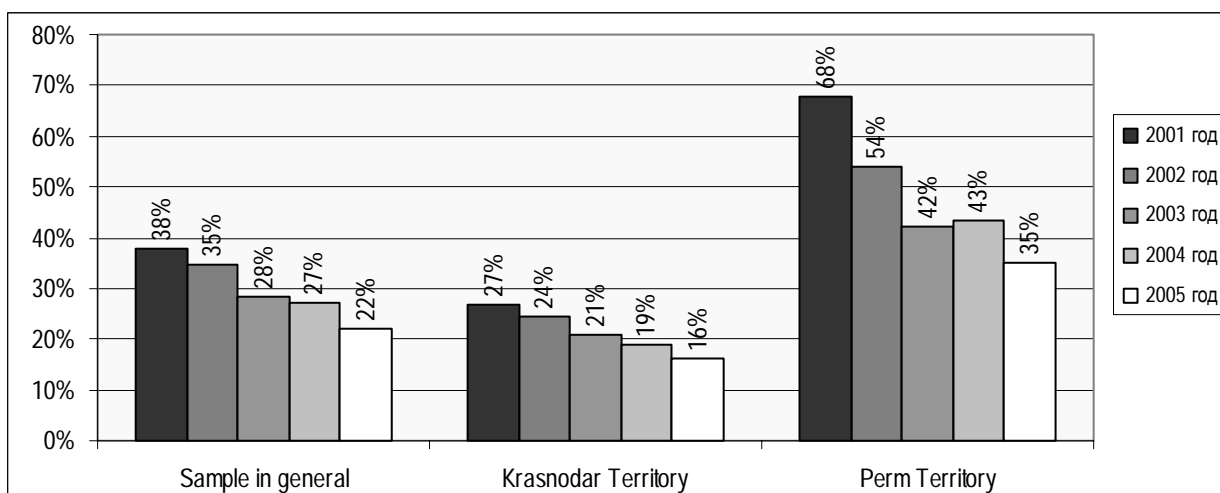


Fig. 106. Indicator 18.8. Share of incomes from budgetary organizations in the total incomes from water supply [reports]

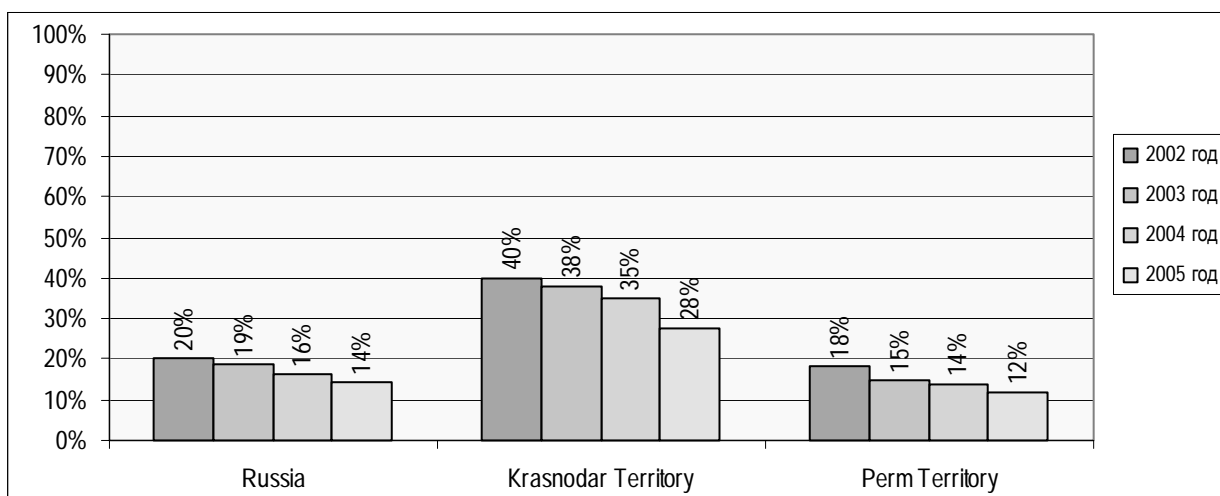


Fig. 107. Indicator 18.8. Share of incomes from budgetary organizations in the total incomes from water supply [sample]

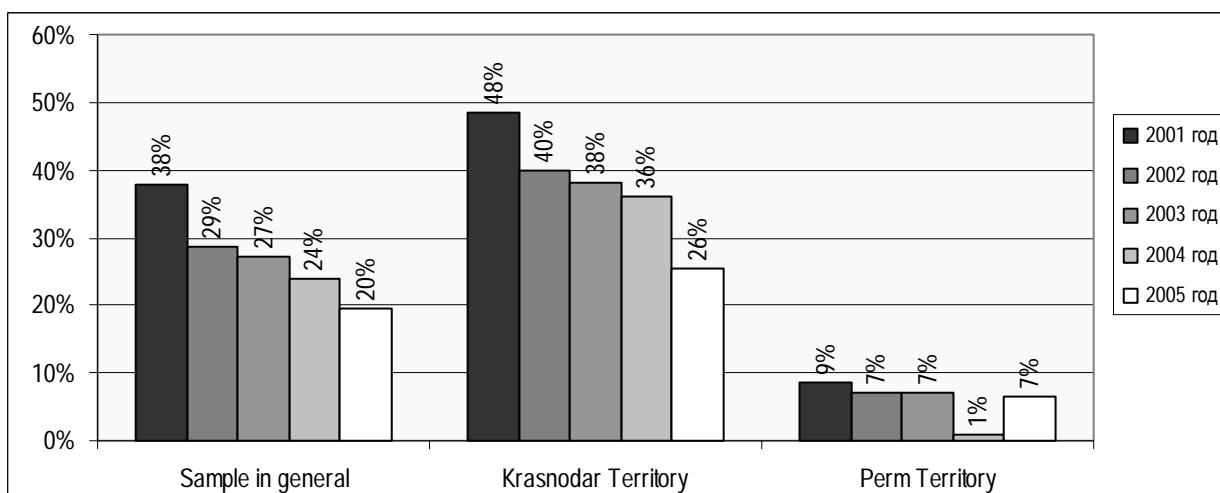


Fig. 108. Indicator 18.10. Incomes from sewerage services [reports]

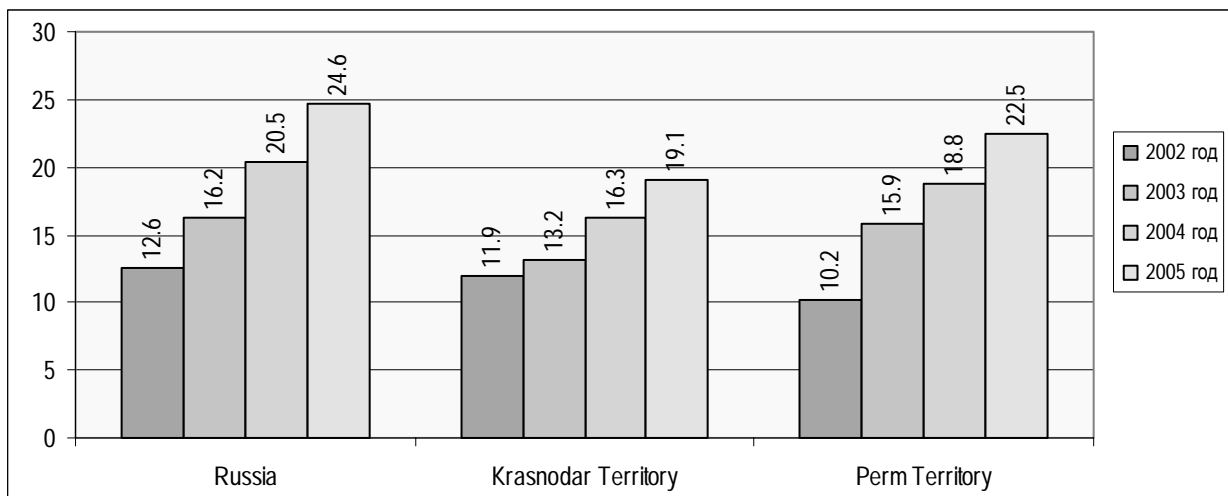


Fig. 109. Indicator 18.10. Incomes from sewerage services [sample]

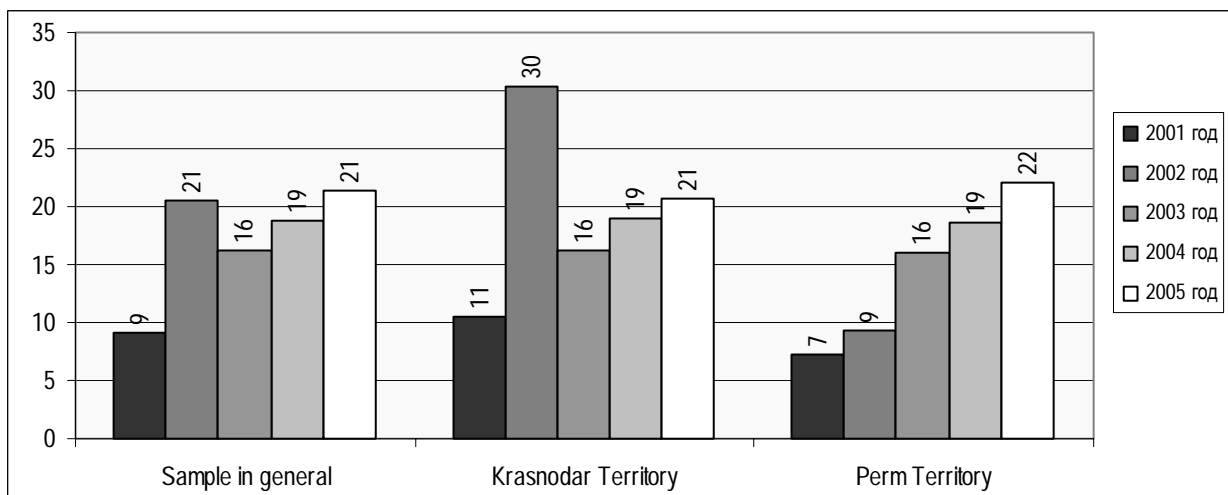
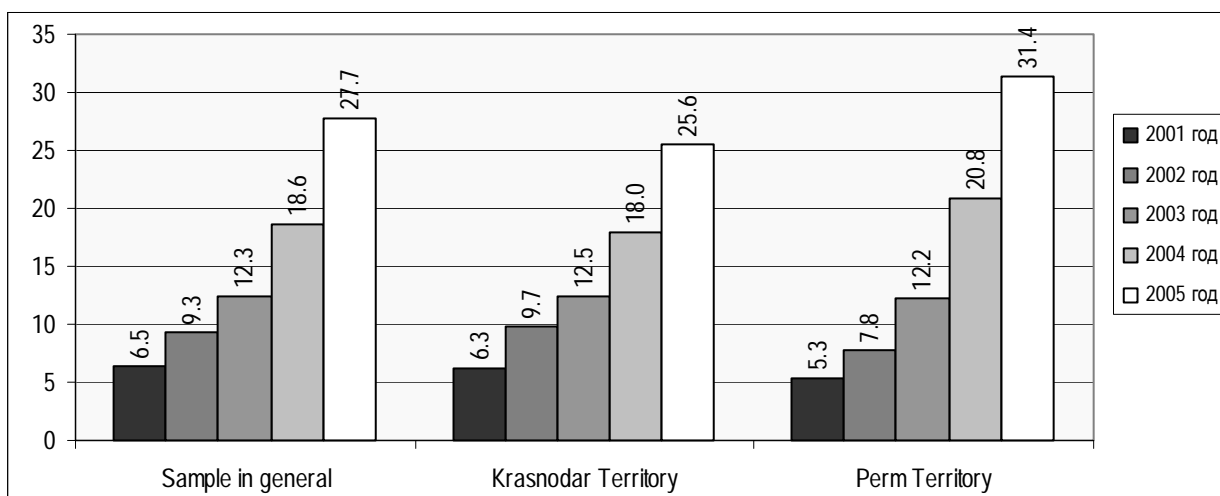


Fig. 110. Indicator 19.2. Water bill Share of incomes from budgetary organizations in the total incomes from water supply [sample]



2.8.2 Comparison of tariffs for individual categories of users

Over the period of analysis, the tariff for population on water supply services increased more than 5-fold, reaching \$0.26 by the results of 2005. The growth of tariffs for water supply services was stipulated by growing expenditures of enterprises which provide such services; however, the tariff for population was more influenced by the reduction of cross subsidies. By the results of 2000, the economically justified tariff for water supply services in Russian in general was \$0.09 per cubic metre of water; however, the Russian population paid on the average a little over half of this cost (\$0.05 per cubic metre of water) (see [Fig. 111.](#)).

A significantly lower tariff for population, compared to the level of the economically justified tariff on all types of housing and communal services, existed in Russia since the Soviet period and was viewed as a measure of social protection of people. Underpayment by population was compensated for by budgetary subsidies provided to enterprises which provided these services, as well as by increased tariff for communal resources for commercial users. In particular, by the results of 2000 commercial users of paid 2 times more for one cubic metre of water than the economically justified tariff, and it was 3.5 times higher compared to tariff for population. A similar disproportion was seen in the tariff for wastewater collection services: whereas the economically justified tariff was \$0,07, the tariff for population by the results of 2000 was on the average \$0.04 for the country in general, while commercial users paid the tariff of \$0.14 (see [Fig. 112.](#)).

Over the period of analysis, the level of ratio between the tariff for population and the economically justified tariff increased significantly: while in 2000 population paid on the average 52% of the water cost, then by the results of 2005 the tariff for population reached 87% of the economically justified tariff. As regards wastewater collection services, from 2000 to 2005 the ratio between the tariff for population and the economically justified tariff increased from 53% to 86% (see [Fig. 113.](#)).

Positive consequences of decreased cross subsidies are even more obvious if we analyze different regions. Thus, by the results of 2000, in 25 regions of Russia the tariff for commercial users for water supply services was more than 5 times higher than the tariff for population (see *Fig. 114.*), whereas the maximum difference in this indicator was 13.8 times (Belgorod Oblast) (see *Fig. 116.*). Only in 7 regions the value of this indicator did not exceed 2-fold; in 28 regions tariffs for commercial users were 2-3 times higher than tariffs for population, and in 26 regions this difference was 3-5 times. A similar situation was in wastewater collection services: in 35 regions tariffs for commercial users exceeded more than 5 times tariffs for population; in 23 regions this difference was 3-5 times (see *Fig. 115.*). The maximum level of this indicator in 2000 was 24.1 times for wastewater collection services (Kamchatka Oblast).

By the beginning of 2006, in 6 regions tariffs on water supply services for population and commercial users were made identical, i.e., according to the economically justified tariff; as regards wastewater collection services, the identical tariffs were introduced in 7 regions. The number of regions where tariffs for commercial users exceeded tariffs for population not more than 2 times, increased, compared to 2000, from 7 to 56 for water supply services and from 7 to 54 for wastewater collection services. Only in 4 regions tariffs for commercial users on water supply services exceeded more than 3 times tariffs for population; as regards wastewater collection services, the number of such region was 9.

Fig. 111. Additional indicator. The average Russian tariffs for water supply services [reports]

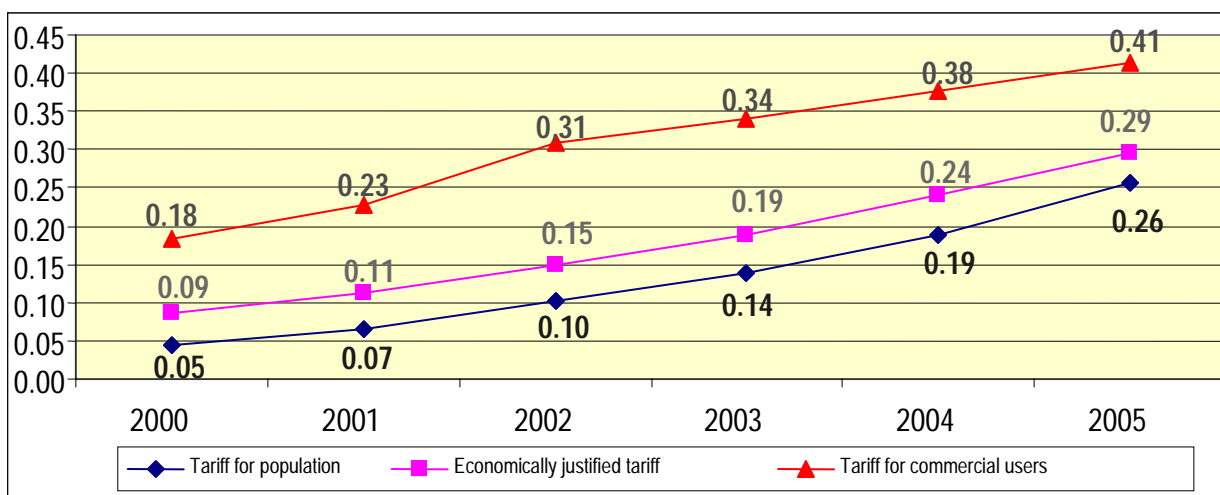


Fig. 112. Additional indicator. The average Russian tariffs for water supply services [reports]

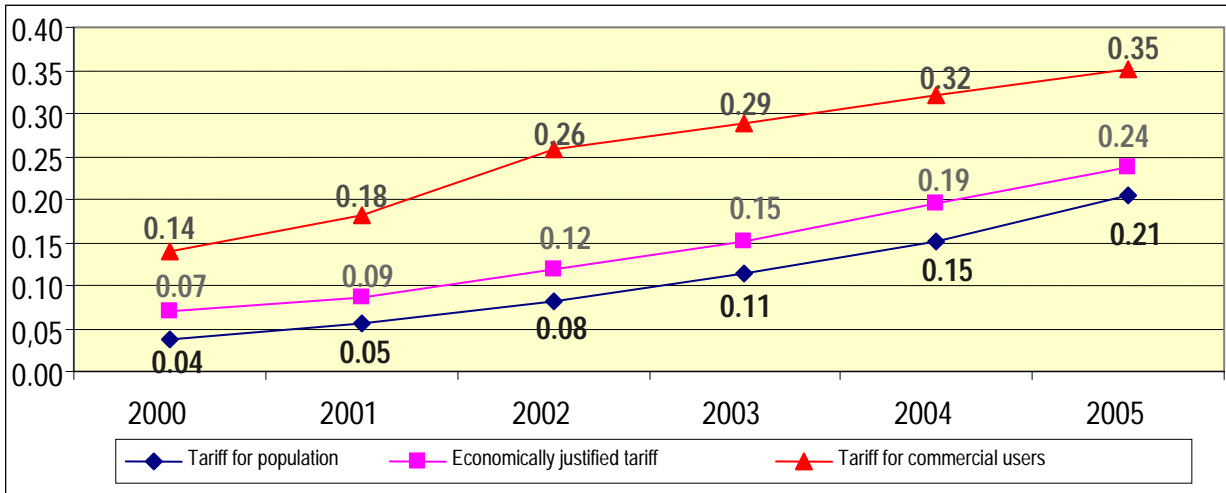


Fig. 113. Additional indicator. The ratio of the tariff for population and the economically justified tariff for water supply and wastewater collection, average for Russia [reports]

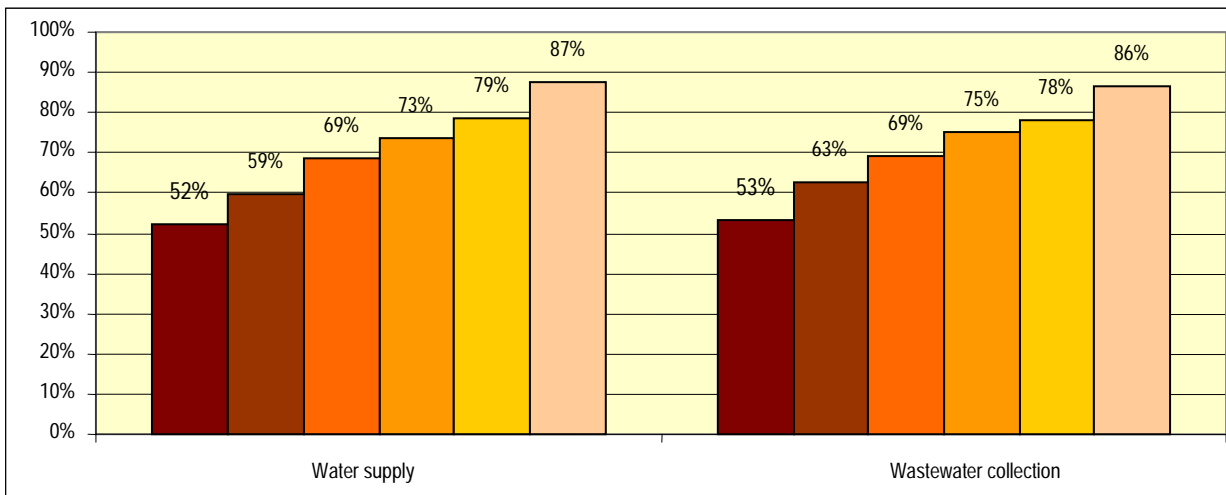


Fig. 114. Grouping of regions by the ratio of tariffs for water supply for commercial users and population [reports]

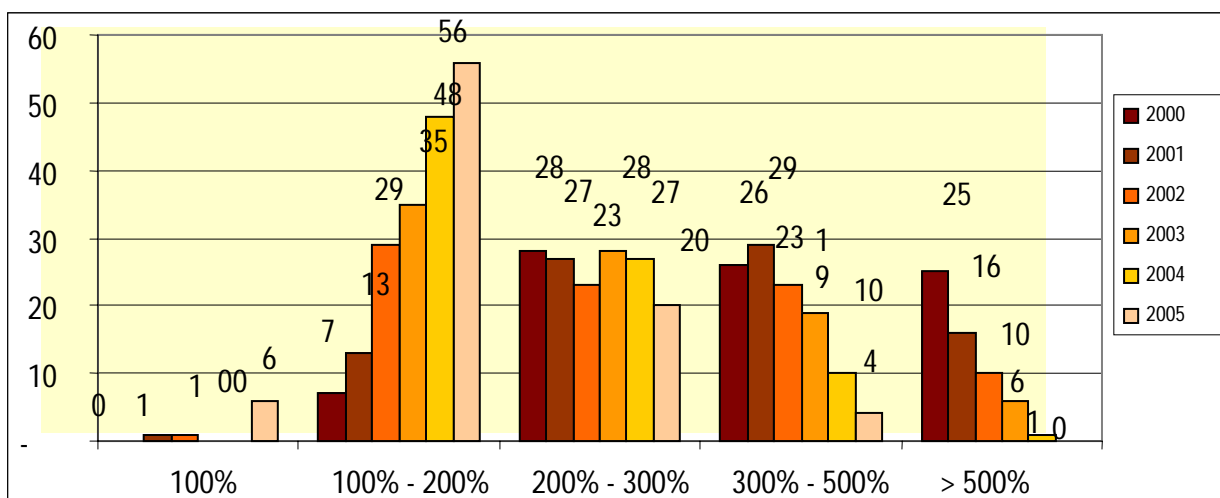


Fig. 115. Grouping of regions by the ratio of tariffs for wastewater collection for commercial users and population [reports]

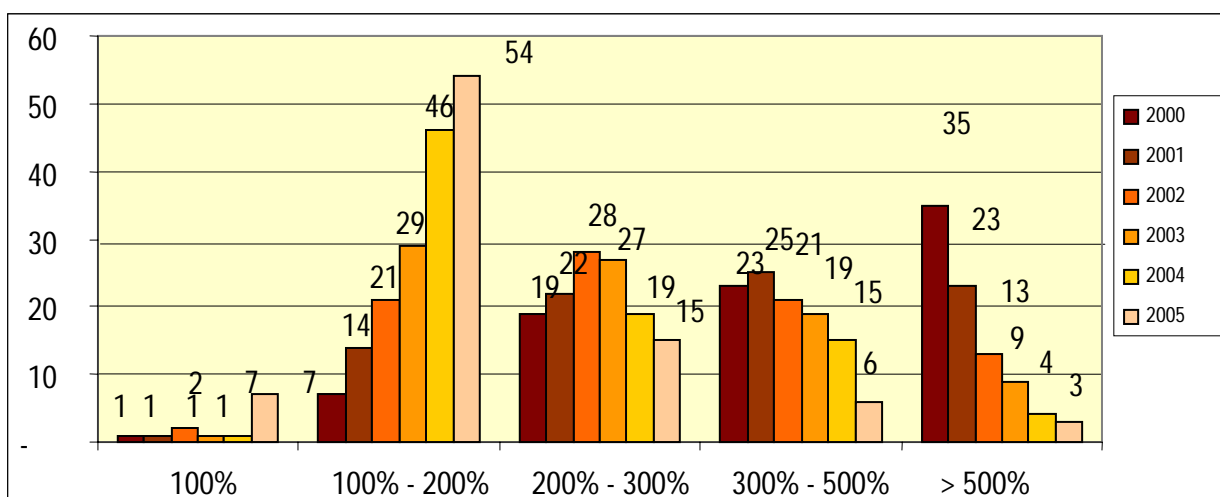
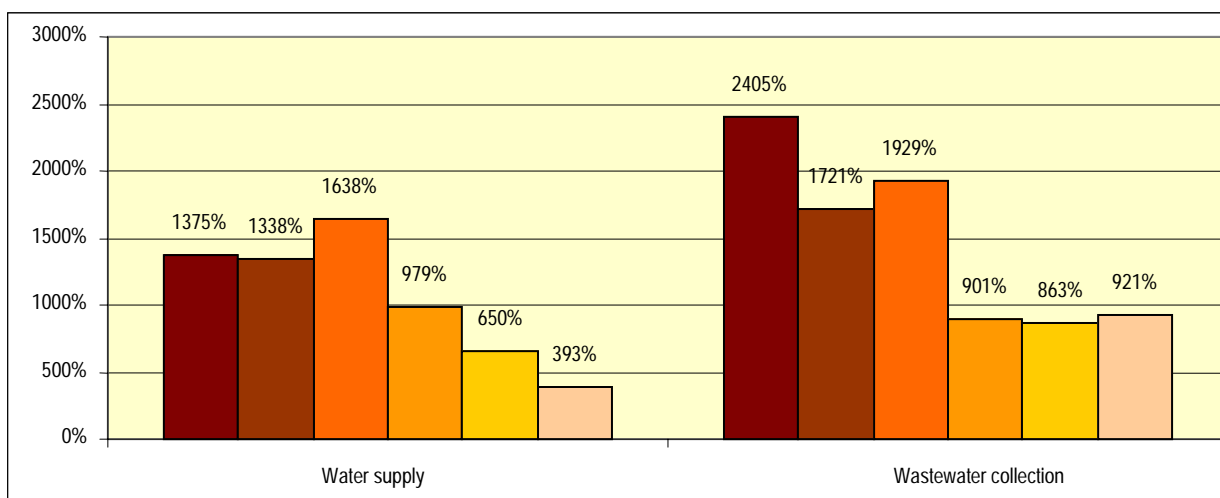


Fig. 116. The maximum ratio between tariffs for commercial users and population, all regions of Russia [reports]



Indicator 21.1, characterizing the ratio between tariffs for industrial users and population in general on water supply and wastewater services³, decreased over the period of analysis more than 2 times: in 2000 it was 3.9, while in 2005 it decreased to 1.7 (see [Fig. 11.7.](#)).

A similar trend was reported also by the results of the indicative survey: for all enterprises, included into the sample, the value of **indicator 21.1** decreased from 5.9 to 1.4 times (see [Fig. 118.](#))

As regards different types of services, the level and dynamics of variation of this indicator were very close: in general for all Russian water supply and wastewater enterprises the ratio between tariffs for industrial users and population on water supply services decreased from 4.0 to 1.6 (see [Fig. 119.](#)), while for wastewater collection services this indicator decreased from 3.8 to 1.7 (see [Fig. 120.](#))

³ This indicator is defined as the ratio of the share of bills for commercial users to the share of bills to population; as a result, its value differs from the earlier discussed additional indicator, characterizing the ratio between tariffs for the above categories of users.

Fig. 117. Indicator 21.1. The ratio between tariffs for industrial users and population [reports]

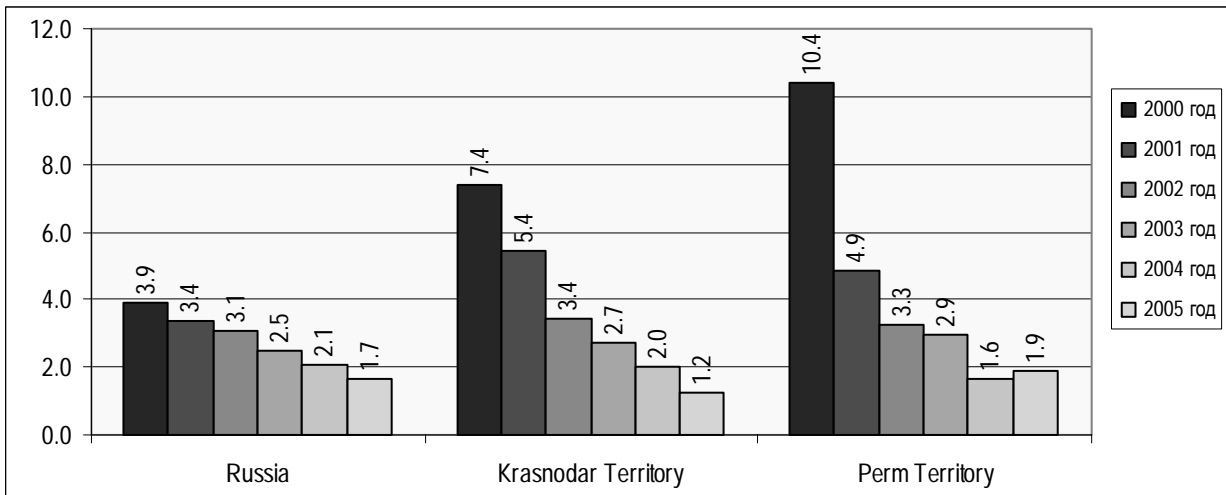


Fig. 118. Indicator 21.1. The ratio between tariffs for industrial users and population [sample]

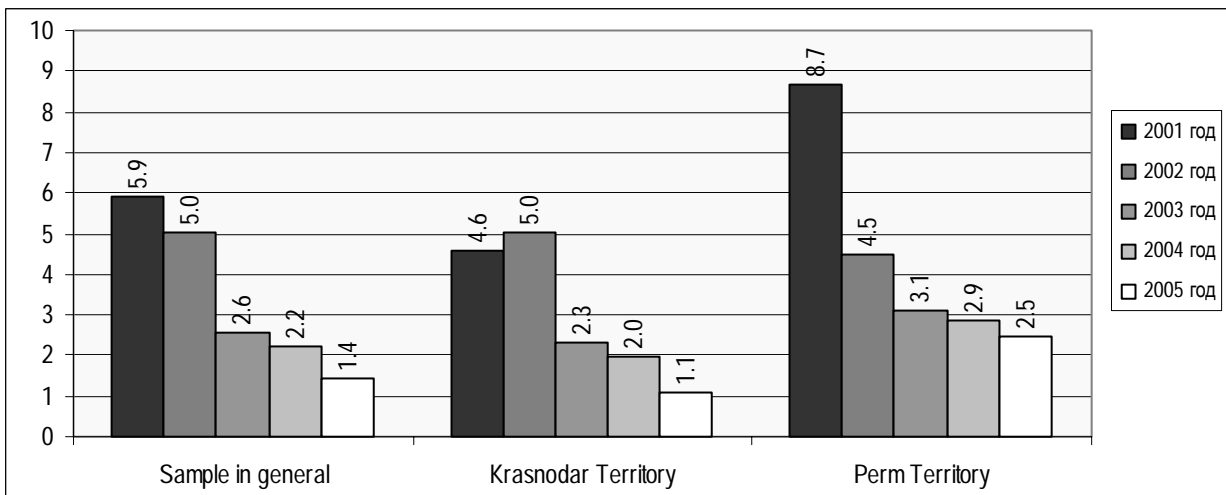


Fig. 119. Indicator 21.2. The ratio between tariffs for industrial users and population: water supply [reports]

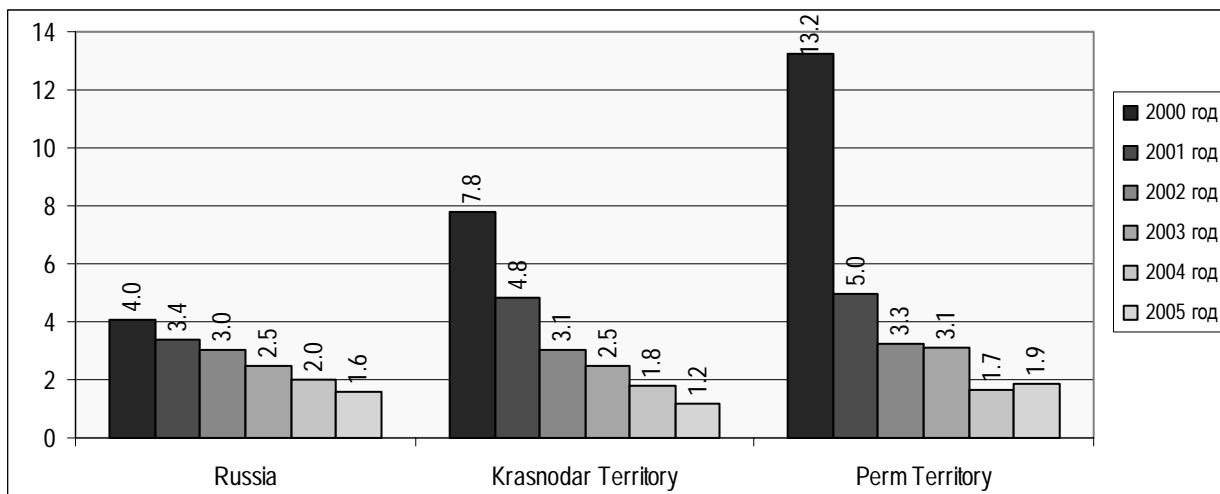
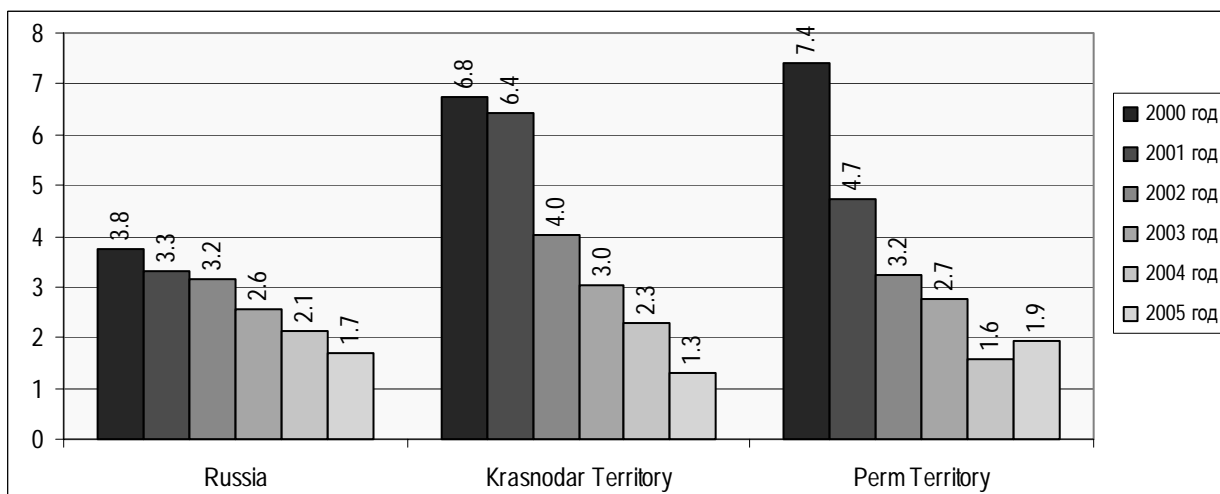


Fig. 120. Indicator 21.3. The ratio between tariffs for industrial users and population: wastewater collection [reports]



2.8.3 Period and level of collection of fees

Period of fees collection (**indicator 23.1.**) over the entire period of analysis invariably decreased, and by the results of 2005 it reached the level of 89 days (see *Fig. 121.*). It should be noted that the decrease of the fees collection period for the Russian water supply and wastewater enterprises is a multi-annual trend: thus, by the results of the indicative survey made among Russian water supply and wastewater enterprises in 2002, the value of the analyzed indicator in 1999 was 300 days, in 2000 it was 248 days, and by the results of 2001 this indicator decreased to 176 days.

Fig. 121. Indicator 23.1. Period of fee collection [reports]

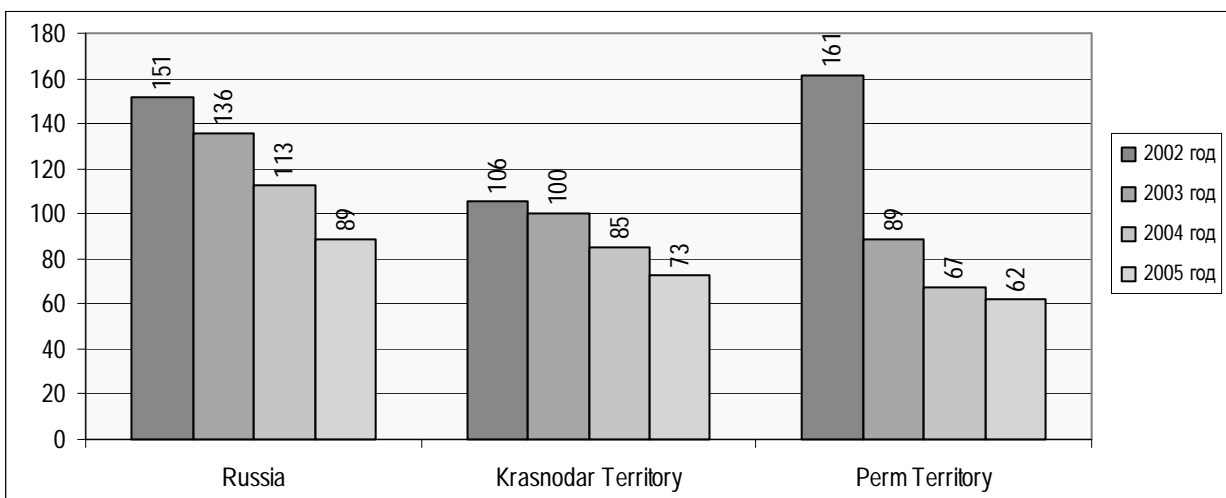
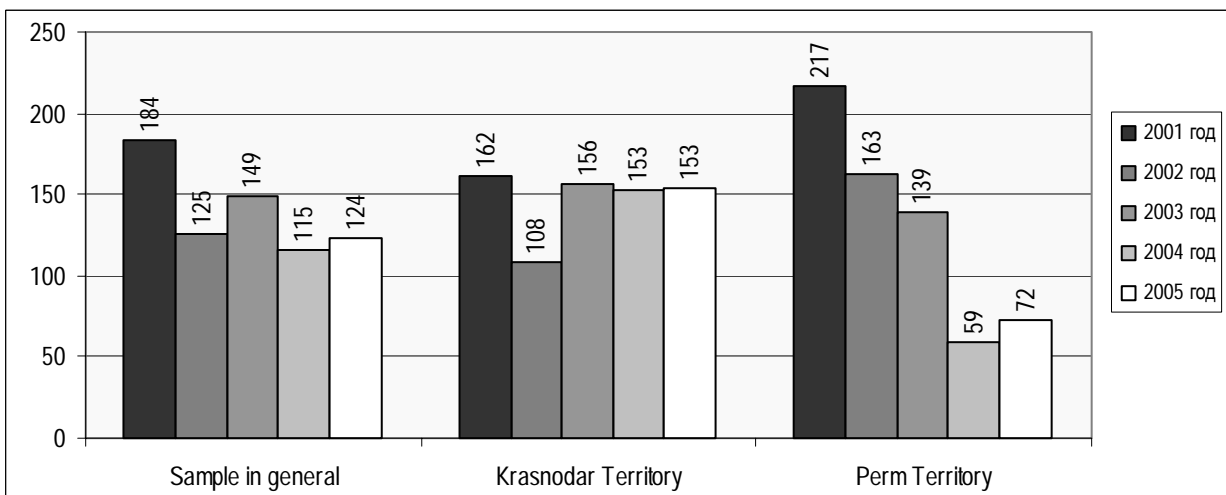


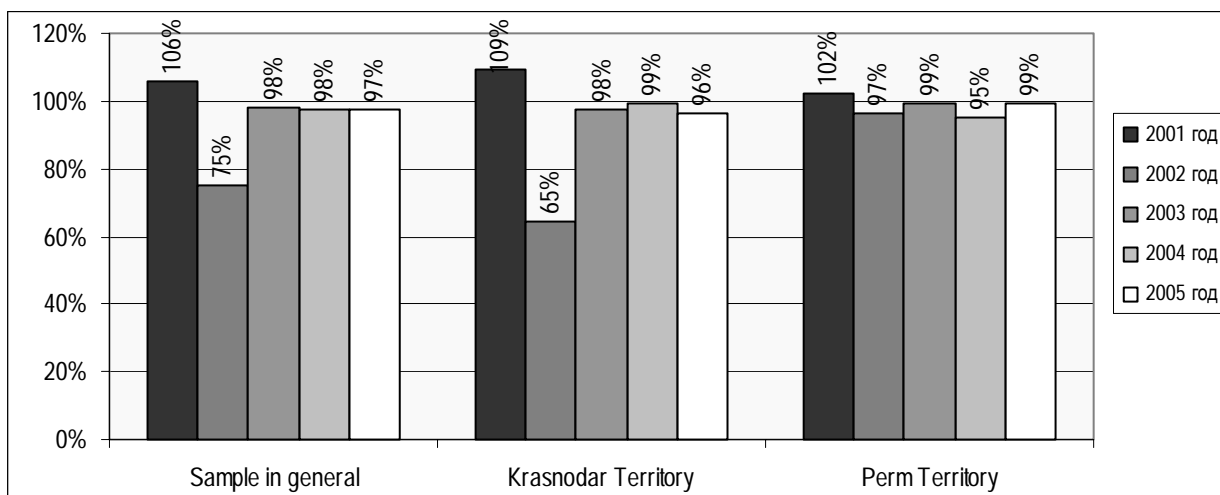
Fig. 122. Indicator 23.1. Period of fee collection [sample]



The official statistical data do not include information, characterizing the level of collection of fees for the services and resources provided by the water supply and wastewater enterprises; however, the Russian reporting form 22-zhkh (total) includes information about the level of collection of fees from population, which, by the results of 2005, was 93.8% for water supply services and 94.4% for wastewater collection services for all Russian enterprises.

By the results of the indicative survey, the general level of collection of fees (**indicator 23.2**) in 2003-2005 was 97%-98% (see *Fig. 123*)

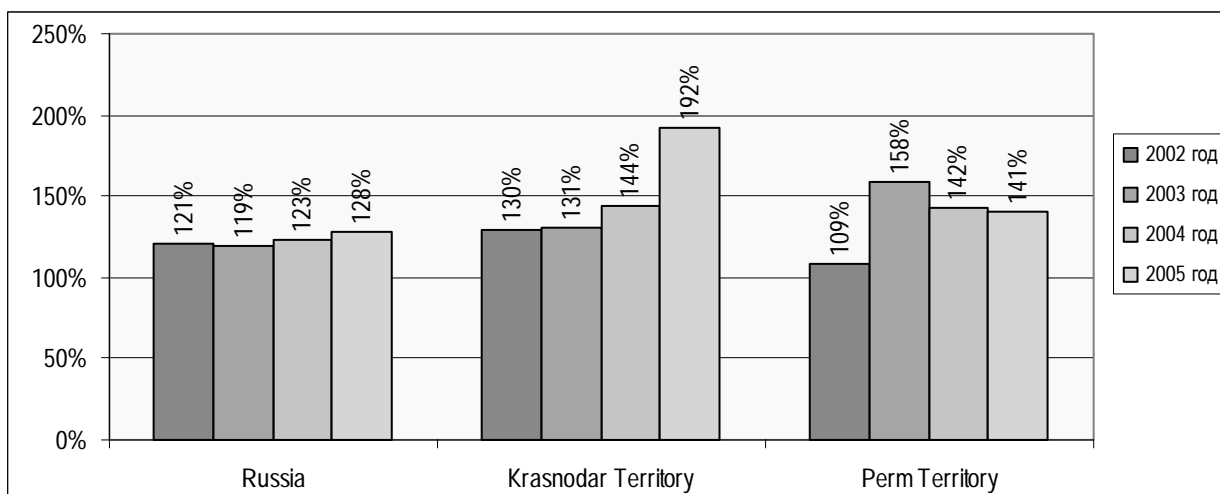
Fig. 123. Indicator 23.2. Collection of fees [reports]



2.9 FINANCIAL OUTCOMES

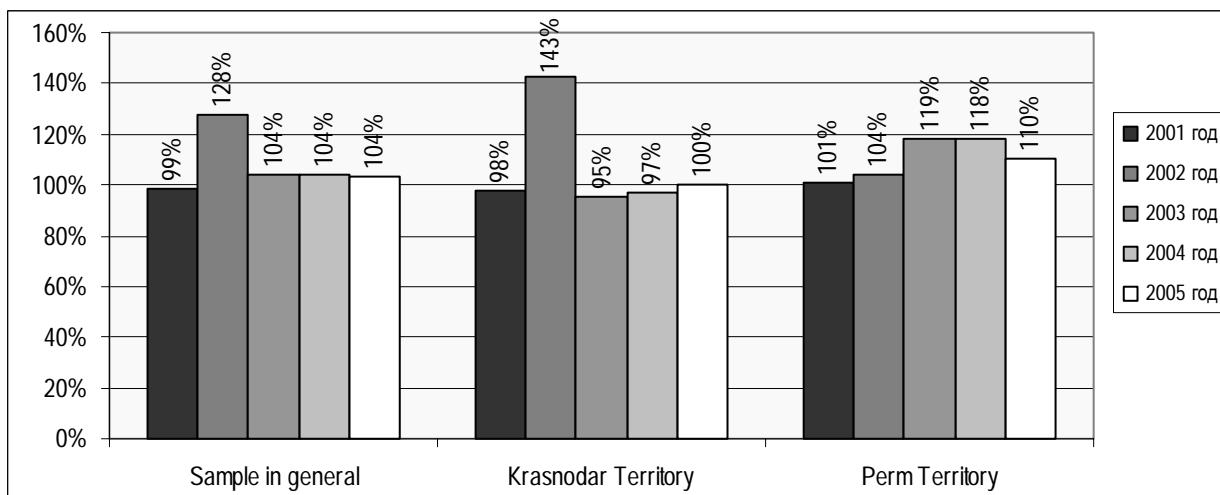
According to official statistical data, **indicator 24.1** “Compensation of operational costs”, characterizing the ratio of the actual bills and costs of water supply and wastewater enterprises related to their basic type of operation activities, increased over the period of analysis both for the country in general and for different regions, which took part in the indicative survey (see *Fig. 124*). By the results of 2001, the total amount of bills, for all Russian water supply and wastewater enterprises, exceeded the operational costs by 21%; by 2005 this exceeding was 28%. A similar exceeding of operational costs was also reported for the regions, taking part in the survey: in the Perm Territory this indicator increased from 109% to 141%, in the Krasnodar Territory this exceeding over the bill was even higher, growing during the period of analysis from 130% to 192%.

Fig. 124. Indicator 24.1. Compensation of operational costs [reports]



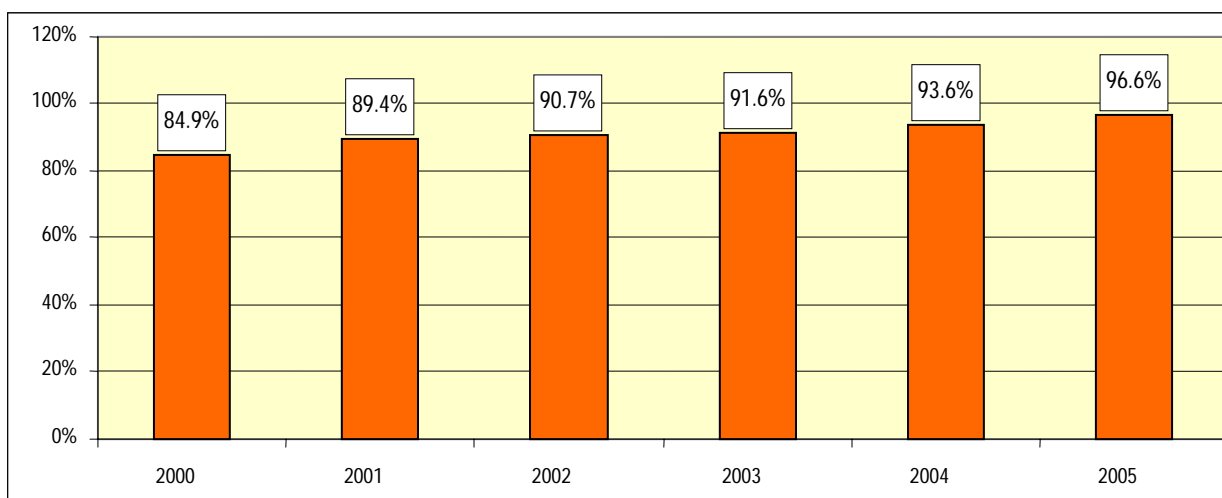
The results of the indicative survey also showed increase of this indicator; however, its value during the entire period of analysis was not that significant as by the official statistical data. In general for all enterprises, included into the sample, the amount of actual bills exceeded all operational costs only in 2002, and during the following period this exceeding was not more than 4% (see *Fig. 125.*).

Fig. 125. Indicator 24.1. Compensation of operational costs [sample]



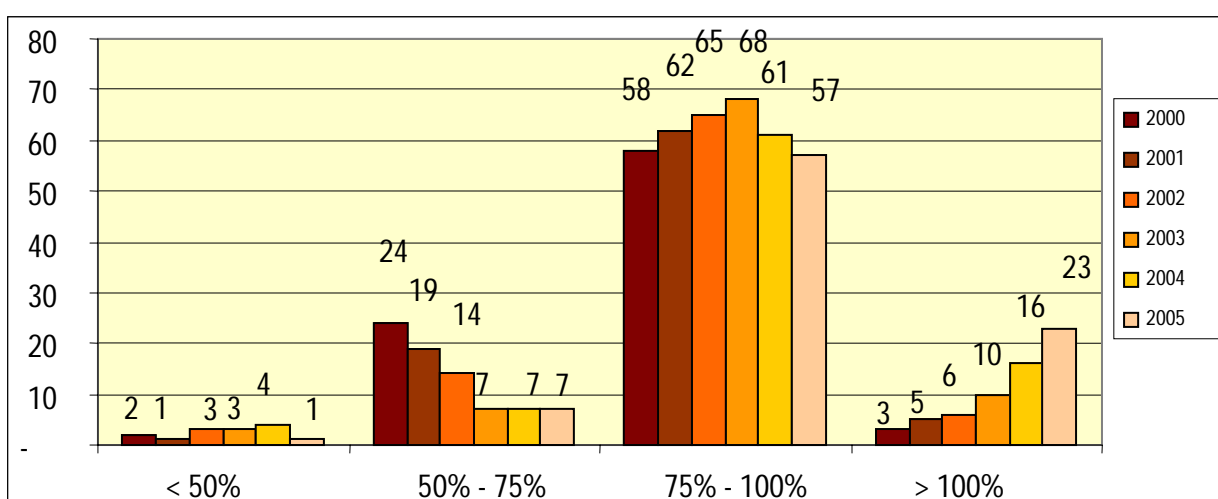
For characterization of financial outcomes of the water supply and wastewater enterprises, it is more expedient, in terms of information, to use the indicator, characterizing the ratio of incomes and expenditures by the main type of their operation activities (see *Fig. 126.*). As seen from the diagram, despite a stable growth of the indicator, during the entire period of analysis incomes of the water supply and wastewater enterprises did not meet their expenditures related to the basic type of operation activities: in 2000, incomes of the enterprises were equalled only 85% of their expenditures, but by 2005 this indicator went up to 97%.

Fig. 126. Additional indicator “The ratio between incomes and expenditures related to the basic type of activities” [reports]



The trend towards increase of the indicator is seen from analysis of the ratio between incomes and expenditures by regions (see *Fig. 127.*). While in 2000 only in 3 regions (Moscow, Chuvash Republic and Saratov Oblast) incomes exceeded expenditures, then in 2005 the number of such regions went up to 23. The number of regions where incomes were equal to 50%-75% of expenditures significantly decreased: while in 2000 this group included 24 regions, then by the results of 2005 the number of regions in the group decreased to 7. A special group is constituted by the regions in which incomes did not exceed half of the expenditures. Totally over 2000–2005 this groups included 5 regions: Republic of Ingushetia (45% in 2002), Yamal-Nenets AA (50% in 2000), Taimyr AA (from 33% to 47% in 2000–2004), Evenki AA (from 39% to 49% in 2002–2004) and Chukotka AA (from 44% to 50% in 2003-2005).

Fig. 127. Grouping of the regions by the indicator “The ratio between incomes and expenditures related to the basic type of activities” [reports]



2.10 ASSETS OF THE ENTERPRISES

By the results of the indicative survey, the value of **indicator 27.1**, characterizing the gross value of fixed assets of the water supply and wastewater enterprises per unit of the serviced population increased, over the period of reporting, from 33 to 50 dollars/employee (see *Fig. 128*). A similar trend was reported in the regions taking part in the survey: in the Krasnodar Territory the indicator increased from 32 to 52 dollars/employee, while in the Perm Territory it increased from 35 to 47 dollars/employee.

As regards different sectors, the value of fixed assets in water supply enterprises increased from 33 to 48 dollars/employee (see *Fig. 129.*), while the value of fixed assets in sewerage enterprises increased from 34 to 52 dollars/employee (see *Fig. 130.*)

Fig. 128. Indicator 27.1. Gross value of fixed assets: water supply and sewerage [sample]

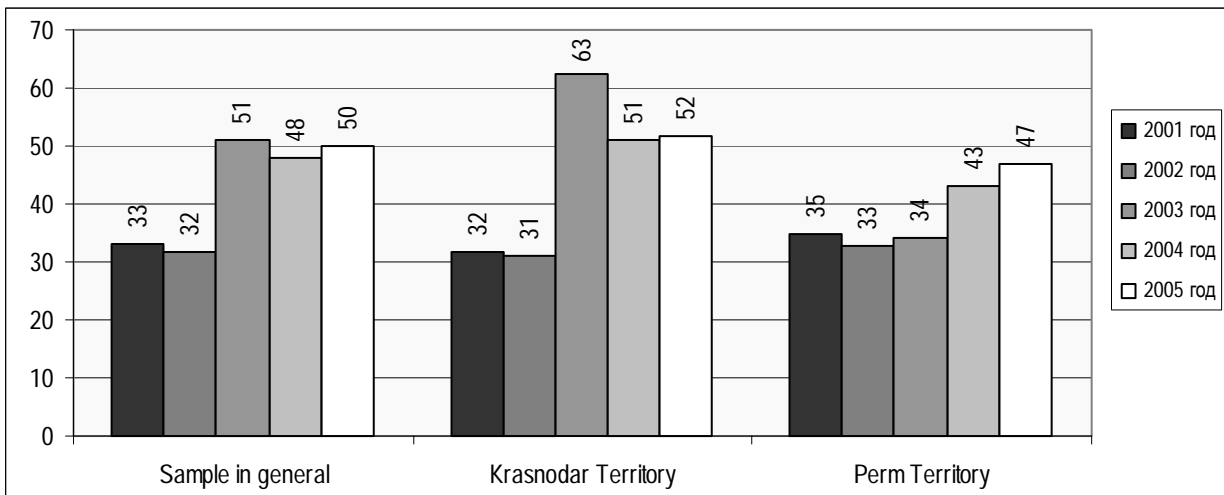


Fig. 129. Indicator 27.2. Gross value of fixed assets: water supply [sample]

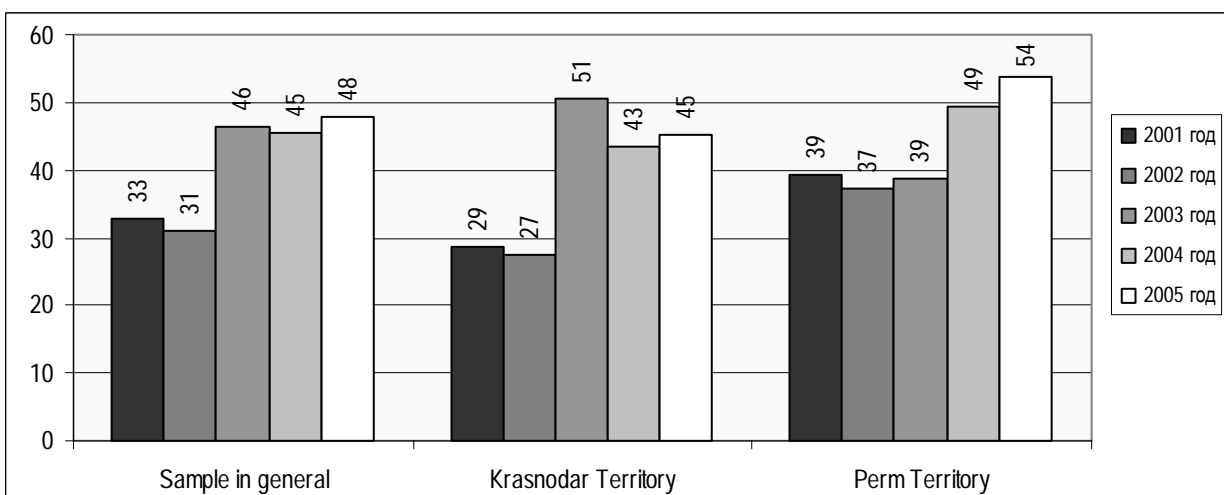
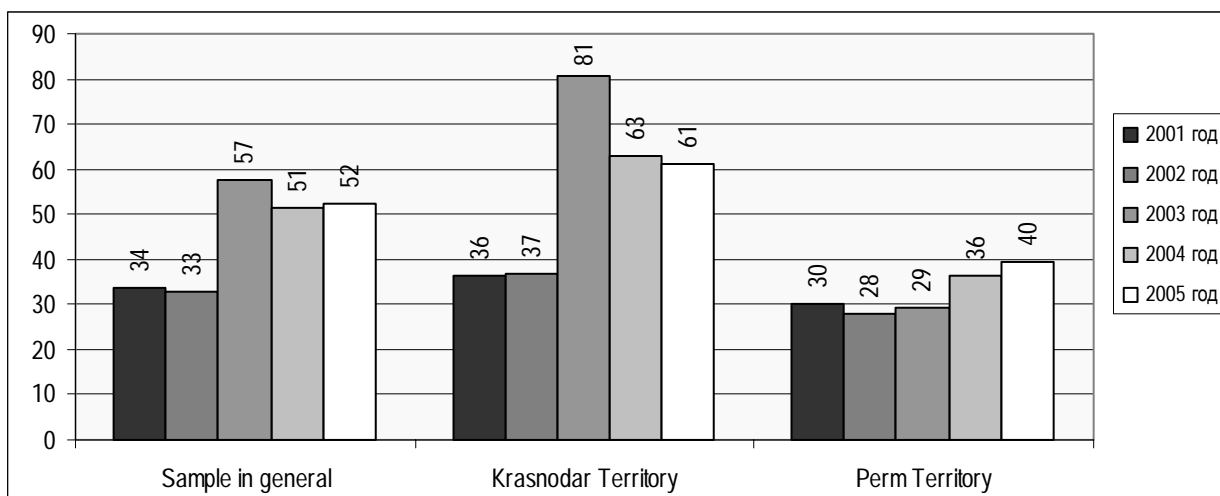


Fig. 130. Indicator 27.3. Gross value of fixed assets: sewerage [sample]



3. DESCRIPTION OF IDENTIFIED AND POTENTIAL DRAWBACKS OF THE COLLECTED DATA

The outcomes of the indicative survey involving water supply and wastewater enterprises in the Perm Territory and the Krasnodar Territory, as presented in this report, are not devoid of drawbacks, which are predefined both by the conditions of the indicative survey and the methods used for calculation of the indicators.

According to conditions of the indicative survey, all water supply and wastewater enterprises took part on voluntary principles. As a result, the authors of the report could not collect all data required from such enterprises. Employees of the participating enterprises filled the proposed survey form using only those indicators which either make part of the official statistical reports or are regularly used by the enterprises themselves. Some of the enterprises decided that it was not necessary to present data that could, to some extent, characterize their financial status, in particular, data on debt repay, receivables, etc. Besides, even when they filled the survey forms in full, it was possible that these data were not correct due their intentional distortion or due to errors made when entering data. A separate category included errors related to incorrect understanding of the terminology used in the survey form. In this connection, we should mention indicators characterizing the number of connections to the water supply and sewerage networks, which presented most difficulties when the survey form was filled.

In addition, it should be noted that part of the requested indicators should have been defined by way of calculation made at the enterprises; however, in most cases the enterprises did not possess basic data required for such calculations. This refers, first of all, to the indicator, characterizing the number of population which has permanent interruptions in water supply. It can only be assumed that in filling the survey form with data on this indicator the employees of the enterprises indicated the number of people living in the areas (in particular, in the residential quarters of the towns) who faced problems with water supply, since it was not possible to correctly determine the real value of this indicator for the previous years.

Keeping in mind the above, the authors considered it necessary to ensure quality of the report, characterizing the condition and outcomes of the Russian water supply and wastewater enterprises, by including information taken from official statistical reports. This significantly increased the volume of the report and, possibly, made it more complicated for reading; however, this allowed ensuring adequacy of the used data.

4. RECOMMENDATIONS FOR ENSURING STABLE MONITORING OF OPERATION OF COMMUNAL ENTERPRISES

According to the Federal Law No. 210-FZ of 30 December 2004 “On Principles of Regulation of Tariffs for Communal Organizations” (with amendments made on 26 December 2005), which came into effect on 1 January 2006, the monitoring of the implementation of the production and investment programme by communal organizations has become mandatory in the Russian Federation.

According to Article 16 of this Law, “monitoring of implementation of production and investment programmes by communal organizations shall be made by regulatory authorities so as to ensure electricity, heat and water supply, wastewater collection and treatment, disposal (burial) of solid communal waste and timely decision-making about the development of communal infrastructure systems”. The law defines that “monitoring of implementation of production and investment programmes by communal organizations shall include collection and analysis of information on the fulfilment of indicators, specified by production and investment programmes by communal organizations, as well as analysis of information on the state and development of respective communal infrastructure systems”. The law also specifies that “monitoring of implementation of production and investment programmes by communal organizations shall be made according to methods of the above monitoring, containing a list of economic and other indicators used by regulatory authorities for analysis of information on the implementation of the production and investment programmes by communal organizations”.

Thus, today the Russian Federation has all the conditions required for the development of sustainable monitoring of operation of communal enterprises and ensuring its stable operation.