



NEEDS OF THE
POPULATION
IN THE ARAL SEA
REGION



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INSTITUTE FOR SOCIAL RESEARCH
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REPORT

SOCIO-ECONOMIC SURVEY OF THE NEEDS OF THE POPULATION IN THE ARAL SEA REGION

Tashkent - Nukus 2017

CONTENTS

LIST OF ACRONYMS	5
SUMMARY	6
INTRODUCTION	10
I. GENERAL CHARACTERISTICS OF SOCIO-ECONOMIC DEVELOPMENT OF THE REPUBLIC OF KARAKALPAKSTAN AND ITS DISTRICTS	12
1.1. Dynamics of macroeconomic indicators and the structure of the economy	12
1.2. Employment and labor market	16
1.3 Family incomes and expenditures	21
1.4. Entrepreneurship	24
1.5. Food security	26
1.6. Production infrastructure	31
1.7. Market infrastructure and local budget	33
II. DEMOGRAPHIC SITUATION	36
III. DEVELOPMENT OF AGRICULTURE AND PRIORITY AREAS	40
IV. SOCIAL INFRASTRUCTURE	44
4.1. Access to education	44
4.2. Access to the health system	47
4.3. Access to the utilities	49
4.4. Social security	54
V. EDUCATION SYSTEM	58
VI. HEALTHCARE SYSTEM	62
VII. ENVIRONMENTAL SITUATION	74
VIII. GENDER ASPECTS IN LABOR ACTIVITY	80
IX. SOCIAL SITUATION	84
X. POTENTIAL SOCIAL RISKS AND SECURITY	86
XI. SUMMARY	90
XII. RECOMMENDATIONS	92
CONCLUSION	94
POTENTIAL PROJECTS	96
LIST OF DOCUMENTS USED	104

LIST OF ACRONYMS

UNDP	United Nations Development Programme
SD	Sustainable development
MDGs	Millennium Development Goals
WHO	World Health Organization
ILO	World Labor Organization
ISR	Institute for Social Research under the Cabinet of Ministers of the Republic of Uzbekistan
UNESCO	United Nations Educational, Scientific and Cultural Organization
JICA	Japanese Agency for International Cooperation
ADB	Asian Development Bank
WB	World Bank
CB	Consumer basket
RK	The Republic of Karakalpakstan
RUz	The Republic of Uzbekistan
GDP	Gross domestic product
GRP	Gross regional product
PS	Pre-schools
EAP	Economically active population
HH	Household
media	Mass media
RHC	Rural health clinic

SUMMARY



This Report on the survey results includes the Introduction, Thematic Sections (General Characteristics of the Region, Demographic Situation, Development of Agriculture and Priority Areas, Social Infrastructure, Education System, Health System, Environmental Situation, Gender Aspects in Labor Activity), Summary and Recommendations, and Conclusion.

The Introduction substantiates the relevance, goal and objectives, methodology, information base, and practical significance of the survey conducted. The main tool of the survey was interviews with the households in the selected eight districts of the Republic of Karakalpakstan covering 116 mahallas and 1,600 households, as well as focus groups organized in each district to identify the needs and necessities of the population covering 1,600 respondents.

General Characteristics of the Region includes the analysis of the dynamics and trends of the economic development in the RK, structural transformations in recent years with an assessment of their effectiveness, and existing macroeconomic inequities. The problem of employment is the most acute one in the region, but there is a tendency towards its reduction. The unemployment rate reaches 5.4% against 4.9% in the country. The survey revealed that the unemployment rate was 7.9%.

In terms of income levels, the RK ranks 12th among the regions of the country. At the same time, 54.5% of its revenues are generated through entrepreneurial activities. In the structure of expenditure, the purchase of food products is predominant. By its level of entrepreneurial activity the RK ranks 12th. The survey revealed that only 25.9% of the population prefers to do business against 49.5% average nationally.

According to balance calculations, the level of food supply from own production is only 60%.

In terms of transport infrastructure development (highways) the RK, given its huge territory, is more than 4,0 times behind the average indicators in the entire country. According to the survey results, 43.2% of the population are not satisfied with the state of transport infrastructure with the low quality of local roads (79.4%) being the main cause of this dissatisfaction.

14.8% of the households are dissatisfied with the facilities of the market infrastructure. There



are needs for the development of insurance and leasing services. RK's budget is subsidized. In twelve of the fourteen districts, local budgets have subventions, which requires concrete measures to increase the revenue base and strengthen the material and technical base of the hokimiyats.

The Demographic Situation in the region is characterized by a decrease in the birth rate and an increase in mortality which has led to a slowdown in population growth. By the scale of external labor migration, the RK occupies leading positions in the country. On average, 20% of the households have one member abroad. The process of urbanization remains low. The share of urban population in the surveyed districts does not exceed 30% against 49.0% in the RK. Rural settlements with a population of less than 1,000 people make 73.8% (for the RUz they make 47.8%). The RK has the lowest population density. Identified features of the demographic situation should be taken into account when developing measures to address the social problems.



The Development of Agriculture has a number of features related to the adaptation of the production structure to the environmental situation and degraded land and water resources. Half of the irrigated land has a low bonitet (soil properties) due to salinity and a high level of groundwater. Irrigation water has a different level of mineralization. Based on systemic problems, the main priorities for the development of agriculture would be cardinal structural changes in crop area in favor of food crops and the use of livestock potential, and transition to innovative technologies using water resources.

The Social Infrastructure was considered in terms of the people's access to education, health care, housing and communal services and social security. Access to preschool institutions is 30%, and in some districts – up to 20%. In certain settlements (31.9%), there are no such institutions at all.

Access to basic education schools, academic lyceums and professional colleges is at a satisfactory level.

The survey found that one third of the households use health services on a regular basis, the main reason for non-use is lack of need. Other stated reasons include the remoteness of health facilities, low quality of services, and inexperience of medical staff.

The most acute issue is the access of the population to high-quality **drinking water**, where the population's dissatisfaction reaches 33.9%. The main reasons are irregular water supply, and low water quality. There are problems with providing the rural population with hot water, and improving housing conditions.

In the Education System, PS dissatisfaction level is 40.3%, basic education schools – 13.1%, and professional colleges – 12.7%. The main reasons are low quality, remoteness from the settlements, the need to improve the material and technical base, etc.

Health System. Dissatisfaction with health services was expressed by 17.8% of the respondents. The main reasons include: inexperience of doctors, lack of access to primary healthcare, low level of doctors' salaries, shortage of medical equipment and financial resources, as well as medicines.



Environmental Situation. The survey revealed that the main causes of the environmental pollution were salt-and-dust storms from the dried-up bottom of the Aral Sea, solid and liquid wastes, pesticides and emissions from large enterprises. These processes have led to soil salinization and crop loss, deterioration of water quality, and created risks and dangers for the population. According to the survey, 46.9% of respondents were not satisfied with the environmental situation. The main stated causes include soil salinity, water pollution, and drought.

Gender Aspects in Labor Activity. The survey revealed that the share of economically active women was 48.1%. The only limitation in women's activity is the lack of jobs. There are not many women among labor migrants (1.0%), mostly aged 30-40.

The lack of higher education limits the choice of professional activities for girls (mainly in trade). Among the reasons for refusing to study in universities, the girls stated the remoteness of educational institutions from their place of residence and gender stereotypes in the family including early marriage or restrictions in obtaining higher education for girls.

Summary and Recommendations. The results of the household survey and focus groups identified the formation of potential social risks and insecurities based on the identified needs of the population. In general, these include: economic, food, demographic, social, environmental and financial insecurities. According to the rating of potential social risks, the first place is occupied by employment, the second – by the environment, the third by the transport infrastructure, the fourth by the supply of medicines, the fifth by

PSs, and the sixth by drinking water.

The recommendations mainly stem directly from local initiatives, which are separately shown in the following areas: ensuring the safety of the population in economic development, the development of agriculture and food security, demographic risks and threats, social stability, environmental stress. Local initiatives are systematized at the level of each surveyed area in the form of a database of recommendations.

To implement the recommendations, general principles and mechanisms have been developed to provide for the compulsory consideration of regional factors and conditions, a differentiated approach to each settlement, taking into account the existing potential, regulatory support for the construction and design of industrial and social infrastructure in the region.



INTRODUCTION

Basis for the survey. Contract #RO/0385/17 concluded between UNDP and the Institute for Social Research under the Cabinet of Ministers of the Republic of Uzbekistan.

Relevance of the survey. Solving the socio-economic problems of the territories affected by the international-scale crisis associated with the drying up of the Aral Sea remains the most urgent and priority area for the activities of the Government of Uzbekistan and the international com-

unity on five priority areas for 2017-2021, the State Program for the Development of the Aral Sea Region for 2017-2021 and several others) and additional measures for socio-economic development and raising the people's living standards.

Despite the measures taken, there are no qualitative changes in the well-being of the population of the Aral Sea region, and their needs are not met, especially in the territories directly affected by the drying out of the Aral Sea.

The existing systemic economic, social and environmental problems in the Aral Sea region, as a rule, consist of the local needs of the local population. Therefore, it is the population and the local community that plays an important role in identifying the factors and conditions for supporting human livelihoods.

In this regard, it is crucial to identify the needs and necessities through direct dialogue with the public and local authorities, and identify additional measures to meet them, involving domestic and international donors.

The goal of the survey is to identify the main factors affecting the living standards and security of the people in the region of the environmental disaster.

Objectives of the survey: organization of a sociological survey of households and focus

Speaking at the 72nd Session of the United Nations (UN) General Assembly, President of Uzbekistan Shavkat Mirziyoyev denoted: “I would like to once again highlight one of the most acute problems of our time – the Aral Sea catastrophe. Overcoming the consequences of the drying up of the sea requires today an active consolidation of international efforts”.

munity. Speaking at the 72nd Session of the United Nations (UN) General Assembly, President of Uzbekistan Shavkat Mirziyoyev denoted: “I would like to once again highlight one of the most acute problems of our time – the Aral Sea catastrophe. Overcoming the consequences of the drying up of the sea requires today an active consolidation of international efforts”. At present, the Government of Uzbekistan has developed and is implementing a package of targeted programs (the Action Strat-

The goal of the survey is to identify the main factors affecting the living standards and security of the people in the region of the environmental disaster.

groups; identification of the main factors affecting the conditions and security of the population in the Aral Sea region; definition of the main components of the living standards of the population affected by the ecological catastrophe;

- development of the Atlas of thematic maps based on survey results (database);
- development of proposals to strengthen the targeting and mobilization of resources for solving the systemic problems, and meeting the people's needs.

Survey methodology. The survey was conducted through several stages:

- the first preparatory stage including the collection, processing and analysis of necessary information, development of a survey program and methodological materials for the organization of population survey and focus groups;
- the second stage: 8 target districts of the Republic of Karakalpakstan, 116 mahallas and 1,600 households were selected by a random where the population survey was conducted;
- the third stage: high-quality interviews were organized by the focus group method in each district. The specialized 8 focus groups included 1,600 respondents;
- the fourth stage: the input and processing of collected data was carried out and analytical files were created using CSPRO and SPSS software ;
- the fifth stage: analysis of the integrated database and an assessment of the needs and necessities of the population, and formulation of concrete recommendations;
- the sixth stage: the Atlas of thematic maps was prepared to illustrate the socio-economic and environmental conditions at the level of each surveyed area (mahalla).

Information base of the survey. Along with the results of the survey in field, the work widely used as a comparison and justification of the needs and necessities of the population: official statistics, information materials of the Council of Ministers of the Republic of Karakalpakstan, district hokimiyats, previous studies in the Aral Sea region, decrees and resolutions of the President and decisions of the Government of Uzbekistan to ensure sustainable socio-economic development of the country and the Republic of Karakalpakstan.

Practical significance of the survey results. The needs and necessities of the population and the systemic problems in meeting them as identified by the survey, as well as the formulated proposals and recommendations for ensuring safe livelihoods of the citizens can be used:

- by the Cabinet of Ministers of the Republic of

Uzbekistan, the Council of Ministers of the Republic of Karakalpakstan, district and city hokimiyats to develop additional measures within the framework of the targeted social and economic development programs for the Aral Sea region;

- by local authorities in the implementation of the stated initiatives of the population and civil society to ensure the welfare of the households based on the potential of each settlement;
- to implement innovative local initiatives and projects in the Aral Sea region as a testing ground for new technologies to meet the population's priority needs;
- the conducted local assessment of social risks and life insecurities can serve as the basis for the justification and formation of the Multi-Partner Trust Fund under the aegis of the United Nations to provide social support for the population of the Aral Sea region, as well as attracting donors to mitigate the Aral Sea crisis.

The analytical report was prepared by the scientists and specialists of the Institute for Social Research under the Cabinet of Ministers of the Republic of Uzbekistan (Ph.D., Associate Professor H. Akhmedova, PhD, Professor T. Akhmedov, G. Krasutskiy, Ph.D F. Mamarasulov, J. Avliyakulova, B. Abdullayev, A. Shoazizov, F. Kadyrova.), the Institute of Forecasting and Macroeconomic Research under the Cabinet of Ministers of the Republic of

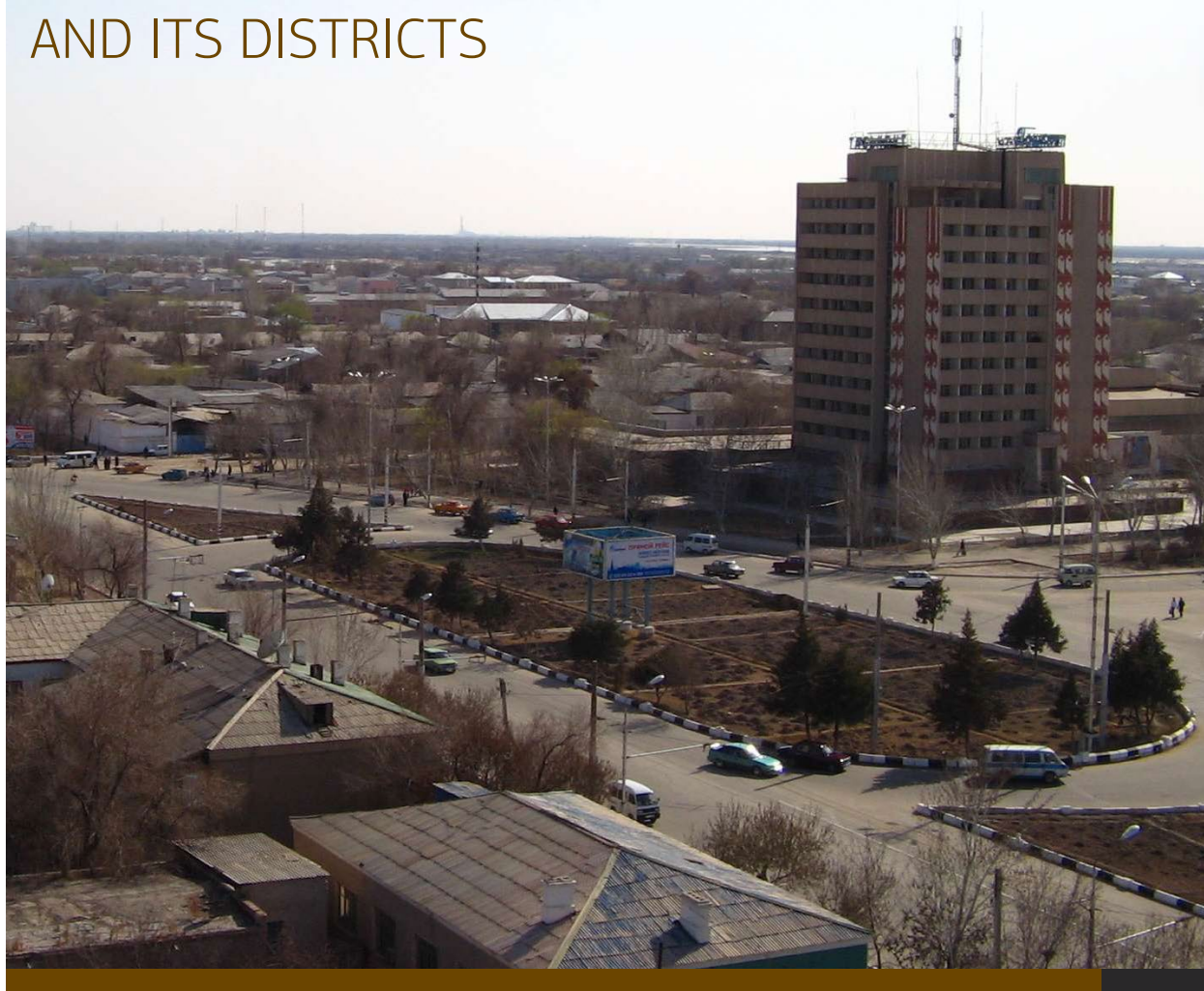
The conducted local assessment of social risks and life insecurities can serve as the basis for the justification and formation of the Multi-Partner Trust Fund under the aegis of the United Nations to provide social support for the population of the Aral Sea region, as well as attracting donors to mitigate the Aral Sea crisis.

Uzbekistan (PhD, Professor D. Karimov), the Zhokargy Kenes (Supreme Council) of the Republic of Karakalpakstan (PhD, Professor A. Khamrayev).

In the organization of the survey, practical assistance was rendered by the officials of the Council of Ministers of the Republic of Karakalpakstan, State Statistics Committee, Ministry of Economy, city and district hokimiyats, territorial branches of the Ministry of Finance, Ministry of Health, Ministry of Education and others.

The structure of the report consists of Introduction, Thematic Sections, Summary and Recommendations, Summary and Conclusion, Annexes.

I. GENERAL CHARACTERISTICS OF SOCIO-ECONOMIC DEVELOPMENT OF THE REPUBLIC OF KARAKALPAKSTAN AND ITS DISTRICTS



1.1. Dynamics of macroeconomic indicators and the structure of the economy

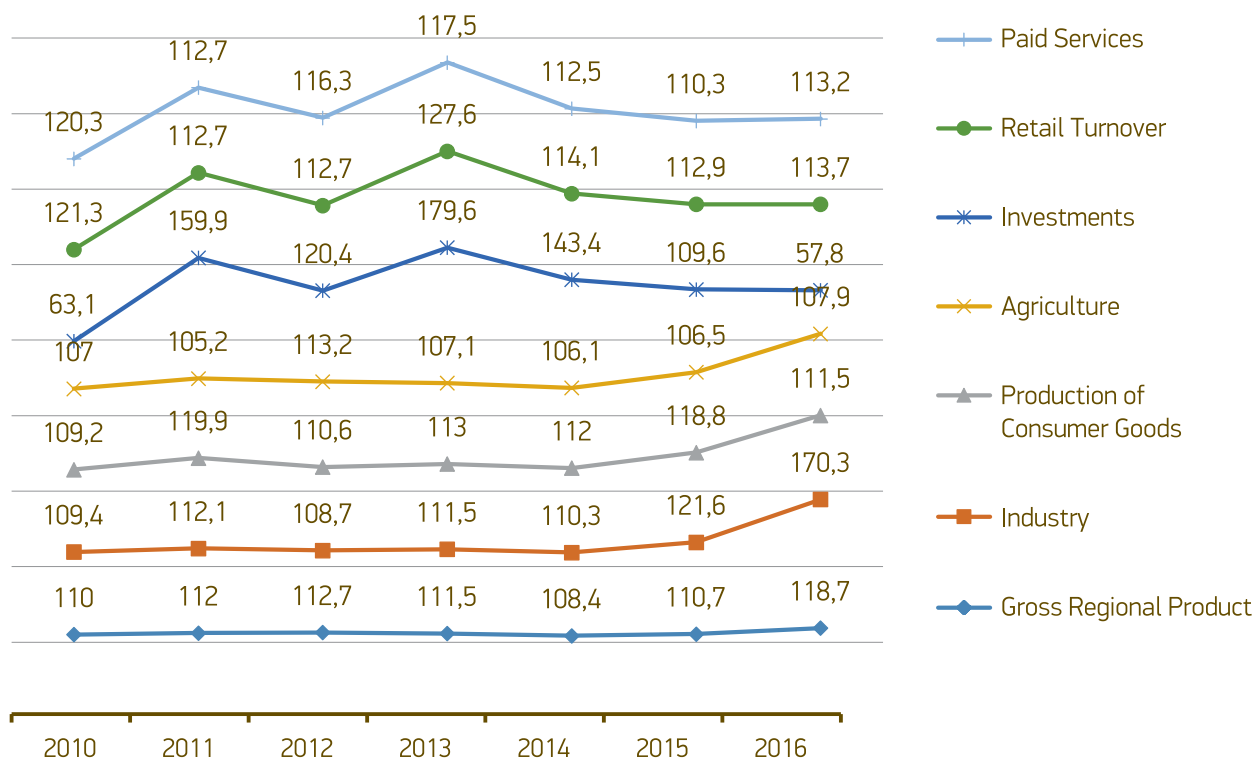
The Republic of Karakalpakstan (the RK) is located in the north of the Republic of Uzbekistan, and is adjacent to the southern part of the Aral Sea. It is the largest region of the country. More than 80.0% of the RK are desert barkhans. In the

surveyed administrative districts, desert territories account for more than 90%. The vastness of the territory affected by desertification processes and the Aral Sea crisis influence the development of the RK.

Figure 1.1.1.

The dynamics of the macro-economic indicators of the Republic of Karakalpakstan

(growth rates comparing to the previous period, in%)



Source: the calculations are made on the basis of the data provided by the Department of Statistics of the Republic of Karakalpakstan.

Over the last decade, the RK achieved a positive dynamic in its economic growth (with an annual increase in gross regional product rising from 7.7% in 2006 to 18.7% in 2016). High rates of economic growth were primarily achieved between 2010 and 2016 (growth of GRP doubled) due to outstripping development of industry and consumer demand (Figure 1.1.1).

Relatively high growth rates of economy and industry vis-à-vis the GDP of the country and other regions occurred mainly due to the construction and commissioning of the two largest industrial enterprises: the Kungrad Soda Plant and the Ustyurt Gas Chemical Complex.

Against the background of the main macro-indicators, the achievements in the field of agricultural production are very modest. Despite the decline in the share of agriculture (including forestry and fisheries) in the economy between 2010 and 2016 from 20.8% to 13.8%, an increase in agricultural production was ensured. Importantly, there have been positive changes

for this period in the structure of the economy which occurred thanks to the growth of industry from 8.9% to 25.7%. Nevertheless, the structure of RK's economy remains irrational. Without taking into account the two above-mentioned enterprises, agriculture dominates the structure of the economy, while the share of industry and services in the economy lags far behind the average republican indicators.

The effectiveness of social and economic development of the RK vis-à-vis other regions of the country can be compared through macroeconomic indicators calculated on a per-capita basis (Table 1.1.1).

As can be seen on the table, the RK is behind by almost all the per-capita indicators vis-à-vis the average republic, despite some positive transformations in industry. In 2016, the autonomous republic among the 14 regions of the country was ranked last in terms of its economic potential, agricultural production, and retail commodity turnover and penultimate in terms

of its production of consumer goods. Economic growth did not ensure an adequate increase in the wellbeing of the population. All these show that Karakalpakstan and its districts remain a depressed and backward region of the country under the influence of the Aral Sea crisis, despite the measures taken at national and international levels. (Table 1.1.2).

Analysis of the official data on industrial, agricultural and small business development in the context of rural areas the RK showed a high level of their differentiation. Industrial production is mainly (approximately 80%) is concentrated in Nukus City, Kungrad, Hojeyli, and Amudarya districts.

The index of industrial development in almost all the surveyed districts remains fairly low. This is especially true of the Takhtakupyr, Kanlykul, Muynak, Shumanay and Nukus districts.

In agriculture, the Nukus, Amudarya, and El-

likkala districts are relatively developed. The districts most affected by the environmental consequences of the Aral Sea crisis are losing their agricultural potential. These include Kanlykul, Muynak, and Kegeyli rural areas.

The service sector is mainly developed in Nukus City and Kungrad district. In Hojeyli, Takhtakupyr, Kanlykul, Muynak, Turtkul, Amudarya districts, services per capita make about 60% of the average for the RK, and in Karauzyak, Kegeyli, Nukus, Shumanay districts – less than half.

At present, the Government of the country has formulated and is implementing a number of dedicated programs for the development of the Aral Sea region, which include the following main priorities:

- improving the water resource management system, enhancing the water supply network, and providing the population with high-quality drinking water;

Table 1.1.1

Main macroeconomic indicators of the Republic of Karakalpakstan

(on per-capita basis)

#	Indicators	2010		2016	
		Index (1.0 -Uzbekistan)	Ranking vs other regions	Index (1.0 -Uzbekistan)	Ranking vs other regions
1	Gross regional product	0.387	14	0.577	14
2	Industrial products	0.209	14	0.685	10
3	Agricultural products	0.526	13	0.504	14
4	Consumer goods	0.235	14	0.430	13
5	Investments	0.512	11	0.331	5
6	Goods turnover	0.550	14	0.590	14
7	Services	0.451	13	0.566	8

Source: calculations are based on the data from the RK Statistics Office.

Table 1.1.2

Assessment of socio-economic development in the districts of the Republic of Karakalpakstan (2016)

#	District	Industrial Development Index	Agricultural Development Index	Small Business Development Index
	Republic of Karakalpakstan	1.000	1.000	1,000
1	Amudarya	1.052	1.463	1,399
2	Beruniy	0.934	1.282	0.756
3	Karauzyak	1.013	1.030	0,732
4	Kegeyli	0.903	0.815	0.979
5	Kungrad	1.504	0.828	0.919
6	Kanlykul	0.377	0.542	0.760
7	Muynak	0.267	0.726	0,738
8	Nukus	0.688	2.296	0,728
9	Takhtakupyr	0.270	1.257	0.563
10	Turtkul	0.969	1.058	1.077
11	Hojeyli	1.069	0.757	1,140
12	Chimbay	0.831	1.104	1,031
13	Shumanay	0.311	1.109	0.905
14	Ellikkala	1.021	1.400	1.095
	The level of differentiation of the highest and lowest development index	5.63	4.24	2.5

Indices are calculated based on volumes of industrial and agricultural production, and small business production on a per-capita basis. RK Statistics Office.

- enabling the reproduction and preservation of the gene pool and public health;
- creating new jobs, expanding employment, raising incomes, improving living conditions, developing the social sector and welfare of the population;
- rehabilitating the ecosystem and biodiversity;

- modernizing the production and developing the transport system, and engineering and communication infrastructures.

In general, the strategic priorities of socio-economic development of the Aral Sea region aims to meet the needs and necessities of the population living in the environmentally disadvantaged territories.

1.2. Employment and labor market

Economically active population. The proportion of economically active population (hereinafter the EAP) within the total population of Karakalpakstan, at the beginning of 2017 amounted to 37.1%, which is less than the average for Uzbekistan (43.7%) due to the relatively low proportion of EAP in RK's labor force structure. This situation signals a systemic problem concerning the reduction of the proportion of economically inactive population. Experience shows that appropriate economic, social and organizational measures to create new jobs, and encourage effective demand will ultimately contribute to the redistribution of labor resources resulting in a bigger share of EAP.

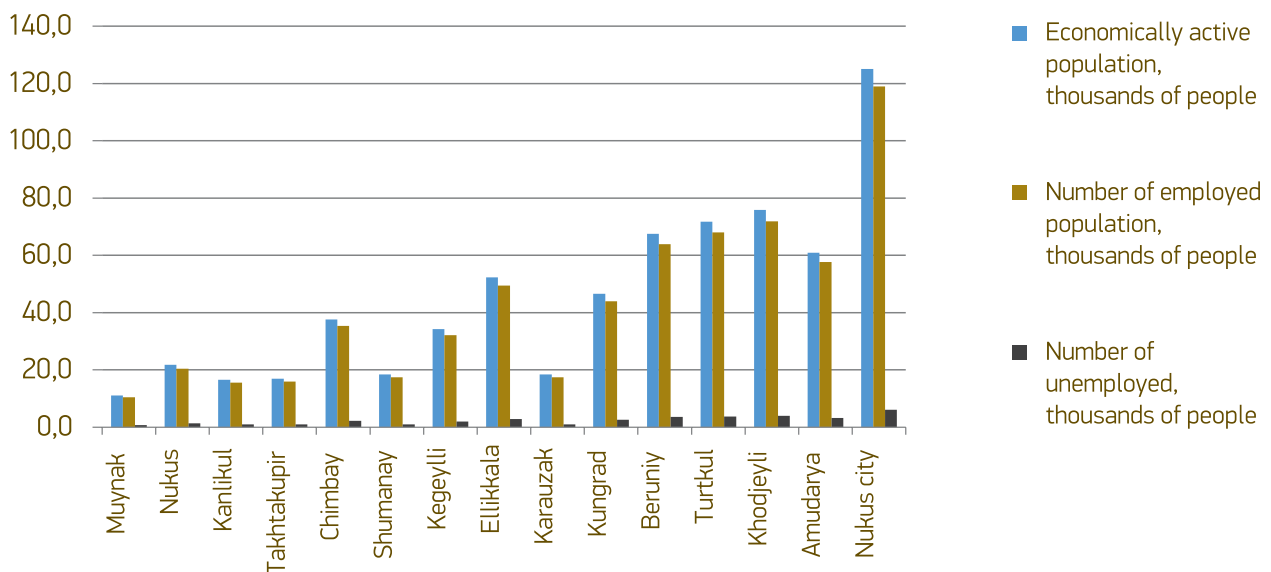
The main features of EAP distribution by "employment-unemployment" parameters (EAP levels in all districts is about 95%) in the administrative districts are traditionally close (Figure 1.2.1, and 1.2.2), therefore the EAP structure by districts and a similar structure of employment

are relatively identical and have retained such similarity for at least the past 5-6 years.

Employment. There has been a downward trend in employment of the RK population from 64.9% in 2006 to 61.0% in 2016. This period saw some structural changes in employment. In essence, the proportion of the employed has not changed in agriculture (32.8% and 30.0% respectively). The increase in the share of the employed mainly occurred in the services sector. The share of people employed in industry increased insignificantly from 9.2% to 9.3% due to the introduction of the large enterprises. Among the systemic problems identified by the survey, an important one is the fairly large number of those working in the informal sector which, as is estimated, accounts for at least half of the total number of the employed (Figure 1.2.3). At the district level, the problem of informal employment needs to be addressed through a detailed study and formulation of

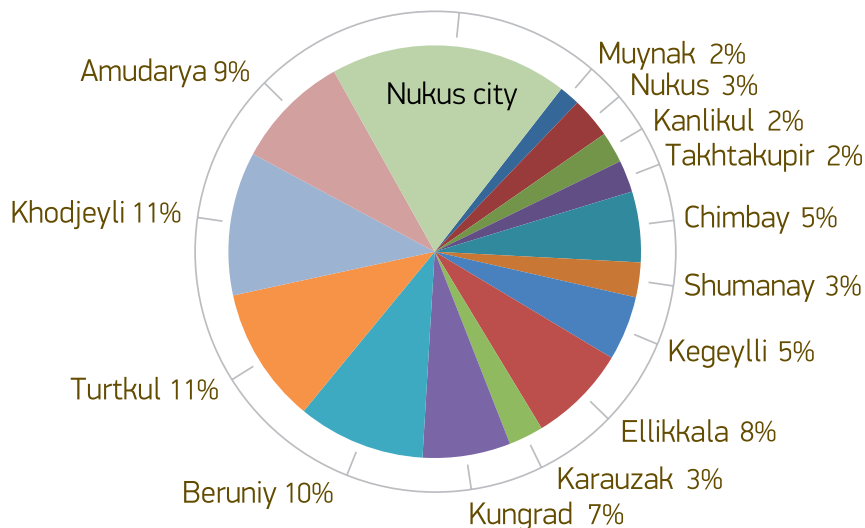
Figure 1.2.1.

Distribution of employed and unemployed EAPs in the districts of the Republic of Karakalpakstan, as of the beginning of 2017



Source: calculations are based on the data from the RK Statistics Office.

Figure 1.2.2.

Employment structure in the districts of the Republic of Karakalpakstan in 2016

Source: RK Statistics Office

measures to legalize it. It is advisable to develop these measures in the form of a separate program or subprogramme in addition to the regional program to create jobs and provide employment for the people.

Ensuring the employment of graduates from special secondary and vocational/professional schools is also an important area in terms of regulating the employment of the people of the surveyed districts. Here, the main issue is to ensure the maximum possible coverage of the graduates to help them find employment based on the specialty they acquired from their institution.

Labor migration. To date, a fairly large flow of labor migrants has emerged (from 5 to 10% of the employed population in each surveyed district), the bulk of which are seasonal workers. At the same time, more than half of migrants are young people (Figure 1.2.4).

The main task of regulation in this case is to try to retain them here, in the local labor market, by mobilizing them in the most effective manner to solve internal social and economic problems. But the lack of jobs and low wages force them to seek jobs (mostly) in Kazakhstan, Russia and other regions of Uzbekistan.

Other problems are associated with: their health, in particular, part of the migrants re-

turn to their homeland with infectious diseases they acquire in recipient countries, others return with degraded professional capabilities and traditional socio-psychological habits (loss of professional knowledge, destruction of family values, acquisition of alien habits and lifestyles, etc.); absence of a systemic mechanism for regulating labor migration at district level in lieu of spontaneous movement of labor migrants in search of work with CIS countries (especially the Russian Federation and Kazakhstan); lack of reliable information on the number, structure, and qualitative indicators of labor migration.

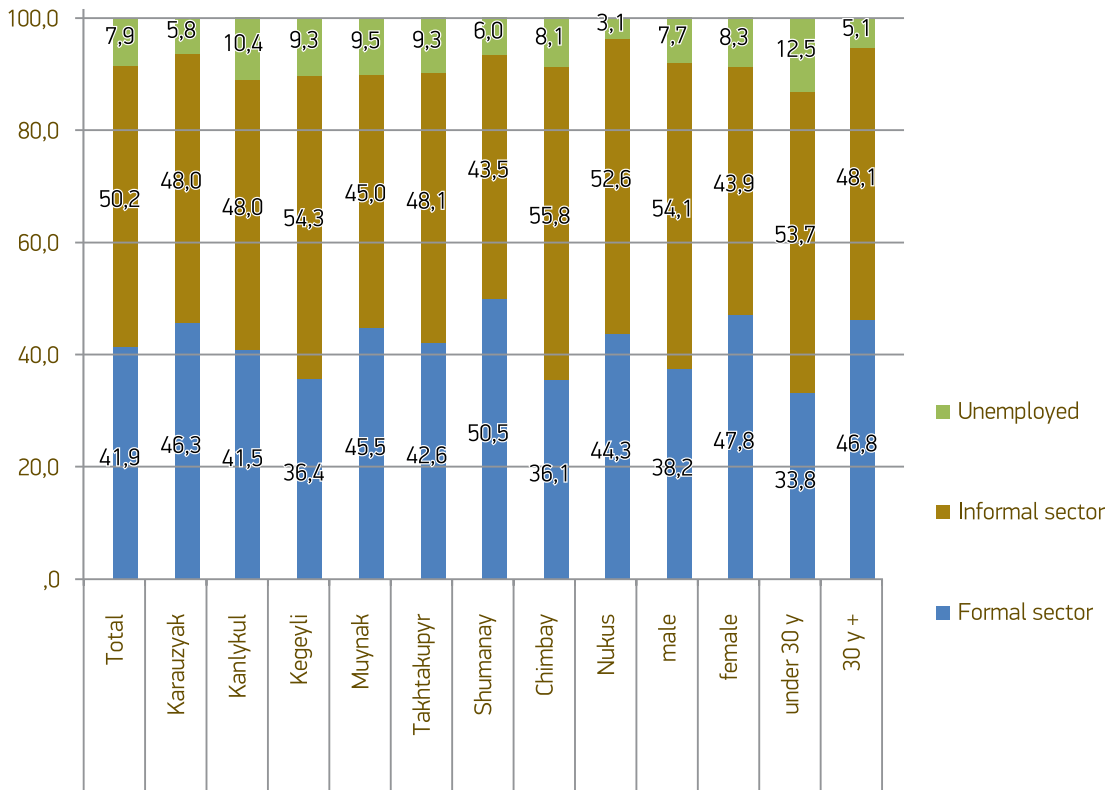
Therefore, there is a clear need to establish cooperation between the employment agencies and internal affairs agencies, as well as other institutions in the field of labor migration. It is necessary to formulate measures to inform the public about the existing problems and possible ways to address them.

At the same time, it is necessary to improve the national legislation on labor migration, develop and adopt dedicated programs to regulate the parameters of labor migration, including in the RK, in the context of its districts, design and implement a special government program to monitor the health and socio-psychological status of labor migrants (at the level of the RUZ, in the context of the RK, the regions, districts

Figure 1.2.3.

Distribution of work force, formal and informal employment in the surveyed districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



and local civil self-governance bodies), to carry out continuous work with migrants and their families, monitor the level and quality of life of the migrants' families, and establish permanent links between competent migration agencies and migrants and their families on a bilateral agreement basis.

The unemployed. In terms of their unemployment levels, the RK districts can be grouped into 2 conventional groups:

1. districts with relatively stable labor market, where the unemployment rate is below the national average;

2. districts with relatively tense labor market, where the unemployment rate is above the average for Karakalpakstan.

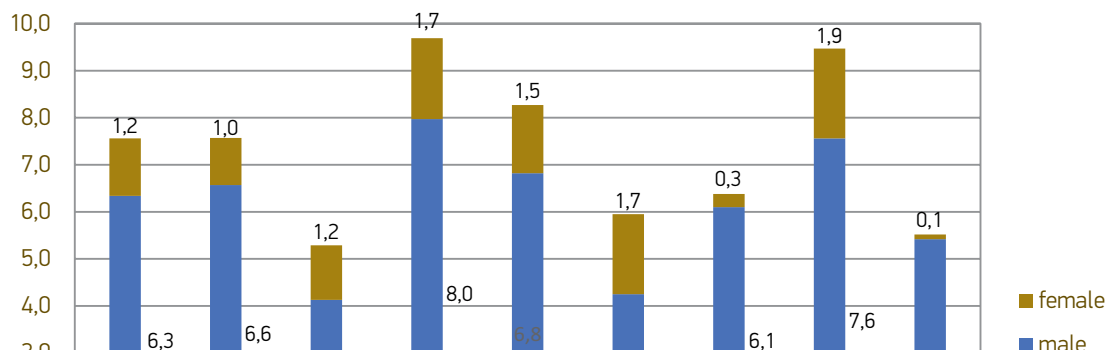
As can be seen on Table 1.2.1, all the surveyed districts, without exception, are in the category of districts with a relatively tense situation in labor market. This category includes only Ellikkala and Kungrad districts from the "unsurveyed" dis-

tricts. At the same time, the highest unemployment rate is recorded in Muynak (9.5%), Kanlykul (10.4%), Takhtakupyr (9.3%) and Kegeyli (9.3%) districts. Thus, the analysis of unemployment levels reveals a truly unique situation in the surveyed districts of the Aral Sea region in terms of their socio-economic status.

Regulation of the labor market. The study of the factors that serve as the basis for a relatively high level of unemployment indicates the presence of the following systemic problems in the labor market of the surveyed districts:

- lack of promptness in addressing the issues of training in the professions demanded in the local labor market, which is caused by the lack of a close relationship between the labor market and the training system. According to the focus group respondents, the same problem is reproduced every year, i.e. there is a continuous training of non-demanded

Figure 1.2.4.
Household members toiling abroad
 (survey results, August 2017, in %)



specialists, particularly with secondary special vocational education by local colleges, who are supplemented by local specialists trained in other districts with no regard to the needs of this district. In this context, it is recommended to record the correspondence of the used and trained specialists to the local labor market demands for specific professions, especially in the field of fish farming, greenhouse agriculture, and beekeeping, and to organize short-term training courses for tractor drivers, combine operators, etc., and, on the basis of determining such correspondence (balance), it is necessary to adjust, on an annual basis, the training parameters of the vocational colleges;

- lack of any noticeable improvements in the local labor market in terms of creating new jobs, especially in the real sector. Weak specialization of the districts in the production of goods with a complete processing cycle, especially for agricultural goods. To solve this problem, it is necessary to organize continuous works to improve the identification of the supply and demand imbalance in the local labor market, and take measures to improve the mobility of the local work force to fill the relevant vacancies in other districts. The best solution may be to invest in the creation of new jobs, possibly by joining efforts of any interested organizations and districts at the level of heads of organizations and districts (hokims) to expand the real sector of the economy based on the real needs for the development of agro-processing industries targeting individual consumers;

- the existence of such organizational and institutional problems as the discrepancy between the number of staff of the local labor agency and the urgent need to regulate the local labor market. This suggests that it is necessary to create an open online information system for tracking the employment of college graduates, which would enable to constantly monitor and regulate the local youth labor market, develop interactive communication between employers and work force suppliers (educational institutions). This, however, requires that all the relevant tasks be described and assigned to the district labor agencies;
- lack of widely available information on the labor market in the regions and the republic;

Fig.1.2.5.
Employment and unemployment in the Republic of Karakalpakstan
 (survey results, August 2017, in %)

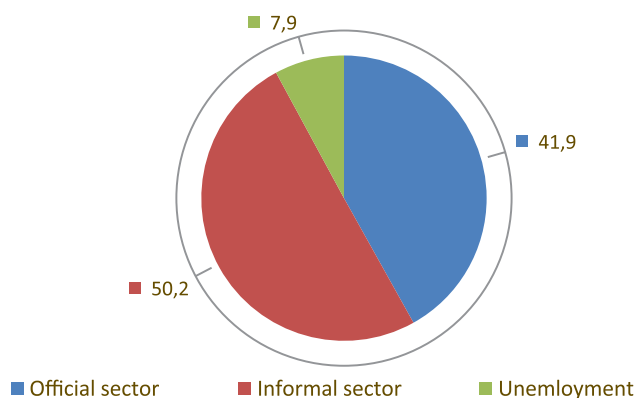


Table 1.2.1

Employment and unemployment in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)

	Official sector	Informal sector	Unemployed
Total	41.9	50.2	7.9
Karauzyak	46.3	48.0	5.8
Kanlykul	41.5	48.0	10.4
Kegeyli	36.4	54.3	9.3
Muynak	45.5	45.0	9.5
Takhtakupyr	42.6	48.1	9.3
Shumanay	50.5	43.5	6.0
Chimbay	36.1	55.8	8.1
Nukus	44.3	52.6	3.1
Sex			
- male	38.2	54.1	7.7
- female	47.8	43.9	8.3
Age			
-30 or younger	33.8	53.7	12.5
-31 or older	46.8	48.1	5.1

lic; lack of publicly available analytical materials on labor market and employment. This problem makes it necessary to periodically (at least once a quarter) collect information and analyze labor markets at district levels, analyze sectorial labor markets to determine the quality and structure of employment and vacancies in various sectors and companies, and develop mechanisms to report progress through the media.

1.3 Family incomes and expenditures

The average monthly gross income per capita in 2010-2016 increased 2.7 times compared to 2.8 times in the whole country. By this indicator the RK is almost 1.4 times lower than the national average and is the 12th among the regions. According to official statistics, the share of income from entrepreneurship is 41.0% (55.2% in the whole country). The household survey suggests that the average monthly total income of 43.8% of households varies from 700 to 1,400 thousand UZS; 27.8% from 1.4 million to 2 million UZS; 12.4% to over 2 million UZS; and 16% less than 700 thousand UZS.

Focus group surveys showed that the main source of income for the district residents is income from the production and sale of agricultural products (more than 50% of total income) and remittances from labor migrants working primarily in Kazakhstan and Russia.

During the interviews, the households noted that they mainly produce food for their own consumption, as well as for sale including vegetables, fruits, melons, canned goods, and dried fruits. Production of fruits and vegetables is most developed in the households of the Kanlykul, Chimbay and Nukus districts (Figure 1.3.1).

In most districts, households have private backyard plots where they grow vegetables, fruits and melons and keep cattle. The products pro-

The survey revealed that the bulk of the people's income is spent on food and utilities which indicates a low level of money income of the population and the need to form new sources of income through business development.

duced household plots are mainly consumed by the households themselves and only one-tenth of it is sold. The specialization of the districts (Kanlykul, Kegeyli, and Karauzyak) in livestock farming makes it possible for the local people to provide themselves with meat.

The households also produce textiles and clothing, handicrafts, and various types of services (Figure 1.3.2, 1.3.3). More than 60% of respondents who produce services said that they provide repair and construction services, about 18% - transport services (passenger and freight), 9% - trade, cooking and sales of traditional national dishes and confectioneries.

The survey revealed that the bulk of the people's income is spent on food and utilities which indicates a low level of money income of the population and the need to form new sources of income through business development.

Figure 1.3.1.
Production of food and non-food products by HHs in the districts of the Republic of Karakalpakstan
(survey results, August 2017, in %)

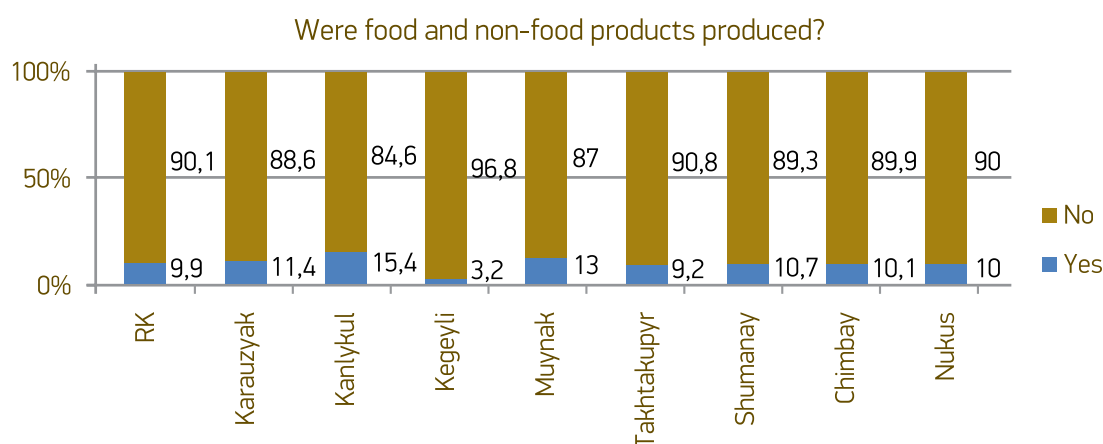


Figure 1.3.2.
Production of food and non-food products by Households in the districts of the Republic of Karakalpakstan
 (survey results, August 2017, in %)

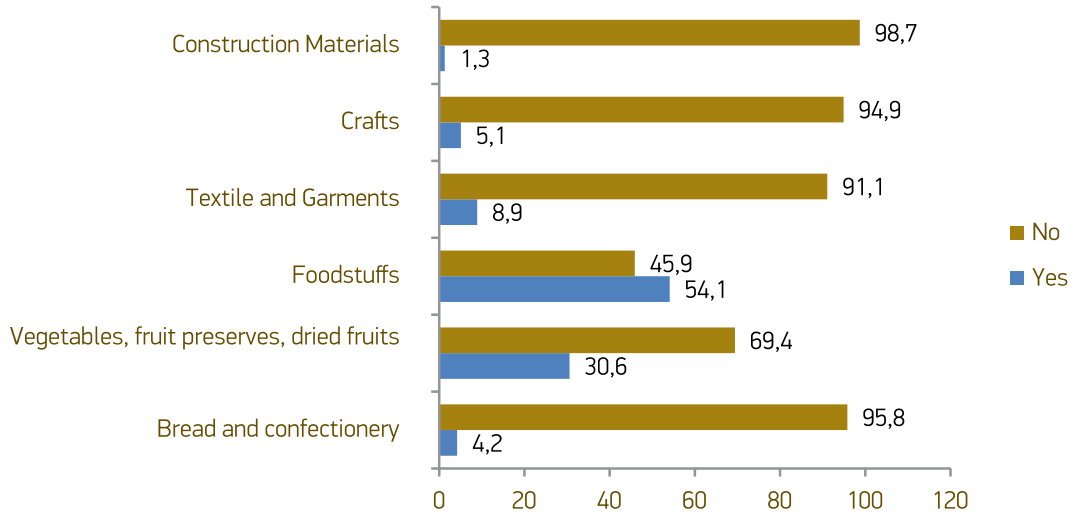
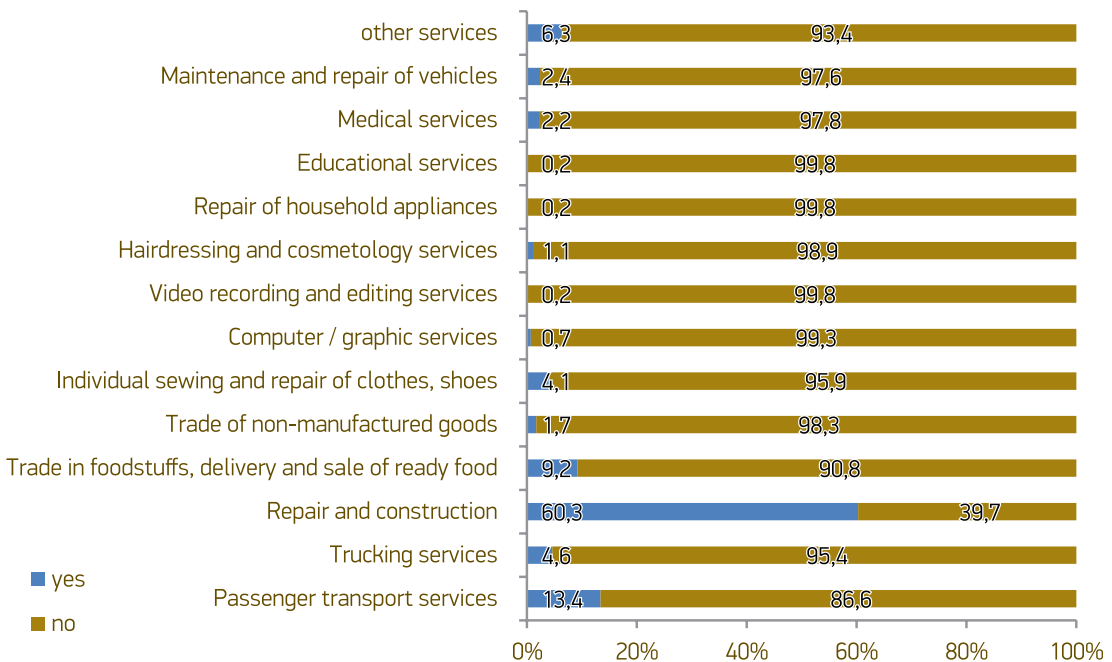


Figure 1.3.3.
Production of services by households in the Republic of Karakalpakstan
 (survey results, August 2017, in %)



Focus group members said that 10-15% of families live on the remittances received from labor migrants working in Kazakhstan and Russia (in the Karauzyak district such families make 20-25%). According to the survey results, about 8% of the population are working abroad send-

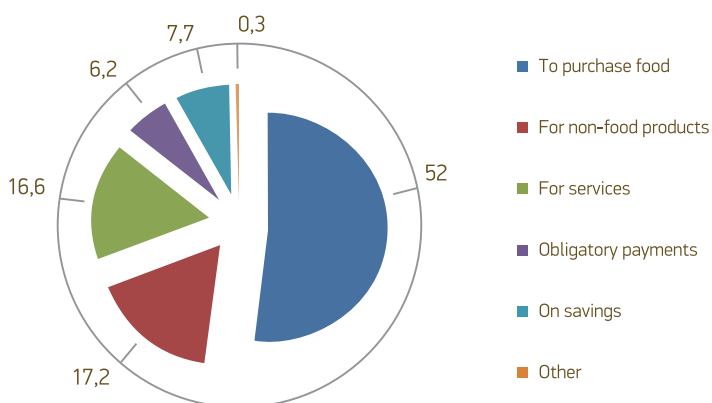
ing back to their families in average \$160 per month. District-wise, the share of labor migrants among the working-age population varies between 5 to 10%, and the money they send back to their families ranges between \$100 to \$300 per month.

Focus group participants said that the people's minds should be changed (from dependence on benefits and remittances to entrepreneurship). Analysis of official statistics showed that small business is very poorly developed in the Karauzyak, Kanlykul and Chimbay districts (2-3 small businesses per 10,000 people), while in the Nukus district there are 63.7 small businesses per 10,000 people, Kegeyli – 38.6, Takhtakupyr – 35.5, Shumanay – 33, and Muynak – 29.

The survey of the households showed that their expenditure structures are dominated by purchases of food (52.0%) including their savings and mandatory payments (Figure 1.3.4) and excluding such – 60.6%.

The largest share of expenditures on food-stuffs falls on Takhtakupyr (54.0%), Chimbay (52.9%), Nukus (51.9%) and Muynak (41.8%) districts. The existing structure of family expenses is largely due to the consumption of own production, and low level of service supply. It is characteristic that accumulation of savings is registered in all the districts. The irrational structure of consumption is largely due to the culture of the rural population, where less attention is paid to the consumption of non-food products and

Figure 1.3.4.
Structure of household expenditures the Republic of Karakalpakstan
(survey results, August 2017, in %)



services, and the objective absence of any supply thereof in rural areas.

In general, the existing levels of incomes and expenditures need to be optimized in order to improve the wellbeing of the rural people.

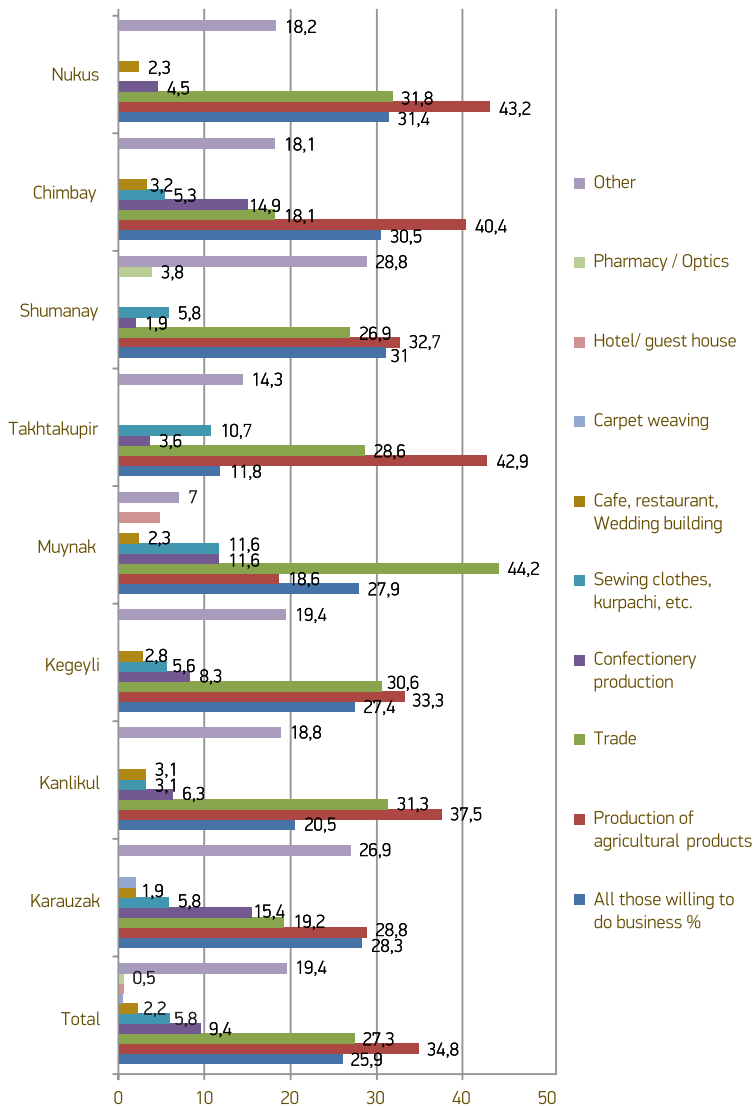
Table 1.3.1

Structure of household expenditures in the districts of the Republic of Karakalpakstan
(survey results, August 2017, in %)

Districts	Food purchases	Non-food products	Services	Mandatory payments	Savings	Other
Total	52.0	17.2	16.6	6.2	7.7	0.3
Karauzyak	49.8	17.3	17.5	6.9	8.4	0.1
Kanlykul	51.2	15.5	17.0	5.9	10.0	0.4
Kegeyli	51.5	16.4	18.3	6.3	7.0	0.4
Muynak	51.8	17.7	15.6	5.9	8.8	0.3
Takhtakupyr	54.0	17.2	15.2	7.0	6.3	0.4
Shumanay	51.9	18.2	16.4	5.0	8.2	0.3
Chimbay	52.9	17.5	16.1	6.0	7.5	0.1
Nukus	51.8	18.0	16.5	6.6	7.1	0.1

1.4. Entrepreneurship

Figure 1.4.1.
Potential for entrepreneurship development in the districts the Republic of Karakalpakstan, in %
 (survey results, August 2017)



According to official data of the State Statistics Committee, as of the beginning of 2017, there were 10.1 thousand small businesses (excluding farms) in the RK. In the gross regional product, the share of small businesses in 2016 was 57.0% compared to 49.5% in 2006. Accordingly, the share in industry – 27.5% (11.4%), agriculture – 98.0% (93.1%), construction – 82.0%

(59.5%), trade – 93.1% (85.9%), and paid services – 42.0% (42.4%). Karakalpakstan is ranked 12th among 14 regions of the country by volume of products and services indicators, the number of small businesses, and exports per capita, which features the level of entrepreneurship development.

A relatively low level of entrepreneurial activity (which is 1,5 times as low as the average indicators for Uzbekistan and more than twice as low as the Fergana Valley regions) is also due to objective factors. The objective regional factors constraining the sustainable development of entrepreneurship in the surveyed districts include the following:

- system of rural population settlement (remoteness of transport, relatively small population of rural settlements);
- the low potential of mineral and raw material base (except livestock products, desert vegetation);
- the environmental effects of the drying out of the Aral Sea and the associated limited and low quality land and water resources;
- unwillingness and low level of entrepreneurship of the local rural people to run a small business.

The potential and reserves for developing entrepreneurship, as the main factor of the people’s income, can be assessed through the results of the survey (Figure 1.4.1).

The people’s preferences to do business are relatively low (25.9%) compared to similar survey results for the entire country (49.5%). Entrepreneurial activity is particularly low in the Takhtakupyr (11.8%) and Kanlykul (20.5%) districts.

Among the main preferred areas is the organization of a family dehqan farm (34.8%), which is fairly objective given the existing potential of the territories. In this context, it is of practical interest to quantify, based on the results of the survey, the share of income from entrepreneurship within total incomes (Figure 1.4.2).

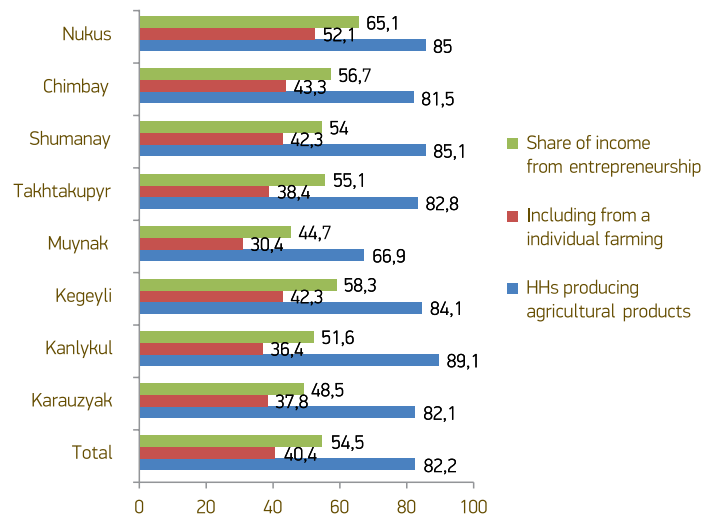
Despite the relatively high level of the share of incomes generated from household plots, it should be noted that, in fact, in the long term, this area will be a priority in business development. At the same time, this very area has a

number of risks associated with the instability of natural and climatic conditions and, accordingly, the incomes generated. The existing barriers to business development are reflected in the respondents' answers (Figure 1.4.3).

Among the reasons stated are insufficient educational potential and awareness of household members about the role and importance of small business in ensuring the wellbeing of the population. Therefore, the answer "I have neither willingness nor capabilities to run a business" is prevalent in almost all the districts surveyed (from 36.0% in the Muynak district to 52.3% in the Karauzyak district). Other reasons include lack of professional education (25.5%), inefficiency of business in rural areas (14.9%), by all probability, due to transport remoteness.

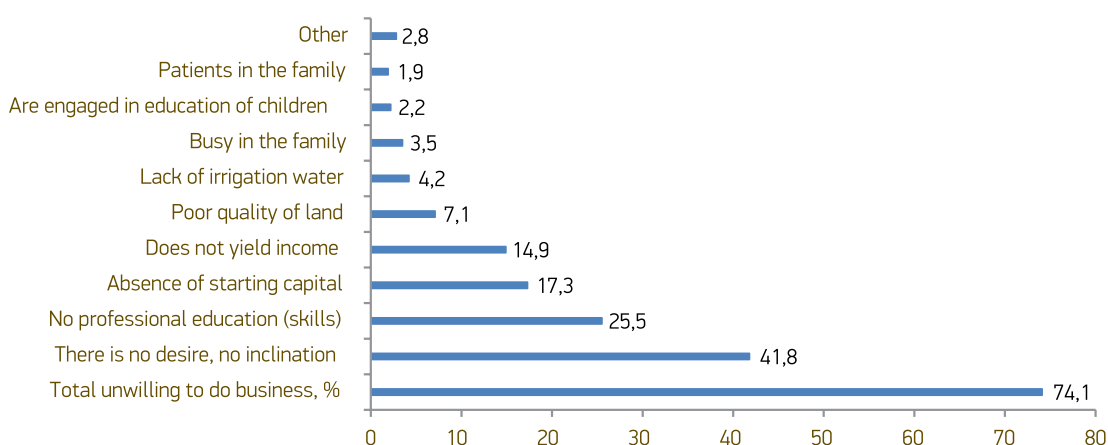
Based on the reasons stated for low entrepreneurial activity and given the existing potential, the local initiatives aim to design a dedicated local business development program (in *auls* and *kishlaks* - villages) (30.0%), expand access to concessional/soft loans (29.5%), training and retraining of the workforce (17.1%). Taking into account the natural and environmental conditions, and the specificities of the rural settlements, it is necessary to work out mechanisms and tools to incentivize the creation of rural cooperatives, facilitate

Figure 1.4.2. Share of income from entrepreneurship within total incomes of the Republic of Karakalpakstan people, in % (survey results, August 2017)



new partnerships through the establishment of branches and workshops of large companies, create home-based jobs to produce and process livestock products, or collect and treat local medicinal herbs, develop handicrafts, and at-home services, etc.

Figure 1.4.3. Main reasons to the unwillingness to run a business, % (survey results, August 2017)



1.5. Food security

Figure 1.5.1.

Cost of consumer basket based on actual consumption in the districts of the Republic of Karakalpakstan
(survey results, August 2017)

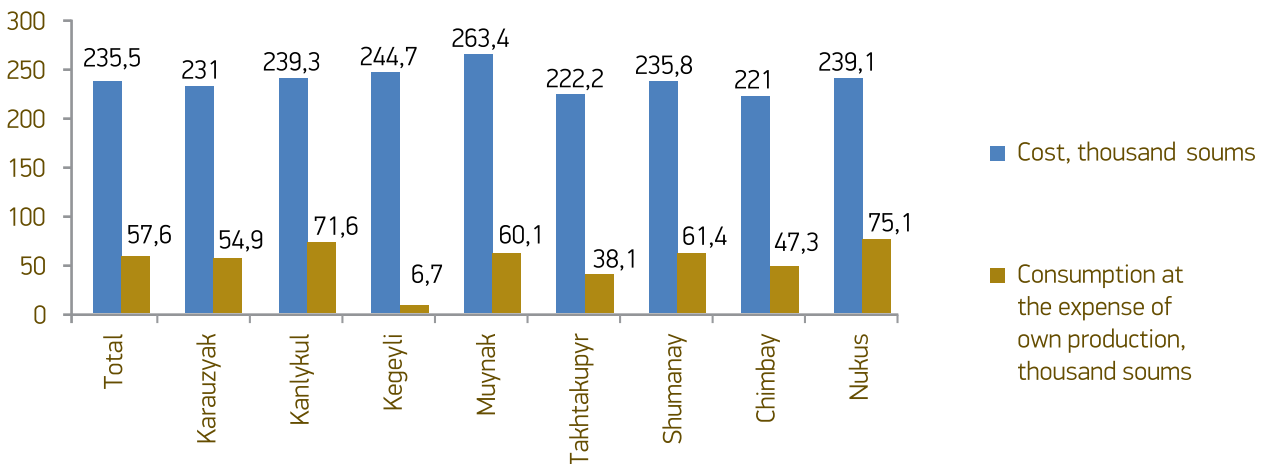
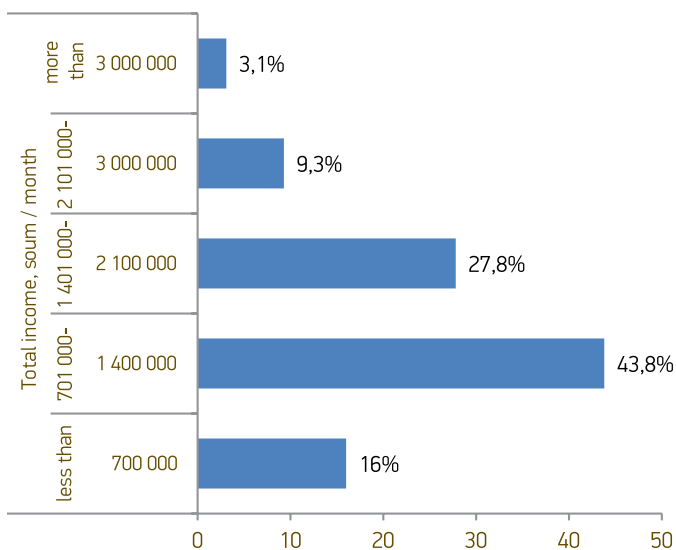


Figure 1.5.2.

Distribution of households by level of aggregate income in the Republic of Karakalpakstan

(survey results, August 2017)



Ensuring food security in the RK has its own specific features related to the state of land and water resources, environmental challenges, the level of socio-economic development, access to transport, and the capacity of food markets. These facts determine the higher relevance and urgency of providing the people with food products in Karakalpakstan vis-à-vis other regions of the country.

According to the focus group results, local producers generally form the existing demands for food products, hence a relatively small share of imports of goods from other regions. The main imported food products include sugar, vegetable oil, flour, confectioneries, fruits, etc. But much depends on the weather and the abundance of irrigation water.

Food security in the surveyed districts can be characterized by the affordability and adequacy of food supply. Affordability can be estimated on the basis of income-to-expenditure ratio, for example, spending on food. The higher the food expenditures in the people's incomes, the fewer possibilities remain to spend on durable goods and services that determine the quality of life.

The household survey revealed that the cost of consumer basket (CB) based on actual consumption averaged 235.5 thousand UZS; with

Table 1.5.1

Distribution of households in the districts of the Republic of Karakalpakstan by level of total income
(survey results, August 2017)

	Total income, UZS/month				
	less than 700,000	701,000-1,400,000	1,401,000-2,100,000	2,101,000-3,000,000	more than 3,000,000
Total	16.0	43.8	27.8	9.3	3.1
Karauzyak	12.5	37.5	32.1	12.5	5.4
Kanlykul	12.2	42.3	38.5	3.8	3.2
Kegeyli	19.8	40.1	29.4	7.9	2.8
Muynak	13.0	45.5	27.3	13.0	1.3
Takhtakupyr	23.5	49.6	18.9	5.9	1.3
Shumanay	16.7	39.9	26.2	14.3	3.0
Chimbay	14.6	48.4	24.7	9.1	3.2
Nukus	10.7	42.9	31.4	9.3	5.7

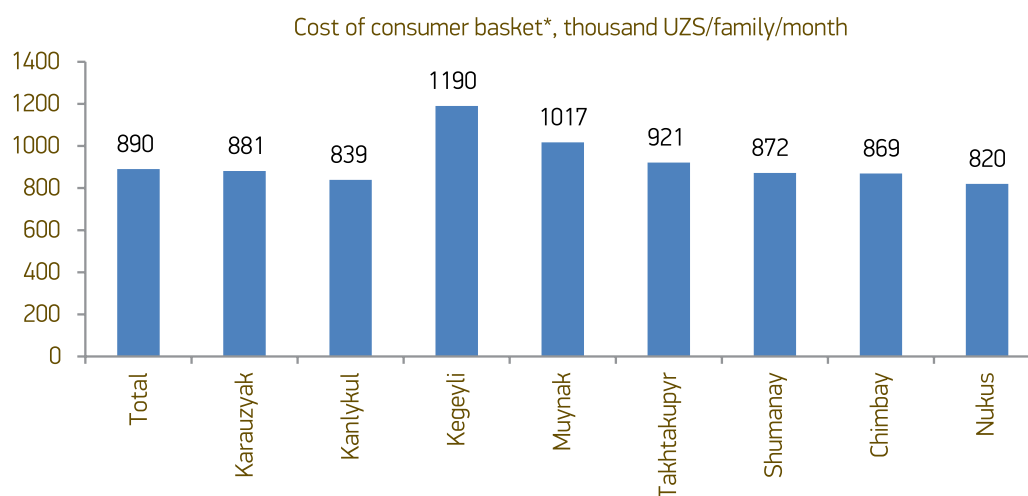
consumption from own production, the cost of CB is 177.9 thousand UZS. Above the average is the cost of CB in the Muynak (203.3 thousand UZS) and Tahtakupyr (184.1 thousand UZS) districts (Figure 1.5.1).

Based on household survey results, a month-

ly total income was determined for all the districts. Specifically, on average 16% of families surveyed generate less than 700 thousand UZS per month, 43.8% - between 701 and 1,400 thousand UZS, and 27.8% - between 1.4 and 2 million UZS. Particularly notable among the

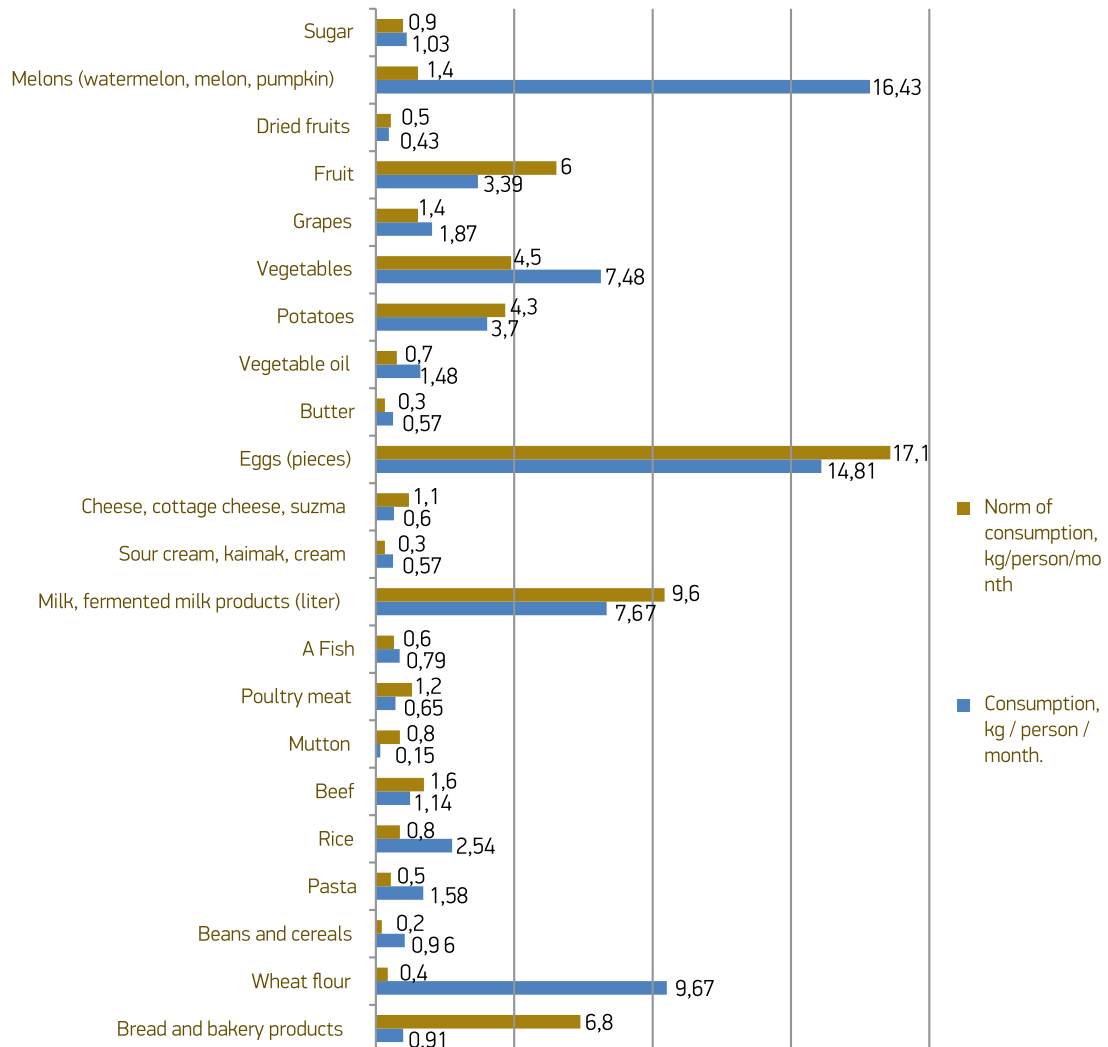
Figure 1.5.3.

Cost of consumer basket in the districts of the Republic of Karakalpakstan
(survey results, August 2017)



Cost of CB was calculated based on family coefficient = 5

Figure 1.5.4.
Food consumption adequacy coefficient in the districts of the Republic of Karakalpakstan
 (survey results, August 2017)



other districts is the Takhtakupyr district where 23.5% of the households surveyed live on incomes that are less than 700 thousand UZS per month (Table 1.5.1).

Based on the actual consumer basket and income level, the food affordability coefficient was calculated (Figure 1.5.3).

For households with total incomes of 700-1,400 thousand UZS per month, the general food affordability coefficient is expressed as income deficit (i.e. their incomes do not cover the cost of their consumer baskets), and such families make, on average, more than half of the households surveyed. This confirms the imbalance between the incomes and food con-

sumption of a large part of the population in the districts surveyed.

Calculations by districts show that in the Kegeyli and Muynak districts, for the population with incomes of 1.4 million UZS and more per month, the affordability of food products was 85% and 73.0 %. In general, for 60% of the households, the affordability of food products is low, that is, the total/aggregate incomes of the families do not cover the cost of consumer basket.

The food consumption adequacy coefficient characterizes the quality of nutrition by correlating the actual consumption of food products with the minimum consumption rec-

ommended by the Ministry of Health (Table 1.5.4). The relatively low consumption of meat (71%), milk and dairy products (80%), eggs (87%), potatoes (86%), fruits (57%) suggests an irregularity in the rational consumption levels with primarily limited proteins and vitamins in dietary intake.

There is a relatively high level of fish supply (132%), sour cream, creams, butter (190%), vegetable oil (211%), vegetables (166%), grapes

(134%), and melons (1174%). Such consumption is due to the level of the households' output in their backyard plots, as well as the presence of lakes and the development of fisheries. The level of consumption of vegetable oil and sugar is due to the specificities and eating habits and culture of the people living in the districts.

In general, the issues of regulating the food market and ensuring consumption/food security are associated with:

Table 1.5.2

Food consumption adequacy coefficient in the districts of the Republic of Karakalpakstan
(survey results, August 2017)

#	Foodstuff	Consumption, kg/ person/month	Norm of consumption, kg/person/month	Consumption relative to the norm, %
1	Bread and bakery products	0.91	6.8	13
2	Wheat flour	9.67	0.4	2418
3	Beans and cereals	0.96	0.2	480
4	Pasta	1.58	0.5	316
5	Rice	2.54	0.8	318
6	Beef	1.14	1.6	71
7	Mutton	0.15	0.8	19
8	Poultry meat	0.65	1.2	54
9	Fish	0.79	0.6	132
10	Whole milk, fermented milk products (liter)	7.67	9.6	80
11	Sour cream, creams	0.57	0.3	190
12	Cheese, cottage cheese, sour yogurt	0.60	1.1	55
13	Eggs (pcs)	14.81	17.1	87
14	Butter	0.57	0.3	190
15	Vegetable oil	1.48	0.7	211
16	Potatoes	3.70	4.3	86
17	Vegetables	7.48	4.5	166
18	Grapes	1.87	1.4	134
19	Fruits	3.39	6.0	57
20	Dried fruits	0.43	0.5	86
21	Melons (watermelon, melon, pumpkin)	16.43	1.4	1174
22	Sugar	1.03	0.9	114

- the low solvency of the rural people, which limits their purchases of quality food products;
- the absence of regional balance instruments to assess food supply and demand;
- the possibility of organizing a number of local productions of food products which are imported from other regions. For some imported food products (vegetables, fruits, flour, vegetable oil, confectioneries), local entrepre-

neurs have a strong potential to expand the production of these foodstuffs locally;

- the need for radical improvement of the water management infrastructure and the quality of land resources through innovative solutions to ensure sustainable development of agriculture in rural areas based on their natural, climatic and economic features.

1.6. Production infrastructure

With RK's geographic and natural climatic conditions, the transport system is of strategic importance among other components of production infrastructure. In some territories the RK has a relatively well developed railroads and automobile roads. Nukus has an international airport that meets modern requirements. Territory of the republic is crossed by a national highway built according to international standards and leading to neighboring countries (Russia and Kazakhstan). The Tashkent-Uchkuduk-Nukus railway runs through a number of rural areas. The construction of the Navoi-Konimeh-Miskin railway line has been initiated in order to enhance RK's transport infrastructure.

At the same time, the level of development of highways in the RK is more than 4.0 times lower than the average for the country, which is due to the vastness of its territory and the low pop-

Figure 1.6.1.

Public satisfaction with the transport infrastructure in the Republic of Karakalpakstan
(survey results, August 2017, in %)

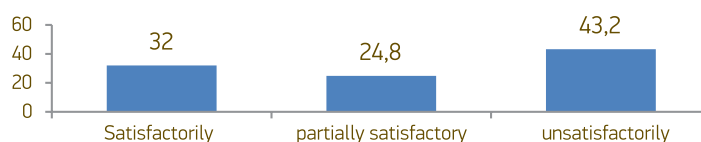


Table 1.6.1

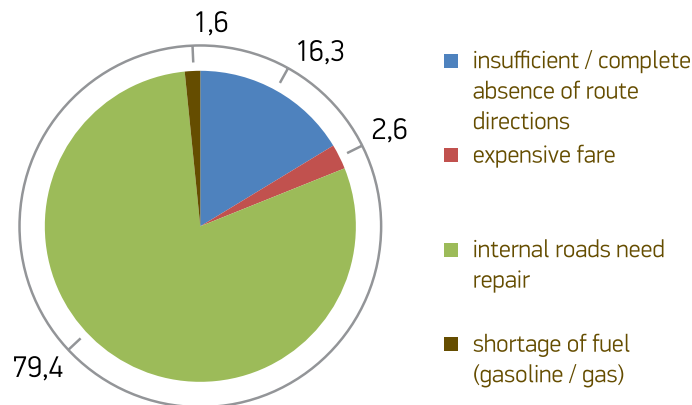
Public satisfaction with the transport infrastructure in the districts of the Republic of Karakalpakstan
(survey results, August 2017, in %)

	Transport infrastructure		
	satisfied	partially satisfied	unsatisfied
Total	32.0	24.8	43.2
Karauzyak	27.7	31.0	41.3
Kanlykul	26.9	30.1	42.9
Kegeyli	46.0	11.5	42.5
Muynak	40.3	17.5	42.2
Takhtakupyr	10.5	24.8	64.7
Shumanay	50.0	29.8	20.2
Chimbay	27.9	27.6	44.5
Nukus	32.9	30.7	36.4

Figure 1.6.2.

Reasons to public dissatisfaction with the transport infrastructure in the Republic of Karakalpakstan

(survey results, August 2017, in %)



ulation density. The districts surveyed (with the exception of the Shumanay, Chimbay, and Nukus districts) have insufficiently developed automobile roads because of the remoteness and inaccessibility of rural areas. This systemic problem was confirmed during the survey (Table 1.6.1).

In general, a significant part of the population in the surveyed districts said they were not satisfied (43.2%) and partially satisfied (24.3%) with the operation of the transport infrastructures. The highest dissatisfaction was registered in the Takhtakupyr (64.7%), Chimbay (44.5%), Kegeyli (42.5%), Kanlykul (42.9%) and Muynak (42.2%) districts.

The main reasons to the public dissatisfaction include the low quality of local internal roads which require repair and reconstruction (79.4%), as well as the lack of passenger routes (16.3%). The households are particularly unhappy about the state of the internal roads. The public dissatisfaction for this reason in most districts reaches more than 80.0% (Figure 1.6.2).

Based on the people's primary needs and necessities in high-quality internal automobile roads, the RK Council of Ministers and the district hokimiyats should promptly address this extremely important problem without referring to dedicated programs for the medium-term period. It is advisable to optimize the automobile routes for remote and inaccessible territories.

Among the key industrial infrastructures in the RK, of special importance is the existing electricity network through the Takhiatash TPP, whose upgraded capacity will sustainably provide the population with electricity.

The territory of the RK is crossed by a number of gas pipelines delivering natural gas to Russia and to local needs. At the same time, there are problems associated with the lack of sustainable provision of electricity and fuel in the surveyed districts. The specificities of these districts require the development of alternative energy sources – solar and wind energy facilities.

1.7. Market infrastructure and local budget

Overall, RK's market infrastructure corresponds to its existing social and economic potential. In terms of its development, the RK (by the volume of banking and financial services rendered per capita) ranks 12th among the regions of the country. There are twenty banking and financial institutions operating in the region. Commercial banks have their branches in all the districts.

In terms of its development, the RK (by the volume of banking and financial services rendered per capita) ranks 12th among the regions of the country.

The recent years have seen a successful development of insurance companies in the region. The company "Uzagrosugurta" has its branches in all the districts, "Kafolat" – in 12 districts, "Uzbekinvest" – 10 districts, and "Madad" – 2 districts. There remains a certain differentiation in the provision of banking, financial and insurance services between individual districts. It should be noted in particular that the market infrastructures are not sufficiently well developed in the Muynak, Shumanay and Kegeyli districts.

The banking and financial institutions do not fully meet the needs of the rural areas in providing agro-machinery leasing services; new modern insurance services are not developed; and the rural population is not sufficiently provided with bank terminals. There are issues with the reasonable placement of market infrastructures in rural areas to accommodate the emerging demand, to support and incentivize small businesses and private entrepreneurship, and strengthen the capacities of rural financial resources and local budgets.

The household survey also confirmed the existing issues associated with the activities of the banking and financial institutions. Specifically, the levels of public dissatisfaction (including partial dissatisfaction) with market infra-

structure services reach: in the Kanlykul district 40.3%, Shumanay district – 42.7%, Chimbay district – 56.8%, Takhtakupyr district – 69.8%, and Muynak district – 38.2% .

The currently implemented Action Strategy on five priority areas focuses on comprehensive social and economic development of the regions by strengthening their financial base – their local budgets.

RK's budget, according to the official data of 2016, is subsidized and ranks first by this indicator vis-à-vis other regions of the country (Figure 1.7.1).

Among the 14 districts, only two – Kungrad and Muynak – did not use any subventions to generate their local budgets. Among the districts surveyed, a large amount of subventions in 2016 were given to the Shumanay (46,7 billion UZS), Kegeyli (31.0 billion UZS) and Karauzyak (20.0 billion UZS) districts.

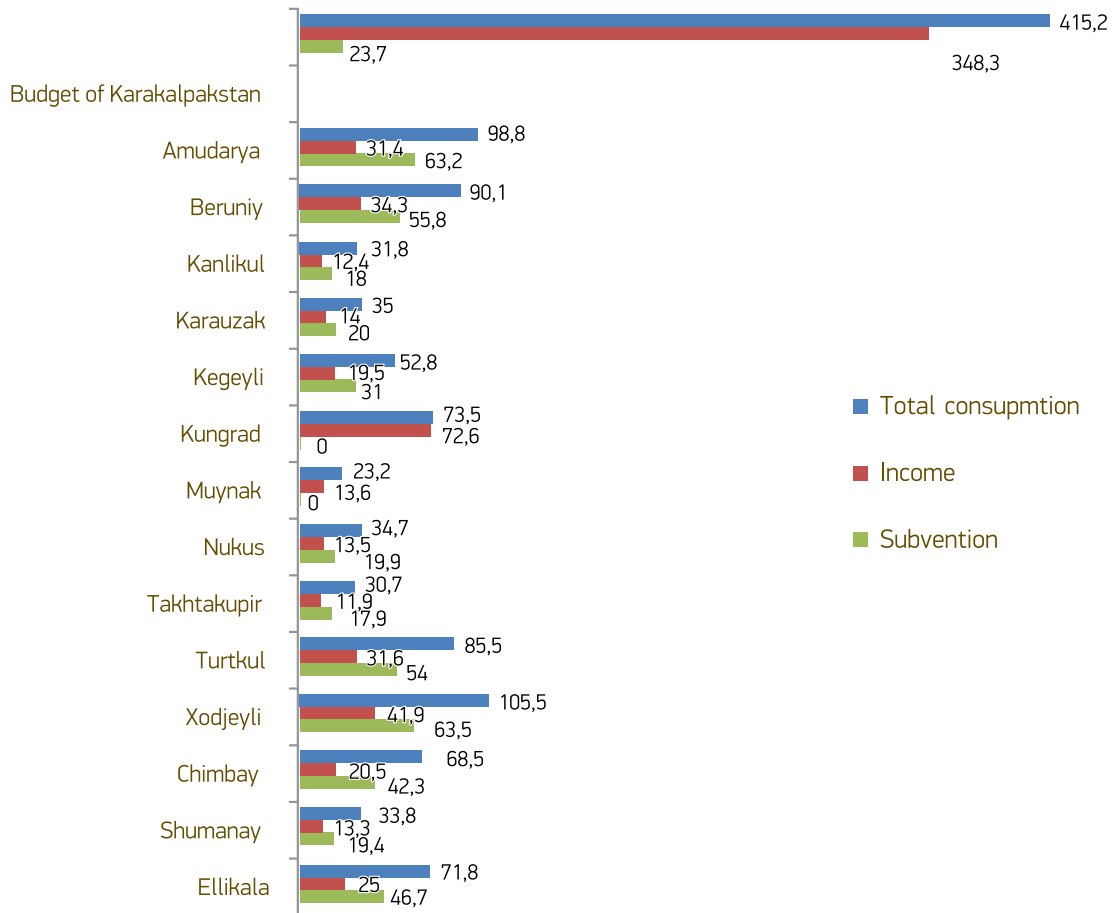
The set target to remove subventions for local district budgets in the context of the RK, which is affected by the Aral Sea crisis, is rather complicated. Local budgets are mainly used to pay the salaries of public sector employees and in fact are not a resource for the development of the local economy.

The dedicated social and economic development programs for each RK district envisage ensuring accelerated development and deployment of small industrial enterprises and facilities for deep processing of mineral and agricul-

The currently implemented Action Strategy on five priority areas focuses on comprehensive social and economic development of the regions by strengthening their financial base – their local budgets.

tural raw materials, sustainable development of agriculture, industrial, market and social infrastructure, and construction of affordable housing. These measures will to some extent ensure the growth of the production potential of the territories and will serve as a strong ba-

Figure 1.7.1.
The budget of the Republic of Karakalpakstan and its districts in 2016
 (billion UZS)



Data of the RK Ministry of Finance

sis for expanding the local budgets and reducing the subventions.

Along with these measures, the following actions should be taken specifically to increase the revenues of the local budgets:

- first, determine the specific impact of the ongoing interventions on bettering the economic potential of the territories and local district budgets for 2018-2021;
- second, undertake a consolidated assessment of the expected impact from the territorial development programs on the integrated development of the regions, and identify the level of inter-regional differences/disproportions of socio-economic development of Karakalpakstan and the regions, and between the districts.

Along with increasing the economic potential of the territories, a series of actions should be taken to enhance the institutional transformations and ensure a consistent decentralization of the inter-budget and fiscal relations in order to increase the revenues of the local budgets and reduce the subventions. These actions may include:

- strengthen the analytical and forecasting capacities to ensure clear rational behind the allocated subventions to the most needy districts based on regional contexts;
- strengthen the role, responsibilities and ownerships of local authorities regarding the integrated/comprehensive development of the territories and generation of local budgets. First and foremost, a number of regu-

latory tools (a new draft Law “On Local Government Agencies”, a due presidential decree and a government resolution) should be adopted to allocate specific powers and functions to the hokimiyats of different levels;

- build real communal property owned by the city and district hokimiyats. Creating and developing the material, technical and economic capacities of the local authorities will open additional opportunities to strengthen and expand the local budgets;
- revise the principles of double subordination of the sectoral, functional and territorial

governance systems, and transfer all locally significant enterprises and organizations to the jurisdictions of the city and district hokimiyats;

- improve the efficiency and effectiveness of the reallocation of the existing off-budget funds to ensure an integrated development of the districts;
- consider establishing an off-budget fund for the integrated development of the RK territories to support and encourage economic growth in the districts affected by the Aral Sea crisis.

II. DEMOGRAPHIC SITUATION

The demographic factor in areas with serious environmental issues plays an important role and makes an impact on social and economic development. In this regard, ensuring demographic security becomes relevant in the Aral Sea region.



Table 2.1.

Comparisons of demographic potential of the Republic of Karakalpakstan
(as of beginning of year)

	2007	2010	2012	2013	2014	2015	2016	2017
Republic of Uzbekistan								
million people	26.3	28.0	29.6	30.0	30.5	31.0	31.6	32.1
growth rates, in %	101.1	101.7	101.5	101.5	101.7	101.7	101.8	101.7
Republic of Karakalpakstan								
million people	1.57	1.63	1.69	1.71	1.74	1.76	1.79	1.82
growth rates, in %	100.1	101.0	100.7	101.1	101.4	101.5	101.6	101.5
percentage of population, in %	6.0	5.8	5.7	5.7	5.7	5.7	5.7	5.7

Source: Calculations are based on the data from the State Statistics Committee.

In recent years, the RK has seen a decline in its demographic growth vis-à-vis the other regions and average indicators for Uzbekistan (Table 2.1).

As can be seen on Table 2.1, since 2012, population growth rates have been lower than the national average.

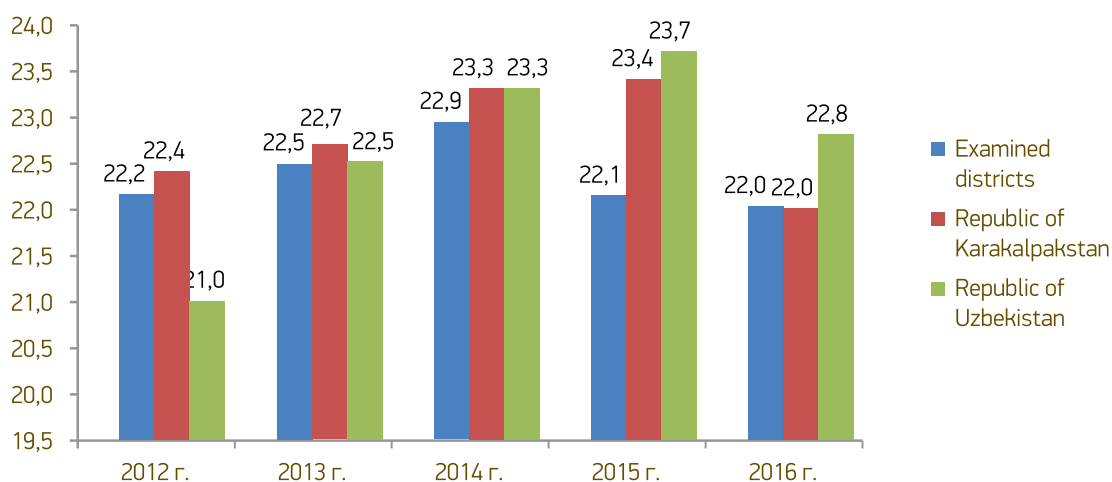
The main source of population growth in the RK is a natural population movement.

The birth rate in 2016 for entire Uzbekistan was 22.8 permille, and slightly lower for Karakalpakstan – 22.0. In the districts surveyed, this indicator was also 22.0 permille (Figure 2.1). In 2016, compared to 2012, the average birth rate for 8 districts had a downward trend (from 22.2 in 2012 to 22.0 in 2016).

Over the past two years, the death rate in the surveyed districts has slightly increased to

Figure 2.1.

The birth rates in the Republic Uzbekistan and the Republic of Karakalpakstan



Source: Data from RK Statistics Office.

In general, the demographic trends associated with birth rates and death rates show a relatively low level of natural population growth in the surveyed districts vis-à-vis similar indicators for Karakalpakstan and Uzbekistan.

reach 5.1 permille, to resume the 2012 death rate. Nevertheless, death rates in the districts are consistently high compared to those of Karakalpakstan and Uzbekistan (Figure 2.2).

Karakalpakstan saw a downward trend in the dynamics of maternal mortality between 2012 and 2016 from 20.2 to 17.3 per 100,000 births, while infant mortality remained almost unchanged at 10.5.

In general, the demographic trends associated with birth rates and death rates show a relatively low level of natural population growth in the surveyed districts vis-à-vis similar indicators for Karakalpakstan and Uzbekistan.

In the districts surveyed and in Karakalpakstan in general, external migration also influences the slowdown in population growth. Despite the downward trend in population resettlements from the RK (from 23.0 thousand people in 2012 to 14.4 thousand people in 2016) to foreign countries, this indicator is the highest vis-à-vis the other regions of Uzbekistan.

Furthermore, by the scales of informal labor migration, the RK, again, ranks one of the highest in the country. In the surveyed districts, an average of 7.6% of the respondents answered that their household members were abroad, primarily in Russia and Kazakhstan. The largest

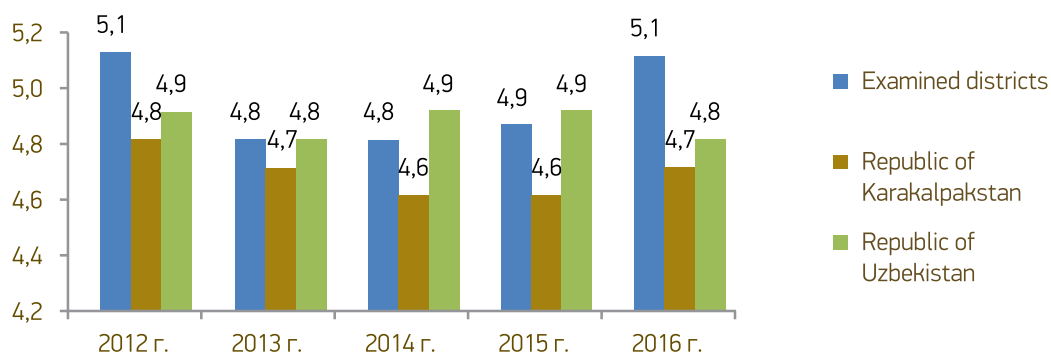
numbers of illegal labor migrants come from the Kegeyli (9.7%), Muynak (8.3%) and Kanlykul (7.6%) districts.

Karakalpakstan and its districts have seen a relatively slower urbanization processes than the national average. Specifically, in 2016 the share of RK's urban population accounted for 49.0% versus 51.0% for the entire RoU. In the surveyed districts, urbanization is much lower. Thus, the share of the urban population in the Karauzyak district is only 29.9%, Kanlykul district – 24.4%, Nukus district – 21.0%, and Shumanay district – 26.2%. Low urbanization makes an adverse impact on the sustainability of the socio-economic development of the rural areas. The other important feature of the RK populated settlements is a significant predominance of rural settlements which may be home to up to 1,000 people. In general, for the RK, their share in the total number of rural settlements as of 01.01.2017 is 73.8% against 47.8% in the entire country (these in the RK are home to 17.4% of rural citizens, while in the RUz – for 4.7%). At the same time, the share of rural settlements with a population of less than 1,000 people in the Kegeyli district reaches 96.7%, Karauzyak district – 95.0%, Shumanay district – 93.5%, and Chimbay district – 92.0%, which should be taken into account in ensuring human security and building social infrastructures.

The trends in demographic behavior influence the composition and structure of the households (Table 2.2). The surveys show that the share of children under 16 was 26.6%, people of working age – 61.8%, and retirees – 7.6%. These data generally coincide with the official data on the RK. There is a small difference in the

Figure 2.2.

The death rates in the Republic Uzbekistan and the Republic of Karakalpakstan



Source: Data from RK Statistics Office.

age composition from the national average for retirees, respectively 7.6% and 9.5%, as well as children under 16 (26.6% and 28.4%), as found by ISR surveys.

The structure of households in the RK and surveyed districts are slightly different from that of the entire country. In particular, households comprising 3-5 people make 54.8% and 47.6%, respectively; one family in a household – 67.1% and 59.5%; households with migrants – 19.8% and 15.6%; households with people with disabilities – 9.8% and 9.1%. The relative predominance of the above-mentioned household structures in the RK are an important factor in terms of providing a targeted social protection for low-income families and in terms of generating demands on goods and services.

Figure 2.3.

Age structure of the population of the Republic of Karakalpakstan

(survey results, August 2017, in %)

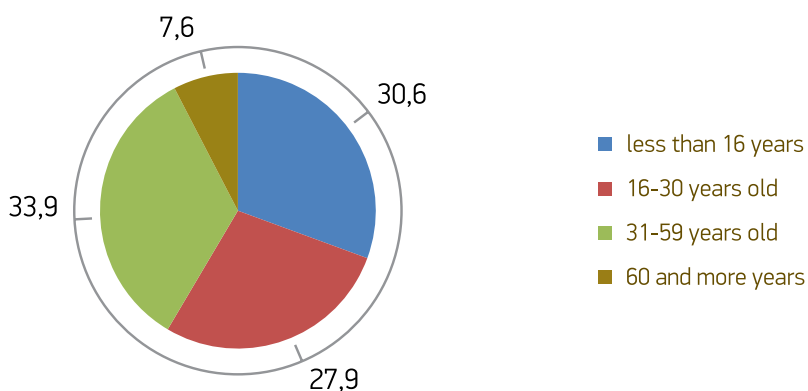


Table 2.2.

Age structure of the population in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)

Districts	Age			
	under 16	16-30	31-59	60 and older
Total	30.6	27.9	33.9	7.6
Karauzyak	29.9	27.4	34.7	8.1
Kanlykul	31.1	26.4	35.8	6.8
Kegeyli	30.2	27.6	33.9	8.2
Muynak	30.2	30.4	31.9	7.5
Takhtakupyr	29.8	28.5	35.1	6.6
Shumanay	34.1	27.1	32.6	6.2
Chimbay	29.9	28.2	33.3	8.6
Nukus	30.3	27.9	34.3	7.5



III. DEVELOPMENT OF AGRICULTURE AND PRIORITY AREAS

The development of agriculture in Karakalpakstan has a number of specific features. First of all, it includes ensuring the food security of the population, adapting the structure of production to the environmental consequences of the Aral Sea crisis and climate change, as well as the existing potential of the degraded land and water resources.

Over the past 10 years, rice production has increased by 1.8 times, legumes – 1.6 times, potatoes – 3.1 times, vegetables – 2.6 times, melons – 2.6 times, fruits and berries – 2.7 times, grapes – 2.0 times, meat – 2.0 times, milk – 2.4 times, and eggs – 7.3 times.

Analysis of the changes in the crop structure against total cultivated area for 2007-2016 in Karakalpakstan showed an increase in cereals from 37.1% to 42.1%, potatoes from 0.9% to 1.7%, vegetables from 3.2% to 4.3%, and melons from 2.1% to 4.1%, and a decrease in industrial crops from 46.5% to 39.2% (including cotton from 45.3% to 36.8%), fodder crops from 10.2% to 8.7%.

As of January 1, 2017, all the categories of RK farms have seen an increase in the total number of cattle by 1.5 times as compared to the total number of livestock as of January 1, 2008, sheep

and goats – 1.4 times, horses – 1.2 times, and poultry – 3 times.

As of 01.01.2017, the irrigated area was 509.6 thousand hectares with a total land area of Karakalpakstan – 16.7 million hectares. Over the past decade, agricultural land shrank by 177.1 thousand hectares.

Sustainable agricultural development in Karakalpakstan depends mainly on the state of land and water resources. According to official estimates, half of the irrigated land in the cadastral groups (quality of land) is below the average. Regarding the surveyed districts, the lowest land quality score is in the Muynak and Chimbay districts.

According to data for 2016, 73.4% of irrigated lands have various degrees of salinity, specifically 30.7% are slightly saline, 35.7% medium saline, and 6.9% highly saline.

High degrees of irrigated land salinity is typical of the Muynak (96%), Chimbay, Kegeyil and Nukus districts (over 80.0%). Low land quality scores and their high salinity levels are the main factors of the instable agricultural production.

In order to increase the yields of the staple and repeated crops on irrigated lands, the RK

Figure 3.1.

Production of legumes and rice in the surveyed districts of the Republic of Karakalpakstan
(survey results, August 2017 (per 1 HH, kg))

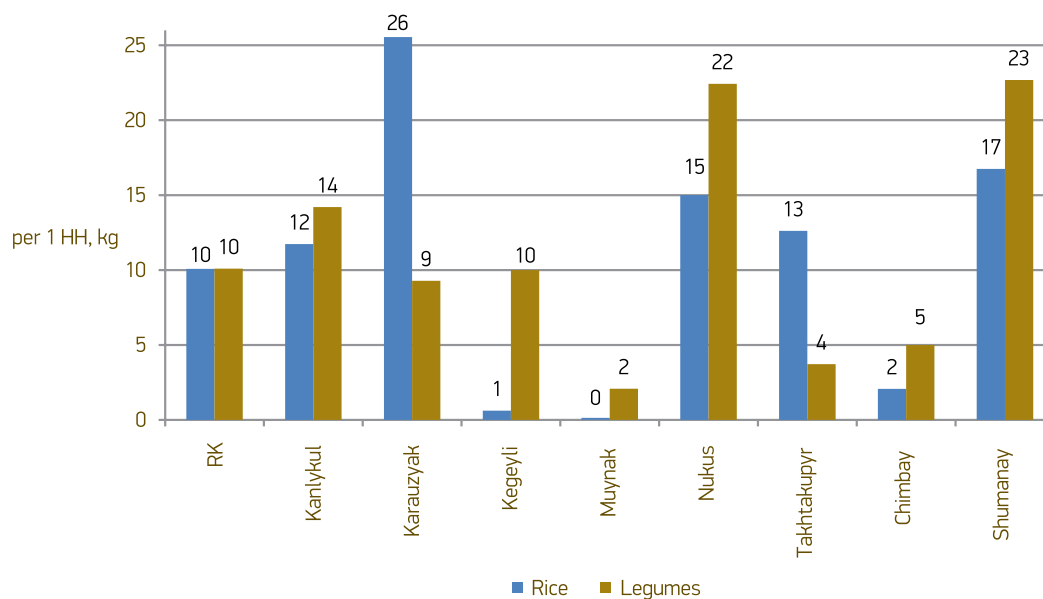
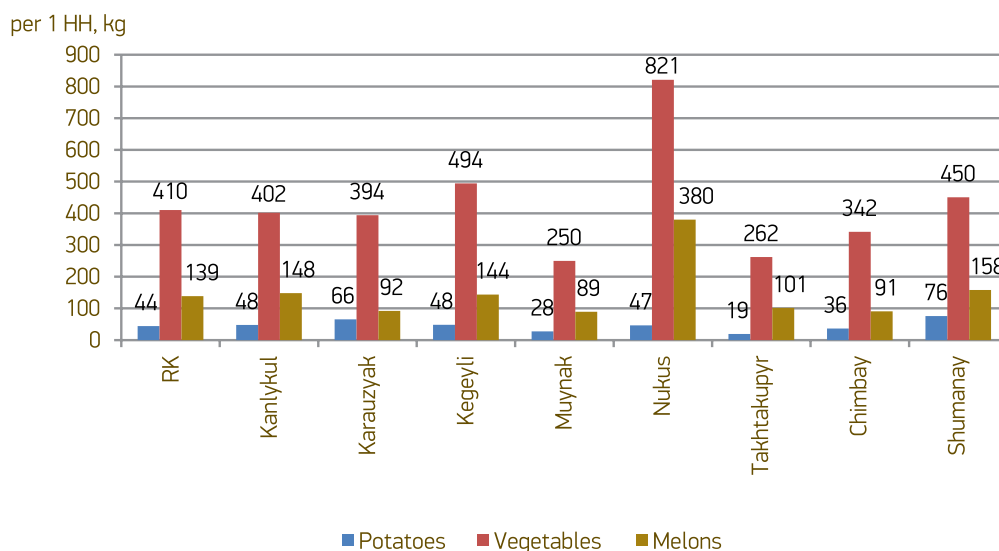


Figure 3.2.

Production of potatoes, vegetables and melons in the surveyed districts of the Republic of Karakalpakstan
(survey results, August 2017 (per 1 HH, kg))



needs to improve its land reclamation efforts and ensure efficient use of its water resources (the actual water use ratio is 0.87%).

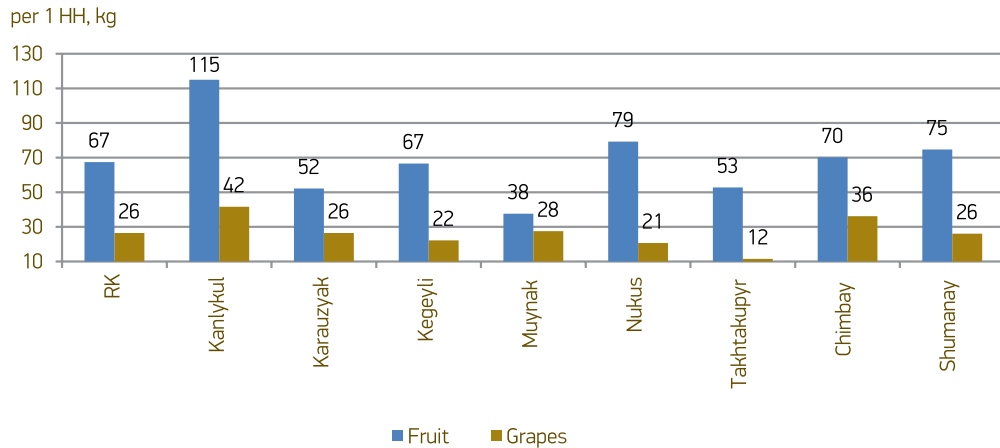
What should be noted concerning water resources is the high level of groundwater occurrence on 64% of the irrigated lands located at a depth of 1.5-2.0 meters, 14.0% at 2.0-3.0 meters; and 10.9% at 1-1,5 meters. They have different

levels of mineralization (69.2% of the land – 1-3 g/l, 30.8% - 3-5 g/l).

In 2016, compared to 2007, the gross regional product (GRP) increased by 2.5 times, and the added value of the agriculture, forestry and fisheries sector – by 1.8 times. The contribution of agriculture, forestry and fisheries in GRP declined during this period from 22.2% to 13.8%.

Figure 3.3.

Production of fruits and grapes in the surveyed districts of the Republic of Karakalpakstan
(survey results, August, 2017 (per 1 HH, kg))



The survey revealed that the production of rice and beans per household was on average 10 kgs. This indicator for rice in the Karauzyak district reached 26 kgs, and in Shumanay – 17 kgs. A relatively high level of leguminous crops was registered in the Shumanay district – 23 kgs, and the Nukus district – 22 kgs (Figure 3.1).

The districts also differ in their production of fruits and grapes (Figure 3.3).

The surveyed districts have some potential for livestock development. According to the survey results, for each 100 households there are on average: cattle – 185 heads, sheep and goats – 292 heads, poultries – 848 heads, horses – 5 heads and rabbits – 9 heads (Figure 3.4).

Concerning poultries, with an average of 848 heads per each 100 households in Karakalpakstan, this indicator is 1,221 in the Nukus district; 1,414 in the Shumanay district; and only 444 in the Muynak district. The largest number of sheep and goats is registered in the Karauzyak district (657 heads) and Takhtakupyr district (427 head), while the fewest – in the Nukus district (145 heads per 100 households). There are relatively equal numbers of cattle in all the households with the highest number in the Muynak district (229 heads), and the lowest in the Shumanay district (151 heads).

Based on the existing livestock capacities, the districts produce meat, milk and eggs (Figure 3.5).

Average per-household meat production in the RK is 193 kgs (in the Muynak district – 259 kgs, and Shumanay district – 140 kgs). Average per-household milk production is 774 kgs in the Muynak district and 452 kgs in the Chimbay district, which is 1.7 times less. Per-household egg production is the highest in the Shumanay district – 980, and the lowest – 512 in the Takhtakupyr district.

In general, the potential for livestock devel-

Low land quality scores and their high salinity levels are the main factors of the instable agricultural production.

In order to increase the yields of the staple and repeated crops on irrigated lands, the RK needs to improve its land reclamation efforts and ensure efficient use of its water resources (the actual water use ratio is 0.87%).

The potential for the production of potatoes, vegetables and melons is demonstrated by the results of the household survey by districts in Figure 3.2.

With an average potato production per 1 household being 44 kgs, the highest is in the Shumanay district (76 kgs) and the lowest in the Takhtakupyr district (19 kg). For vegetables, this indicator was 821 kgs in the Nukus district and 250 kgs in the Muynak district. The production of melons also varies from district to district. In the Nukus district, it is 380 kgs, while in Muynak district it is only 89 kgs.

opment in the surveyed districts is rather varied depending on the existing natural and climatic conditions.

Based on the above findings, the main priorities for the development of agriculture in the RK

should be: cardinal transformation of the crop structure based on natural, climatic and environmental conditions; transition to innovative water use technologies; and a significant improvement of the land and water resources.

Figure 3.4.

Number of livestock and poultry in the surveyed districts of the Republic of Karakalpakstan
(survey results, August 2017 (per 100 HH, head))

Per 100 HH, head

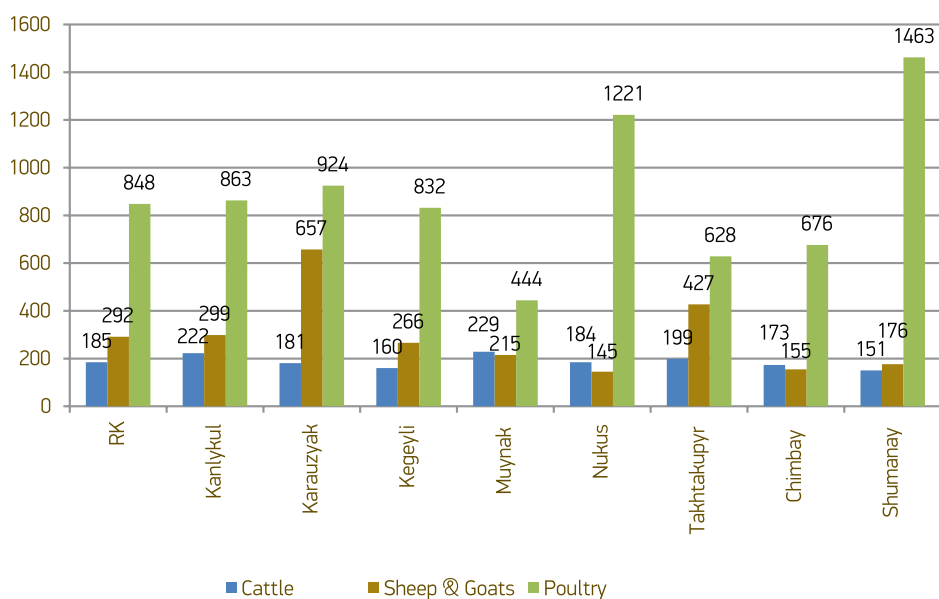
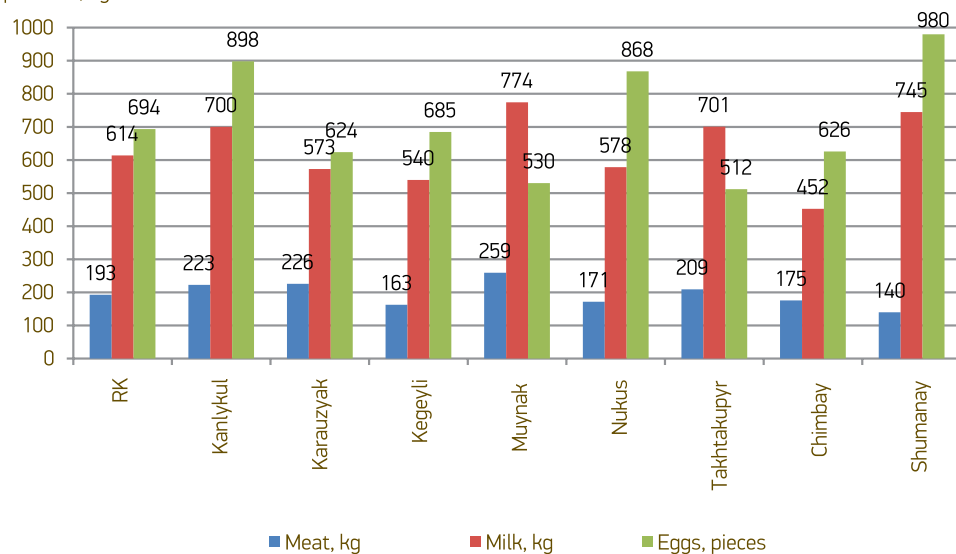


Figure 3.5.

Livestock production in the surveyed districts of the Republic of Karakalpakstan
(survey results, August 2017 (per 1 HH, kg))

per 1 HH, kg





IV. SOCIAL INFRASTRUCTURE

4.1. Access to education

Starting from academic year 2017-2018, Uzbekistan's education system has undergone significant transformations. Institutional reforms have been implemented to increase access and improve the quality of education. The country transitioned to an 11-year free compulsory school system, while the number of professional colleges and academic lyceums has been reduced significantly, and a new ministry for the development of preschool education has been created, while the compositions and structures of the Ministry of Public Education and the Ministry of Higher and Secondary Special Education as well as the professional

training and retraining systems have been re-designed.

The assessment of the children's and young people's access to the education system in the districts surveyed revealed certain issues, primarily related to preschool coverage (Figure 4.1.1).

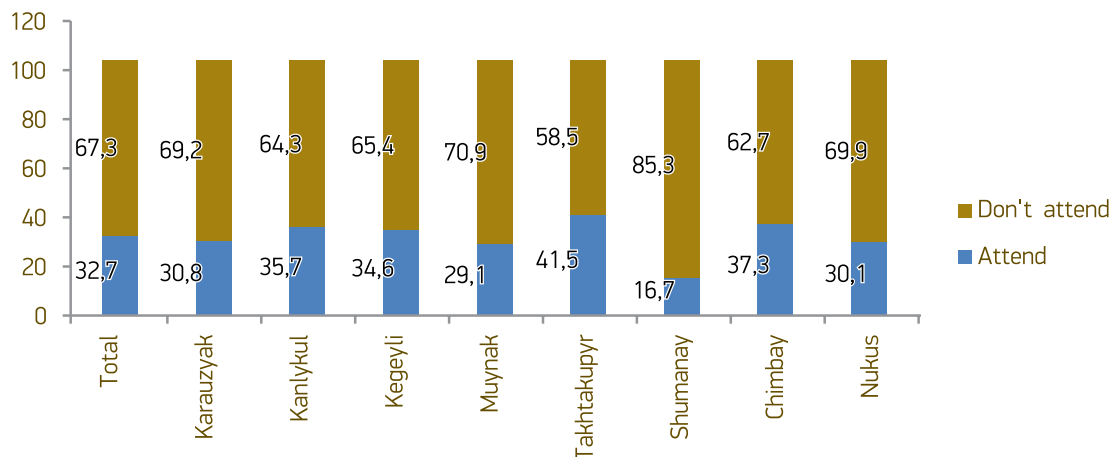
The analysis showed that the overall preschool coverage in the districts corresponds to and even exceeds (Takhtakuyr – 41.5% and Chimbay – 37.3%) the national average.

Nevertheless, children's access to preschools remains relatively low in the Shumanay (16.7%) and Muynak (29.1%) districts. The main subjective reasons for the children's not attending the

Figure 4.1.1.

Access to preschools (kindergartens and day-cares) in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



kindergartens include the lack of need (51.7%) and the absence of the preschool institution (31.9%), or its remoteness from the settlement (6.2%), and high fees (6.2%). Particularly alarming is the lack of preschools (PSs) in certain localities of the Shumanay (58.8%), Karauzyak (38.6%), and Kegeyli (36.6%) districts of the RK. Given the existing problems, it would be advisable to develop a scheme for providing kindergartens in each district based on their geographical location and the emerging demand, and a road map.

There are no fundamental issues with regard to basic/general education schools, lyceums and colleges, and the coverage is fully ensured.

Some non-attendance of schools (15.6%) is mainly due to: illness (68.8%), helping parents (11.7%) and additional expenses for travels and meals for students (9.3%), which are typical for the districts surveyed. Specifically, reasons to skipping classes for illness were most commonly stated in the Kegeyli (83.3%), Muynak (73.3%) and Takhtakupyr (77.1%) districts. The remoteness of lyceums and colleges, in particular, leads to additional expenses for the family budget, which is quite important in terms of school access in the Karauzyak (15.8%), Muynak (20.0%) and Shumanay (21.7%) districts, and this should be addressed.

The problems of access to education are largely caused by public dissatisfaction and the low quality of the services provided (Table 4.1.1).

The highest public dissatisfaction with preschool (PS) education was registered in the

Shumanay (61.6%), Karauzyak (51.2%), Kegeyli and (55.7%) districts. The main reasons for the relatively high level of PS dissatisfaction in almost all the districts include the lack of the kindergarten itself (from 17.6% in the Muynak district to 65.3% in the Kegeyli district) and, as

The problems of access to education are largely caused by public dissatisfaction and the low quality of the services provided.

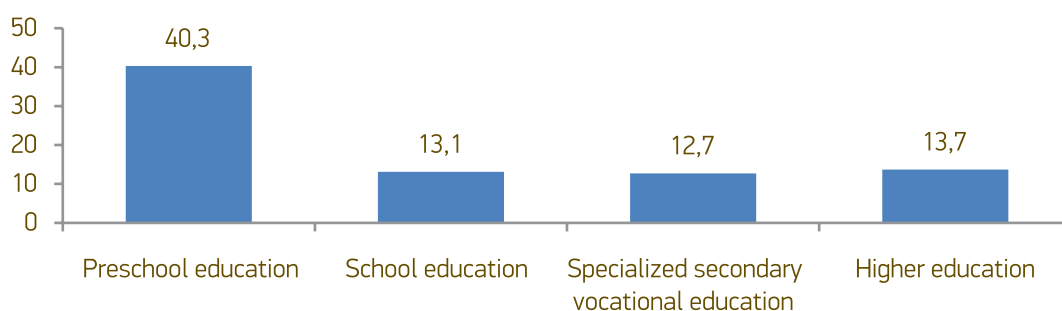
already noted, the remoteness of the kindergarten from the people's places of residence (from 5.9% in the Muynak district to 29.4% in the Nukus district).

A new PS policy (a special PS development program was formulated) and the establishment of the dedicated ministry will give an impetus to meeting the needs and necessities of the people, particularly those living in rural areas.

The households' dissatisfaction with the quality of preschool, secondary specialized and higher education is at an acceptable level. Nonetheless, there are a number of problems and reasons that should be brought to the attention of the local authorities. For example, 100% of the respondents in some surveyed districts mentioned the low quality of education (the Karauzyak district – for secondary special professional/vocational education). High university fees were also men-

Figure 4.1.2.

Dissatisfaction with the education services provided in the Republic of Karakalpakstan
(survey results, August 2017, in %)



tioned (in the Karauzyak, Muynak, and Takhtakupyr districts).

In general, access to education is affected by a number of objective factors that need to be ad-

ressed through additional measures to expand and improve the quality of education based on the demographic, climatic, economic and environmental conditions of the people in the districts surveyed.

Table 4.1.1.

Dissatisfaction with the education services provided in the districts of the Republic of Karakalpakstan
(survey results, August 2017, in %)

Districts	Preschool education	School education	Specialized secondary vocational education	Higher education
Total	40.3	13.1	12.7	13.7
Karauzyak	51.2	10.1	6.3	7.1
Kanlykul	40.6	21.8	20.0	66.7
Kegeyli	55.7	17.7	14.7	11.4
Muynak	30.4	9.3	8.5	8.7
Takhtakupyr	34.4	13.0	12.5	15.2
Shumanay	61.6	11.7	22.6	8.0
Chimbay	23.6	8.6	8.8	15.0
Nukus	34.0	14.7	16.3	12.9

4.2. Access to the health system

A set of measures is being taken across Uzbekistan and its regions, in particular, in Karakalpakstan, to improve the quality of health services provided to the people. To this end, the country has built an institutional and legal framework through the transformation of the functions, tasks and governance mechanisms of the Ministry of Health and its territorial branches, reforming the primary health care and specialized institutions, accelerated development of the private health sector, equipping the health centers with modern equipment and highly qualified personnel, and the establishment of branches and centers of renowned foreign health institutions and agencies.

In terms of ongoing efforts the health sector is definitely ranked first among all other sectors

in the country as part of addressing a number of existing disparities and shortcomings in meeting the people's health service needs and necessities.

The results of the survey in certain RK districts confirmed the need to take efficient measures to ensure public access to health services by, inter alia, addressing the impacts of the Aral Sea crisis.

Almost one third of the households use health services on a regular basis (Figure 4.2.1).

Relatively even is the percentage of attending family polyclinics (34.8%), rural health centers (29.9%) and hospitals (27.1%). Access to private sector health services remains fairly low (1.8%). There are no significant inter-district differences in the level of attendance of health institutions. The main stated reason for non-attendance of a health facility is the lack of need (89.1%) and

Figure 4.2.1.

Access to health services in the districts of the Republic of Karakalpakstan,
(survey results, August 2017, in %)

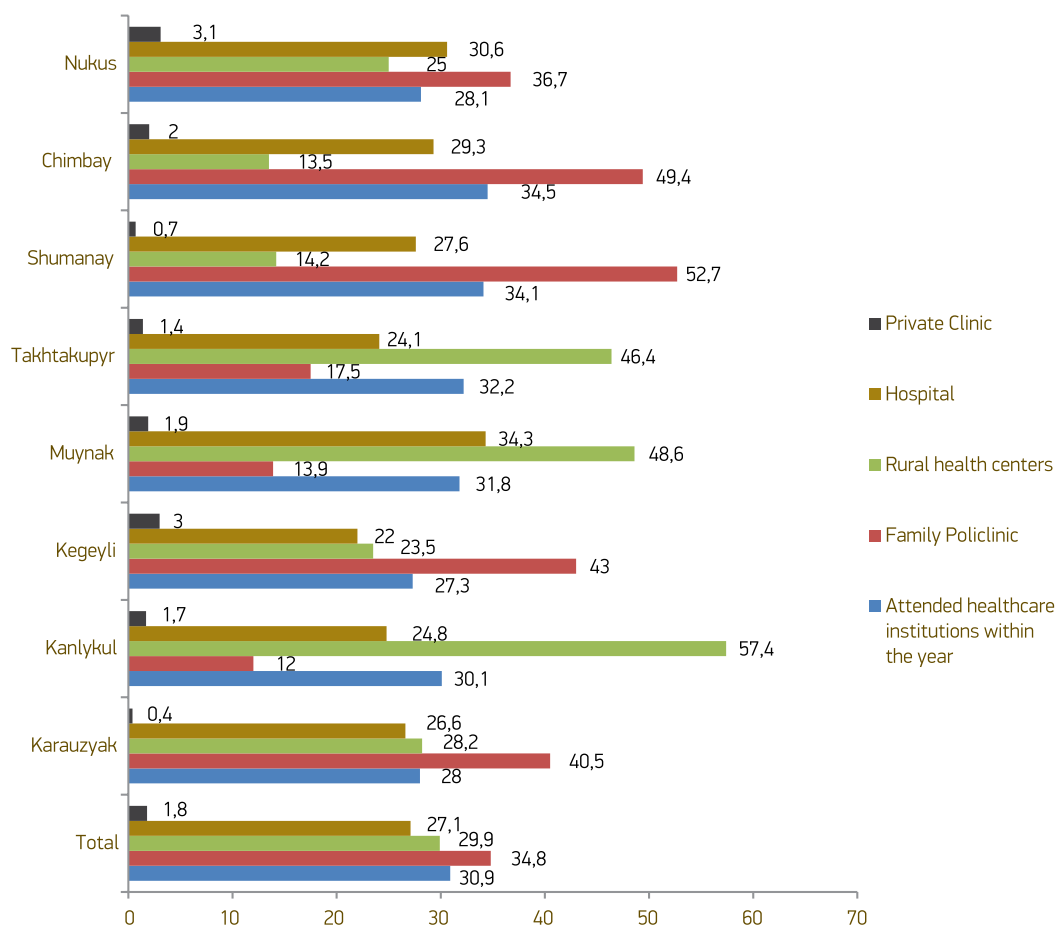
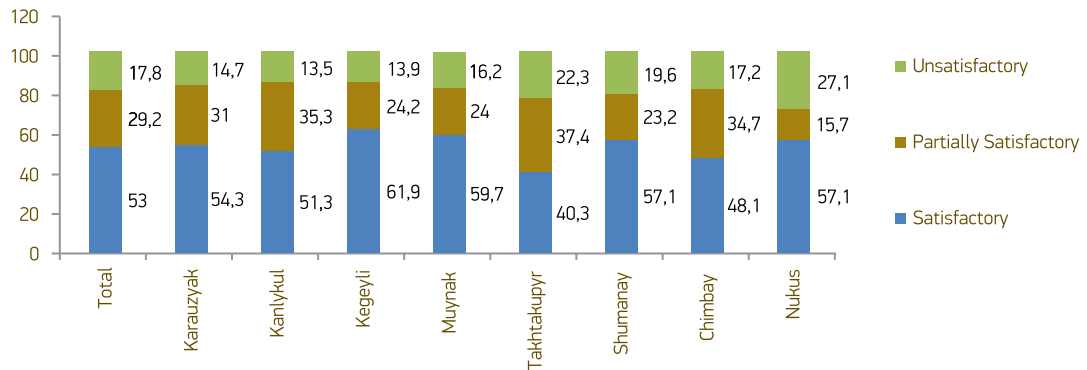


Figure 4.2.2.
Public satisfaction with the quality of health services in the districts of the Republic of Karakalpakstan,
 (survey results, August 2017, in %)



their remoteness (2.6%). An important factor is the level of public satisfaction with the quality of the services provided (Figure 4.2.2).

More than half of respondents are satisfied with the quality of health services provided. There is, however, a relatively high level of public dissatisfaction in the Nukus (27.1%), Takhtakupyr (22.3%) and Shumanay (19.6%) districts.

The main causes of the dissatisfaction with the quality of health services include: poor quality of emergency medical care (14.0%), inexperienced doctors (31.9%), inadequate supply of

and associated additional costs are typical for the Karauzyak (29.5%) and Shumanay (48.5%) districts. Low qualification of doctors was mentioned in all the districts.

In general, based on the results of the focus group discussions and public surveys regarding health service quality and accessibility, the following key priority areas can be identified in terms of improving public access to health services:

- improve the capacities of district hospitals (DH) to diagnose and treat patients with cardiovascular diseases, neurological disorders, kidney and urinary tract diseases and other diseases by organizing specialized departments or chambers, and provide qualified specialists in cardiology, neurology, urology, oncology, and others;
- improve the equipment base: ultrasonic devices (scanners) for multiprofile and family polyclinics, ECG machines with remote data transmission function, anesthesia and breathing apparatus, surgical sets and others;
- ensure uninterrupted power, heat, and water supply, and sanitation systems for health institutions (installation of low-capacity water treatment plants);
- repair and rehabilitate primary health institutions;
- procure mobile ambulance stations (bus-embedded), equipped with necessary medical diagnostic equipment to improve health service accessibility for remote settlements.

The main causes of the dissatisfaction with the quality of health services include: poor quality of emergency medical care (14.0%), inexperienced doctors (31.9%), inadequate supply of medical equipment (13.0%), remoteness of the health institutions (22.5%), and lack of specialized doctors (10.9%).

medical equipment (13.0%), remoteness of the health institutions (22.5%), and lack of specialized doctors (10.9%). Given the existing problems and the their causes, it is advisable to formulate specific district-tailored proposals on improving the quality of the health services provided. For example, remoteness of the health institutions

4.3. Access to the utilities

As part of the implementation of the Development Action Strategy on five priority areas for 2017-2021 Uzbekistan is transforming its housing and communal system. The country established the Ministry of Housing and Communal Services, and the State Inspectorate for the Supervision of Drinking Water Use under the Cabinet of Ministers of Uzbekistan. A package of dedicated programs were designed and are currently implemented to enhance the water supply, heating, and sewerage systems, and build affordable houses.

The Presidential Decree "On Affordable Homes with Upgraded Designs Program for 2017-2021" plans to ensure the commissioning of 962 houses in the RK in 2017 alone. It should be noted that in 2009-2016, 3,650 modern standard-design residential buildings with all amenities were constructed in rural areas.

Nonetheless, rural areas of the RK are still experiencing rather acute housing problems. The surveys revealed that 34.8% of households in general remain unsatisfied (including partial dissatisfaction) with their living conditions. In the context of the surveyed districts, the greatest need for improving housing conditions is in the Chimbay (44.0%) and Takhtakupyr (43.2%) districts (Figure 4.3.1).

The main reasons for dissatisfaction with housing improvements include problems with

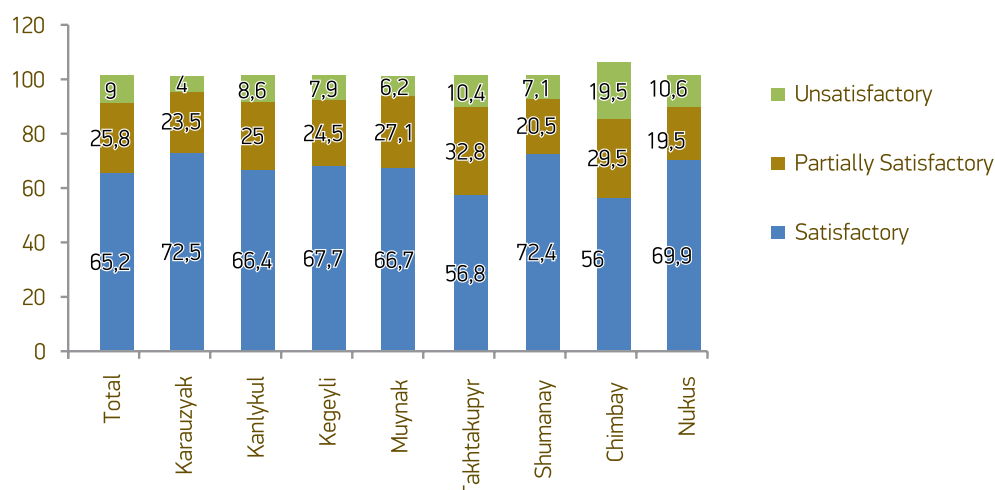
allocation of land for construction (46.7%) and high costs of construction materials (40.0%), associated with additional transportation costs due to the remoteness of the rural settlements. These reasons/causes strongly vary from district to district. Specifically, in the Karauzyak district, the cost of construction materials (50.0%) ranks first, while land plot allocation ranks second (16.7%). On the contrary, the Kegeyli district rankings are, respectively, 66.7% and 16.7%.

The main reasons for dissatisfaction with housing improvements include problems with allocation of land for construction (46.7%) and high costs of construction materials (40.0%), associated with additional transportation costs due to the remoteness of the rural settlements.

In general, rural housing construction in the RK has its own specific features associated with climate and the environment which requires the development of regional construction codes and rules, as well as a special design system that takes into account the local conditions.

Figure 4.3.1.

Satisfaction with housing conditions in the districts of the Republic of Karakalpakstan
(survey results, August 2017, in %)



The most topical factor for the RK population is access to quality drinking water. According to official statistics, the provision of centralized water supply for apartments in the RK for 2006-2016 decreased from 71.3% to 66.6% (for the entire country, this parameter was 82.9 and 80.2%, respectively). This shows that there is a considerable gap in terms of ensuring adequate water supply for the RK people). The survey found that the satisfaction with access to drinking wa-

ter in the districts is 33.8%, partial dissatisfaction – 32.4%, and dissatisfaction – 33.9% (Figure 4.3.2).

The survey found that the satisfaction with access to drinking water in the districts is 33.8%, partial dissatisfaction – 32.4%, and dissatisfaction – 33.9%

ter in the districts is 33.8%, partial dissatisfaction – 32.4%, and dissatisfaction – 33.9% (Figure 4.3.2).

Despite the introduction of the 'Kungrad-Muynak' water pipeline in August 2017, the residents of the Muynak district are the most dissatisfied with access to drinking water (42.9%). The problem of drinking water for the residents of the Takhtakupyr (43.7%) and Karauzyak (41.8%) districts remains acute. In general, the situation with the key component of the rural

people's livelihoods, i.e. sustainable water supply, remains highly worrying. Among the reasons for dissatisfaction, the respondents mentioned irregular water supply (26.9%), poor quality of water (37.8%), and long distance to the water source (19.0%).

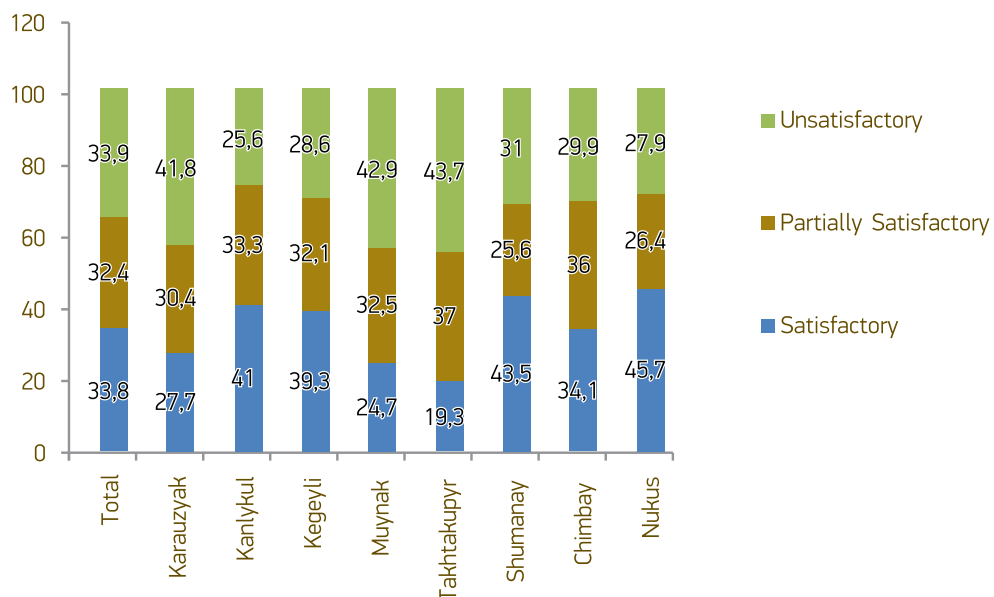
All the districts referred to the above mentioned reasons as predominating. For example, in the Kanlykul district, irregular water supply is 40.0%, and low water quality is 35.0%. In the Nukus district, the situation is somewhat different. Here, the main reason for dissatisfaction is poor quality of water (53.8%), while water supply instability is relatively low (2.6%). Remoteness and inaccessibility are also important causes of dissatisfaction for individual districts. In particular, for the Chimbay (21.7%), Karauzyak (23.4%) and Kegeyli (26.4%) districts.

Other type of information collected during the survey that confirms the unfavorable situation with meeting the people's needs is associated with the assessment of the actual functioning of the water supply network. In general, 60,0% of the respondents in the surveyed districts mentioned the lack of water pipeline, while in the Takhtakupyr district this factor was mentioned by 81.9% of the respondents, Karauzyak – 71.7%, and Chimbay – 60.7%.

Figure 4.3.2.

Satisfaction with access to drinking water in the in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



The causes of dissatisfaction with drinking water and the condition of the water supply network are important areas for investment and management decisions.

In essence, the rural areas have no centralized hot water supply (99.3%), while non-centralized systems do not function in all the households (27.5%). These factors are the main reasons for the people's dissatisfaction with the hot water supply system (Figure 4.3.3).

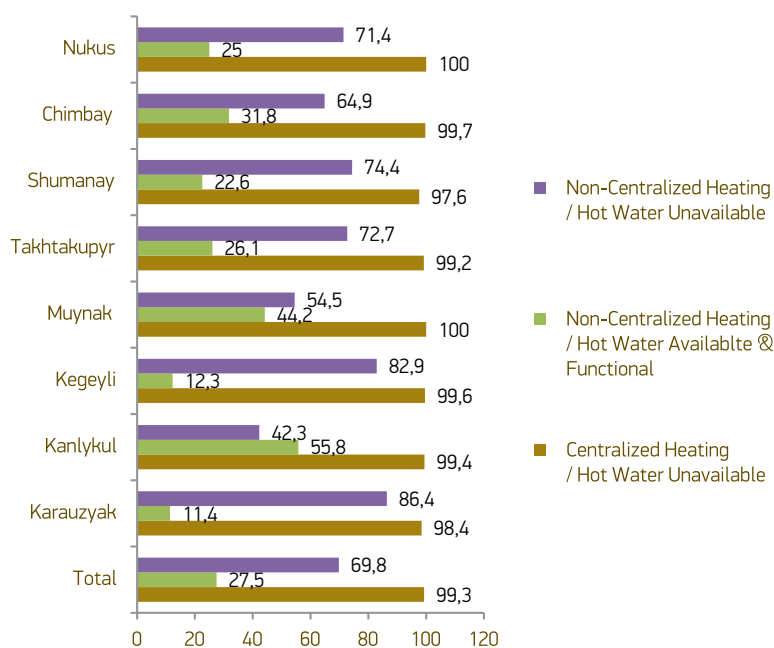
While the overwhelming absence of centralized hot water supply for objective reasons is typical for all the districts, the absence of a local system in many households is an important issue which should be addressed. This is especially true for the Karauzyak (86.4%), Kegeyli (82.9%), Takhtakupyr (72.7%) and Shumanay (74.4%) districts. Promoting the culture of consuming hot water in rural households would help significantly raise the domestic culture and would be of great benefit in terms of making women's work easier and ensuring sanitary norms.

The rural population uses centralized natural gas, liquefied gas and fuel (coal) for heating and cooking. In general, the RK and Uzbekistan have seen a decrease in the centralized supply of natural gas between 2006 and 2016. In particular, throughout RK, it dropped from 93.1% to 69.1% (nationally it dropped from 81.1% to 66.0%). During the interviews, the respondents said that: they used centralized gas supply (60.3%); and liquefied gas (33.8%) and fuel (20.8%). This said, public satisfaction with natural and liquefied gas was 48.6%, and fuel – 34.4% (Figure 4.3.4).

Dissatisfaction with gas supply is relatively high in the Takhtakupyr (32.8%), Kegeyli (27.4%) and Chimbay (21.1%) districts. Approximately the same level of dissatisfaction was indicated by the respondents in terms of fuel supply. Again, there is a high level of dissatisfaction in the Takhtakupyr, Kanlykul, Shumanay, Nukus and Chimbay districts.

When analyzed, the reasons/causes of public dissatisfaction with gas supply boil down to irregular natural gas supply (20.5%) and late delivery of liquefied gas cylinders (41.2%). Due to the remoteness of the rural areas, the problem of sustainable provision with liquefied gas is particularly acute in the Karauzyak (44.4%), Kegeyli (46.4%), Takhtakupyr (56.4%), Kanlykul (39.1%) and Chimbay (39.3%) districts. With regard to coal supply, the main causes of dissatisfaction include irregular deliveries (23.4%) and high costs (56.3%). The residents of the districts demand

Figure 4.3.3.
Hot water (heating) supply in the districts of the Republic of Karakalpakstan
(survey results, August 2017, in %)



that the prices and tariffs should be revised; in particular such districts include the Shumanay (100%), Nukus (87.0%) and Chimbay (56.3%). The interviews and focus groups surveys found that the people preferred liquefied gas in cylinders as a more environmentally friendly source of energy given their living conditions and the remoteness of transport.

In general, access to gas and fuel supply is relatively less important/urgent than sustainable water supply. The issue of irregular fuel supply can be resolved promptly through local authorities.

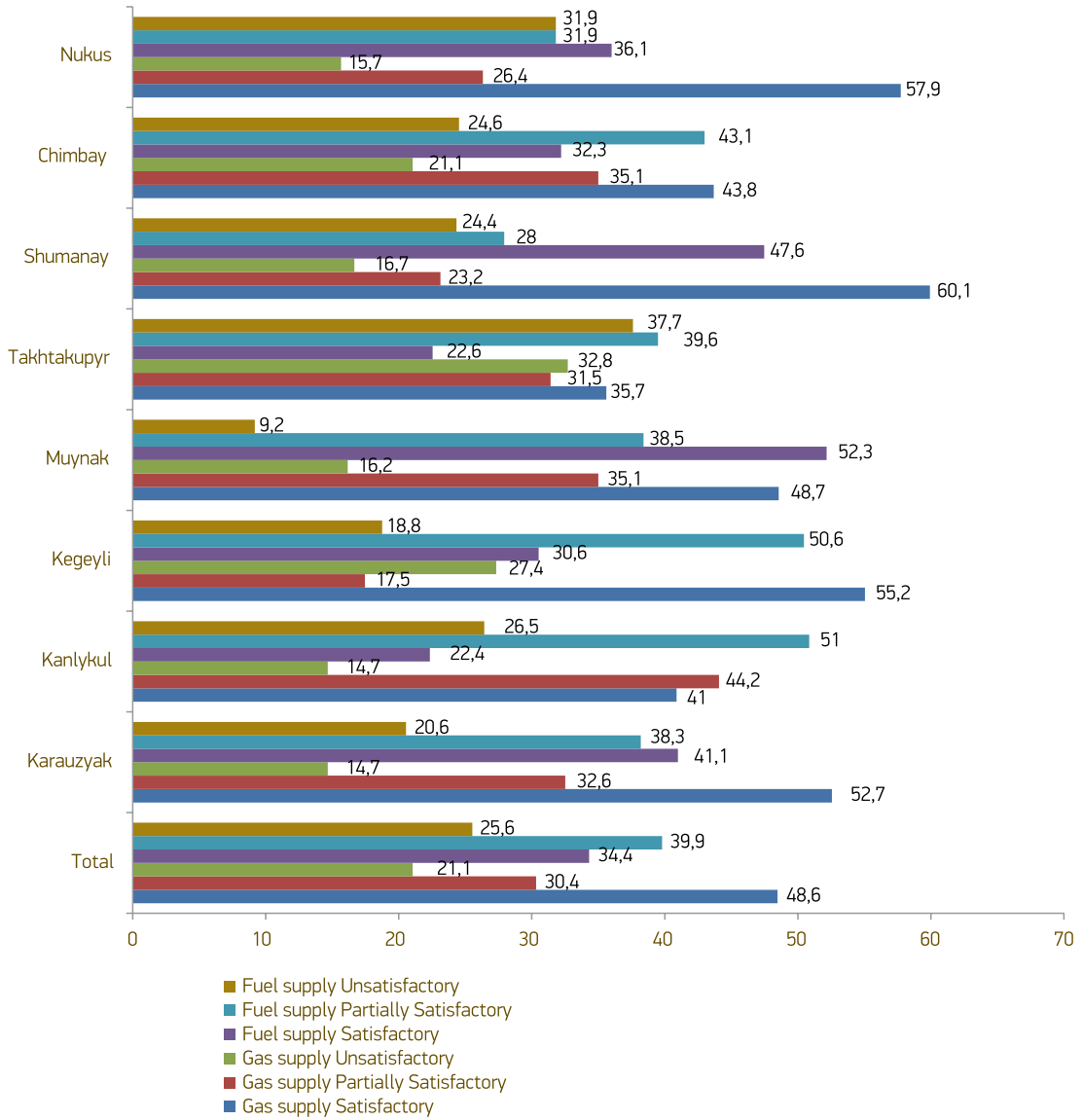
Public satisfaction with natural and liquefied gas was 48.6%, and fuel – 34.4%.

In terms of sanitary and hygienic conditions, separate bathrooms in rural houses should be considered a norm. However, the survey revealed that 79.1% of the households do not have a separate room for bathing and linen washing. This indicator is quite high in the Karauzyak (78.8%), Kanlykul (88.5%), Takhtakupyr (84.0%), and Shumanay (79.2%) districts. This problem, with ade-

Figure 4.3.4

Public satisfaction with access to gas supply and fuel supply in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



quate support and advocacy efforts by local authorities and local communities, can be solved by reconstructing, expanding and constructing the houses.

Relatively favorable is the situation with the people's access to power supply in the RK vis-à-vis the other regions of the country. The level of satisfaction is 73.2%, dissatisfaction is 4.5%. The reasons for dissatisfaction include primarily power cuts without a fixed schedule (42.5%) and the obsolete power grid (19.2%). In this regard, dedicated national programs have been designed and are being implemented and additional mea-

sures taken to ensure sustainable power supply for the RK people.

In general, people's access to housing and communal services/utilities in the RK is unstable. In terms improving public access to the utilities, the key focus areas should be providing quality drinking water and bringing substantial changes to the situation with hot water consumption.

New standard house designs including all amenities and adapted to the RK districts' natural, climatic and environmental features would give a strong push towards a higher public well-being in the region.

4.4. Social security

Focus group participants said that the existing system of social support for needy people and families is relatively effective, but instead of providing benefits and allowances, people should be trained to run a business and earn money. The existing conditions do not provide jobs for disabled people and low-income citizens. This limits the ability of the beneficiaries to get out of poverty (Kegeyli, Kanlykul, Shumanay, and Nukus districts).

Statistics shows that the number of low-income families in all the surveyed districts (except Nukus district) has been declining in recent years. From 2011 through 2016, the Kanlykul district saw a decrease in the number of needy families to 3.2 thousand families, the Kegeyli district – 2.2 thousand families, Chimbay – 2.4 thousand families, Takhtakupyr – 1.29 thousand families, Karauzyak – 720 families, and Shumanay – 702 families, whereas the Nukus district saw an increase by 145 families.

At the same time, according to official data, the poverty level in Karakalpakstan is relatively high vis-à-vis the other regions of the country. Poverty levels in the surveyed districts were determined based on the survey of the mahalla leaders. The data collected indicate relatively

high poverty levels in the Takhtakupyr (26.2%), Muynak (22.9%), Kanlykul (23.0%) and Chimbay (22.1%) districts, which requires a differentiated approach to using social protection tools for the most vulnerable populations (Figure 4.4.1).

Household interviews revealed that the main recipients of social benefits in the districts surveyed are large/multi-children families (benefits for families with children under 14, childcare allowances for children under 2) and vulnerable populations: people with disabilities and single pensioners (Figure 4.4.2).

Survivor's pension recipients are concentrated in the Nukus and Takhtakupyr districts, childcare allowances for children under 2 – in the Karauzyak, Nukus, Takhtakupyr, and Chimbay districts, allowances for families with children under 14 – Karauzyak, Kegeyli and Nukus districts, and mahallas' material support for the needy – Takhtakupyr, Shumanay, Kanlykul, Muynak districts, etc.

Household surveys showed that families with pensioners and disabled people are fully (more than 80%) satisfied with their pensions. However, 14% of the households with disabled people are satisfied with their pensions only partially, which is the case specifically in the Takhtakupyr

Figure 4.4.1.

Poverty levels in the districts of the Republic of Karakalpakstan (survey results, August 2017, in %)

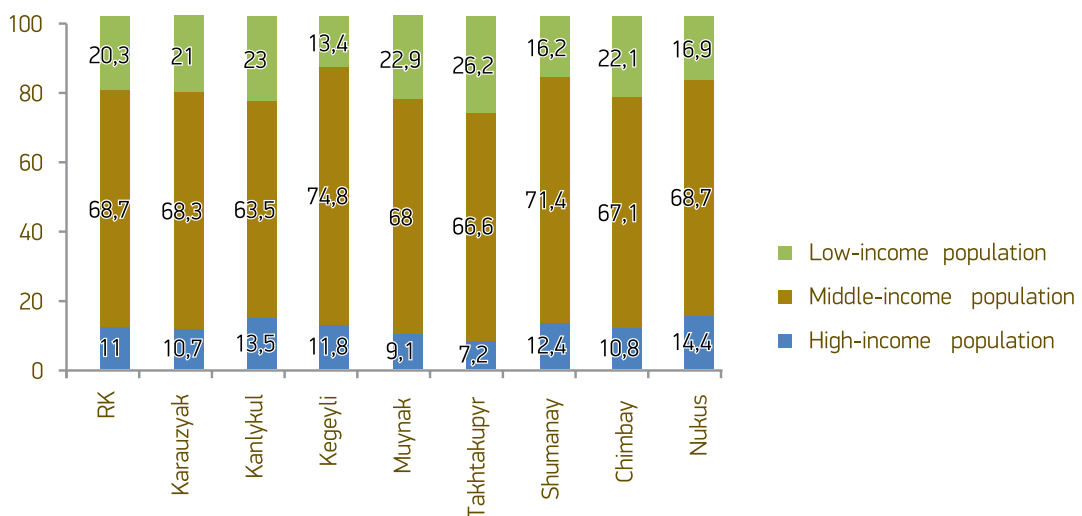
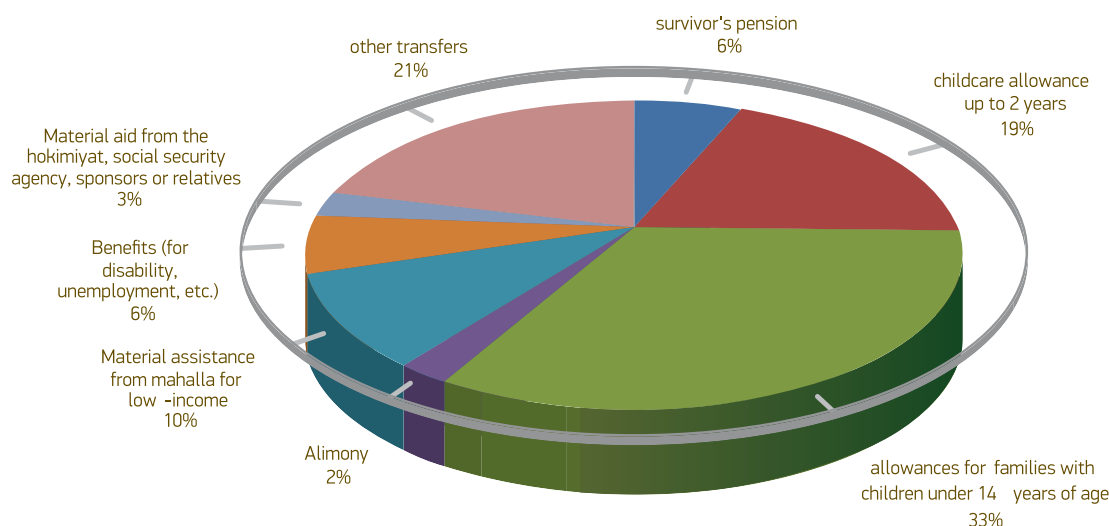


Figure 4.4.2.

Recipients of social benefits and allowances, in % of respondents

(survey results, August 2017)



district – 25%, Shumanay – 20%, and Chimbay – 17%. The respondents in the Kanlykul and Shumanay districts said the pensions were not paid on time, in the Chimbay district – there was too much red tape in terms of preparing all the necessary documents, in the Karauzyak, Kegeyli and Takhtakupyr districts – there were issues with paying the pensions in cash.

As part of the State Program for the Development of the Aral Sea Region for 2017-2021, a new type of social benefit was introduced in the Karakalpakstan from 1 February 2017 in the form of one-time material support in the amount of 2 to 5 minimum wages for needy families, primarily for single/lonely citizens, pensioners, families with a disabled breadwinner and other low-income populations and families. Focus group participants confirmed that this type of benefit was already fully paid under the State Program.

The main types of social security are not only pensions and benefits, but also health-related services. The existing network of health institutions and the services they provide meet the needs of more than half of the households with family members who are pensioners and disabled people, as revealed by the surveys. Relatively low levels of satisfaction with health services for families with disabled people were registered in the Chimbay and Takhtakupyr districts (Figure 4.4.2).

Over 40% of the families with disabled people and pensioners said that the quality of health services had improved over the past 2 years. At the same time, every fifth family with disabled people in the Chimbay, Shumanay, and Kanlykul districts indicated that the quality of health services was deteriorating. More than half of the households with disabled people and pensioners claimed that the conditions and quality of health services in their district did not change. The main reasons for the dissatisfaction were low qualifications of the doc-

As part of the State Program for the Development of the Aral Sea Region for 2017-2021, a new type of social benefit was introduced in the Karakalpakstan from 1 February 2017 in the form of one-time material support in the amount of 2 to 5 minimum wages.

tors (more than 30%) and absence of narrow specialists (more than 10%), remoteness of the health institution from home and high transportation costs (more than 20%), and insufficient provision of modern equipment (about 15%).

The respondents indicated that the equipment of the health institutions should be upgraded and narrow specialists should be recruited, while enhancing the doctors' qualifications. This was mentioned by 40% of the surveyed households with pensioners and almost all the households with disabled family members in the Kegeyli and Karauzyak districts. The respondents in the Kanlykul, Muynak, Takhtakupyr and Shumanay districts spoke more about the need to equip the health institutions with modern high-tech equipment.

and in the Kegeyli district – by increasing the number of pharmacies in the settlements.

In general, despite the effective and comprehensive social support provided for low-income and vulnerable populations, the respondents indicated that there were certain issues and suggested the following measures to improve the health of the elderly and disabled people and ensure the social integration of the poor:

Support for single pensioners and disabled people:

- create jobs for disabled people and low-income citizens (Kegeyli, Kanlykul, and Chimbay districts);
- help them find housing or repair their houses (Shumanay district);
- as disability pensions are small, disabled people should be supported in receiving and paying for health services and medicines; routine advice sessions should be organized for the elderly (Takhtakupyr and Karauzyak districts);
- help single pensioners and disabled people in receiving and paying for the utilities (gas, water, electricity supply) (Kegeyli district);
- ensure continuous training for district doctors and other health specialists;
- boost fundraising and donor support for the lonely elderly and improve the coordina-

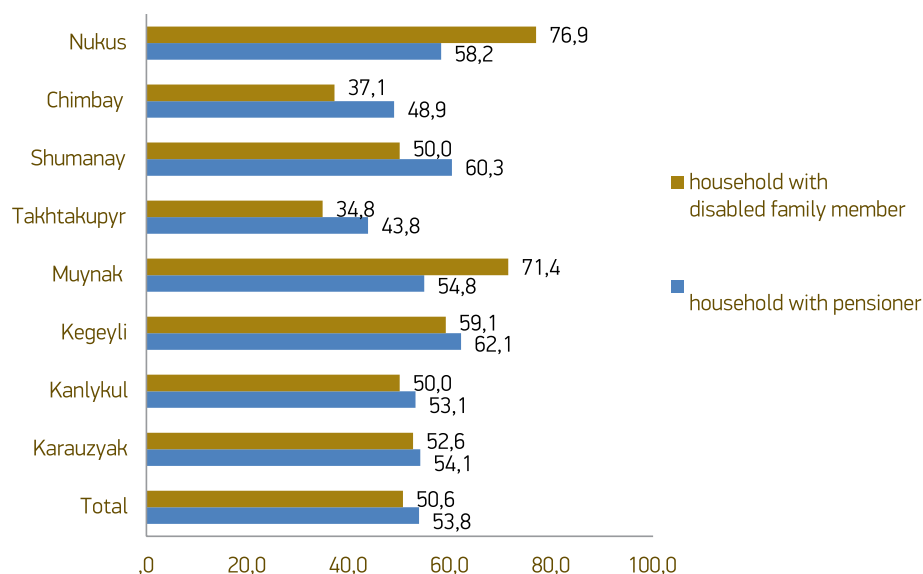
More than half of the households with disabled family members are not satisfied with the provision of medicines.

More than half of the households with disabled family members are not satisfied with the provision of medicines (especially in the Kanlykul, Muynak, Takhtakupyr, Shumanay and Chimbay districts).

Households with disabled family members in the Kanlykul (71.4%), Nukus (85.7%) and Muynak (50%) districts suggested solving the problems with access to/affordability of medicines through State-managed price regulation,

Figure 4.4.3.

Satisfaction with health services, in% of the respondents (survey results, August 2017)



tion of efforts in this area.

The survey also identified the level of satisfaction with reproductive health service in the districts. The majority of the respondents said they were satisfied – 58.6%, partially satisfied – 19.0%,

and dissatisfied – 5.6%. Among the districts surveyed, a relatively high level of dissatisfaction was registered in the Takhtakupyr (11.5%), Chimbay (7.1%) and Muynak (6.9%) districts that are most affected by the environmental crisis.

V. EDUCATION SYSTEM



Preschool education. The main typical features of preschool education in the districts surveyed include primarily the shortage of preschool (hereinafter “PS”) capacities to cover not only the entire population category, but at least the majority of the children with PS education. As indicated by the data for 2017, preschool coverage in Karakalpakstan was 29.9% (17.0% in 2016). Notably, over the past 6 years, preschool coverage increased by more than 1.5 times, while in the surveyed districts – by 1.4 times (Figure 5.1).

- In addition to the insufficient PS enrollment capacities, there are the following specific gaps and issues:
- lack of hard and soft furniture, kitchen accessories, teaching materials and other necessary equipment at the existing PSs. Focus group participants confirmed that PSs lack hard and soft furniture, kitchen utensils, teaching aids and other necessary equipment;
- lack of PS teachers with higher specialized education resulting in a wide recruitment of lowly qualified teachers/educators. This issue should be addressed by ensuring adequate level of training and retraining for PS teachers and educators (for existing and future preschools);
- given the urgent need to foster foreign language learning (as per the ongoing in-depth foreign language learning program), foreign language learning groups should be piloted within the PSs along with piloting PSs specialized in foreign language teaching and

health correction; PSs staff should include pediatricians; all PSs should widely introduce sporting activities. All these require revising the current PS staffing standards to improve their diversity and adaptation to the RK district contexts;

- comparatively low wages of PS staff. This requires monitoring the salaries paid at PSs and introducing proactive incentives and bonuses.

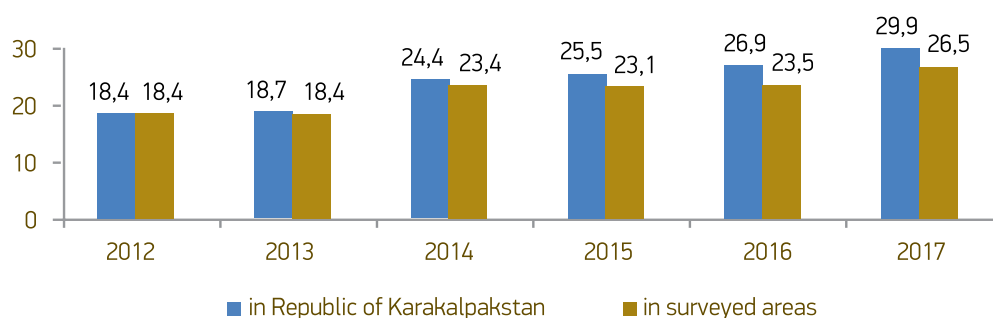
Secondary general education. Secondary schools ensure full coverage of the children with appropriate level of education.

Key problems and recommended solutions:

- lack of secondary school enrollment capacities. Teachers are overloaded without any incentives or bonuses. This problem requires a comprehensive analysis of the state of secondary schools and taking stock of their actual capacities to identify needs for construction, reconstruction, overhaul and maintenance/current repairs. Adoption of a dedicated program to reconstruct and expand secondary schools for higher enrollment capacities and better secondary education parameters based on the current state of the existing secondary schools and demographic indicators and birth rates in the districts would help improve the quality, flexibility and adaptability of secondary education to successfully integrate with professional education;
- insufficient laboratory equipment, educational tools and subjects, multimedia, and ICTs. This requires improving the schools’ supply of modern laboratory and learning

Figure 5.1.

Number of children covered by PSs, across the Republic of Karakalpakstan and the surveyed districts, 2012-2017, in %



Source: RK Statistics Office.

equipment, and providing additional subjects based on modern norms and standards for equipping secondary schools with teaching aids, multimedia and ICTs;

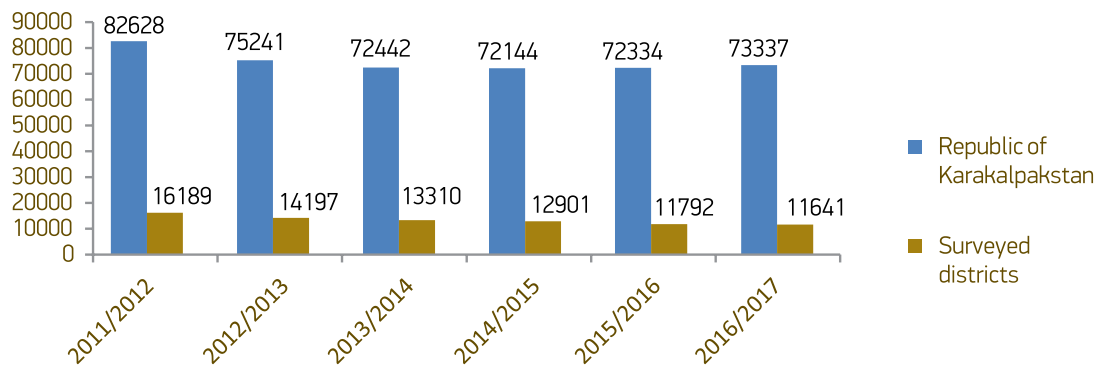
- consider introducing free breakfasts for schoolchildren. It is recommended to evaluate the free breakfast needs of the schoolchildren in the depressed areas of the Aral Sea region;
- too much red tape for teachers. In order to reduce the excessive workload not related to teaching process, all secondary school documentation should be inventoried and certain paper-based teacher performance reports should be made electronic and the teachers' prestige and reputation should be strengthened.

Secondary special professional/vocational education.

This type of educational institutions both across Karakalpakstan and in the surveyed districts in particular, meet the most common modern requirements both in terms of their number and capacities. It should be noted that among the surveyed districts only the Chimbay district has an academic lyceum that simultaneously educates 870 students (data for academic year 2016/2017) and produces 210-260 graduates annually. RK professional colleges produce between 23,000 and 30,000 graduates on a yearly basis, and professional college training has a steady tendency towards producing ever declining numbers of graduates mainly for demographic reasons (decreasing birth rates). In particular, statistics

Figure 5.2.

Professional college student number dynamics across the Republic of Karakalpakstan and in the districts surveyed, academic years 2011/12-2016/17



Source: RK Statistics Office.

show that while in academic year 2012/13 RK vocational colleges had 82,628 students, in academic year 2016/17 this number dropped to 73,337. Regrettably, this factor is aggravated by the degrading prestige and quality of professional college education over the last years (Figure 5.2).

Focus group surveys found that the most systemic of the shortcomings that currently reduce the quality of secondary special vocational education include the following:

- the need to create normal conditions and microclimate in colleges that have heating disruptions in winter due to low pressure. Therefore, the unstable functioning of the

heating system in the colleges (as well as other educational institutions) necessitates the adoption of urgent measures to introduce autonomous, and where possible – centralized, experimental and alternative ways to improve energy supply and heating for the educational institutions; and

- lack of modern computers, other teaching equipment and technologies, hard and soft furniture, school kitchen and kitchen equipment. Therefore, compliance with the standards of provision with ICTs and furniture, and with food hygiene standards at the educational institutions are of outmost importance.



VI. HEALTHCARE SYSTEM

RK's health system is gradually overcoming the difficult path of transitioning to new forms of organizing the health care for the people. The highest priority in the creation of a modern healthcare system in the country is to ensure wide accessibility, timeliness and high quality of primary health services for the people (Table 6.1).

38 inpatient and 141 outpatient clinics provide their health services to the RK population. Strengthening the primary health facilities (rural health clinics and family clinics) contributed to the reduction in hospitalizations from 1991 through 2017 by 1.7 times while the number of people attending polyclinics increased by 2.1 with an increase of the attendance rate per 1 resident from 5.4 to 8.6. Overall, 3,808 doctors and 16,732 nursing staff work in RK's health system (Table 6.2).

The availability of medical staff across the RK is 21 doctors and 92.1 nurses per 10 thousand people including health workers at republican (oblast) level health institutions. The lowest doctor availability rates were registered in the Muynak (9.8) and Takhtakupyr (13.2) districts, especially availability of general practitioners. All the district health facilities are provided with nursing staff for 100%. In general, the RK lacks more than 600 doctors with more than half being general practitioners. At least 25-33% of health staff (doctors and nurses) should have advanced trainings on an annual basis. RK Ministry of Health data show that more than 700 doctors and 4,500 nurses have annual refresher/advanced training courses. The proportion of doctors with qualification categories is 50.6% and nurses – 36.2%. The proportion of doctors with

Table 6.1.
Health service provision indicators in the Republic of Karakalpakstan

#	Parameters	2006	2016
1	Birth rates	22.3	22.0
2	Death rates	5.4	4.7
3	Infant mortality	16.7	13.8
4	Coverage by modern means of contraception (in %)	68.8	57.1
5	Coverage of pregnant women with antenatal care during the first months of pregnancy (in %)	90.7	89.1
6	TB incidence per 100 thousand people	120.9	84.1
7	General morbidity	1035.5	937.6
8	Provision with inpatient beds	61.2	38.9
9	Provision with outpatient clinics (outpatient clinic capacities per 10 thousand people)	135.5	122.0
10	Outpatient clinic coverage radius (km)	150	35
11	Health equipment provision at health facilities (% of norm)	60	78

RK Ministry of Health data

qualification categories is the smallest in the Karauzyak (33%) and Muynak (36.7%) districts. One of the problems with upgrading and obtaining the qualification categories is the remoteness of the RK from the capital where the Tashkent Institute for Advanced Training of Doctors and the Attestation Center are located (transportation and travel expenses, fees for tests, etc.), as well as the insignificant surplus to the salaries of the doctors with qualification categories 2 and 3.

In general, the RK has a satisfactory level of supply of medical equipment for outpatient facilities. All RHCs (rural health clinics) were equipped with the necessary medical equipment between 2006 and 2014 under the 'Health-1', 'Health-2' and 'Health-3' projects. There are problems with providing the newly established rural family clinics with ultrasonic devices, portable ECG devices with remote patient information exchange, modern X-ray diagnostic devices facilities (computer tomographs, intraoperative X-ray machines, angiographic equipment), anesthesia and breathing equipment, surgical sets and others. There are also problems with maintaining the existing high-

tech equipment and providing consumables and reagents.

Provision of medicines until April this year was ensured in a decentralized manner as all RHCs had the status of independent legal entities and purchased medicines on their own based on approved RHC forms. Currently, all RHCs and family polyclinics are funded by district health institu-

The radius of servicing by district-level health institutions in the districts ranges significantly – on average, it ranges from 30 km to 50 km.

tions, hence they receive medicines from the in-house pharmacy based on their applications. The provision/availability of medicines for inpatient facilities across the RK is 30-40% by volumes and 90-95% by denominations.

Interruptions in the provision of medicines are primarily caused by insufficient funding, absence or interruptions in the delivery of certain types

of medications and health products by wholesale suppliers.

The radius of servicing by district-level health institutions in the districts ranges significantly – on average, it ranges from 30 km to 50 km. The health institutions in the Muynak, Kegeyli and Takhtakupyr districts have the largest radius of servicing, while those in the Kanlykul and Shumanay districts have the smallest.

Analysis of demographic indicators for 2012-2016 across the RK and in the districts surveyed showed that the birth rate (births per 1,000 people) declined slightly during this period, although there was an upward trend until 2015 (Table 6.3).

Of the surveyed districts, the Nukus (26.4) and Chimbay (24.3) districts have the highest birth rates. Total death rates for this period across the RK remained unchanged at a relatively low level (4.7), due to the high birth rates and age composition of the population. Remarkably, this indicator in all the surveyed districts is higher than the average for the RK. One of the reasons is the relatively high infant mortality rates and TB-caused death rates whose prevalence is much higher in the districts surveyed.

Total and primary disease incidences in the surveyed districts over the recent years has remained unchanged, except for the Shumanay

Table 6.2.
Availability of medical staff in the Republic of Karakalpakstan for 2016

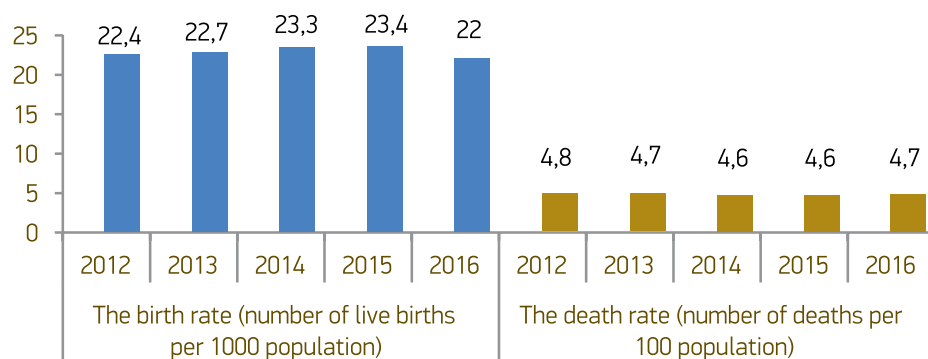
City and district	Number of doctors	Availability of doctors per 10 thousand people	Categories %	Number of GPs	Categories %	Number nursing staff	Availability of doctors per 10 thousand people	Categories %
Nukus city	416	13.5	37.3	182	30.2	1451	47.2	41.5
Tahiatash	-	-	-	-	-	-	-	-
Turtkul	234	11.5	62.0	40	65.0	1114	54.8	37.3
Beruniy	289	16.0	59.9	29	62.0	1614	89.4	31.1
Ellikkala	174	11.6	57.5	29	65.5	1091	72.8	37.7
Amudarya	308	16.3	62.3	67	56.7	1154	61.2	21.5
Khojeyli	292	15.4	41.8	38	44.7	1319	69.6	34.0
Shumanay	82	15.0	48.8	21	23.8	575	105.1	35.1
Kanlikul	78	15.9	42.3	20	40.0	512	104.3	32.0
Kungrad	177	14.1	56.5	50	32.0	1277	102.0	33.5
Muynak	30	9.8	36.7	7	14.2	281	92.1	31.0
Nukus district	102	21.7	41.2	19	26.3	467	99.2	44.5
Kegeyli	123	14.0	45.5	35	14.3	662	75.1	34.3
Chimbay	180	16.0	49.4	72	44.4	659	58.5	56.9
Karauzyak	78	15.1	33.3	22	27.3	488	94.8	43.0
Takhtakupyr	52	13.2	50.0	7	57.1	448	113.7	48.0
Republican level health facilities:	1193		51.7			3620		36.3
Total:	3808	21.0	50.6	638	40.0	16732	92.1	36.2

Source: RK Ministry of Health data

Figure 6.1.

Birth and death rates in the Republic of Karakalpakstan, 2012-2016

(per 1,000 people)



Source: RK Ministry of Health data

Table 6.3.

Birth and death rates in the districts of the Republic of Karakalpakstan, 2012-2016

(per 1,000 people)

Districts	Birth rates (number of live births per 1,000 people)					Death rates (number of deaths per 1,000 people)				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Nukus city	20.2	20.9	21.2	21.4	19.1	5.0	4.6	4.6	4.4	4.7
Turtkul	22.7	23.5	23.0	23.7	21.9	4.4	4.3	4.5	4.6	4.4
Beruniy	24.8	24.6	26.5	25.8	25.1	4.5	5.0	4.8	4.3	4.5
Ellikkala	23.5	24.8	24.1	26.5	25.7	4.0	4.0	3.6	3.7	3.9
Amudarya	22.4	21.9	24.9	25.6	22.8	4.3	4.9	4.4	4.4	4.3
Khojeyli	21.8	21.9	21.9	21.5	20.4	5.4	5.0	5.1	4.8	5.1
Shumanay	19.4	19.6	19.7	18.1	18.3	3.9	3.9	4.0	4.0	4.0
Kanlykul	20.0	22.8	24.0	22.9	22.5	4.5	4.5	4.2	4.3	5.2
Kungrad	23.2	22.9	24.8	21.8	21.1	5.0	4.9	4.7	4.6	4.7
Muynak	20.2	20.7	22.0	20.3	20.9	5.0	4.7	5.4	5.3	5.0
Nukus	23.1	25.5	24.6	26.4	26	5.9	5.1	4.6	5.2	5.5
Kegeyli	23.2	23.6	22.5	22.4	21.2	5.9	5.3	5.6	4.9	5.3
Chimbay	23.8	23.2	23.7	24.3	24	5.4	5.5	5.0	5.2	5.4
Karauzyak	23.3	21.0	23.3	21.9	21.9	4.5	4.5	4.7	4.5	4.9
Takhtakupyr	24.2	23.5	23.7	20.8	21.4	5.8	4.9	4.9	5.4	5.5
Total for the RK	22.4	22.7	23.3	23.4	22.0	4.8	4.7	4.6	4.6	4.7

Table 6.4.
Viral hepatitis incidence in the Republic of Karakalpakstan
(per 100,000 people)

City/District	2012	2013	2014	2015	2016
Nukus city	116.7	67.1	82.9	90.3	125.1
Tahiatash	331.9	-	-	-	-
Turtkul	76.3	76.0	66.9	178.4	189.3
Beruniy	54.2	100.1	72.7	21.1	16.9
Ellikkala	32.2	43.1	63.5	53.1	122.0
Amudarya	10.2	12.3	17.2	34.8	24.8
Khojeyli	89.9	59.6	52.1	46.2	56.0
Shumanay	74.4	94.5	230.3	168.8	51.7
Kanlykul	45.6	34.3	292.4	33.4	16.6
Kungrad	70.3	110.6	116.6	90.5	82.5
Muynak	75.6	467.6	229.7	493.3	72.8
Nukus	149.3	130.6	107.4	138.5	78.1
Kegeyil	98.3	68.8	68.1	140.0	113.8
Chimbay	89.1	44.5	65.2	43.5	111.5
Karauzyak	63.4	20.2	132.0	130.4	100.4
Takhtakupyr	12.9	23.2	15.5	107.7	186.7
Total for the RK	79.5	70.7	82.2	89.8	92.7

Source: RK Statistics Office

district where the primary incidence rate increased by 70% due to the twofold increase in the incidence rate among children under 14 and the total morbidity/incidence rate by 35%. This, apparently, is due to improved registration and better preventive examinations of children in the districts.

The incidence of infectious diseases such as diarrhea and viral hepatitis A is an important indicator of quality drinking water supply levels and sanitation skills of the people (Table 6.4).

Although the total incidence of infectious diseases (number of registered infectious diseases per 100 thousand people) across the RK during the period was at the same level, some surveyed districts registered significant fluctuations in morbidity rates. For example, in 2013 and 2015, the Muynak district saw a 6-time increase in the incidence of viral hepatitis compared to 2012

which was caused by local outbreaks in some localities resulting from the contamination of the drinking-water sources.

The northern and north-western districts of Karakalpakstan including the surveyed districts are characterized by relatively high rates of TB incidence and TB-caused mortality. TB prevention campaigns through early diagnostics and effective treatment helped halve incidence rates and reduce death rates by more than three times. Nevertheless, TB incidence in general across the RK is twice as high as the average for Uzbekistan. TB incidence in the districts surveyed, especially Muynak, Karauzyak and Takhtakupyr is twice as high as the average for Karakalpakstan (Table 6.5).

The incidence of oncological diseases across the RK, as suggested by the statistics from the branch of the Institute of Health and Medical

Table 6.5.
Incidence of tuberculosis in the Republic of Karakalpakstan
 (per 100,000 people)

City/District	2012	2013	2014	2015	2016
Nukus city	118.5	139.3	137.6	115.5	112.3
Tahiatash	9.9	-	-	-	-
Turtkul	42.7	42.4	40.6	32.8	30.5
Beruniy	44.0	44.4	51.2	34.2	38.4
Ellikkala	47.6	43.8	41.6	43.4	31.4
Amudarya	63.2	56.2	48.7	42.4	52.8
Khojeyli	130.1	134.6	151.8	127.2	127.5
Shumanay	108.8	132.3	101.1	113.2	121.8
Kanlykul	145.6	191.0	148.3	148.2	115.9
Kungrad	122.9	129.1	143.1	115.7	83.3
Muynak	161.5	191.1	212.8	150.0	102.6
Nukus district	158.4	150.9	199.1	180.2	156.2
Kegeyli	124.7	136.4	120.9	119.2	92.0
Chimbay	185.7	143.9	164.4	151.4	104.3
Karauzyak	169.7	204.4	144.0	179.8	143.7
Takhtakupyr	155.0	144.7	121.1	107.7	145.8
Total for the RK	101.0	106.3	106	93.2	84.1

Statistics for 2012-2016, did not change significantly. However, among the districts surveyed, especially in the Nukus, Kanlykul and Chimbay districts, there are significant fluctuations in the incidence of malignant tumors. This is probably due to the registration of cancer cases by the health institutions as not all patients identified go to an oncologist, especially in cases of late diagnosis, when doctors and relatives realize the unfavorable impacts of the disease.

Registered incidences of cardiovascular, endocrinological, respiratory, kidney and urinary tract diseases fluctuate significantly every year, particularly in the surveyed districts where lower incidences are due to the fact that there are no specialists, and, accordingly, the sharp increase when a new specialist comes to the district, or due to other factors.

The socio-economic difficulties caused by the drying out of the Aral Sea and the frequently recurring droughts over the recent years have led to a decline in the living standards of some socially

vulnerable groups and the difficulties of psychological adaptation to the environmental changes. All these have adversely affected the health of the populations.

The survey of experts found that the main cause of deaths were cardiovascular diseases. In

Figure 6.2.
Mortality patterns, based on focus groups discussions

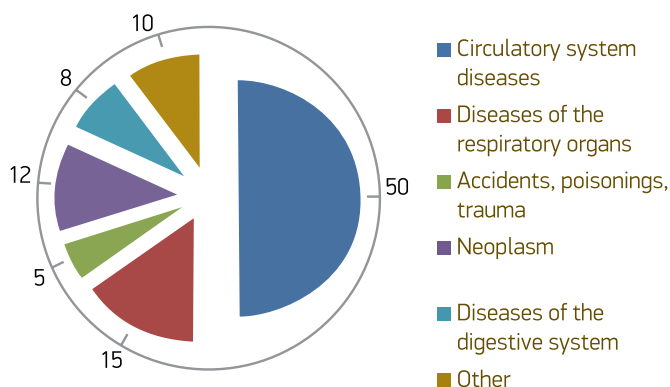
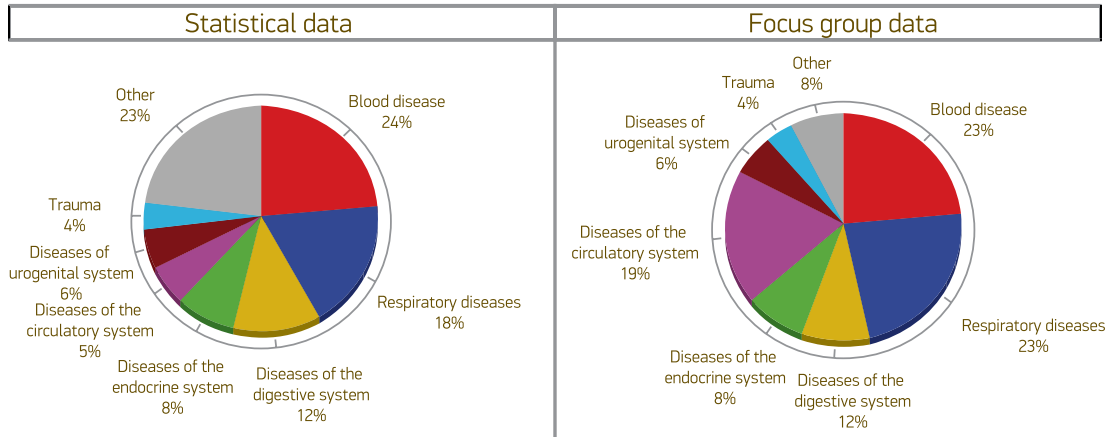


Figure 6.4. **Morbidity patterns in the surveyed districts of the Republic of Karakalpakstan** (survey results, August 2017, in %)



recent years, they have caused over 50% of all deaths. Ranked second are respiratory diseases, accidents, poisoning, traumas and neoplasms.

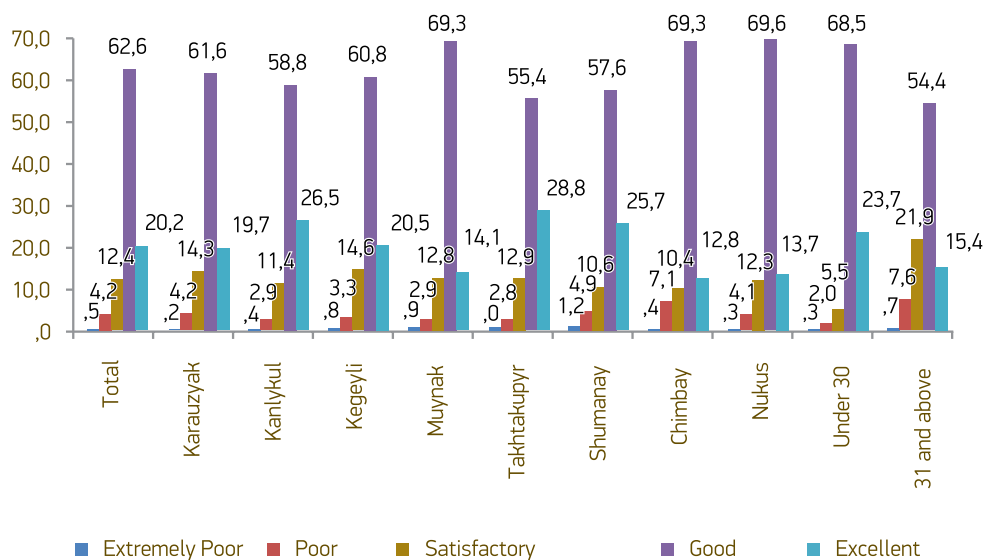
Focus group discussions of the availability and quality of primary health services helped identify the following key systemic problems:

- remoteness of the primary health institutions from the settlements due to low population density;
- low qualifications and lack of motivations for primary health workers to improve their

skills;

- incomplete staffing of primary health institutions with general practitioners and some types of health professionals;
- low salaries of health workers, especially young professionals, hence they are not interested in working for the primary health system;
- problems with providing health services for shepherds and their families living on pasturelands caused by the lack of roads and

Figure 6.5. **Perceived health status of the people in the districts of the Republic of Karakalpakstan** (survey results, August 2017, in %)



cross-terrain ambulances cars;

- low health literacy and lack of sanitary and hygienic skills to live healthy lifestyles (improper diets, obesity and other metabolic diseases) among some rural populations;
- insufficient provision of primary health facilities with modern medical equipment (ultrasound devices, digital fluorography units, intraoperative X-ray machines, diagnostic and surgical laparoscopic devices, anesthesia and respiratory apparatus, fetal monitors, oxygen concentrators and many other types of equipment);
- lack of finances to buy medicines and health products.

Additional financial injections have to be made into the health system in order to solve these problems. This can only be achieved if there are sustainable sources of funding. All focus group participants supported the idea of creating a **special fund** to finance projects aimed at mitigating the health impacts of the Aral Sea crisis in the region.

Focus group participants said that the most typical diseases in the region included respiratory diseases, cardiovascular diseases, diabetes mellitus, anemia, musculoskeletal system diseases, dermatomycosis, and the relatively high TB and oncological disease incidence rates (Figure 6.4).

The local experts said that the key health-related and social problems of their region include: high child morbidity and mortality; high incidence

of extragenital diseases among childbearing-age women (anemia, kidney and cardiovascular diseases); low health literacy of the people; and the risk of feral herd infection outbursts.

Climate change is resulting in higher occurrences of extreme weather events: heat waves and dust storms that exacerbate respiratory diseases. Strengthening the health service response to respiratory diseases is one of the priorities of the health institutions in terms of mitigating the Aral Sea crisis.

The respondents rated the quality and public access to health services and self-rated their own health status (Figure 6.5).

Every fifth respondent (20.2%) rated his/her health "excellent". Such an optimistic response prevailed among the respondents under 30 (23.7%) and only 15.4% of the respondents above 31 rated their health "excellent"

62.6% of the respondents rated their health "good". 12.4% of the respondents rated their health "satisfactory", 4.2% - "bad" and 0.5% - "very bad". Certainly, self-rating of one's own health status depends on many factors, and in most cases it is subjective. A more sober rating of health status among the respondents over 30 suggests that adults fall ill more often, have numerous chronic diseases, and therefore their answers are more realistic.

Concerning the ratings of the existing chronic diseases, mainly negative answers were received in all the districts (Figure 6.6).

A clarifying question was asked about the type

Figure 6.6.

Health status of HH members in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)

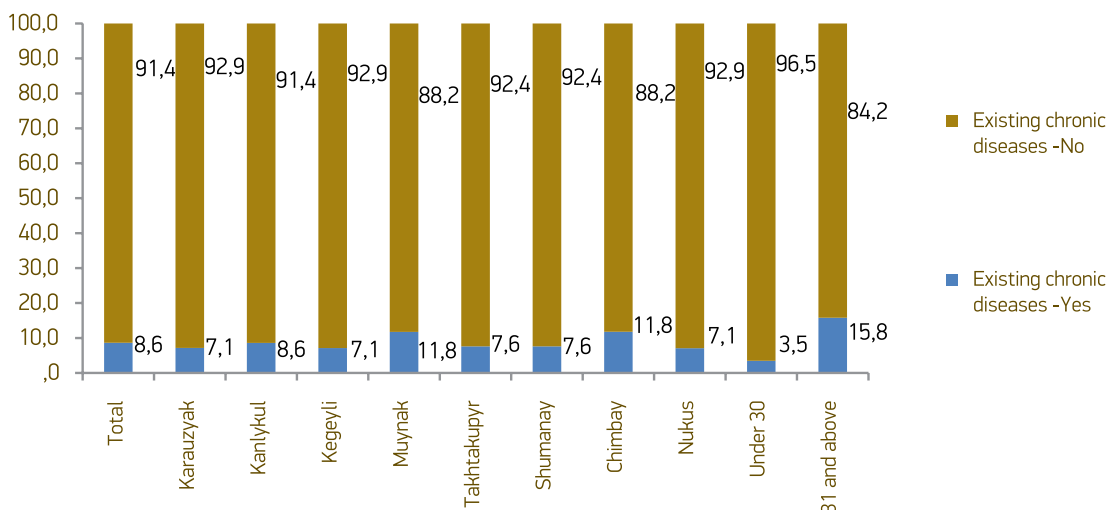
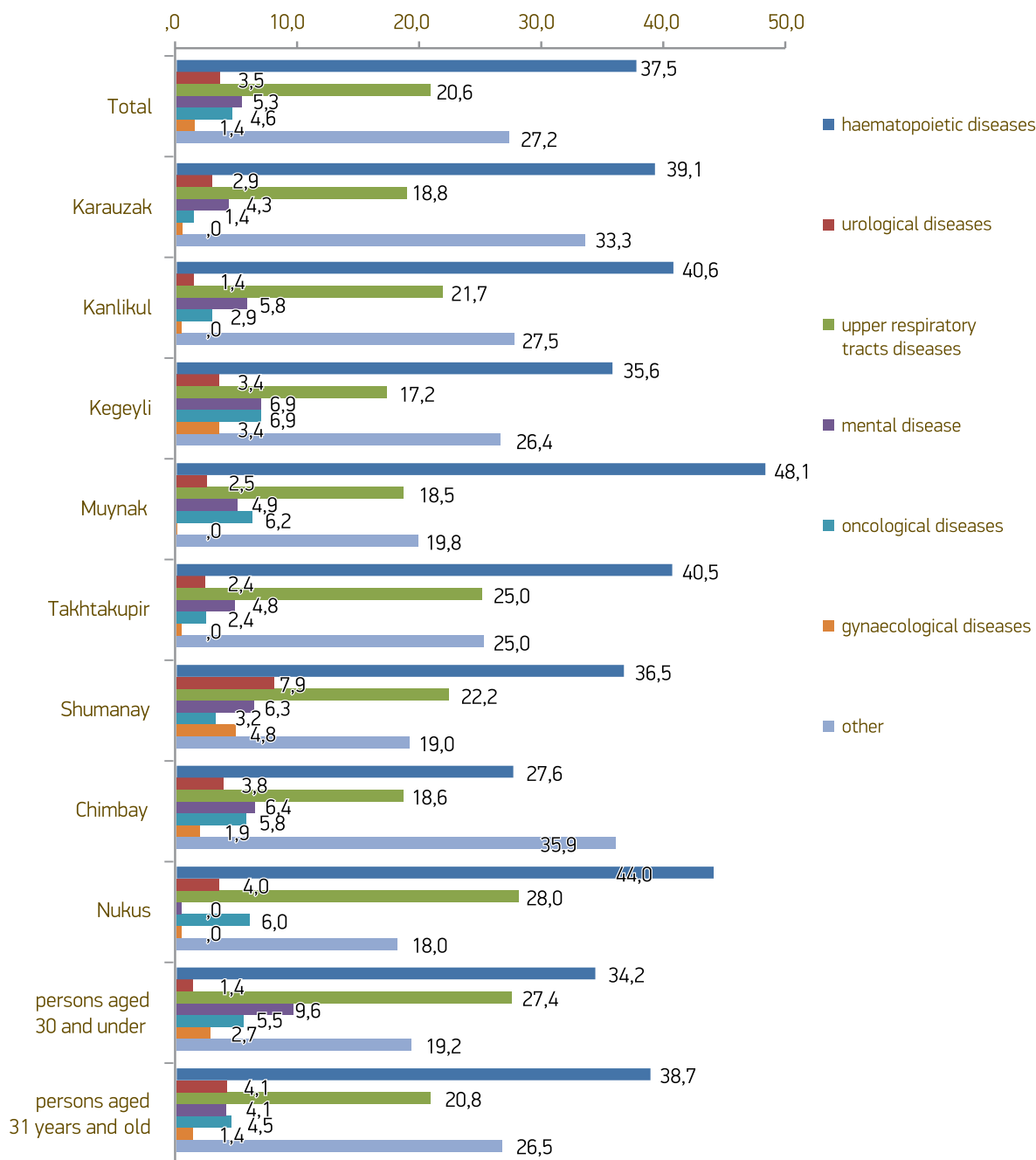


Figure 6.7.

Types of chronic diseases in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



of chronic diseases (Figure 6.7).

Positive responses were given by only 8.6% of the respondents, while 3.5% of the respondents below 30 said they had chronic diseases. In the older age group of 31 and older, the proportion of respondents who answered positively was 15.8%. This suggests that not everyone has real

information about their own health status and the health status of their families. Data from the health institutions show that on average 15-18% of adolescents and 25-30% of people over 30 in these districts have at least one chronic disease. Of the respondents who answered positively, 37.5% said that they have blood and hematopoi-

etic diseases, 3.5% - urological, 20.6% - respiratory and ENT organs diseases, 5.3% - mental, 4.6% - oncological, 1.4% - gynecological and 27.3% - other diseases. In general, the morbidity patterns correspond to the survey responses. Indeed, across the RK, the proportion of blood and blood-forming organ diseases, especially anemia, prevail among chronic diseases.

In order to learn about the rate of public appeal to medical institutions, surveyors asked this question: "Have you sought health assistance throughout this year? If yes, where did you request them?" (Figure 6.8).

30.9% of the respondents said they had appealed to medical institutions during the year, 68.7% said they had not, and 0.4% found it difficult to answer this question. The proportion of those who applied for medical assistance was 10% higher in the age group of people of 31 and older. The survey found that 34.8% had applied to family polyclinics, 29.9% - to RHCs, 4.1% - to diagnostic centers, and 27.1% to hospitals. It is noteworthy that less than 1% of the respondents

had resorted to *tabibs* (healers) or self-treatment, though these practices are very widespread among the people, especially among women. The number of RHC visitors is the highest in the Kanlykul, Muynak and Takhtakupyr districts and this is

Traditionally, the local population has low confidence in outpatient polyclinics. They believe that hospitals have more qualified staff and, if necessary, they can provide highly qualified health services.

apparently due to the remoteness of the settlements from the district centers and family polyclinics. The fewest RHC visitors were registered in the Shumanay and Chimbay districts.

Regarding the reasons for non-attendance of health institutions, 89% of the respondents said that there was no need, 2.6% said such institutions were far away, 2.1% - that health services

Figure 6.8.

Health institution attendance rate

(survey results, August 2017, in %)

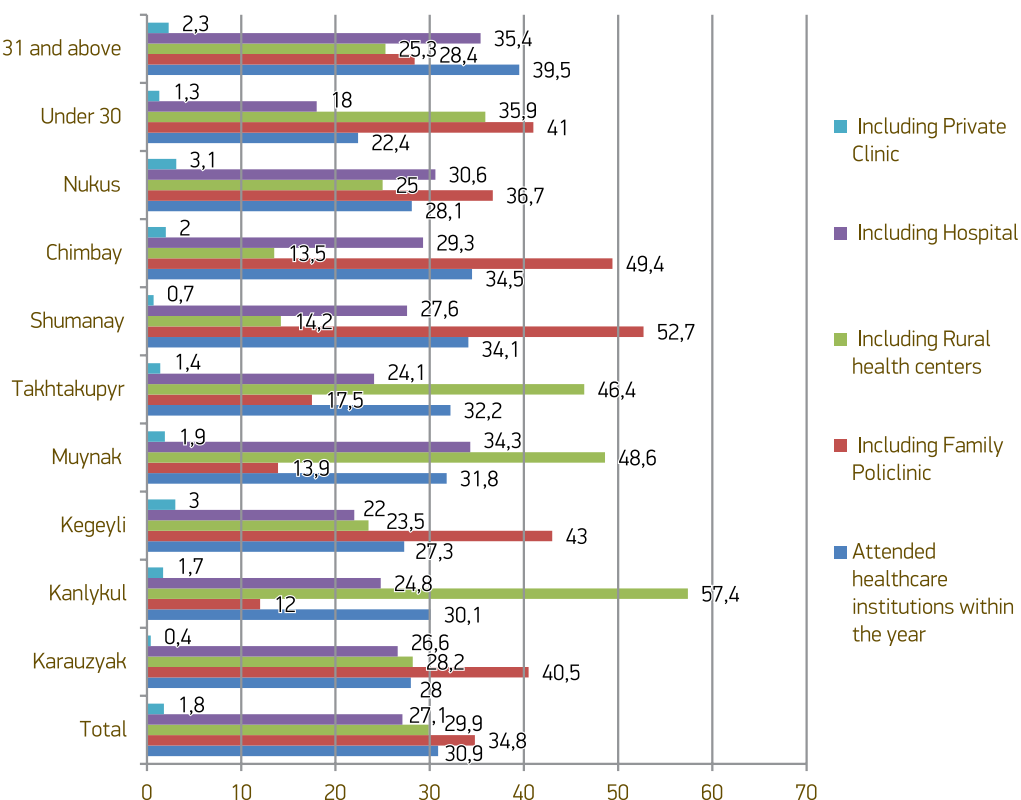
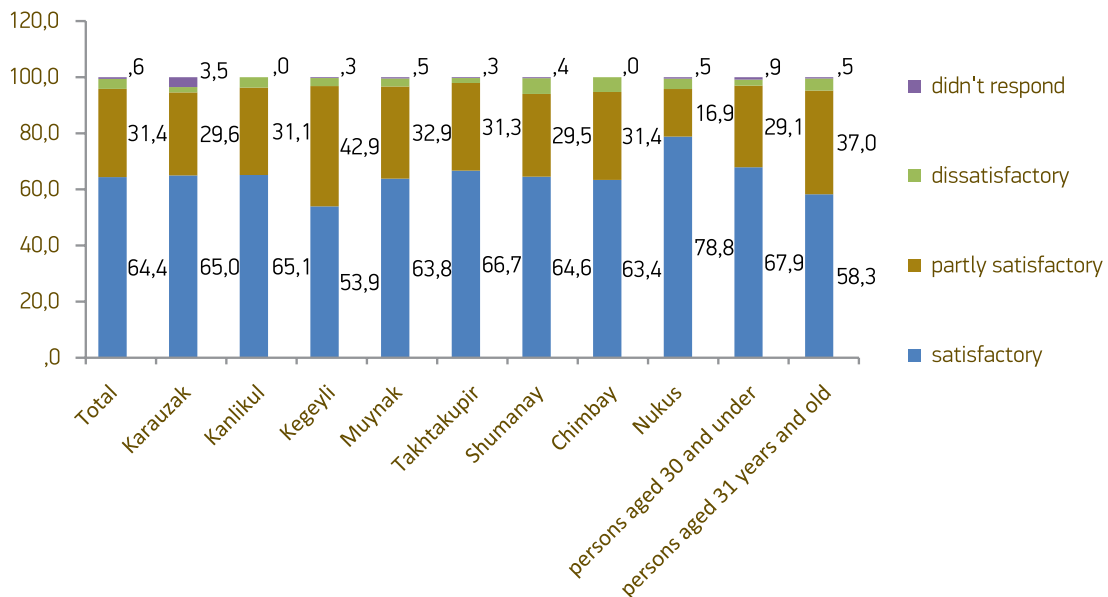


Figure 6.9.
Perceived quality of health services in the districts of the Republic of Karakalpakstan
 (survey results, August 2017, in %)



were too costly, and 2.1% - that the doctors had no adequate qualifications. Importantly, it should be noted here that the local people approach health institutions only if they feel sick and not for preventive purposes.

When asked if they sought medical assistance throughout the year, 91% of patients with chronic diseases responded positively. Of them,

ernment decisions fully meet the people's desires.

The quality of the health services provided by the healthcare facilities as a whole was rated "satisfactory" by 64.4% of the respondents, 31.4% - "partly satisfactory" and around 3.5% - "unsatisfactory". Older generation is more realistic in rating the quality of health services (58.3%) (Figure 6.9).

On the whole, 64.4% of the patients rate health services in the RK as "satisfactory". Patients from the Karauzyak, Muynak and Nukus districts gave higher ratings.

The quality of health services is necessarily associated with its accessibility. Accessibility, as viewed by the World Health Organization, is the availability of qualified primary health assistance within a radius of five kms (1 hour walk). It is not possible to organize primary health care within a five-km radius in all areas of Karakalpakstan due to the low population density and the features of the shepherds'/cattle breeders' lifestyles in the desert zone. The less the population density, the more costly is the organization of health care.

It is not possible to organize primary health care within a five-km radius in all areas of Karakalpakstan due to the low population density

60.7% had preferred to go to the hospital. Logically, 80-85% of the population's attendances should be visits to outpatient polyclinics, while only 15-20% of the patients need to be hospitalized. Traditionally, the local population has low confidence in outpatient polyclinics. They believe that hospitals have more qualified staff and, if necessary, they can provide highly qualified health services.

The reforms of the health system, optimization of the RHC network, organization of rural family polyclinics, and the extension of the outpatient clinic working hours to 12 hours as per the gov-

The less the population density, the more costly is the organization of health care.

One of the ways to address the problem of accessibility is mobile dispensaries/outpatient clinics equipped with modern diagnostic facilities. Such dispensaries could serve the population in remote areas thus ensuring the accessibility of health care.

Furthermore, in the context of Karakalpakstan where air temperature falls below 25-30 degrees Celsius in winter accompanied by a piercing wind, heating a health institution means additional costs. Sanitary and hygienic norms as well as construction norms for health institutions should be revised to incorporate the climatic, geographical and ecological features of the region. Around half of the interviewed patients are not satisfied or partially satisfied with the quality of medical

care provided by the health institutions. Focus group discussions and the survey results show that one of the problems with the health institutions is the unreliable/interrupted functioning of sanitation and shower systems of the hospitals. The main reason for this is the lack of a central sewerage. Sewage is collected in waste pits that are not large enough to allow uninterrupted discharge during the day. There is no way to enlarge the waste pits as groundwater level is high. One of the ways to solve this problem is by building local treatment facilities.

On the whole, the health system in the surveyed districts has numerous problems that should be addressed through better financing and legal support.



VII. ENVIRONMENTAL SITUATION

Uzbekistan is taking proactive measures to rehabilitate the environmental situation in the Aral Sea region by restoring the local small lakes and building pipelines to supply drinking water. In particular, the 'Sudochoye' lake system in the delta of the Amu-Darya River has been restored. The 'Sudochoye' is of international significance as a nesting place for colonies, migration and wintering of semi-aquatic and aquatic birds including rare and endangered species.

Saxaul and other trees are planted to fix the mobile sands and stabilize the ecosystem on the dried-up bottom of the Aral Sea. Another example is the rehabilitation of the tugai forests in the delta of the Amu-Darya River (Table 7.1).

Despite the importance and significance of

these measures taken as part of the environmental policy, all these are not enough if confined within just one country. There has to be a unified and targeted environmental policy pursued by all the states of Central Asia. Absence of such a policy will inevitably lead to the degradation of the ecosystem.

Of particular concern is the current state of the land resources and croplands. Soil researches revealed that 56.6 thousand hectares of all irrigated lands in Karakalpakstan are strongly salinized, while 171.3 thousand hectares of the land (34%) have medium salinity level. Soil salinity is very high in the Karauzyak and Takhtakupyr districts. As a consequence, the yields of

Table 7.1.

Indicators of the environmental situation in the Republic of Karakalpakstan

#	Parameters	2006	2016
1	Total area of land covered by a network of protected natural areas (in %)	30.2	39.2
2	Proportion of degraded irrigated and non-irrigated lands (in %)	22.4	16.6
3	Proportion of renewable energy sources in the energy mix (in %)	0	less than 1%
4	Proportion of recycling and processing of solid domestic waste (in %)	0.5	1.8
5	Emissions from immobile sources (thousand tons)	22.3	19.7
6	Emissions from mobile sources (thousand tons)	36.1	35.5

Source: data from the RK Center for State Sanitary and Epidemiological Surveillance

cotton, wheat and melons/gourds grown on highly and medium saline lands are decreasing. This and the impossibility of growing gourds such as melons, pumpkins, etc. in normal conditions have caused the increase in the number of patients with gastrointestinal, cardiovascular, oncological, respiratory and other diseases. Karakalpakstan registers the highest TB incidence rates.

In essence, the environment affects human health through air, water and soil as well as food products grown in such an environment.

Environmental surveillance is carried out by relevant agencies of the State Committee for Environmental Protection and Ecology, and the Republican, City and District Centers for the State Sanitary and Epidemiological Surveillance. Air monitoring results show that the gross volume of emissions into the air basin ranges from 55.2 thousand to 63.0 thousand tons (Figure 7.1).

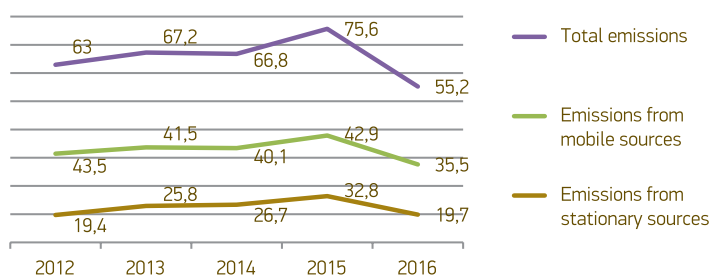
The main stationary/immobile sources of and contributors to the emissions include the following enterprises: the Kungrad Gas Trunk Line Department (56.7%); Takhiatash TPP (13.9%); 'Shimoligaztaminat' (13.8%); JV LLC 'Uz-Kor Gas Chemical' (22.3%); and the Kungrad Soda Plant (15.6%). The highest dust pollution of the atmospheric air is registered from March through November and phenol pollution – from April through November with the main air pollutants

being asphalt-concrete and limestone workshops and brick factories. As suggested by the official

In essence, the environment affects human health through air, water and soil as well as food products grown in such an environment.

Hydromet data, the annual dust concentration norm is exceeded by 2.7 times. This is caused by the local meteorological conditions of the region (high winds, salt-and-dust storms from the dried-

Figure 7.1.
Dynamics of emission of pollutants into the atmospheric air in the Republic of Karakalpakstan (thousand tons)



Source: RK State Committee for Environmental Protection and Ecology

up bottom of the Aral Sea, and a few days with precipitation).

Importantly, there is a proven steady pattern of seasonal changes in the concentration of the pollutants in the atmosphere and increase of sulfur dioxide and phenol content in cold seasons. For dust and nitrogen dioxide, there is an inverse relation with the highest concentration registered in warm seasons. For other ingredients, no exceeding of concentration norms were registered. The laboratory data of the RK Center for State Sanitary and Epidemiological Surveillance show that 13.5% of the air samples taken in the populated areas did not meet the prescribed norms.

77 open source water sampling points across

The annual dust concentration norm is exceeded by 2.7 times.

the RK were identified. More than half of the water samples (53%) taken from these points did not meet the chemical norms and 19.6% did not meet the bacteriological norms.

The RK population consumes water from 45,822 hand water pumps/faucets and 182 wells. More than 60% of water samples taken from these sources of drinking water (wells and tubular wells, and hand pumps for pumping groundwater) did not meet the sanitary requirements for chemical content and 10.0% - for bacteriological content.

Availability of tap water for the RK population is 63%, including 51% for the rural population. The lowest tap water availabilities were registered in the Amudarya (27.9%), Beruniy (36.3%) and Muynak (36.1%) districts, as well as the rural areas of the Khojeyli (29.7%) and Shumanay (45.9%) districts. Although only half of the RK rural population is provided with tap water, its chemical content does not meet the due norms on average in 47.7% of cases, and bacteriological norms – in 2.9% of cases.

Currently, the existing monitoring system uses instrumental, physical and chemical analysis of samples of emission sources, discharges, and soil contamination and allows controlling the priority 16 ingredients included in the laboratory accreditation area. Nevertheless, due to the incomplete equipment of the laboratories, the Committee for Nature Protection and Ecology does not conduct physical and chemical analysis to help monitor soil and mineral contamination with industrial toxic substances, heavy metal content, as well as pesticides and other poisonous chemicals used in agricultural production, to control the concentrations that might jeopardize human health.

Due to the lack of special tools, the soil samples from the “poison burials” are sent to Tashkent to determine their pesticide content and for physical and chemical analysis.

One of the main sources of environmental pollution are landfills of “solid household/domestic waste” and waste waters/sewage. As suggested by the data of the utilities units of the city and

Figure 7.2.

Sources of drinking water in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)

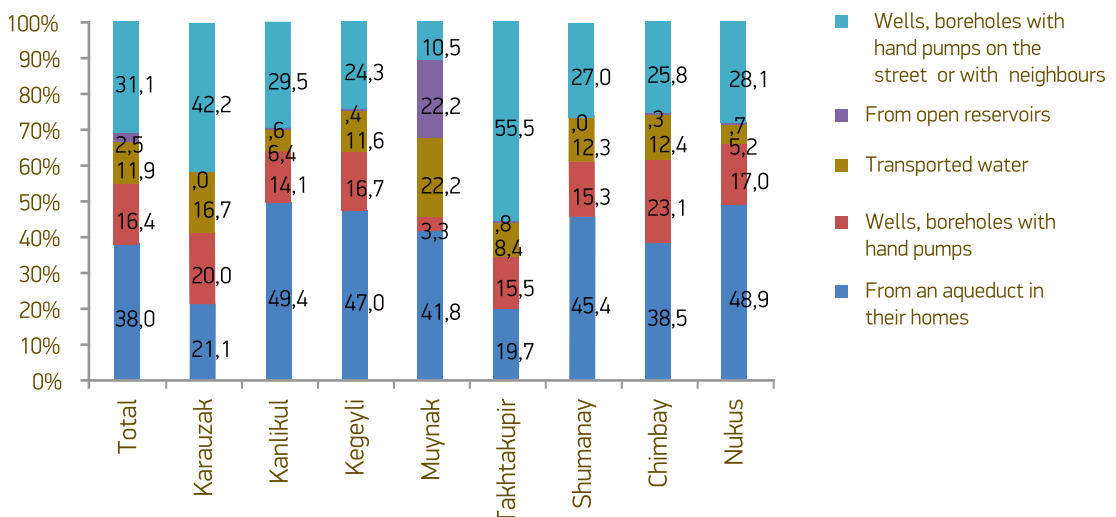
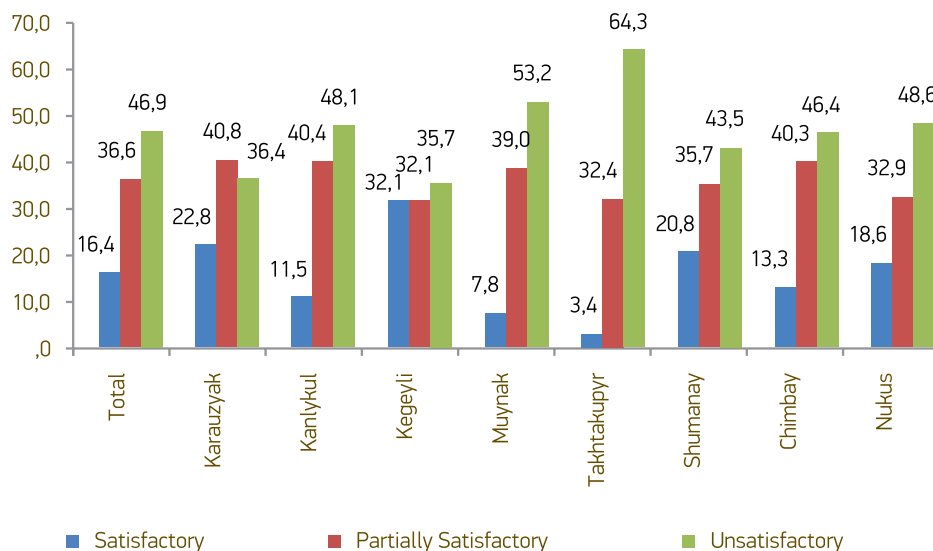


Figure 7.3.

Satisfaction with the environmental situation in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



district hokimiyats, in 2016, 160.93 thousand m³ of solid household wastes, including 1.3 thousand m³ of sewage, across the RK were transported to and buried in the landfills. Sanitation system coverage in Takhiatash is 17.7%; Kungrad – 7.0% and Khojeyli – 2.9%. The other cities and district centers have no centralized sanitation systems.

As revealed by the analysis of the urban water treatment facilities, due to their outdated equipment, their maintenance staff does not observe the due operational regime. The treatment facilities are either operated inappropriately, or practically do not function, or are inexistent.

As is known, among the factors affecting the health status, the environment is highly significant (more than 20%), which is twice as important for public health protection as the development of the health system (10%). Therefore, the main task in terms of improving the health of the population is to protect the environment.

Expert surveys revealed that the main causes of the environmental pollution are salt-and-dust storms generated by high winds from the dried-up bottom of the Aral Sea. In recent years, they have caused more than 50% of all deaths. Ranked second to them are solid household wastes, pesticides, and emissions from mainly large industrial enterprises such as Takhyatash CHPP, Kungrad Soda Plant, and the Ustyurt Gas Chemical Complex. Experts believe that the main environmental risks for the people include the

following: soil salinization and loss of crop yields resulting from the precipitation of salt-and-dust particles drifted away from the dried-up bottom of the Aral Sea; low quality and availability of/access to drinking water; absence of a safe system to recycle household wastes; deterioration of the unfavorable weather conditions (increase in the number of hot days in summer and strong frost in winter); and low quality of ecological/environmental education.

The state of the environment can be assessed through drinking water. One in every three respondents (31.1%) answered that they take water from a well column, from a well with a hand pump on the street or from a neighbor (Figure 7.2).

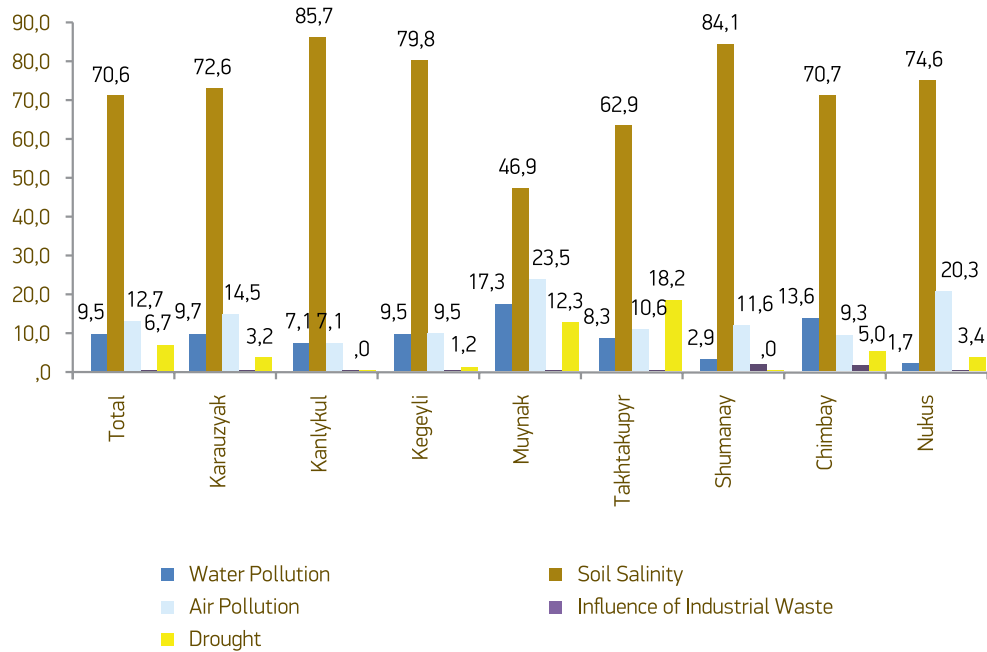
One of the main sources of environmental pollution are landfills of “solid household/ domestic waste” and waste waters/sewage.

Water from the well is used more in the Takhtakupyr (55.5%) and Karauzyak (42.2%) districts, less in the Muynak district (10.5%). This is due to the fact that there are no underground water sources suitable for drinking in the Muynak district. Therefore, this district uses transported water or water from surface water bodies (44.4%).

Figure 7.4.

Main causes of public dissatisfaction with the environmental situation

(survey results, August 2017, in %)



Overall, 38% of respondents answered that they use tap water. The lowest use of tap water was registered in the Takhtakupyr and Karauzyak districts. Due to the low population density in these districts it is impossible to provide all the localities with tap water as most of these localities are scattered and far away from each other and the district center usually with a small population (*hutor*, or “farm” system set-

tlements). Despite the local desalination plants that were installed in such localities, most of them, apparently, have gone out of order and are unused.

Only 16.4% of the respondents are satisfied with the environmental situation (Figure 7.3).

The lowest satisfaction with the existing environmental situation were registered in the Takhtakupyr (3.4%) and Muynak (7.8%) districts. This is understandable and objective as these two districts have suffered most from the Aral Sea crisis and the frequently recurring droughts over recent years.

In general, 70.6% of the respondents across the RK said that the reasons for their dissatisfaction were soil salinity, 12.7% - air pollution, 9.5% - water pollution, 6.7% - drought and only 0.4% - the impact of industrial wastes. The dissatisfaction of the majority of the respondents with the environmental situation due to soil salinization can be explained by the fact that the soil conditions worry everyone, regardless of where they live – in the city or village. Water pollution (17.3%), air pollution (23.5%) and drought (12.3%) are more troubling for the residents of the Muynak district as their livelihoods mainly consist of livestock farming (Figure 7.4).

As seen in Figure 7.3, more than half of the

Experts believe that the main environmental risks for the people include the following: soil salinization and loss of crop yields resulting from the precipitation of salt-and-dust particles drifted away from the dried-up bottom of the Aral Sea; low quality and availability of/access to drinking water; absence of a safe system to recycle household wastes; deterioration of the unfavorable weather conditions (increase in the number of hot days in summer and strong frost in winter); and low quality of ecological/environmental education.

respondents (55%) said that special measures should be taken to prevent soil salinization. All the respondents understand that the people's food security in the region depends on land fertility. Although water is the basis of life, it can be desalinated using modern technologies and transported via water pipes from fresh water sources. The largest proportion of public dissatisfaction caused by soil contamination was registered in the Kegeyli (78.8%) and Shumanay (84.1%) districts. The main occupation of the people in these districts is agriculture, cotton and wheat production for which soil salinity is a highly significant factor.

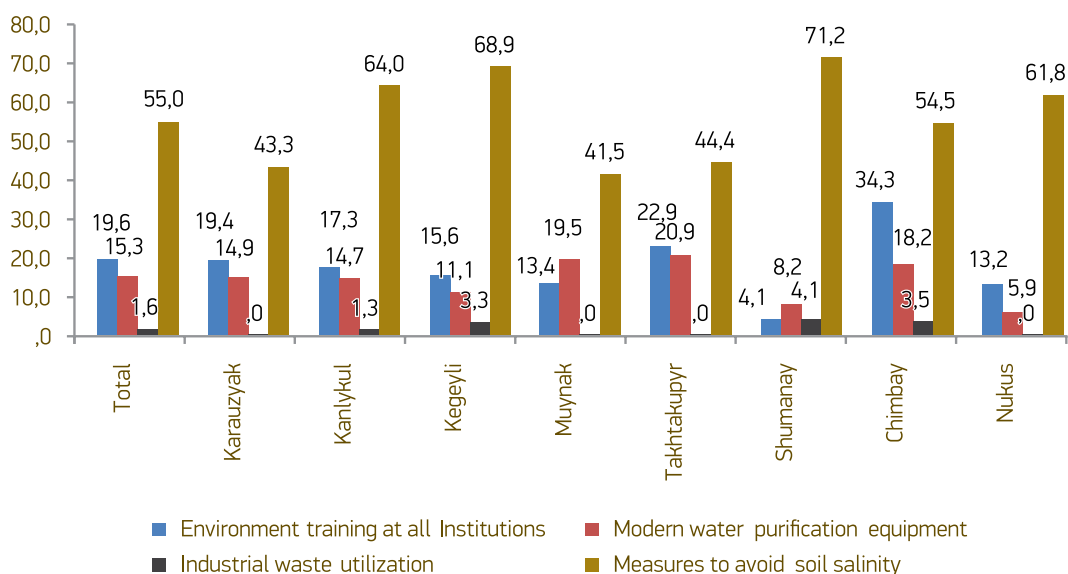
19.6% of the respondents said that, in order to improve the environmental situation, environmental education should be introduced in all edu-

cational institutions, and 15.3% said that modern water treatment facilities should be installed. Only 1.6% of the respondents suggested that industrial wastes should be recycled (Figure 7.5).

In essence, the respondents said that the key obstacles to environmental sustainability were problems related to drinking water, decreasing crop yields, destruction of some types of employments, and more types of diseases.

On the whole, 10.6% of the local population believed that over the last two years the environmental situation in the surveyed districts had improved; 69.9% - remained unchanged; and 29.9% - worsened, and this requires taking additional measures to ensure the citizens' livelihood security.

Figure 7.5.
Measures to improve the environmental situation
(survey results, August 2017, in %)





VIII. GENDER ASPECTS IN LABOR ACTIVITY

One of the most important priorities of Uzbekistan's state policy is to strengthen the role and status of women in socio-political and socio-economic life. To this end, the country is taking measures to enhance women's social activity, ensure their employment, strengthen the institution of the family, and protect motherhood and childhood.

Despite the equal numbers of both men and women populations in all the surveyed districts, the survey revealed that the proportion of economically active women was 48.1%, while men – 74%. On average, 25% of the female labor force is employed in the official sector of the economy mainly including school teachers, doctors, preschool teachers, and 23% - in the informal sector – mostly in trade and agriculture. 14.2% of economically inactive women are housewives.

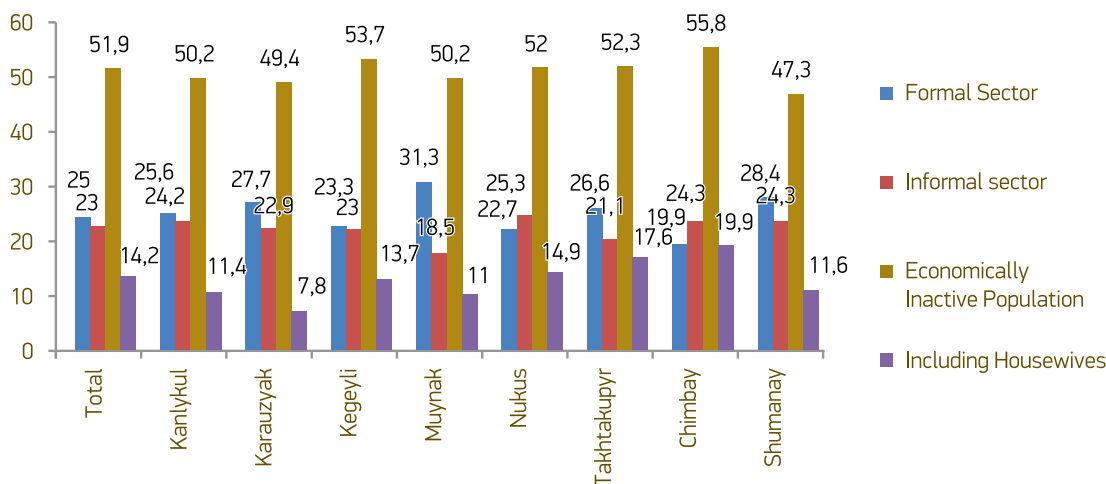
The economically inactive population includes students, mothers who are on parental leave for children under 2 and voluntarily unemployed people (Figure 8.1).

The survey results suggest that women are mainly employed in the public sector (doctors and teachers). Women involvement in business is growing and now, as estimated by the respondents, women make around 70% of the sector. The main activities of businesswomen is in trade and sewing. Most of the businesswomen in the Karauzyak, Kegeyli, Shumanay, and Nukus districts have secondary vocational education degree, but not higher education. This is the main reason why girls and women have a limited choice of business activities (being mainly in trade). Women in the Kanlykul district said that there was no in-

Figure 8.1.

Women employment in the districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)



centive to acquire higher education as there were almost no jobs for highly skilled workers or labor remuneration was very low.

According to focus group participants, 80% of female college graduates apply for a university. The accessibility of higher education for girls is expressed by the following three criteria: remoteness from the place of residence, affordability of the university fees, and gender stereotypes within the family (the priority of marriage, but not education). The results of the household surveys suggest that the main reasons for not attempting a higher education include the high fees and cost of higher education and the low qualifications of the teachers. It should be noted that among the reasons for refusing to apply for a university, the girls do not consider as important the remoteness of the university from their place of residence and the gender stereotypes within the family such as early marriage or restrictions on acquiring higher education for girls.

Focus group participants in all the districts said that there was a lack of teaching staff – Russian and English teachers, music teachers, physics and chemistry teachers, doctors, psychologists, culture specialists, and preschool teachers who speak Russian. The respondents in the Karauzyak district said that it should be incumbent on teacher training university graduates (future teachers of the Russian and English languages) to work at least 5 years in the districts where they live; and in the Tahtakupyr district it was suggested that the admission quotas should be revised to allow more students for the specialties in which

there is a shortage of working professionals and introduce incentive mechanisms to attract young specialists to the district.

The interview results suggest there are no gender stereotypes within families (for example, husbands or other relatives do not restrict women's finding a job and working). The only limitation in women's activity in local labor markets is the lack of jobs.

About half of the women surveyed said that their total family income was within 700 to 1,400 thousand UZS; 18.7% - less than 700 thousand UZS; 23.4% - from 1.4 to 2 million UZS; 6.8% - from 2 to 3 million UZS; and 3% - more than 3 million UZS. (Figure 8.2).

A comparison of more than half of woman-headed families in the surveyed districts

Figure 8.2.

Total income depending on the sex of the Household head in the surveyed districts of the Republic of Karakalpakstan

(survey results, August 2017, in %)

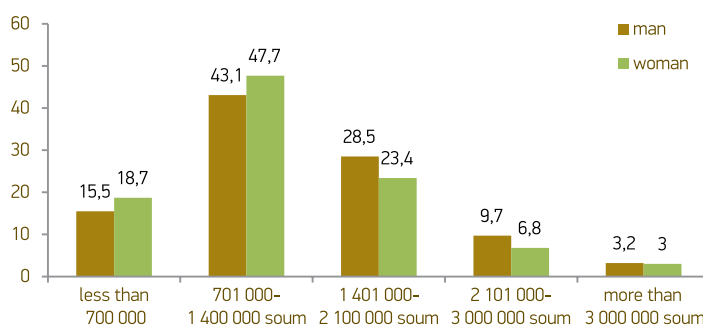
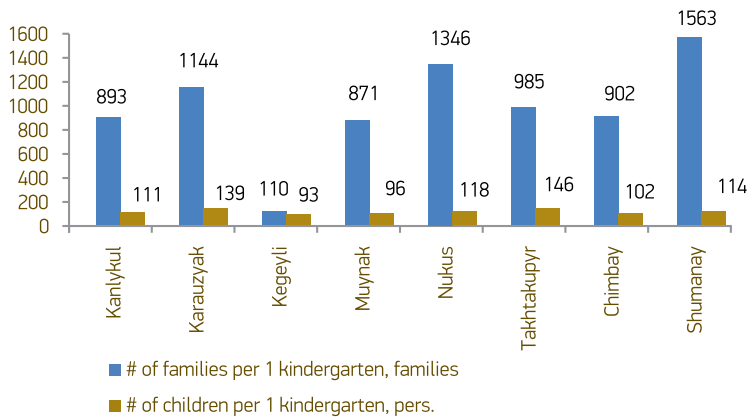


Figure 8.3.
Availability of kindergartens in the districts of the Republic of Karakalpakstan
 (survey results, August 2017, in %)



shows that total incomes do not cover the cost of the consumer basket. This situation requires that more effective measures be developed to create jobs and provide employment for women.

In order to increase women involvement in business, it is also important to create such conditions that would release women from big household chores; in particular, women should be enabled to take care of their children. Statistics show that the problem with the lack of kindergartens is common to all the districts, except Kegeyli where for every 110 families there is on average

The insufficient number of preschools does not allow women's devoting their time to improving their skills and culture, organizing and running their own business. Children's attending preschools depends in part on the family's wellbeing and affordability to pay the PS fees. In particular, the household survey results show that 66.7% of high-income families and only 25% of low-income families send their children to preschools.

one kindergarten that serves 93 children. In other districts, for example, the Nukus district, for an average of 1,346 families there is one kindergarten with 118 children (Figure 8.3).

The insufficient number of preschools does not allow women's devoting their time to improving their skills and culture, organizing and running their own business.

Children's attending preschools depends in part on the family's wellbeing and affordability to pay the PS fees. In particular, the household survey results show that 66.7% of high-income families and only 25% of low-income families send their children to preschools (Figure 8.4).

The lack of jobs in local labor markets remains the main cause of the high unemployment rates among girls who graduate vocational colleges. This was mentioned during focus group discussions in the Takhtakupyr, Kegeyli, Kanlykul and Karauzyak districts. In the Kanlykul district, the respondents said that this problem resulted in greater numbers of young labor migrant girls. Of labor migrants working in Russia and Kazakhstan, women make around 1% (Figure 8.5).

These women are mostly middle-aged – 30-40. Labor migration is not typical for women in the districts surveyed. Those who leave to work abroad include women travelling with their families. Young girls are also migrating for work never to come back to their home districts.

Local authorities and NGOs are helping develop women's entrepreneurship. In some districts, for example, in Kegeyli women's entrepreneurship is relatively developed. There is a comprehensive support provided by the district hokimiyat and the 'Mahalla' Charity Fund to create an enabling environment for running a business. The district branch of the Business Women's Association established a dedicated fund 'Tadbirkorinvest' to help women start and run their businesses. The Women's Committee and other NGOs such as 'Hunarmand' Association, the Karakalpak branch of the Center to Support Civil Initiatives and others work extensively to train women in building their businesses and help them master necessary professional skills.

The respondents believe that the following actions should be taken to boost women's economic activity

1. Attract women to entrepreneurship through:
 - trainings on the basics of building a business and professional skills;
 - solving problems with allocating land, premises, financial resources for organizing businesses (Shumanay, Nukus, and Kanlykul districts);
 - enhanced lending and micro-credits based on revised interest rates or providing concessional loans taking into account the conditions of a particular district (environmental disaster)

and standard of living of the people (the Chimbay and Takhtakupyr districts);

- obtaining loans not by transfers to settlement accounts but to plastic cards (the Karauzyak district);
- improving the numbers of preschools and opening nurseries (the Shumanay, Chimbay, Karauzyak, Takhtakupyr, and Nukus districts);
- improving the local authorities' and NGOs' proactive facilitation of women's entrepreneurs.

2. Strengthen the girls' economic and political activities by increasing their education levels and improving their access to higher education through:

- opening correspondence and evening departments of universities to increase the coverage of young people with higher education (the Tahtakupyr district);
- developing programs to help school and college girls master their professions and expand the network of university branches across Karakalpakstan to improve the choice of professions (the Kegeyli district).

Figure 8.4. **Preschool attendance depending on Household's income levels in the Republic of Karakalpakstan** (survey results, August 2017, in %)

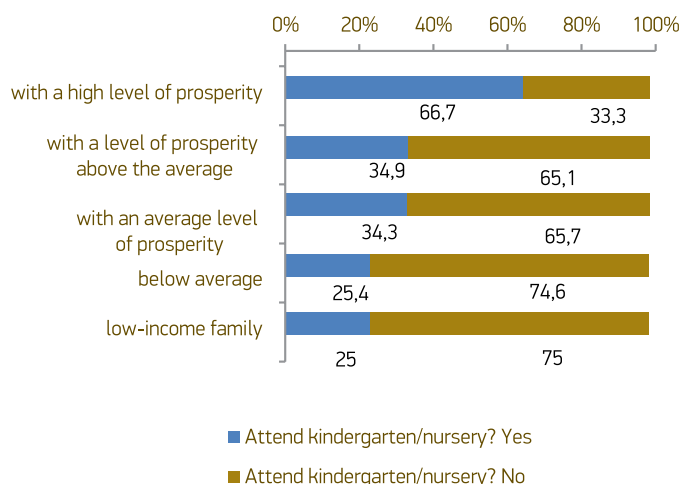
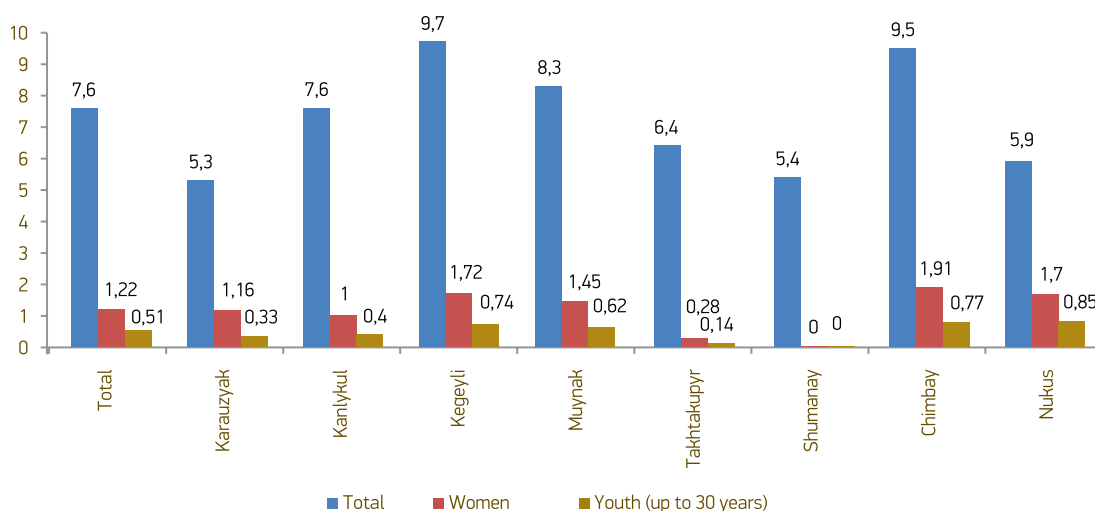


Figure 8.5. **Women working abroad, in % of total labor migrants** (survey results, August 2017, in %)





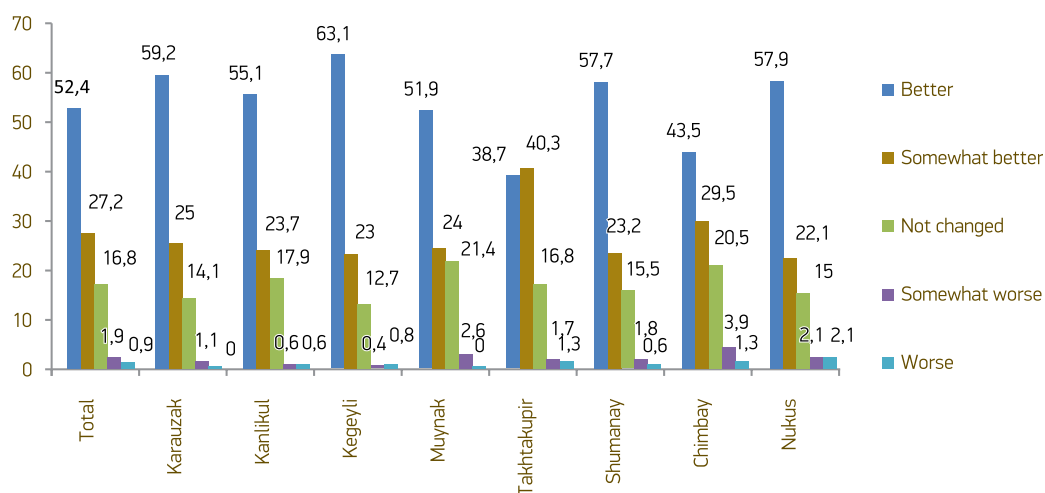
IX. SOCIAL SITUATION

The survey also analyzed the households' self-evaluation of their social wellbeing. First of all, they evaluated the dynamics of changes in their welfares over the past five years (Figure 9.1).

Survey results show that 52.4% of the respondents said the people's living standards had improved in recent years (ISR's survey results for Uzbekistan as a whole indicate more than 60%). More negative evaluations were offered in the

Figure 9.1.

Perceived changes in social welfare over the past 5 years
(survey results, August 2017, in %)



Muynak (24.0%), Chimbay (25.7%), Takhtakupyr (19.8%), and Kanlykul (19.1%) districts which should be taken into account when preparing proposals on socio-economic development of these rural areas.

Based on the respondents' answers regarding their expectations and confidence that the people's lives will improve during the next 5 years, relatively high optimistic results were generated (Figure 9.2).

The majority of the respondents seem to have an optimistic outlook on their future. Answers "it will be better" including "somewhat better" made up 91.0% and the households seem to be confident in their future. Somewhat pessimistic views are typical of the depressive Muynak, Takhtakupyr, Shumanay and Chimbay districts where living conditions are somewhat complicated by environmental conditions.

Given the impact of the Aral crisis, deteriorated climatic conditions and numerous so-

cio-economic factors including the rates of external migration, it was interesting to receive answers regarding where the household planned to live permanently in the coming years (Figure 9.3).

The overwhelming majority of the population is not going to change their places of permanent residence (92.4%). One should also take into account a relatively small number of households wishing to move to another region of Uzbekistan (3.9%) and go abroad (1.8%). Here, too, the depressive districts such as the Muynak (7.7%), Shumanay (7.2%), Karauzyak (8.7%) and Takhtakupyr (5.5%) are among the leading ones.

The people's social perceptions in the districts surveyed are quite optimistic. This positive confidence of the people should be maintained and supported with real actions to ensure sustainable development of the rural areas creating more favorable conditions for and ensuring the people's livelihood security.

Figure 9.2.

Expectations and confidence in life improvements during the next 5 years

(survey results, August 2017, in %)

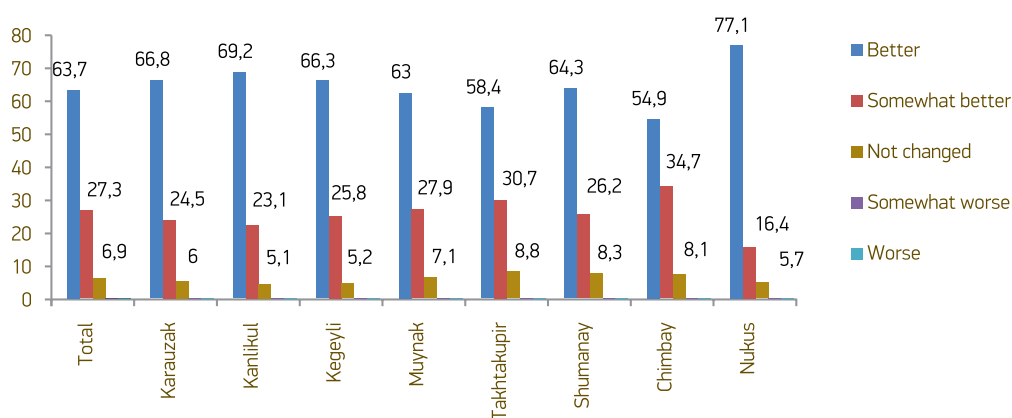
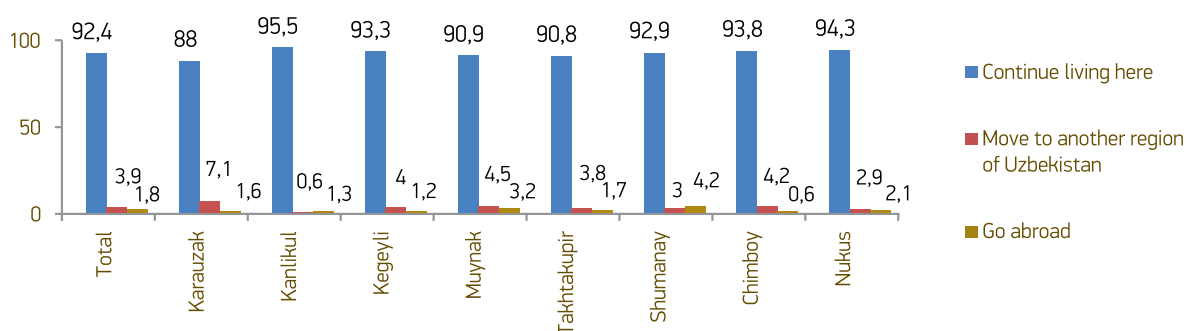


Figure 9.3.

Households' plans regarding permanent residence for the next 5 years

(survey results, August 2017)



X. POTENTIAL SOCIAL RISKS AND SECURITY



The rating and the level of potential social risks are determined on the basis of a differentiated assessment of the households' satisfaction with the access and quality of social services by key components. The ranking of weight indicators made it possible to identify the social problems and risks at the level of individual components of the welfare of the RK population as a whole and district-wise.

The collected data on public satisfaction are summarized in three groups: Group I – from 90% or more; Group II – 80-90%; and Group III – 70-80% of the total number of the respondents. Satisfaction levels below 70%, as testified by world practices, indicate potential risks and threats contained in a specific component of the people's wellbeing (group IV).

Table 10.1

Rating of the people's social wellbeing by its key components in the Republic of Karakalpakstan
(survey results, August 2017, in %)

#	Components	% of the respondents		
		Satisfied	Partially satisfied	Not satisfied
I	Education services			
	Preschool	40.1	19.6	40.3
	General basic education	64.5	22.4	13.1
	Secondary special/professional/vocational	61.8	25.5	12.7
	Higher education	59.2	27.1	13.7
II	Health services			
	Medical services	53.0	29.2	17.8
	Provision with medicines	32.8	25.9	41.3
III	Quality of the utilities			
	Drinking water	33.8	32.3	33.9
	Electricity	73.2	22.3	4.5
	Natural (liquefied) gas	48.6	30.3	21.1
	Fuel	34.5	39.9	25.6
IV	Quality of household services	31.1	38.0	30.9
V	Trade services	51.2	32.5	16.3
VI	Housing conditions	65.2	25.8	9.0
VII	Transport infrastructure	32.0	24.8	43.2
VIII	Quality of banking and financial services	54.5	30.7	14.8
IX	Pensions and social benefits	79.9	18.3	1.8
X	People's employment	30.9	19.3	49.8
XI	Social stability	65.8	33.5	0.7
XII	Environmental situation	16.4	36.7	46.9

According to the survey results, the highest satisfaction (including "partial satisfaction") was given to the indicator "social stability" - 99.3%; "pension and social benefits" - 98.2%; "electricity supply" - 95.5%; and "provision with land and housing" - 91.0%, i.e. these constitute **Group I** (Table 10.1).

Group II includes the appropriate level of satisfaction assessment: general secondary education, secondary specialized vocational education, higher education, trade, medical, financial, and banking institutions.

Group III: gas and fuel supply/availability.

Group IV: preschool services, medication supply, drinking water supply, household services, transport infrastructure, employment and environmental situation.

Based on the identified social welfare component groups as well as the public dissatisfaction levels, potential social risks were rated (Table 10.2).

According to the results of the survey, employment occupies **the first place** in the rating of the social risks of high tension (49.8% dissatis-

Table 10.2

Rating of potential social risks in the Republic of Karakalpakstan (based on public dissatisfaction level)
(survey results, August 2017)

Social infrastructure and services	Rating
People's employment	1
Environmental situation	2
Transport infrastructure	3
Provision with medicines	4
Preschools	5
Drinking water	6
Houshold services	7
Fuel supply	8
Provision with natural (liquefied) gas	9
Health services	10
Trade services	11
Banking and financial services	12
Higher education	13
General education	14
Secondary vocational education	15
Housing	16
Electricity	17
Pensions and social benefits	18
Social stability	19

Table 10.3

Rating of potential risks by districts
(survey results, August 2017)

Districts	Consolidated index (scores)	Rating
Takhtakupyr	10.80	1
Kanlykul	12.05	2
Chimbay	12.61	3
Kegeyli	13.45	4
Shumanay	13.87	5
Muynak	14.10	6
Nukus	14.18	7
Karauzyak	14.27	8

faction). The main reasons for this risk are the lack of permanent jobs (76.2%) and low pay (21.6%).

The second position in the rating of risks is taken by the ecological situation (46.9%). The main reasons for this situation are soil salinity (70.6%), air pollution (12.7%), water pollution (9.5%), and drought (6.7%).

Number three in the rating is dissatisfaction with the state of the transport infrastructure (43.2%). The main reason for this risk is the need for major overhaul of the local mahalla roads (79.4%).

The fourth place among the potential risks of high tension is the population dissatisfaction with the provision of medications (41.3%). The situation worsens due to the remoteness of pharmacies (57.5%) and the high cost of medicines (37.6%).

The fifth place in the rating is occupied by preschool education services (40.3%). The main reasons for dissatisfaction are the lack of institutions for children's preschool education (53.3%), their remoteness from the settlements (16.5%), high fees (6.7%), and the lack of appropriate conditions (material and technical base, etc.) (7.1%).

The sixth position is dissatisfaction with the provision of drinking water (33.9%). The main causes of this risk are poor (salty) water (42.6%), irregular water supply (30.4%), and large distance to water sources (21.4%).

The seventh place in the rating is occupied by consumer services (30.9%). The main reason for dissatisfaction is the large distance to the facilities (96.0%).

In the context of the districts, the first three places are occupied by the Takhtakupyr (10.80 points), Kanlykul (12.05) and Chimbay (12.61) districts.

The first three places are occupied by the Takhtakupyr (10.80 points), Kanlykul (12.05), and Chimbay (12.61) districts.

The potential risks of high tension are formed as follows:

Takhtakupyr district

transport infrastructure (dissatisfaction level is 64.7% of the respondents); environmental situation (64.3%); employment of HH members (58.5%); availability of medicines (54.2%); household/consumer services (45.7%); drinking water (43.7%); fuel (37.7%); preschool education (34.4%); natural (liquefied) gas (32.8%); trade services (31.5%).

Kanlykul district

higher education (66.7%); employment of HH members (54.2%); environmental situation (48.1%); transport infrastructure (42.9%); preschool education (40.6%).

Chimbay district

employment of HH members (54.6%); environmental situation (46.4%); transport infrastructure (44.5%); availability of medicines (41.9%); household/consumer services (30.0%).

Kegeyli district

preschool education (55.7%); employment of HH members (50.6%); transport infrastructure (42.5%); environmental situation (35.7%); household/consumer services (31.6%).

Shumanay district

preschool education (61.6%); availability of medicines (45.2%); employment of HH members (44.7%); environmental situation (43.5%); household/consumer services (33.8%); drinking water (31.0%).

Muynak district

environmental situation (53.2%); availability of medicines (50.0%); employment of HH members

The existing rather high level of potential social risks in the districts requires a differentiated approach based on the people's basic social service needs focusing on the priority task to ensure the people's livelihood security.

(48.3%); drinking water (42.9%); transport infrastructure (42.2%); preschool education (30.4%).

Nukus district

environmental situation (48.6%); availability of medicines (46.4%); employment of HH members (42.4%); transport infrastructure (36.4%); preschool education (34.0%); fuel (31.9%).

Karauzyak district

preschool education (51.2%); drinking water (41.8%); transport infrastructure (41.3%); employment of HH members (37.6%); availability of medicines (37.0%); environmental situation (36.4%).

The existing rather high level of potential social risks in the districts requires a differentiated approach based on the people's basic social service needs focusing on the priority task to ensure the people's livelihood security.



XI. SUMMARY

The results of the household surveys and focus group discussions with the representatives of government and non-government institutions testify to the presence of particular potential social risks and threats to the livelihoods of the people in the Aral Sea region. These risks belong to the following areas:

- Economic security, which is affected by such risks as low socio-economic potential of the agriculture-oriented region, insufficient income level of the population and the resulting imbalance in the food consumption structure,

high unemployment rate and weak business activity, as well as dissatisfaction of the population with the condition of industrial infrastructure and, above all, with the condition of the local automobile roads;

- Food security arising from the de-grouped structure of the crop areas, deteriorating state of the irrigated lands and water resources, insufficient adaptation of the agricultural production to the consequences of the ecological crisis, and high level of food imports;

- Demographic security, which is affected by poor quality of life, increasing mortality and declining birth rate, low level of urbanization, large outflow of the population to other regions and foreign countries, and high levels of external migration;
- Social security, which is associated with insufficient targeted support to the poor, high level of dissatisfaction with the quality and access to education, healthcare, housing and communal services. The main social risks here are the provision of quality drinking water and the need to strengthen targeted social protection for low-income layers of the population;
- Environmental security associated with the consequences of the Aral Sea crisis, the deterioration of the condition and the quality of land and water resources, air basin, water supply. These factors have a direct impact on the health and welfare of the population;
- Financial security arising from insufficient revenues of the local budgets that do not ensure integrated and balanced development of Karakalpakstan and its regions, high level of centralization of allocated financial resources for the needs of the population, low level of

business climate and investment attractiveness due to transport and geographic location and environmental factors.

In general, according to the assessment of potential social risks, the RK ranks second among the regions of the country. According to the results of the survey in 8 surveyed areas, the potential social risks of high tension (where dissatisfaction level is over 30%) are arrayed in the following order: #1) employment, #2) ecology,

At the level of each district, the social risks are lined up in a slightly different order, but the prevailing risks for most of them are tension in the labor market and unemployment.

#3) transport infrastructure, #4) medicines, #5) preschool education, and #6) drinking water. At the level of each district, the social risks are lined up in a slightly different order, but the prevailing risks for most of them are tension in the labor market and unemployment.



XII. RECOMMENDATIONS

Based on the identified needs and necessities of the people and the factors that affect the safety and security of their livelihoods, we propose a system of measures, which is largely built up on the local initiatives.

In the field of economic security:

- consistent improvement of the districts' economy structure owing to the advanced development of small industrial enterprises and service sector;
- implementation of district factors applicable to the budget employees' wages in the depressed rural areas;
- expansion of benefits and preferences for the Aral Sea region in order to create favorable conditions for attracting domestic and foreign investors;
- along with traditional employment forms, expansion of non-standard forms of employment (such as home-based business, branches and workshops of large enterprises, family businesses, liberalization of informal employment);
- promotion of entrepreneurship through the system of continuous training, mobilization of the rural areas' capacity by development of rural cooperatives, collection and primary processing of agricultural raw materials, medicinal plants, development of innovative livestock complexes, etc.;
- strengthening the material and technical base of the local authorities to enable them to quickly address the issues of repairs and maintenance of the local roads;
- increasing the revenue base and reducing subventions through empowering the local authorities and decentralizing the local budgets.

In the field of food security:

- ensuring sustainable development of agri-

culture with a focus on expanding the production of food crops adapted to the environmental conditions and land and water resources (with simultaneous reduction of cotton production);

- establishing a well-developed scientific and experimental regional base in the areas of specialization;
- wide introduction of new innovative technologies and achievements in water use and land quality improvement.

In the field of demographic security:

- development of a long-term population settlement pattern that takes into account the trends in desertification processes, the adverse impacts of climate and ecology change, and the region's socio-economic development strategy;
- development of urbanization processes and foundation of new townships and urban settlements as examples of sustainable development of rural areas;
- targeted regulation of migration flows and expansion of official export of labor;
- improving the quality of the population through a system of continuous education and quality medical services.

In the field of social security:

- development of kindergarten dislocation schemes in the context of each district, taking into account the geographical location and the population settlement pattern; designing typical kindergarten projects that meet modern architectural standards, local conditions and demand; development of family kindergartens in the rural areas;
- organization of transportation of pupils by school shuttle buses, improvement of the

material and technical base of the educational institutions, significant improvement in the level of qualifications and raising the prestige of the teaching staff;

- development of an optimal scheme to cover the population with the medical institutions and pharmacy network, which takes into account the population settlement pattern; establishment of the system of continuous training and retraining for nurses and doctors, foundation of branches of Russian medical centers reputable in key areas of morbidity, equipping the healthcare facilities with advanced medical equipment; and development of private healthcare sector;
- expansion of rural and urban housing construction based on modern typical projects that take into account the climatic and environmental conditions of the region and meet the needs and demands of the population;
- cardinal improvement of supply of quality drinking water through mobilization of all available water sources and implementation of the most advanced water desalination and purification technologies; setting up an efficient management system based on the best world practices;
- establishment of a new targeted social protection system for low-income segments of the population with the participation of government bodies and civil society organizations, development of minimum state-guaranteed social standards.

In the field of environmental security:

- regular monitoring and updating the population on the quality of drinking water, the state of soil and air basin;
- construction of small solid and liquid household waste processing plants, desalination stations and pasture wells;
- development of proactive measures to reduce the negative impact of climate change, drought periods and frequent dust storms;
- expansion of the scope of works on innovative reconstruction of the collector-and-drainage system.

The above priority areas for meeting the

needs and necessities of the people stem from specific local initiatives that are systematized in the database of recommendations and proposals in the context of each district. The data bank will be attached to the report in electronic form.

The principles and mechanisms of actions. The implementation of specific recommendations and management decisions should be based on the following general principles:

- the decisions shall be made based on the long-term consequences of the emerging potential social risks and threats to the population safety and security;
- when addressing the needs of the population, a differentiated approach shall be applied to each aul, kishlak, mahalla, and rural areas. Such approach shall be based on natural and ecological factors, and take into account the population distribution pattern and transport accessibility;
- development of a regional regulatory framework that takes into account the specifics (construction standards and rules, zonal infrastructure design, research base for sustainable development of rural areas) and minimum social standards;
- the region can become a testing ground for the implementation of innovative local initiatives and projects to address the most complex social and economic problems (integrated drinking water supply management system, the latest resource-saving technologies, development of water infrastructure and alternative energy sources, advanced information technologies in education, healthcare, agriculture, ecology, etc.);
- establishment of the most favorable treatment regime for the people's lives and welfare, as well as for attracting domestic and foreign investments (special funds, benefits and preferences);
- testing at the regional level of the development of an adapted indicator system and a set of measures to implement the goals set in the UN's Sustainable Development Agenda 2030, which coincide with the strategic goals and objectives of the Government of Uzbekistan.



CONCLUSION

Addressing the problems related to the livelihoods of the people living in the areas affected by the international-scale environmental disaster of the Aral Sea remains quite pressing. In this regard, conducting a survey through the prism of identifying the people's needs and necessities by building a dialogue with the local population is of practical interest in terms of developing additional measures to ensure their life security in the Aral Sea region.

The survey results and focus group discussions revealed the needs and requirements of the population that should be addressed in the following areas:

- ensure economic security through outstripping socio-economic development of Karakalpakstan, ensuring consistent increase in the incomes and employment of the population, mainly through the industrialization and development of the service sector, boosting entrepreneurial activities, developing industrial, engineering and transport infrastructures including inland roads;

- ensure food security based on the main factor – sustainable agricultural development adapted to the natural and climatic conditions and available land and water resources. Here, the priorities include bringing radical changes into the crop patterns in favor of food crops and using the live-

- stock development potential more efficiently;

- social stability and security in the region are largely related to the outstripping development of social infrastructure to stimulate the living and attracting of specialists from other regions of the country. Special attention should be given to the measures aimed at enhancing public access to preschool education, upgrading general education schools, professional colleges, and the enhancing the teachers' skills and prestige. The quality of the population, along with education, is largely determined by its health. Here, too, there are systemic problems in meeting the needs of the population in terms of improving the quality of medical services, training and retraining of skilled health workers, and optimal placement of medical institutions;

- the most priority task is to solve the most socially significant need of the people in sustainable provision of high-quality drinking water using the most advanced technologies of desalination and water purification, and building an effective system to regulate water supply, especially in rural areas;

- to ensure environmental security additional measures have to be taken to mitigate the negative impacts of the crisis focusing on the improvement of the quality of land and water resources, reducing air pollution, and recycling solid



and liquid wastes.

To implement the measures on meeting the priority needs and necessities in the districts, the role and importance of the local budgets should be strengthened significantly, i.e. financial security should be ensured.

In this regard, it is recommended to strengthen the budget revenues and decentralize inter-budget and fiscal relations.

As the basic principles and mechanisms for meeting the needs and necessities of the population and ensuring livelihood security, it is recommended to take the following actions: make managerial decisions bearing in mind the long-term economic, social and environmental implications; use a differentiated approach in prepar-

ing additional measures to ensure the welfare of the citizens based on natural and economic factors and the existing system of population settlements; develop regional construction and designing norms and rules for social facilities based on local natural and climatic conditions; implement, as a matter of priority, new innovative ICTs in all sectors of the region's economy; create a favorable investment and business climates to attract investors.

In general, the findings and recommendations of the survey aim to ensure the people's livelihood security in the region, and a well-targeted implementation of investment projects based on the real needs and necessities of the citizens living under environmental pressures.

Potential projects based on the results of the people's needs assessment focus groups and household surveys in the Aral Sea region

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
Business and entrepreneurship			
1	Development of leasing centers working as per orders of entrepreneurs (Kanlykul, Kegeyli, Karauzyak, and Shumanay districts)	Regional office in the RK JSC 'Uzbekleasing'	100.0
2	Using the potential of the mahallas to develop services, family business and home-based jobs by providing microcredits (Kanlykul, Kegeyli, Karauzyak, Shumanay, Takhtakupyr, Nukus, Chimbay and Muynak districts)	Chamber of Commerce and Industry of RK	70.0
3	Creation of logistics centers in the districts to sell domestic products in foreign markets	Chamber of Commerce and Industry of RK	0.5
4	Supplying electricity for entrepreneurs using alternative energy sources (solar batteries, wind generators, etc.) (Kanlykul, Shumanay, Karauzyak, and Nukus districts)	Ministry of Economy of RK	50.0
5	Conducting trainings on the basics of building a business and professional skills based on the characteristics of the districts and the existing potential (Kanlykul, Kegeyli, Karauzyak, Shumanay, Takhtakupyr, Nukus, Chimbay and Muynak districts)	Chamber of Commerce and Industry of RK	-
6	Acquisition of mini-equipment for home-based production of sunflower oil (Kegeyli, Nukus, Karauzyak, and Chimbay districts)	Chamber of Commerce and Industry of RK	0.5
7	Acquisition of mini-equipment for and setting up the production of confectioneries (Kanylykul, Muynak, Shumanay, and Chimbay districts,)	Chamber of Commerce and Industry of RK	0.2

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
8	Acquisition of mini-equipment for and setting up the processing of fish products (Muynak and Kegeyli districts)	Chamber of Commerce and Industry of RK	0.5
9	Acquisition of mini-equipment for and setting up the production of chipboards from reeds (cane) (Kanlykul, Muynak, Kegeyli, and Chimbay districts)	Chamber of Commerce and Industry of RK	1.5
10	Acquisition of equipment for drying fruits and gourds and seeds (Nukus, Karauzyak, and Chimbay districts)	Chamber of Commerce and Industry of RK	0.25
11	Acquisition of a mini-furnace for and setting up the production of bricks (Kanylykul, Muynak, Kegeyli, and Chimbay districts)	Chamber of Commerce and Industry of RK	0.15
12	Acquisition of mini-equipment for and setting up the production of window glasses (Muynak and Chimbay districts)	Chamber of Commerce and Industry of RK	0.5
13	Creation of a mini workshop for the production and sewing of packaging bags (Shumanay and Chimbay districts)	Chamber of Commerce and Industry of RK	0.5
14	Acquisition of sewing machines to produce mattresses (Kanlykul district)	Chamber of Commerce and Industry of RK	0.2
15	Licorice processing plant (Chimbay district).	Chamber of Commerce and Industry of RK	2.0
16	Development of dedicated (annual) brochures and booklets on the natural and economic potentials of the districts and their competitive advantages to inform domestic and foreign entrepreneurs, in particular, on their demographic potential and local raw materials.	Kanlykul, Kegeyli, Karauzyak, Shumanay, Takhtakupyr, Nukus, Chimbay, Muynak districts	0.05
17	Substantial expansion of tourism potential and related industries and services.	Muynak district	0.15
18	Create an enterprise specializing on the production of vermiculite used by construction organizations, glass, porcelain, and cement producers, agriculture and paint and varnish industries.	Karauzyak district	0.5

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
Education			
19	Construction of new and expansion of existing PSs based on the features of population resettlements in rural areas (experimental model).	Council of Ministers, local hokimiyats and preschool departments	2.0
20	Equipping the PSs with hard and soft furniture, kitchen accessories, educational materials and other necessary equipment.	Council of Ministers, local hokimiyats and preschool departments	2.0
21	Training and retraining of PS teachers with higher pedagogical education degree to replace similar specialists with secondary specialized vocational education degree.	Council of Ministers, local hokimiyats and preschool departments	2.0
22	Revision of the existing standard PS staffing tables to improve their diversity and adaptation to various local peculiarities of the regions. especially the RK districts.	Council of Ministers, local hokimiyats and preschool departments	0.2
23	Creating a full-time position of pediatrician in pre-schools and taking additional measures to develop sports in PSs	Council of Ministers, local hokimiyats and preschool departments	0.2
24	Construction, rehabilitation and expansion of existing schools to increase their enrollment capacities and improve their equipment with modern laboratory and educational facilities, multimedia and ICTs based on the districts' demographic development indicators.	Council of Ministers, local hokimiyats and public education departments	3.0
25	Using alternative ways to improve energy supply and heating in schools.	Council of Ministers, local hokimiyats, education departments	2.0
26	Development of regulatory and legal tools to establish new norms of working hours for the employees of the education system excluding their involvement in works not related to the performance of their official duties.	Council of Ministers, local hokimiyats and education departments	0.3
27	Creation of a centralized school food system for schoolchildren.	Council of Ministers, local hokimiyats and education departments	1.5

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
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Employment

28	Organization of permanent work to improve the identification of problems of supply and demand imbalances in local labor markets and taking measures to improve the mobility of local specialists to fill the relevant vacancies in other regions.	Council of Ministers, Ministry of Employment and Labor Relations, local hokimiyats and public education agencies and departments	2.0
29	Create an open online information system for tracking the employment of college graduates which would will allow to constantly monitor and regulate local youth labor markets; development of interactive communication between employers and work force suppliers (educational institutions).	Ministry of Employment and Labor Relations, local hokimiyats and education departments	1.5
30	Development of measures to legalize informal employment in the form of a separate program or sub-program in addition to the regional jobs and employment program.	Council of Ministers, Ministry of Employment and Labor Relations, local hokimiyats and education departments	0.5
31	Development and implementation of a special government program to monitor the health and socio-psychological state of labor migrants.	Council of Ministers, Ministry of Employment and Labor Relations, local hokimiyats	0.5
32	Develop measures to monitor, determine the scale of and create decent working conditions in local labor markets for potential labor migrants (to prevent excessive labor migration to other regions).	Council of Ministers, Ministry of Employment and Labor Relations, local hokimiyats	0.5

Agriculture and water management

33	Implementation of remote sensing technologies and GIS.	RK Department for Land and Cadastre, RK Ministry of Agriculture and Water Resources	2.5
34	Enhancing the equipment stocks of the Water User Associations (WUA) for irrigation system maintenance and repair.	Ministry of Agriculture and Water Resources of RK	0.8
35	Introduction of ICTs to improve the efficiency and transparency of WUA's water management.	Ministry of Agriculture and Water Resources of RK	0.1

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
36	Introduction of water-saving technologies (drip irrigation, film coating, straw mulching, black polyethylene film mulching, etc.)	Ministry of Agriculture and Water Resources of RK	3.0
37	Organization of short crop rotation and repeated cropping systems on irrigated lands	Ministry of Agriculture and Water Resources of RK	0.5
38	Applying solar panels for irrigation using well or canal waters and pumps	Ministry of Economy, Ministry of Agriculture and Water Resources of RK	1.0
39	Improvement of veterinary services to prevent the environmental impacts on livestock development.	Veterinary Committee of RK	0.5
40	Enhance the efficiencies of biological laboratories to protect plants and prevent environmentally caused diseases by providing them with modern equipment.	JSC 'AgRKimyohimoya'	0.3
41	Development of a strategy for adapting the structure of arable lands to natural and environmental conditions and effective year-round use of irrigated land (based on soil and climatic conditions of the districts).	Ministry of Economy, Ministry of Agriculture and Water Resources of RK	0.3
42	Construction of mini-plants for processing licorice and other medicinal plants adapted to saline lands.	Ministry of Economy, Ministry of Agriculture and Water Resources of RK	3.0
43	Enhancing the work of research institutions involved in breeding, seed farming and agro-technologies.	Ministry of Agriculture and Water Resources of RK	1.0
44	Expand research and development on crop production (rice, vegetables, etc.) and livestock (including poultry) based on environmental and climatic conditions.	Ministry of Agriculture and Water Resources of RK	0.5
Health			
45	Equip family polyclinics "Khalkabad" and "Kazanketken" with modern ECG, ultrasound and digital X-ray machines.	Kegeyli GPs	0.5
46	Introduce distance learning for doctors; revise their wage bonuses for qualification categories 2 and 3.	Kanlikul, Muynak, and Chimbay GPs RHC and SSP	0.3

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
47	Establish branches of family polyclinics and RHCs within secondary schools or other social facilities to provide primary health services for remote and sparsely populated localities (similar to former FAPs).	Nukus district RHCs	0.1
48	Establish neurological and cardiological departments within district hospitals.	Nukus district, GPs	0.5
49	Equip district hospitals, multidisciplinary polyclinics, family polyclinics and RHCs with modern medical diagnostic equipment and facilities.	Nukus district, GPs	1.5
50	Organize mobile outpatient clinics equipped with modern facilities and tools (digital fluorography, ECG, ultrasound, hematological and biochemical analyzers) to provide health services to residents of remote localities.	Nukus district, GPs, District Polyclinics	0.4
51	Organize specialized beds (neurology and cardiology) within therapeutic departments.	Nukus district, GPs, District Polyclinics	0.2
52	Organize annual targeted preventive examinations involving specialists from the center for early diagnostics of oncological diseases, TB and other diseases.	Nukus district, GPs, District Polyclinics	0.2
53	Develop a comprehensive program to improve the health literacy of the population and train the general public in healthy lifestyles based on their knowledge levels.	Nukus, Karauzyak, Shumanay, Takhtakupyr, Kanlykul, Muynak, Chimbay GPs, District Multiprofile Polyclinics	0.4
54	Examine old sources of anthrax; take comprehensive measures for the prevention of zoonotic infectious diseases; ensure full coverage of domestic animals with preventive vaccinations. Control vectors and natural reservoirs of focal infections.	Shumanay, Takhtakupyr GPs	0.2
55	Equip family polyclinics "Nurmuhammedov" and "Sary Altin" with modern ultrasound and X-ray machines, reagents and other expendable laboratory materials, disposable medical products and certain medicines for emergency care.	Kanlykul GPs	2.0
56	Optimize the scope of medical documentation and reporting forms filled by general practitioners and home nurses.	Kanlikul GPs	

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
57	Carry out repair and maintenance of the alternative electricity systems delivered under the UN project in 2006-2008.	Muynak GPs	0.5
Environment			
58	Provide quality drinking water to rural people who use water from artesian wells.	Nukus, Kegeyli districts Center for State Sanitary and Epidemiological Surveillance and district hospitals	3.0
59	Install containers at garbage collection points; purchase additional garbage collection vehicles.	Kegeyli, Karauzyak, Shumanay, Takhtakupyr, Muynak districts	0.4
60	Create a system for liquid domestic waste collection and recycling; create sewerage system in the district center with apartment buildings and a hospital.	Nukus, Kegeyli districts Center for State Sanitary and Epidemiological Surveillance and district hospitals	0.4
61	Construct mini-plants to process domestic waste.	Karauzyak, Kanlykul, Kegeyli, Muynak, Takhtakupyr, Shumanay, Chimbay, Nukus districts	4.0
62	Rehabilitate the existing water supply network and increase its capacity to ensure uninterrupted water supply and new construction to improve the people's access to tap water.	Kegeyli, Karauzyak, Shumanay, Takhtakupyr, Muynak districts	2.5
63	Revise the sanitary norms and rules for the designing residential buildings and social facilities based on climatic and geographical conditions of the region.	Karauzyak, Kanlykul, Kegeyli, Muynak, Takhtakupyr, Shumanay, Chimbay, Nukus districts	1.0
64	Rehabilitate the irrigation networks in the district centers and urban-type settlements.	Kegeyli, Karauzyak, Shumanay, Takhtakupyr, Muynak districts	2.5
65	Allocate land for the construction of industrial facilities outside populated areas taking into account the wind patterns in the district.	Karauzyak Center for State Sanitary and Epidemiological Surveillance	0.1

#	Proposals (project titles)	Responsible government agencies	Estimated amount of investments (\$ million)
66	Construct a central sewage system in the central district hospital.	Shumanay Center for State Sanitary and Epidemiological Surveillance	
67	Construct incinerators to burn medical and veterinary wastes.	Takhtakupyr Center for State Sanitary and Epidemiological Surveillance	1.0
68	Increase the height of the dam in the interfluvial lake system providing spill nodes based on water flows in high water years.	Muynak Center for State Sanitary and Epidemiological Surveillance	5.0
69	Connect the rural settlements to the Kunduz-Muynak water pipeline; increase the capacity of the reservoir to ensure uninterrupted water supply and improve the people's access to potable tap water.	Muynak Center for State Sanitary and Epidemiological Surveillance	1.0
70	Continue plantations on the dry bottom of the Aral Sea to reduce dust storms.	Muynak Center for State Sanitary and Epidemiological Surveillance	1.0

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