Отчет
О результатах единовременного выборочного обследования
"О состоянии энергетического хозяйства и эффективности его использования в 2016 году"

REPORT
ON THE RESULTS OF ONE-OFF SAMPLE SURVEY ON" THE STATE OF THE ENERGY FACILITIES AND EFFICIENCY OF USE IN 2016 »
Редакционная коллегия:

Hasanzoda G.K. - Chairman of Editorial Board,
Shokirzoda SH.SH. - Deputy Chairman of the Editorial Board
Members of the editorial board:
Davlatzoda K., Odizoda U., Kasimov Kh., Gafurov Sh., Kulov A., Asmatbekov .F, Khodjaev Z, Minakova S.V, Nadjibullaev A.,
REPORT
ON THE RESULTS OF ONE-OFF SAMPLE SURVEY ON “THE STATE OF THE ENERGY FACILITIES AND EFFICIENCY OF USE IN 2016”
The Agency on Statistics under President of the Republic of Tajikistan in frames of Multi-Donor Programmatic Trust Fund to Support Statistical Capacity Building in Eastern Europe and CIS countries (ECASTAT) conducted the first large-scale one-off sample survey on “The state of the energy facilities and efficiency of use in 2016”. This analytical report is the result of this survey.

The development of energy consumption and enhancement of energy efficiency is of utmost importance for the Republic of Tajikistan from the point of view of its social and economic development and ensuring energy security. The verified and properly selected data on energy sector as well as statistical forms form the basis for developing the quality energy strategy and the energy efficiency improvement strategy.

Information on energy sector is summarized and presented in Fuel-and-Energy Balances, which are used in many countries. In the Republic of Tajikistan, during Soviet Union period, Fuel-and-Energy Balance (hereafter FEB) had been made up every five years. The last FEB had been formed in 1990.

Today there is a need for a comprehensive national integrated methodology of preparation of FEB that meets requirements of economic development of the Republic of Tajikistan and globalization of economies.

In order to fulfil modern requirements to quality statistical data, the survey methodology on preparation of FEB includes an integrated approach to data acquisition. This survey consisted of two random sampling surveys and a comprehensive coverage of legal entities:

1. Households Survey “On use of energy resources by households in 2016”;
2. Individual Entrepreneurs Survey “The state of the energy facilities and efficiency of use in 2016”;
3. Comprehensive (blanket) coverage of legal entities “On manufacture, use and energy resources stocks in 2016”

Agency on Statistics expresses special thanks and appreciation to the Government of the Republic of Tajikistan and the heads of the local executive authority for timely support in conduction of this survey.

We also express our gratitude to the International Experts, Mr. Mantsurov Igor Germanovich for his recommendations during elaboration of a survey methodology for preparation of FEB and to Ms. Svetlana Burgak for her advisory contribution on dissemination of random survey data, technical support in analysis of output tables, as well as in development of recommendations for preparation of FEB.

The survey results will allow to obtain information on the level of energy efficiency improvement of the country's economy, which predetermine the areas for the energy development in long-term perspective, energy-consuming growth may entail advance growth of domestic demand for energy resources.

As a result, even, if maximum potential growth of production of energy resources is achieved, the demand can be met by expansion of imports or limiting of exports.

The Agency on Statistics expresses its gratitude to the Project Implementation Group of the “National Strategy for Development of Statistics” Project, ECASTAT for the assistance and support provided during implementation of the survey.

We also express our acknowledgement to the ministries and departments and to all staff of statistical system of the Republic of Tajikistan as well as to the staff of the Agency on Statistics under the President of the Republic of Tajikistan, the SE Main Computing Centre, main regional offices of statistics as well as departments and units of the district statistical offices. In total, 175 specialists were involved for the survey.
Special thanks are conveyed to the citizens of the Republic of Tajikistan and individual entrepreneurs who understood the importance of this survey, took part and provided the necessary information.

The report has been prepared by Mr. F.Ya. Asmatbekov – the Head of the Trade and Services Statistics Department, Mr. F. Mirpochoev – the Programming Specialist of this Survey, under the leadership of Mr. Sh. Sh. Shokirzoda – First Deputy Director of the Agency on Statistics, as well as under general supervision of Ms. G.K. Hasanzoda - the Project Director and Director of the Agency on Statistics under the President of the Republic of Tajikistan.

Tel: (+992372) 227-82-66

Fax: (+374 10) 221-43-75

E-mail: stat@tojikiston.com; asmatbekov@stat.tj

Web site: www.stat@tj
INTRODUCTION ........................................................................................................................................ 195

I. METHODOLOGY OF SAMPLING AND SURVEY ........................................................................ 197
   1.1 SAMPLING OF HOUSEHOLDS .............................................................................................. 197
   1.2 SAMPLING OF INDIVIDUAL ENTREPRENEURS .............................................................. 198
   1.3 FULL COVERAGE OF LEGAL ENTITIES ............................................................................ 198
   1.4 DESIGN OF QUESTIONNAIRES .......................................................................................... 198
   1.5 LISTING OF HOUSEHOLDS AND INDIVIDUAL ENTREPRENEURS .................................. 200
   1.6 DATA PROCESSING ............................................................................................................ 200

II. HOUSEHOLDS’ SURVEY RESULTS ANALYSIS ................................................................. 201
   2.1 SURVEY FINDINGS ............................................................................................................. 201
   2.2 TABLES “DESCRIPTION OF HOUSING” ............................................................................ 210

III. INDIVIDUAL ENTREPRENEURS SURVEY FINDINGS ANALYSIS ...................................... 218
   3.1 SURVEY RESULTS ............................................................................................................... 218
   3.2 TABLES “MAIN DESCRIPTIONS OF INDIVIDUAL ENTREPRENEURS” .................................. 227
   3.3 TABLES “ENERGY RESOURCES CONSUMPTION BY INDIVIDUAL ENTREPRENEURS” .... 234

IV. ANALYSIS OF FULL COVERAGE RESULTS OF THE LEGAL ENTITIES ............................ 238
   4.1 SURVEY RESULTS ............................................................................................................... 238
   4.2 TABLES “CONSUMPTION OF ENERGY RESOURCES BY LEGAL ENTITIES” ............... 244

VI. SURVEY DESIGN IN LINE WITH THE GSBPM MODEL ...................................................... 256

VII. ANNEXES ............................................................................................................................. 258
LIST OF ABBREVIATIONS

RT – Republic of Tajikistan
AS – Agency on Statistics under the President of the Republic of Tajikistan
IEA – International Energy Agency
FER – Fuel & Energy Resources
FEB – Fuel & Energy Balance
GBAO – Gorno-Badakhshan Autonomous Region
RRS – Region of Republican Subordination
PSU - Primary sampling unit
CCEA (ОКЭД) - Common Classifier of Economic Activity
HPP – Hydro Power Plant
Mln. - million
Bln. - Billion
kWh – kilowatt-hour
m³ – cubic meter
GJ – Giga Joule
UN- United Nations Organization
INTRODUCTION

The resource provision of the energy sector in modern economy is one of the key global challenges. The importance of energy resources in the common economic cycle is great and gives grounds to assert that in the nearest future the powerful factor influencing the country’s welfare and power are not only stocks of energy sources, but also their relationship in the neighbouring countries.

Great attention has always been paid to the state of energy resources of the Republic of Tajikistan both by the Government of RoT and by the international institutions. In 2012, Tajikistan became a member of International Energy Agency (IEA) and committed itself to submit annually information on FER, its stocks and consumption. To assure complete data on FER, the Agency on Statistics periodically revises the data collection methodology that results in progressive development of the existing system.

However, there were certain, missing moments that required comprehensive study of FER. Individual entrepreneurs fall outside the statistical coverage, who operated on the basis of patent and certificates, and the number of entrepreneurs and households amounted to 258,211 as of January 1, 2017. In that context, the Agency on Statistics faced a task to assess the energy resources of the Republic in breakdown by producers and users.

As a result, in 2017, the Agency on Statistics conducted a survey “The state of the energy facilities and efficiency of use in 2016” in frames of the Project of “National Strategy for Development of Statistics” ECASTAT with the purpose of detailed and comprehensive study of issues of the energy sector of the Republic of Tajikistan.

This analytical report presents the results of the survey on state of the energy economy and efficiency of energy use. Eventually, in the result of the conducted large-scale survey, that involved households, individual entrepreneurs and legal entities, valuable information on the current state, use and economic potential of the energy sector of the Republic of Tajikistan had been collected. The survey of the energy system state and efficiency of energy consumption is aimed to monitor energy security and determine the level of change of energy security. It is important to underline that the results obtained within this study will be the basis for preparation of the Fuel & Energy Balance of the Republic of Tajikistan.

In the period of planned economy, the statistical system used to have huge capacities to account all sources of information for preparation of FEB, since there was a single complete form of accounting and all operating subjects were state-owned legal entities.

It worth mentioning that in 1990 there were 1700 enterprises and organizations operating in the Republic of Tajikistan. Even, considering the fact that in early 90s the cooperative system had been developed, cooperatives and private enterprises had been opened, however, the statistical accounting covered all operating subjects. So, the existing methodology on preparation of FEB allows for consideration of the whole chain of consecutive elements: generation-import-distribution-consumption-remaining balance.

Recent years the Government of the Republic of Tajikistan pays special attention to the development of the power sector of the Republic. Tajikistan possesses big hydro energy resources, which are estimated as 527 bln kWh per year, considerable stocks of coal, which are estimated as 4.5 bln. tons, as well as possibilities to use alternative sources of energy.

Presented potential directions for development of the fuel & energy complex allows concluding that there is a need in meeting the requirements of new era that suggests a qualitatively new system which is a financially sustainable, economically efficient and progressively developing one, which meets environmental standards and is equipped with state-of-art technologies and managed by highly qualified specialists.

With this regard, it is crucial to understand the quality and quantity of those energy stocks owned by the Republic of Tajikistan and assess their importance for the country’s economy as well as in common system of world stocks.
The whole period survey, starting from development of the methodology up to the release of the current report, took one year, i.e. from May 2017 up to May 2018.

It is expected that the results of the survey of “The state of the energy facilities and efficiency of use in 2016” will be used for preparation of the Fuel & Energy Balance of the Republic of Tajikistan.

This survey has the following tasks:

1. To provide complete and qualitative data on use of energy resources by the households in 2016.
2. To provide complete and qualitative data on use of energy resources by individual entrepreneurs, operating based on patents and certificates, in 2016;
3. To provide information on generation, consumption and stocks of energy resources at plants and in organizations in the Republic of Tajikistan in 2016;
4. To provide data, required for International Energy Agency, Eurostat and UN Statistics Division;
5. To improve the data collection system for further improvement of technical base in field of planning, collection and analysis of data for elaboration of the Fuel & Energy Balance of RT on regular base (once every five years);
I. METHODOLOGY OF SAMPLING AND SURVEY

1. Survey sampling system

The survey of the state of the energy system and efficiency of energy consumption in 2016 pursues a set goal, which is to monitor the energy security and to determine changes of the levels of the energy security.

For this purpose a complex approach has been developed that allows to cover all groups of producers and users of energy resources in the Republic of Tajikistan.

Individual samplings were elaborated for two categories of the energy resources consumers:

1. For households;
2. For individual entrepreneurs

1.1 Sampling of households

The total sample size has covered 3000 households, including 1140 households in urban area which is 38,0% and 1860 households – living in rural area, which is 62,0%.

The sampling is based on the territorial principle of formation of sampling population. In order to ensure the equal distribution of sampling throughout the territory of the Republic of Tajikistan, the sampling has been conducted separately for urban areas and separately for rural areas, based on the census data. Therefore, the sampling design has been developed with a purpose to assure representatively of the territorial structure of the Republic and sufficiency of the sampling volume for obtaining the representative data on the key features of the survey programme of the main administrative units of the Republic of Tajikistan: Gorno-Badakhshan Autonomous Region (GBAO), Sughd Region, Khatlon Region, Dushanbe city and Rayons of Republican Subordination (RRS). It helped to cover the whole country geographically as planned in the survey of households “On use of energy resources by households in 2016”, to acquire evaluation data on the level of all five main administrative units, separately for urban and rural areas, and, to make interregional correlation of main indicators.

During sampling of households the probability sampling method has been applied, i.e. the sampling units are defined based on the probability of proportional population size in each administrative-territorial unit.

The two-stage probability sampling has been employed: the sampling of primary sampling units (PSU) has been formed in the first stage, and, in the second stage – sampling of addresses of the households selected in the first stage of PSU.

Census portfolio (enumeration area) has been admitted as the sampling unit of first stage for the urban areas, and, rural household register – for rural areas.

Selection of households took place at the second stage of the sampling. The selection of households in urban areas has been made based on the lists in selected census portfolios, whereas, in rural areas – based on lists of households’ registers which are kept by rural Jamoats.

To prevent biased sampling of households, the replacement of addresses on the further steps of the work has not been admitted.

The survey has been conducted by the method of interviewing of households’ members. The detailed analysis and main results of households’ survey “On use of energy resources by households in 2016” are given in annexes hereof.

It is important to get information from all respondents during sample statistical surveys, but the practice in this field shows, that it is actually impossible to interview all respondents. This is why it was necessary to calculate the level of non-responses. Therefore, the level of non-responses in households’ survey made up only 0.6%, which is a good result.
1.2 Sampling of individual entrepreneurs

Survey on individual entrepreneurs for study of “The state of the energy facilities and efficiency of use in 2016” has been conducted in all regions of the Republic of Tajikistan and city of Dushanbe and has covered 7670 individual entrepreneurs.

The sampling of individual entrepreneurs has been based on the stratified random sampling principle, according to which the sampled population is divided into strata, which denote activity fields of the individual entrepreneurs (types of economic activity). In line with the current classification in the Republic of Tajikistan there are three groups of entrepreneurs, and, namely:

- the entrepreneurs who operate on the basis of patent;
- the entrepreneurs who operate on the basis of certificate;
- the entrepreneurs who run agricultural activity on the basis of certificate (dekhkan – farming households);

These strata are divided into substrate in line with the requirements of the given survey, particularly – types of economic activity pursuant to the Common Classifier of Economic Activity of the Republic of Tajikistan (OKED, edition 1).

In order to assure the representatively of the sampling of the regions of the Republic of Tajikistan, selection has been made on the basis of the administrative-territorial division of the country.

During sampling of individual entrepreneurs, the probability sampling method has been employed, i.e. the sampling units are defined based on the probability that is proportional to the population size of individual entrepreneurs in each administrative-territorial unit.

For dissemination of data, the analysis will be conducted separately for each region, in particular:

- Gorno-Badakhshan Autonomous Region (GBAO),
- Sughd Region,
- Khatlon Region,
- Dushanbe city and
- Rayons of Republican Subordination (RRS)

The entrepreneurs of a region are grouped by types of economic activity. So, we have got the spreading (propagation) coefficient for each region with split into groups by economic activities.

1.3 Full coverage of legal entities

Besides two sampling surveys, legal entities of all types of economic activities are completely covered by the survey.

Three simultaneous surveys give opportunity to acquire all necessary data for elaboration of a high-quality energy balance of the country.

1.4 Design of questionnaires

As it was said above, two surveys and one continuous canvass in frames of this research. Due to that, three forms of questionnaires:

1. The questionnaire for households “On use of energy resources by households in 2016”;
2. The questionnaire for individual entrepreneurs to study “The state of the energy facilities and efficiency of use in 2016”
3. A state statistical reporting form 4a “Report on purchase, generation, sales, stocks and consumption of fuel and electrical energy”
The questionnaire for households “*On use of energy resources by households in 2016*” is comprised of the following sections:

1. Housing/living conditions;
2. Use of electricity;
3. Use of liquefied petroleum gas;
4. Use of oil products for heating, hot water and other needs;
5. Use of coal;
6. Use of fuel wood and farm animal waste;
7. Use of alternative sources of energy;
8. Volume of stocks, acquisition, sales, generation and consumption of energy resources

The questionnaire for individual entrepreneurs to study “*The state of the energy facilities and efficiency of energy use in 2016*” has been comprised of the following modules:

1. General information on business activity;
2. Use of electricity;
3. Use of liquefied petroleum gas;
4. Use of oil products;
5. Use of coal;
6. Use of fuel wood and farm animal waste;
7. Use of alternative sources of energy;
8. Volume of stocks, acquisition, sales, generation and consumption of energy resources

The state statistical reporting form 4a “*Report on purchase, generation, sales, stocks and consumption of fuel and electrical energy*” is comprised of the following sections:

1. Purchase of energy resources;
2. Own generation;
3. Sales;
4. Stocks;
5. General consumption, *including*:
   - For production of electricity/heat
   - For other energy needs;
   - For non-energy needs;
   - For transport

The questionnaires for sample surveys are specifically designed for this study. In order to assure acquisition of reliable and quality information, the guidelines/instructions on how to fill in questionnaires for survey among households “*On use of energy resources by households in 2016*” and questionnaires for survey among individual entrepreneurs the “*The state of the energy facilities and efficiency of use in 2016*” are developed.

Questionnaires and instructions are provided in Tajik and Russian languages. Before starting of field works the questionnaires were tested in urban and rural areas in vicinity of Dushanbe city. Based on the results of preliminary testing, some changes were made in questionnaires. The final version of
1.5 Listing of households and individual entrepreneurs

In statistical sampling surveys it is very crucial to obtain information from all respondents, but the practice in this field shows, that it is actually impossible to interview all respondents. This is why it was necessary to calculate the level of non-responses.

With consideration of the fact, that as a whole, in current statistics, the data from individual entrepreneurs are gathered in result of conducted sampling surveys, by the end of sampling on individual entrepreneurs the listing of selected individual entrepreneurs has been implemented from 10th to 31st of August 2017.

This work had a huge positive influence on results obtained.

The process of listing has involved 5 coordinators of listing process and 26 listers. Therefore, the listing of households and individual entrepreneurs showed the level of non-responses as only 0.6% which is a good indicator.

Training of supervisors and interviewers for field works.

Field works training has been presented for four days in July 2017. Training included lectures on polling techniques, on content of the questionnaire, preparation of instructions/guidelines, as well as practical trainings on interviewing for interviewers to get acquainted with the interview method and learn how to give questions in a right way. On lecture classes trainers presented rules on filling of the questionnaires. Beside lectures, supervisors and interviewers spent one day of practical trainings on field, on the territory of Rudaki rayon and Vahdat city. At the final class, the problems raised at the practical trainings in field conditions and other unsettled issues were discussed. Supervisors and editors spent additional half of the day for settlement of issues linked with management of field works and editing of questionnaires.

30 teams have participated in conduction of surveys; every team is composed of head of field works, three interviewers and a driver. Experienced specialists of the Agency on Statistics and coordinator of the component managed and controlled the progress of field works. The field works started since 9th October and continued up to the 7th of November 2017. Upon completion of field works, 4 editors have checked data to assure accurateness and completeness in filling questionnaires and 4 encoders have coded all questionnaires.

1.6 Data processing

In order to provide complete and accurate input of field works results, 17 operators were invited.

The software for input of surveyed data has been developed based on program C#4 MSSQLServer, that allows to assure required logical and arithmetical control of data. The control of indicators foreseen in the questionnaires has been set during input of data.

Data processing scheme foresees:

- development of tasks for input of data and receiving results;
- preparation of output tables for analysis of survey results;
- formation of aggregated data;

After survey data are input, the data base is formed which included the whole list of indicators. Based on the data collected, there are 40 output tables, allowing analysis of results by geographical location, by type of area, by types of economic activity.
II. HOUSEHOLDS’ SURVEY RESULTS ANALYSIS

2.1 Survey findings

Description of housing

**Housing construction year.** By 31.12.2016, share of urban area is 40.4% and share of rural area is 59.6% of general housing facilities. The share of housing facilities constructed in period before 1950 – is 3.9%, and the share of housing facilities constructed from 1951 till 1990s – is 62.2%, whereas 48.9% is constructed on urban area and 51.1% are in rural area.

Survey findings point that residential construction has started to develop in period of independence of the Republic of Tajikistan. The share of housing facilities built in this period – is 33.9%. It is necessary to note that from 1991 till 1995 a steady decline of housing construction could be observed. Civil construction development dynamic has started since 1996. Starting from this period, the share of completed residential housing reached 26.7%, including 16.6% in urban area and 33.6% in rural area.

*Figure 1 Breakdown of housing by year of construction, type of locality and by regions, in %*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RRK</td>
<td>6.1%</td>
<td>68.7%</td>
<td>5.0%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Khatlon region</td>
<td>2.5%</td>
<td>51.1%</td>
<td>5.8%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Soghd region</td>
<td>3.6%</td>
<td>61.6%</td>
<td>12.1%</td>
<td>22.7%</td>
</tr>
<tr>
<td>GBAO</td>
<td>4.6%</td>
<td>61.3%</td>
<td>7.1%</td>
<td>27.0%</td>
</tr>
<tr>
<td>Dushanbe</td>
<td>4.2%</td>
<td>82.5%</td>
<td>1.5%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Rural</td>
<td>4.0%</td>
<td>53.3%</td>
<td>9.1%</td>
<td>33.6%</td>
</tr>
<tr>
<td>Urban</td>
<td>3.7%</td>
<td>75.3%</td>
<td>4.4%</td>
<td>16.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3.9%</strong></td>
<td><strong>62.2%</strong></td>
<td><strong>7.2%</strong></td>
<td><strong>26.7%</strong></td>
</tr>
</tbody>
</table>

**Types of housing accommodation.** Survey findings showed that the housing stock of the Republic is quite diverse. The analysis of the data indicates that in the total number of surveyed households, the share of households residing in private houses is 77.0%, it includes 74.1% of residential housing located in rural area and 25.9% in urban area.

In the total share of multi-storey buildings that is 22.7%, including 89.5% represented by buildings in urban area, and 10.5% of it is represented by housing in rural area. The residential housing fund of the Republic that covers all other kinds of residential housing is 0.3% that embraces dormitories, shared apartments, barrack-type houses, etc.
The type of outer walls material is significant while use of energy resources for heating of houses. The survey results showed that the main material of external walls of housing is clay-made structures – 60.1%, brick-built structures – 19.8%, precast-concrete construction – 14.0%, stone-made structures – 2.8% and other mixed materials – 3.3%.

It is necessary to note clay-built housing is widely used mainly in rural areas (76.7%), precast-concrete structures used to be constructed in urban area (93.6%). Stony housing is usual for GBAO region, which made up 72.3%.
**Breakdown of housing by number of living rooms.** Analysis of residential houses to determine number of living rooms in apartments showed that 30.2% are three–rooms apartments, 23.9% - are four-room flats, 21% - are two-room dwellings, 19.9% - are 5-room apartments and 5.1% are one-room flats.

Figure 3 *Housing by number of living rooms, in %*

**Gross floor area.** Based on survey findings as of 31.12.2016, the gross floor area in the Republic of Tajikistan is 61.9 mln. sq. m.

In the total number of sampled households, the share of households living on area of 50-99 m² is 46.1%, the share of households living on area of 21-49 m² is 20.1%, the share of households living on area of 151 m² is 11.0% and only 3.2% used to live on up to 20 m² living area.

The total number of households living in rural area is mainly those households with living space of 50-99 m² (58.3%), as well as a fraction of households with living area from 100 to 150 m² (79.7%). For urban area it is observed that the housing stock of households with living area of 21-49 m², which is 62.6% of total housing stock.

Figure 4 *Housing by living floor area size in urban and rural areas, in %*
**Types of conveniences in houses**

The survey results showed that urban conveniences in residential dwellings are as follows: in 100 households there are 70 households which use electrical stove, 67 households use liquefied gas (gas bottle), 64 households used to have bath and shower room, 53 households have running water, 40 households – furnace heating, 21 households are supplied with hot water, 24 households have access to sanitation and 4 households have other conveniences.

Review of types of conveniences in urban and rural area showed that in rural area dominant share of furnace heating (74.8%), electrical stove (57.8%), hot water (17.3%) and sewerage system (7.4%) is used in rural area.

Similarly, in urban area the housing conveniences are available, including sewerage system - 99.5%, hot water - 82.7%, electrical stove - 42.2% and furnace heating - 25.2%.

**Figure 5 Housing by types of housing conveniences, in %**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric stove</td>
<td>66.8%</td>
<td>69.8%</td>
<td>64.8%</td>
</tr>
<tr>
<td>Liquefied gas</td>
<td>0.8%</td>
<td>69.78202671</td>
<td>64.7738141</td>
</tr>
<tr>
<td>Furnace heating</td>
<td>39.9%</td>
<td>24.9%</td>
<td>50.1%</td>
</tr>
<tr>
<td>Bath and/or shower</td>
<td>64.6%</td>
<td>82.6%</td>
<td>52.3%</td>
</tr>
<tr>
<td>Sanitation</td>
<td>24.0%</td>
<td>55.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Running water</td>
<td>53.2%</td>
<td>79.8%</td>
<td>35.1%</td>
</tr>
</tbody>
</table>

**Electrical appliances.** It is necessary to note, that survey finding were extrapolated to number of households according to population census data and housing fund data of 2010, which is 1197187 units.

One of the main types of energy resources, consumed by population, is electrical power. The survey results show that for 100 households, the application of lightning devices is 96, TV sets – 92, refrigerators – 68, electrical stoves and kettles – 54, washing machines – 38, heaters – 31, vacuum cleaners – 30, microwave ovens – 25, air conditioners – 21, computers – 17 and electrical generators – 9.

Bigger share of equipment like heaters -70.6%, air conditioners – 63.7%, washing machines – 58.9%, vacuum cleaners – 58.4% and computers – 56.2% is used in the urban area.

In rural area it is more popular to use electrical equipment like power generators with share of 65.6%, TV sets with share of 58.1%, lightning devices with share of 58.9%, electrical stoves and kettles with share of 49.4%.
Figure 6 Composition of electrical appliances used

Figure 7 Composition of equipment fed with liquefied oil gas, in %

**Equipment run on liquefied oil gas.** According to the survey results, in 2016 the use of liquefied gas by households reached 104.4 thousand tons. The main device where liquefied gas used is the cooking stove (92.0%). The share of rural area using liquefied gas is 58.9%, and the share of urban area is 41.1%.

**Use of oil product for house heating and heating water**
According to the survey findings, in 2016 households mainly use electrical energy for houses heating and heating of water. However, it was recorded that for the purpose of heating and water heating the households also consumed 20.3 thousand tons of oil products. These products used for house heating and water heating are: other kinds of oil products (57.0%), diesel fuel (36%) and heating/furnace/household oil (7%).
Coal consumption by households. The survey results showed that households used coal mainly for heating of the residential premises. Population utilizes indoor furnaces fed by coal (52.3%), food cooking stoves (13.5%) and water heating boiler (7.4%).

According to the survey findings, in coal consumption the share of rural area is 66.3% and the urban area share is 33.7%. Share of application of indoor furnaces by regions can be split as follows: Sughd region – 43.1%, RRS – 37.1%, Khatlon region – 23.2% and GBAO – 3.1%.

Biofuel use. Use of biofuel (biomass) is widely used by households for heating and cooking purposes, especially in rural areas of the Republic. Farmyard manure comes mainly from household livestock. Women collect, treat wet manure in cake-shape form, which are dried in the sun. Households that do not grow cattle, can buy the wet manure from neighbors, and then treat and dry it on their own. Cotton-plant cane is collected in harvest season (in November-December).
As for the availability of different kinds of biofuel by households, the survey findings showed that 68.6% of households use fuel wood, 55.7% use livestock manure, 30.2% - ghuzapaya (cotton-plant cane) and 10.5% use other kinds of fuel wood (wood-dust bricks, wood pellets, wood debris).

*Figure 10 Use of biofuel (biomass) by type of area*

*Capacity and area of used solar collectors, wind- and small-scale hydro-generators.*

It is necessary to note, that during survey, the issue of application of alternative or renewable energy sources (wind and solar energy) was very topical and urgent. At the same time, the survey results showed that there is not any household that makes use of wind generators. As for the use of solar energy, some 1711 rural households do use solar collectors with capacity of 605 kWh and area of 4515 m².

*Energy resources generation by households.* For the purpose of meeting the needs of households in energy resources for domestic/household needs (house heating, water heating and cooking), the most popular sources of energy are: fuel wood, manure (animal waste), cotton-plant cane, corn leaves. It should be noted that these energy resources are produced by households themselves. Mainly, the producers of these energy resources are rural households. Share of use of cotton-plant cane is 94%, livestock manure – 84.2%, corn leaves – 83.6% and fuel wood – 83.5%.
Figure 11 *Biofuel (biomass) production by types of energy resources*

**Energy resources consumption by households.** The study showed that in 2016, the households used energy resources for domestic needs as follows: electricity – 4845.9 mln. kWh., liquid gas– 106.5 thousand tons, fuel wood – 7671.0 тыс. м³, coal – 409.8 thousand tons, gasoline and diesel – 82.8 thousand tons, livestock manure – 520.2 thousand tons, cotton-plant cane – 149.5 thousand tons, corn leaves – 21.7 thousand tons.

The main consumers of these energy resources as cotton-plant cane — 99.6%, livestock manure– 85.5%, corn leaves – 83.0%, fuel wood - 80.5%, coal– 75.9%, liquid gas – 60.8% are rural households.

The urban households used more oil products — 61.3% and electricity – 57.9%.
Energy resources stocks. As of 31.12.2016 the households stock energy reserves in the following volumes: coal – 101,0 thousand tons, liquid gas – 2,1 thousand tons, cattle manure– 56,2 thousand tons, fuel wood – 565,5 thousand m³, cotton-plant cane – 12,6 thousand tons and other wood by-product – 1,5 thousand tons. Mainly these stocks are stored in rural area: cotton-plant cane– 85,2%, cattle manure– 84,2%, coal – 79,2%, liquefied gas – 78,8%, fuel wood – 75,9%, and other wood by-products – 33,3%.
2.2 Tables “description of housing”

Table II-1 Main description of housing by area type (in per cent)

<table>
<thead>
<tr>
<th>Construction year of housing</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>До 1950</td>
<td>3,9</td>
<td>3,7</td>
<td>4,0</td>
</tr>
<tr>
<td>1951 - 1990</td>
<td>62,2</td>
<td>75,3</td>
<td>53,3</td>
</tr>
<tr>
<td>1991 - 1995</td>
<td>7,2</td>
<td>4,4</td>
<td>9,1</td>
</tr>
<tr>
<td>1996 - 2005</td>
<td>13,4</td>
<td>9,5</td>
<td>16,0</td>
</tr>
<tr>
<td>2006 - 2010</td>
<td>7,2</td>
<td>3,2</td>
<td>9,9</td>
</tr>
<tr>
<td>2011 and after</td>
<td>6,1</td>
<td>3,9</td>
<td>7,7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

| Type of housing               |        |        |        |
| Apartment in multi-storey building |        |        |        |
| Dormitory                     | 0,2    | 0,4    | 0,1    |
| Private house                 | 77,0   | 49,3   | 95,8   |
| Other                         | 0,1    | -      | 0,1    |
| **Total**                     | **100,0** | **100,0** | **100,0** |

<p>| Outer wall material of housing |        |        |        |
| Concrete, Monolith, Panel     | 14,0   | 32,4   | 1,5    |
| Stone                         | 2,8    | 2,2    | 3,2    |
| Brick                         | 19,8   | 28,2   | 14,1   |
| Clay                          | 60,1   | 34,7   | 77,5   |
| Mixed material                | 2,8    | 2,5    | 3,0    |
| Other material                | 0,5    | 0,0    | 0,8    |
| <strong>Total</strong>                     | <strong>100,0</strong> | <strong>100,0</strong> | <strong>100,0</strong> |</p>
<table>
<thead>
<tr>
<th></th>
<th>Dushanbe city</th>
<th>Gorno-Badakh-shan Autonomous Region (GBAO)</th>
<th>Sughd region</th>
<th>Khatlon region</th>
<th>Region of Republican Subordination (RRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing construction year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before 1950</td>
<td>4,2</td>
<td>4,6</td>
<td>3,6</td>
<td>2,5</td>
<td>6,1</td>
</tr>
<tr>
<td>1951 - 1990</td>
<td>82,5</td>
<td>61,3</td>
<td>61,6</td>
<td>51,1</td>
<td>68,7</td>
</tr>
<tr>
<td>1991 - 1995</td>
<td>1,5</td>
<td>7,1</td>
<td>12,1</td>
<td>5,8</td>
<td>5,0</td>
</tr>
<tr>
<td>1996 - 2005</td>
<td>7,0</td>
<td>14,7</td>
<td>15,0</td>
<td>17,4</td>
<td>8,1</td>
</tr>
<tr>
<td>2006 - 2010</td>
<td>1,7</td>
<td>9,2</td>
<td>4,5</td>
<td>12,2</td>
<td>6,6</td>
</tr>
<tr>
<td>2011 and after</td>
<td>3,0</td>
<td>2,9</td>
<td>3,2</td>
<td>11,0</td>
<td>5,5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
<tr>
<td><strong>Type of housing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apartment in multi-storey building</td>
<td>68,5</td>
<td>6,3</td>
<td>16,5</td>
<td>14,5</td>
<td>20,5</td>
</tr>
<tr>
<td>Dormitory</td>
<td>0,5</td>
<td>-</td>
<td>0,1</td>
<td>0,5</td>
<td>-</td>
</tr>
<tr>
<td>Private house</td>
<td>31,0</td>
<td>93,7</td>
<td>83,4</td>
<td>85,0</td>
<td>79,2</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
<tr>
<td><strong>Outer wall material of housing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete, Monolith, Panel</td>
<td>44,8</td>
<td>0,4</td>
<td>11,9</td>
<td>5,1</td>
<td>14,9</td>
</tr>
<tr>
<td>Stone</td>
<td>0,5</td>
<td>72,3</td>
<td>0,7</td>
<td>0,6</td>
<td>1,9</td>
</tr>
<tr>
<td>Brick</td>
<td>38,3</td>
<td>2,1</td>
<td>18,9</td>
<td>17,9</td>
<td>15,5</td>
</tr>
<tr>
<td>Clay</td>
<td>13,2</td>
<td>25,2</td>
<td>64,8</td>
<td>72,0</td>
<td>66,4</td>
</tr>
<tr>
<td>Mixed material</td>
<td>3,2</td>
<td>0,0</td>
<td>3,2</td>
<td>3,4</td>
<td>1,3</td>
</tr>
<tr>
<td>Other material</td>
<td>0,0</td>
<td>0,0</td>
<td>0,5</td>
<td>1,0</td>
<td>0,0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>
### Table II-3 Distribution of housing by number of living rooms and area type (in per cent)

<table>
<thead>
<tr>
<th>Number of living rooms</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5,1</td>
<td>7,1</td>
<td>3,7</td>
</tr>
<tr>
<td>2</td>
<td>21,0</td>
<td>24,4</td>
<td>18,7</td>
</tr>
<tr>
<td>3</td>
<td>30,2</td>
<td>32,7</td>
<td>28,5</td>
</tr>
<tr>
<td>4</td>
<td>23,9</td>
<td>20,9</td>
<td>25,9</td>
</tr>
<tr>
<td>5 and more</td>
<td>19,8</td>
<td>14,9</td>
<td>23,2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
<tr>
<td>Gross floor area, sq.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 20</td>
<td>3,2</td>
<td>4,4</td>
<td>2,5</td>
</tr>
<tr>
<td>21 - 49</td>
<td>20,1</td>
<td>31,0</td>
<td>12,6</td>
</tr>
<tr>
<td>50 - 99</td>
<td>46,1</td>
<td>47,6</td>
<td>45,1</td>
</tr>
<tr>
<td>100 - 150</td>
<td>19,6</td>
<td>9,8</td>
<td>26,3</td>
</tr>
<tr>
<td>151 and more</td>
<td>11,0</td>
<td>7,2</td>
<td>13,5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

### Table II-4 Description of housing by number of rooms and by regions (in per cent)

<table>
<thead>
<tr>
<th>Number of living rooms</th>
<th>Dushanb e city</th>
<th>Gorno-Badakhshan Autonomous Region (GBAO)</th>
<th>Sughd region</th>
<th>Khatlon region</th>
<th>Region of Republican Subordination (RRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6,0</td>
<td>5,0</td>
<td>5,6</td>
<td>3,2</td>
<td>6,6</td>
</tr>
<tr>
<td>2</td>
<td>26,3</td>
<td>49,2</td>
<td>23,7</td>
<td>14,2</td>
<td>20,7</td>
</tr>
<tr>
<td>3</td>
<td>28,5</td>
<td>37,4</td>
<td>32,8</td>
<td>28,5</td>
<td>29,1</td>
</tr>
<tr>
<td>4</td>
<td>21,5</td>
<td>7,6</td>
<td>22,9</td>
<td>28,0</td>
<td>22,5</td>
</tr>
<tr>
<td>5 and more</td>
<td>17,7</td>
<td>0,8</td>
<td>15,0</td>
<td>26,1</td>
<td>21,1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
<tr>
<td>Gross living area, sq.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 20</td>
<td>1,0</td>
<td>1,3</td>
<td>2,5</td>
<td>4,7</td>
<td>3,7</td>
</tr>
<tr>
<td>21 - 49</td>
<td>31,0</td>
<td>12,6</td>
<td>20,3</td>
<td>17,3</td>
<td>18,6</td>
</tr>
<tr>
<td>50 - 99</td>
<td>53,5</td>
<td>39,1</td>
<td>45,0</td>
<td>44,6</td>
<td>46,7</td>
</tr>
<tr>
<td>100 - 150</td>
<td>8,8</td>
<td>35,7</td>
<td>16,6</td>
<td>23,0</td>
<td>23,4</td>
</tr>
<tr>
<td>151 and more</td>
<td>5,7</td>
<td>11,3</td>
<td>15,6</td>
<td>10,4</td>
<td>7,6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>
Table II-5 Number of households by types of conveniences, by area type and by regions
(per 100 households)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Dushanbe city</th>
<th>GBAO</th>
<th>Sughd</th>
<th>Khatlon</th>
<th>RRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running water</td>
<td>53</td>
<td>80</td>
<td>35</td>
<td>94</td>
<td>24</td>
<td>40</td>
<td>43</td>
<td>69</td>
</tr>
<tr>
<td>Sewerage</td>
<td>24</td>
<td>55</td>
<td>3</td>
<td>78</td>
<td>5</td>
<td>19</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Bath and/or shower</td>
<td>65</td>
<td>83</td>
<td>52</td>
<td>91</td>
<td>10</td>
<td>56</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Heating</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Furnace heating</td>
<td>40</td>
<td>25</td>
<td>50</td>
<td>18</td>
<td>68</td>
<td>45</td>
<td>49</td>
<td>27</td>
</tr>
<tr>
<td>Liquid gas</td>
<td>67</td>
<td>70</td>
<td>65</td>
<td>41</td>
<td>12</td>
<td>72</td>
<td>70</td>
<td>76</td>
</tr>
<tr>
<td>Electrical stove</td>
<td>70</td>
<td>81</td>
<td>63</td>
<td>94</td>
<td>60</td>
<td>59</td>
<td>76</td>
<td>67</td>
</tr>
</tbody>
</table>

Table II-6 Number of households by type of application of home electric appliances, by area type and by regions (per 100 households)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Dushanbe city</th>
<th>GBAO</th>
<th>Sughd</th>
<th>Khatlon</th>
<th>RRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lightning devices</td>
<td>96</td>
<td>98</td>
<td>95</td>
<td>97</td>
<td>75</td>
<td>99</td>
<td>94</td>
<td>98</td>
</tr>
<tr>
<td>Lamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing machine</td>
<td>38</td>
<td>56</td>
<td>26</td>
<td>67</td>
<td>22</td>
<td>50</td>
<td>18</td>
<td>37</td>
</tr>
<tr>
<td>Refrigerator,</td>
<td>67</td>
<td>81</td>
<td>59</td>
<td>92</td>
<td>37</td>
<td>75</td>
<td>54</td>
<td>66</td>
</tr>
<tr>
<td>Freezing chamber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV set</td>
<td>92</td>
<td>94</td>
<td>79</td>
<td>94</td>
<td>73</td>
<td>96</td>
<td>88</td>
<td>94</td>
</tr>
<tr>
<td>Heater, oil radiator</td>
<td>31</td>
<td>54</td>
<td>15</td>
<td>79</td>
<td>21</td>
<td>23</td>
<td>20</td>
<td>34</td>
</tr>
<tr>
<td>Computer, notebook</td>
<td>16</td>
<td>23</td>
<td>12</td>
<td>30</td>
<td>9</td>
<td>23</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Electrical stove and</td>
<td>54</td>
<td>67</td>
<td>44</td>
<td>77</td>
<td>49</td>
<td>60</td>
<td>42</td>
<td>48</td>
</tr>
<tr>
<td>Kettle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microwave oven</td>
<td>25</td>
<td>30</td>
<td>22</td>
<td>36</td>
<td>8</td>
<td>29</td>
<td>15</td>
<td>32</td>
</tr>
<tr>
<td>Air conditioner</td>
<td>21</td>
<td>33</td>
<td>13</td>
<td>41</td>
<td>-</td>
<td>22</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Vacuum cleaner</td>
<td>30</td>
<td>43</td>
<td>21</td>
<td>53</td>
<td>10</td>
<td>38</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>Electric generator</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1,9</td>
</tr>
</tbody>
</table>
Table II-7 Number of households by type of liquid oil gas-fed equipment, by area type and by regions (in per cent)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Including by regions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dushanb e city</td>
</tr>
<tr>
<td>Cooking stove</td>
<td>62,6</td>
<td>63,7</td>
<td>61,9</td>
<td>39,5</td>
</tr>
<tr>
<td>Boiler for house</td>
<td>2,0</td>
<td>1,4</td>
<td>2,4</td>
<td>-</td>
</tr>
<tr>
<td>heating and hot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heater</td>
<td>2,9</td>
<td>2,7</td>
<td>2,9</td>
<td>0,2</td>
</tr>
<tr>
<td>Other</td>
<td>0,6</td>
<td>0,4</td>
<td>0,8</td>
<td>0,7</td>
</tr>
</tbody>
</table>

Table II-8 Number of households using oil products for home heating and water heating, and by area type (in per cent)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Including by regions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dushanb e city</td>
</tr>
<tr>
<td>Furnace/household</td>
<td>2,5</td>
<td>2,7</td>
<td>2,3</td>
<td></td>
</tr>
<tr>
<td>oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>13,2</td>
<td>10,8</td>
<td>14,8</td>
<td></td>
</tr>
<tr>
<td>Other oil products</td>
<td>20,5</td>
<td>14,6</td>
<td>24,5</td>
<td></td>
</tr>
</tbody>
</table>

Table II-9 Number of households by use of coal-fed appliances, by area type and by regions (in per cent)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Including by regions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dushanb e city</td>
</tr>
<tr>
<td>Cooking stove</td>
<td>13,5</td>
<td>9,0</td>
<td>16,5</td>
<td>7,2</td>
</tr>
<tr>
<td>Boiler for house</td>
<td>1,7</td>
<td>0,4</td>
<td>2,5</td>
<td>-</td>
</tr>
<tr>
<td>heating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiler for hot</td>
<td>7,4</td>
<td>3,2</td>
<td>10,2</td>
<td>1,0</td>
</tr>
<tr>
<td>water heating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor furnace</td>
<td>52,3</td>
<td>33,7</td>
<td>64,8</td>
<td>15,7</td>
</tr>
</tbody>
</table>
Table II-10 Number of households by use of fuel wood, by area type and by regions (in per cent)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
<th>Including by regions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dushanbe city</td>
</tr>
<tr>
<td>Fuel wood</td>
<td>68,6</td>
<td>25,7</td>
<td>83,7</td>
<td>20,2</td>
</tr>
<tr>
<td>Wood –dust bricks</td>
<td>2,4</td>
<td>1,4</td>
<td>3,0</td>
<td>-</td>
</tr>
<tr>
<td>Wood pellets</td>
<td>0,4</td>
<td>0,4</td>
<td>0,4</td>
<td>-</td>
</tr>
<tr>
<td>Wood debris</td>
<td>2,8</td>
<td>2,4</td>
<td>3,0</td>
<td>0,2</td>
</tr>
<tr>
<td>Ghuzapaya (cotton-plant cane)</td>
<td>30,2</td>
<td>6,5</td>
<td>39,2</td>
<td>0,5</td>
</tr>
<tr>
<td>Corn leaves</td>
<td>4,5</td>
<td>2,3</td>
<td>6,0</td>
<td>-</td>
</tr>
<tr>
<td>Livestock manure</td>
<td>55,7</td>
<td>6,1</td>
<td>75,4</td>
<td>4,0</td>
</tr>
</tbody>
</table>

215
2.3 Tables “Energy resources consumption by households”

Table II-11 Purchase of energy resources by area type as of December 31, 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric energy (mln kWh)</td>
<td>4845,9</td>
<td>2805,8</td>
<td>2040,1</td>
</tr>
<tr>
<td>Fuel wood (thousand m³)</td>
<td>2565,1</td>
<td>651,0</td>
<td>1914,1</td>
</tr>
<tr>
<td>Coal (thousand tons)</td>
<td>452,9</td>
<td>101,8</td>
<td>351,1</td>
</tr>
<tr>
<td>Liquid gas (thousand tons)</td>
<td>104,4</td>
<td>40,5</td>
<td>63,9</td>
</tr>
<tr>
<td>Kerosene (thousand tons)</td>
<td>0,2</td>
<td>0,04</td>
<td>0,16</td>
</tr>
<tr>
<td>Black oil (tons)</td>
<td>136,0</td>
<td>136,0</td>
<td>-</td>
</tr>
<tr>
<td>Cattle manure (animal waste) (thousand tons)</td>
<td>177,3</td>
<td>22,9</td>
<td>154,4</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>7,2</td>
<td>1,1</td>
<td>6,1</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,3</td>
<td>0,2</td>
<td>0,1</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>16,1</td>
<td>3,6</td>
<td>12,5</td>
</tr>
<tr>
<td>Wood brick (thousand tons)</td>
<td>1,1</td>
<td>0,3</td>
<td>0,8</td>
</tr>
<tr>
<td>Petrol &amp; diesel (thousand tons)</td>
<td>80,3</td>
<td>26,2</td>
<td>54,1</td>
</tr>
</tbody>
</table>

Table II-12 Own production (own collection) of energy resources by area type, as of December 31, 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel wood (thousand m³)</td>
<td>5195,9</td>
<td>855,6</td>
<td>4340,3</td>
</tr>
<tr>
<td>Livestock manure (animal waste) (thousand tons)</td>
<td>346,3</td>
<td>54,6</td>
<td>291,7</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>14,9</td>
<td>2,4</td>
<td>12,5</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,6</td>
<td>0,4</td>
<td>0,2</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>134,8</td>
<td>7,9</td>
<td>126,9</td>
</tr>
<tr>
<td>Wood bricks (thousand tons)</td>
<td>0,1</td>
<td>0,0</td>
<td>0,1</td>
</tr>
</tbody>
</table>
Table II-13 Consumption of energy resources in households by area type, as of December 31, 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric energy (mln kWh)</td>
<td>4845,9</td>
<td>2805,8</td>
<td>2040,1</td>
</tr>
<tr>
<td>Fuel wood (thousand m³)</td>
<td>7671,0</td>
<td>1494,2</td>
<td>6176,8</td>
</tr>
<tr>
<td>Coal (thousand tons)</td>
<td>409,8</td>
<td>98,7</td>
<td>311,1</td>
</tr>
<tr>
<td>Liquid gas (thousand tons)</td>
<td>106,5</td>
<td>41,8</td>
<td>64,7</td>
</tr>
<tr>
<td>Kerosene (thousand tons)</td>
<td>0,2</td>
<td>0,04</td>
<td>0,16</td>
</tr>
<tr>
<td>Black oil (tons)</td>
<td>136,0</td>
<td>136</td>
<td>-</td>
</tr>
<tr>
<td>Cattle manure (animal waste) (thousand tons)</td>
<td>520,2</td>
<td>75,3</td>
<td>444,9</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>21,7</td>
<td>3,5</td>
<td>18,2</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,8</td>
<td>0,5</td>
<td>0,3</td>
</tr>
<tr>
<td>Cotton -plant cane (thousand tons)</td>
<td>149,5</td>
<td>11,0</td>
<td>138,5</td>
</tr>
<tr>
<td>Wood brick (thousand tons)</td>
<td>1,2</td>
<td>0,3</td>
<td>0,9</td>
</tr>
<tr>
<td>Petrol &amp; diesel (thousand tons)</td>
<td>82,8</td>
<td>26,9</td>
<td>55,9</td>
</tr>
</tbody>
</table>

Table II-14 Stocks of energy resources in households by area type as of December 31, 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel wood (thousand m³)</td>
<td>565,5</td>
<td>144,6</td>
<td>420,9</td>
</tr>
<tr>
<td>Coal (thousand tons)</td>
<td>101,0</td>
<td>21,0</td>
<td>80,0</td>
</tr>
<tr>
<td>Liquid gas (thousand tons)</td>
<td>2,1</td>
<td>0,2</td>
<td>1,9</td>
</tr>
<tr>
<td>Livestock manure (animal waste)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(thousand tons)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>1,3</td>
<td>0,3</td>
<td>1,0</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,1</td>
<td>0,1</td>
<td>-</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>12,6</td>
<td>0,8</td>
<td>10,8</td>
</tr>
<tr>
<td>Wood bricks (thousand tons)</td>
<td>0,1</td>
<td>0,1</td>
<td>0,0</td>
</tr>
</tbody>
</table>
3.1 Survey results

According to the survey findings, the number of the individual entrepreneurs consuming different types of energy resources in 2016 is 191684. Out of the total number of the individual entrepreneurs, 8.4% work on the basis of patent; 91.3% operate on the basis of certificates and 0.3% of the individual entrepreneurs answered “I don’t know”, i.e. could not give a clear-cut answer to the question on the basis of what document they run their business.

It is necessary to note, that the survey covered dehkan farming households the number of which totals to 135272. In accordance with the current legislation of the Republic of Tajikistan, dehkan farming households run their business activities as individual entrepreneurs on the basis of certificates. It means that out of the total number of individual entrepreneurs, 70.6% out of them are entrepreneurs in field of agriculture, the remaining 29.4% covered other sectors of economy.

The breakdown of individual entrepreneurs by type of economic activity showed that 70.6% are working in agriculture, hunting and forestry, 10.2% - engaged in wholesaling and retail business activity, 8.0% in transport and communications, 3.2% - processing industry and 8.0% - in other sectors.

Figure 1: Breakdown of individual entrepreneurs by economic activity, in %

Survey findings showed that 7.9% of individual entrepreneurs have started their business before 2000, 40.2% of individual entrepreneurs – between 2000 and 2010, 46.5% of individual entrepreneurs – between 2010 and 2015 and 5.4% of individual entrepreneurs – between 2015 and 2016.
Although it is unlike individual entrepreneurs to hire labour force, the survey results showed that the number of employees hired by individual entrepreneurs varies between 1 and more than 21 people.

So, 49.9% of individual entrepreneurs have hired 1 to 4 employees, 26.4% have hired 5 to 10 employees, 15.2% of individual entrepreneurs have hired 11 to 20 employees and 8.5% of individual entrepreneurs have hired more than 21 employees.

Mainly, the number of hired people by individual entrepreneurs varies between 1 to 4 persons. The breakdown of employees by sectors showed that relative share goes to agriculture (44.2%), for trade (19.1%), for transport (15.3%) and other services (7.4%).
Employment of labour forces from 5 up to 21 and more is typical for individual entrepreneurs working in agriculture (in dehkan farming households).

One of the tasks of the survey was to obtain information on types of conveniences inside premises (offices) of individual entrepreneurs, kinds of used machines, energy consumption and use of other types of fuel. The findings are: the number of individual entrepreneurs having hot water is 1.7%, those having furnace heating – 0.6%, those using liquid gas for heating – 2.6%, and those heating with electricity – 3.3%.

The study results also showed that 82.4% of individual entrepreneurs do use electricity for running their businesses, out of which 25.5% is used for lightning, 10.8% for electric stoves and electric kettles, 10.2% for refrigerators and freezing chambers, 8.3% for TV sets, 6.9% for air conditioners, 5.0% for computers, 3.0% for washing machines, 2.4% for microwave ovens, 1.8% for vacuum cleaners, 1.3% for pumps and 5.3% for other devices and equipment.
By types of economic activity it was determined that electric energy in agriculture is mainly used for pumping (68.1%), and in trade for refrigerators and freezing chambers (43.6%).

The review of oil products use by individual entrepreneurs showed that mainly they use diesel fuel (72.0%), petrol (18.9%), liquefied gas (6.5%) and kerosene (0.1%). The number of individual entrepreneurs which did not use oil products in their business activities is 2.5%.

Mainly use of oil products in business activities is noted in agriculture. So, consumption of diesel is 92.5%, petrol is 70.5% and liquefied gas -39.9%.
For formation of Fuel & Energy Balance it is required to review data on procurement, production, export, import, consumption and stocks of energy resources in the Republic of Tajikistan on a given period.

**ELECTRIC POWER** The data review on purchase of energy resources showed that the volume of energy purchased in 2016 totaled to 658.3 mln. kWh. Proportion of energy bought by sectors is such: agriculture (42.4%), trade and service (38.2%), transport and communications (15.1%), processing industry (3.9%) and construction industry (0.4%).

The review shows that main buyer and consumer of energy resources is the agricultural sector, it is reasoned by the number of individual entrepreneurs involved in agricultural sector. On 31.12.2016 the number of registered dehkan farming households in the State Register of legal entities and individual entrepreneurs of the Republic of Tajikistan is 135 272 units. The number of individual entrepreneurs in processing industry is 6101 units. So, the survey proves that agriculture is the main electric energy consumer.

The survey results shows that use of energy resources in 2016 the volume of energy consumption made up 658.3 mln. kWh. Proportion of energy bought by sectors is such: agriculture (42.4%), trade and services (38.1%), transport and communications (15.1%), processing industry (3.9%) and construction industry (0.4%).
**Figure 8 Breakdown by sectors of economy of the use of electric power for business needs of individual entrepreneurs**

**COAL.** In 2016 purchase of coal totaled to 16.8 thousand tons. Main buyer of coal is the sector of services, which is 66.1% as well as the transport and communications sector – 17.8%, and then it is agriculture, construction and industry with 16.1% each.

During this period 11.2 thousand tons of coal was consumed. Use of coal in services sector made up 43.7%, transport and communications – 26.8%, agriculture – 11.6, industry and construction – 14.3%.

**Figure 9 Breakdown by sectors of economy of the use of coal for business needs of individual entrepreneurs, in %**

**LIQUIFIED GAS.** Liquefied gas is one of the main types of energy resources used in the Republic of Tajikistan. The review showed that in 2016 the volume of purchased liquefied gas by individual entrepreneurs is 21.0 thousand tons. The major buyers of liquefied gas are the sector of...
services (58.6%), transport and communications (16.2%), processing industry (12.8%) and agriculture (12.4%).

The survey findings showed that the volume of consumed liquefied gas by individual entrepreneurs totaled to 17.1 thousand tons, and main consumer of liquefied gas is the sector of services (48.5%), transport and communications (19.9%), processing industry (15.8%), agriculture (15.2%) and construction (0.6%).

Figure 10 Breakdown by sectors of economy of the use of liquefied gas for business needs of individual entrepreneurs, in %

OIL PRODUCTS. The survey results showed that in 2016 individual entrepreneurs procured 246.9 thousand tons of oil products. The dominant types of fuel are petrol and diesel fuel (99.7%) and lubricants (0.3%). Agriculture is main purchaser of oil products, which is 37.4%, sector of services procures 10.2%, transport and communications – 50.6%, processing industry buys 1.6% and construction sector purchases – 0.2%.

Survey results show that individual entrepreneurs have consumed 239.8 thousand tons of oil products. Main types of fuel are petrol and diesel fuel (99.7%) and lubricants (0.3%). Agriculture is main consumer of oil products, which is 44.2%, transport and communications is 46.6%, service sector is 7.3%, processing industry consumes 1.6% and construction – 0.3%.
BIOFUEL (BIOMASS). It is necessary to say that approximately 70% of population of the Republic of Tajikistan lives in rural areas, having access to the most available type of fuel – biofuel. The survey results that in 2016, individual entrepreneurs procured 93.4% thousand m$^3$ of fuel wood, 19.7 thousand tons of manure (animal waste), 5.3 thousand tons of cotton-plant cane and 0.1 thousand tons of corn leaves. Purchase of fuel wood in the agriculture made up 48.5%, the service sector – 32.4%, the processing industry – 13.2%, transport and communication – 5.2% and in the construction sector - 0.7%. Other types of biofuel were bought mostly in agriculture.

The survey findings showed that in 2016, individual entrepreneurs consumed 138.1 thousand m$^3$ of fuel wood, 37.6 thousand tons of manure (livestock waste), 44.2 thousand tons of cotton-plant cane and 0.4 thousand tons of corn leaves. Fuel wood use in agriculture made up 65.1%, in the service sector – 22.0%, in the processing industry – 9.0%, in transport and communication – 3.5% and in construction sector – 0.4%. Consumption of other types of biomass is mainly observed also in agriculture.

Considering that the individual entrepreneurs do not produce various types of energy resources, the study findings showed that biofuel is the main form of production (by natural collection) of energy resources. Volume of generated biofuel in 2016 is such: cotton-plant cane – 73.3 thousand tons, fuel wood – 49.3 thousand m$^3$, manure - 15.3 thousand tons, bushes – 0.5 thousand tons and corn leaves – 0.3 thousand tons. All these kinds of biofuel were produced (collected) in agricultural and forest areas.
Energy resources stocks

Coal stocks. As of 31.12.2016, individual entrepreneurs had 0.9 thousand tons of coal in stock. The services sectors mainly reserved 77.7% of coal volume, agriculture and processing industries reserved 22.2% of coal volume.

Oil products stocks. Survey results showed that reserves of oil products made by individual entrepreneurs totaled to 0.2 thousand tons. Major type of fuel is petrol and diesel fuel (88.9%). Main consumer is the agricultural sector, which is 88.9% of total volume of reserves, and the service sector – 0.9%.

Biofuel (biomass) stocks. Survey results showed that biofuel stock made by individual entrepreneurs totaled to 9.0 thousand m\(^3\) of fuel wood, 0.4 thousand tons of manure (animal waste) and 5.9 thousand tons of cotton-plant cane.

In general volume of reserves, the share of agriculture equals to 82.2%, service sector share – 1.3%, processing industry – 4.4%. Other types of biofuel are reserved mainly in agriculture.
3.2 Tables “Main descriptions of individual entrepreneurs”

Table III-1 Number of entrepreneurs by operations conditions by types of economic activity as of December 31, 2016

<table>
<thead>
<tr>
<th>Total</th>
<th>Patent</th>
<th>Certificate</th>
<th>Do not remember</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>191684</td>
<td>16007</td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>135272</td>
<td>-</td>
<td>134971</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>111</td>
<td>26</td>
<td>85</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>6101</td>
<td>1962</td>
<td>4114</td>
</tr>
<tr>
<td>F. Construction</td>
<td>535</td>
<td>119</td>
<td>416</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>19467</td>
<td>3976</td>
<td>15491</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>3249</td>
<td>695</td>
<td>2504</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>15316</td>
<td>4527</td>
<td>10739</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>40</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>3363</td>
<td>970</td>
<td>2393</td>
</tr>
<tr>
<td>M. Education</td>
<td>224</td>
<td>51</td>
<td>173</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td>483</td>
<td>174</td>
<td>309</td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td>7523</td>
<td>3480</td>
<td>3967</td>
</tr>
</tbody>
</table>

(in per cent)

<table>
<thead>
<tr>
<th>Total</th>
<th>Patent</th>
<th>Certificate</th>
<th>Do not remember</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>8,4</td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>100</td>
<td>0,0</td>
<td>99,8</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>100</td>
<td>23,4</td>
<td>76,6</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>100</td>
<td>32,2</td>
<td>67,4</td>
</tr>
<tr>
<td>F. Construction</td>
<td>100</td>
<td>22,2</td>
<td>77,8</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>100</td>
<td>20,4</td>
<td>79,6</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>100</td>
<td>21,4</td>
<td>77,1</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>100</td>
<td>29,6</td>
<td>70,1</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>100</td>
<td>67,5</td>
<td>32,5</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>100</td>
<td>28,8</td>
<td>71,2</td>
</tr>
<tr>
<td>M. Education</td>
<td>100</td>
<td>22,8</td>
<td>77,2</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td>100</td>
<td>36,0</td>
<td>64,0</td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td>100</td>
<td>46,3</td>
<td>52,7</td>
</tr>
</tbody>
</table>
Table III-2  Number of entrepreneurs with breakdown by start year, by types of activity as of 31.12.2016 (in percent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>84,9</td>
<td>81,9</td>
<td>63,2</td>
<td>29,1</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>-</td>
<td>-</td>
<td>0,1</td>
<td>-</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>0,7</td>
<td>1,5</td>
<td>4,3</td>
<td>9,7</td>
</tr>
<tr>
<td>F. Construction</td>
<td>-</td>
<td>0,3</td>
<td>0,4</td>
<td>-</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>5,5</td>
<td>6,3</td>
<td>12,8</td>
<td>22,5</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>0,3</td>
<td>1,1</td>
<td>2,1</td>
<td>5,0</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>6,3</td>
<td>5,2</td>
<td>9,5</td>
<td>18,1</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>0,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>0,3</td>
<td>1,1</td>
<td>2,3</td>
<td>4,6</td>
</tr>
<tr>
<td>M. Education</td>
<td>-</td>
<td>0,1</td>
<td>0,1</td>
<td>0,3</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td>-</td>
<td>0,1</td>
<td>0,4</td>
<td>0,8</td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td>1,7</td>
<td>2,6</td>
<td>4,8</td>
<td>10,0</td>
</tr>
</tbody>
</table>

Table III-3  Number of entrepreneurs with breakdown by number of employees, by type of activity as of 31.12. 2016 (in percent)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>1-4</th>
<th>5-10</th>
<th>11-20</th>
<th>21 and more</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>49,9</td>
<td>26,4</td>
<td>15,2</td>
<td>8,5</td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>100</td>
<td>31,3</td>
<td>35,5</td>
<td>21,3</td>
<td>12,0</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>100</td>
<td>76,5</td>
<td>23,5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>100</td>
<td>97,1</td>
<td>2,9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>F. Construction</td>
<td>100</td>
<td>95,1</td>
<td>4,9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>100</td>
<td>93,9</td>
<td>5,2</td>
<td>0,8</td>
<td>0,1</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>100</td>
<td>90,7</td>
<td>8,5</td>
<td>0,8</td>
<td>-</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>100</td>
<td>95,2</td>
<td>3,9</td>
<td>0,7</td>
<td>0,2</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>100</td>
<td>100,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>100</td>
<td>94,8</td>
<td>4,5</td>
<td>0,7</td>
<td>-</td>
</tr>
<tr>
<td>M. Education</td>
<td>100</td>
<td>76,3</td>
<td>23,7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td>100</td>
<td>95,1</td>
<td>4,9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td>100</td>
<td>94,3</td>
<td>4,4</td>
<td>1,0</td>
<td>0,3</td>
</tr>
</tbody>
</table>
Table III-4 Number of entrepreneurs with breakdown by conveniences in premises, by activity type as of 31.12.2016 (in percent)

<table>
<thead>
<tr>
<th></th>
<th>Hot water supply</th>
<th>Furnace heating</th>
<th>Liquified gas (in ballon)</th>
<th>Electric stove</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>1,7</td>
<td>0,6</td>
<td>2,6</td>
<td>3,3</td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>0,0</td>
<td>0,1</td>
<td>0,8</td>
<td>0,5</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>0,1</td>
<td>0,1</td>
<td>0,3</td>
<td>0,3</td>
</tr>
<tr>
<td>F. Construction</td>
<td>0,0</td>
<td>0,0</td>
<td>0,1</td>
<td>0,1</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>0,7</td>
<td>0,2</td>
<td>0,7</td>
<td>1,4</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>0,1</td>
<td>0,0</td>
<td>0,2</td>
<td>0,2</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>0,5</td>
<td>0,0</td>
<td>0,5</td>
<td>0,4</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>0,1</td>
<td>0,0</td>
<td>0,1</td>
<td>0,1</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>M. Education</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td>0,2</td>
<td>0,0</td>
<td>0,1</td>
<td>0,3</td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table III-5 Number of entrepreneurs with breakdown by types of energy aggregates/units and by activity type as of 31.12.2016 (in percent)

<table>
<thead>
<tr>
<th></th>
<th>Electric</th>
<th>Petrol</th>
<th>Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>1,3</td>
<td>0,5</td>
<td>3,0</td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>0,1</td>
<td>0,4</td>
<td>2,3</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>0,1</td>
<td>0,0</td>
<td>-</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>0,0</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>F. Construction</td>
<td>0,4</td>
<td>0,1</td>
<td>0,2</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>0,4</td>
<td>0,0</td>
<td>0,1</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>0,0</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>0,0</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>0,0</td>
<td>-</td>
<td>0,1</td>
</tr>
<tr>
<td>Category</td>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>property, rent and services to enterprises</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Education</td>
<td>0,2</td>
<td>-</td>
<td>0,1</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table III-6 Number of entrepreneurs broken down by type of equipment using electricity and by type of activities as of December 31, 2016 (in percent)

<table>
<thead>
<tr>
<th>Lightning devices (lamps)</th>
<th>Washing machines</th>
<th>Refrigerator, freezing chamber</th>
<th>TV set</th>
<th>Heater, oil heater</th>
<th>Electrical stove and kettle</th>
<th>Microwave oven</th>
<th>Air conditioner</th>
<th>Vacuum cleaner</th>
<th>Pumps</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>4.8</td>
<td>0.2</td>
<td>2.4</td>
<td>1.9</td>
<td>2.4</td>
<td>0.1</td>
<td>1.9</td>
<td>0.3</td>
<td>2.4</td>
<td>0.3</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>1.7</td>
<td>0.2</td>
<td>0.7</td>
<td>0.6</td>
<td>0.3</td>
<td>0.3</td>
<td>0.6</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>E. Construction</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households, goods and personal use items</td>
<td>8.0</td>
<td>1.3</td>
<td>3.1</td>
<td>1.9</td>
<td>0.9</td>
<td>0.4</td>
<td>1.7</td>
<td>3.3</td>
<td>2.1</td>
<td>0.6</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>1.2</td>
<td>0.1</td>
<td>0.6</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>5.6</td>
<td>0.5</td>
<td>1.4</td>
<td>1.4</td>
<td>0.7</td>
<td>1.1</td>
<td>0.4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.6</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>0.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent</td>
<td>1.1</td>
<td>0.3</td>
<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.4</td>
<td>0.1</td>
<td>0.4</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>M. Education</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>O. Other communal, social and personal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>services</td>
<td>2.7</td>
<td>0.3</td>
<td>1.4</td>
<td>1.1</td>
<td>0.5</td>
<td>0.8</td>
<td>1.2</td>
<td>0.2</td>
<td>1.1</td>
<td>0.6</td>
</tr>
</tbody>
</table>
### Table III-7 Number of entrepreneurs by type of consumption of oil products and by type of activity as of December 31, 2016 (in percent)

<table>
<thead>
<tr>
<th></th>
<th>Petrol</th>
<th>Diesel fuel</th>
<th>Kerosene</th>
<th>Liquified gas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td><strong>18,9</strong></td>
<td><strong>72,0</strong></td>
<td><strong>0,1</strong></td>
<td><strong>6,5</strong></td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>13,3</td>
<td>66,6</td>
<td>0,0</td>
<td>2,6</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>0,6</td>
<td>0,6</td>
<td>0,0</td>
<td>0,5</td>
</tr>
<tr>
<td>F. Construction</td>
<td>0,1</td>
<td>0,1</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>3,0</td>
<td>1,5</td>
<td>0,0</td>
<td>2,1</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>0,4</td>
<td>0,3</td>
<td>0,0</td>
<td>0,2</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>0,8</td>
<td>1,5</td>
<td>0,0</td>
<td>0,5</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>0,3</td>
<td>0,4</td>
<td>0,0</td>
<td>0,3</td>
</tr>
<tr>
<td>M. Education</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td>0,4</td>
<td>0,8</td>
<td>0,1</td>
<td>0,2</td>
</tr>
</tbody>
</table>

### Table III-8 Number of entrepreneurs with breakdown by type of coal-fed equipment used for needs of premises, by types of activity as of December 31, 2016 (in percent)

<table>
<thead>
<tr>
<th></th>
<th>Food cooking stove</th>
<th>Boiler for central heating</th>
<th>Boiler for heating water</th>
<th>Furnace for heating the premises</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,1</strong></td>
<td><strong>0,1</strong></td>
<td><strong>0,3</strong></td>
<td><strong>1,0</strong></td>
</tr>
<tr>
<td>A. Agriculture, hunting and forestry</td>
<td>0,2</td>
<td>0,0</td>
<td>0,1</td>
<td>0,3</td>
</tr>
<tr>
<td>B. Fishing and fish breeding</td>
<td>0,1</td>
<td>-</td>
<td>0,0</td>
<td>0,1</td>
</tr>
<tr>
<td>D. Processing industry</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>F. Construction</td>
<td>0,4</td>
<td>0,1</td>
<td>0,1</td>
<td>0,3</td>
</tr>
<tr>
<td>G. Wholesaling and retail trade, repair of cars, motorcycles, households goods and personal use items</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>0,1</td>
</tr>
<tr>
<td>H. Hotels and restaurants</td>
<td>0,2</td>
<td>-</td>
<td>0,0</td>
<td>0,1</td>
</tr>
<tr>
<td>I. Transport and communication</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>J. Financial intermediation</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>K. Transactions with immovable property, rent and services to enterprises</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>M. Education</td>
<td>0,1</td>
<td>0,0</td>
<td>0,0</td>
<td>0,1</td>
</tr>
<tr>
<td>N. Public health and social services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Other communal, social and personal services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

233
### 3.3 Tables “Energy resources consumption by individual entrepreneurs”

Table III-9 Purchasing of energy resources in 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Processing industry</th>
<th>Construction</th>
<th>Transport &amp; communication</th>
<th>Other sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric power (mln. kWh)</td>
<td>658,3</td>
<td>279,4</td>
<td>25,4</td>
<td>2,4</td>
<td>99,7</td>
<td>251,4</td>
</tr>
<tr>
<td>Fuel wood (thousand m³)</td>
<td>93,4</td>
<td>45,3</td>
<td>12,3</td>
<td>0,6</td>
<td>4,9</td>
<td>30,3</td>
</tr>
<tr>
<td>Coal (thousand tons)</td>
<td>16,8</td>
<td>1,3</td>
<td>1,3</td>
<td>0,1</td>
<td>3,0</td>
<td>11,1</td>
</tr>
<tr>
<td>Liquefied gas (thousand tons)</td>
<td>21,0</td>
<td>2,6</td>
<td>2,7</td>
<td>0,1</td>
<td>3,4</td>
<td>12,3</td>
</tr>
<tr>
<td>Kerosene (тонн)</td>
<td>2,0</td>
<td>1,7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,3</td>
</tr>
<tr>
<td>Manure (livestock waste)</td>
<td>19,7</td>
<td>19,7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>0,1</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>5,3</td>
<td>4,6</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>0,6</td>
</tr>
<tr>
<td>Sawdust (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Petrol and diesel fuel (thousand tons)</td>
<td>246,2</td>
<td>92,1</td>
<td>3,9</td>
<td>0,6</td>
<td>124,5</td>
<td>25,1</td>
</tr>
<tr>
<td>Lubricants (oil) (thousand tons)</td>
<td>0,7</td>
<td>0,7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,1</td>
</tr>
</tbody>
</table>
Table III-10 Own production (collection) of energy resources in 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Processing industry</th>
<th>Construction</th>
<th>Transport &amp; communication</th>
<th>Other sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel wood (тыс. м³)</td>
<td>49,3</td>
<td>49,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Manure (livestock waste) (thousand tons)</td>
<td>15,3</td>
<td>15,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>0,3</td>
<td>0,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,5</td>
<td>0,5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>73,3</td>
<td>73,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>Sawdust (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Energy resources</td>
<td>Total</td>
<td>Agriculture, hunting and forestry</td>
<td>Processing industry</td>
<td>Construction</td>
<td>Transport &amp; communication</td>
<td>Other sectors</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------</td>
<td>-----------------------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>---------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Electric power (mln. kWh)</td>
<td>658,3</td>
<td>279,4</td>
<td>25,4</td>
<td>2,4</td>
<td>99,7</td>
<td>251,4</td>
</tr>
<tr>
<td>Fuel wood (thousand m$^3$)</td>
<td>138,1</td>
<td>89,9</td>
<td>12,4</td>
<td>0,5</td>
<td>4,9</td>
<td>30,4</td>
</tr>
<tr>
<td>Coal (thousand tons)</td>
<td>11,2</td>
<td>1,3</td>
<td>1,5</td>
<td>0,1</td>
<td>3,0</td>
<td>5,3</td>
</tr>
<tr>
<td>Liquefied gas (thousand tons)</td>
<td>17,1</td>
<td>2,6</td>
<td>2,7</td>
<td>0,1</td>
<td>3,4</td>
<td>8,3</td>
</tr>
<tr>
<td>Kerosene (тонн)</td>
<td>2,3</td>
<td>1,9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Manure (livestock waste) (thousand tons)</td>
<td>37,6</td>
<td>37,6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>0,4</td>
<td>0,4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>44,2</td>
<td>43,5</td>
<td>0,1</td>
<td>0,0</td>
<td>0,0</td>
<td>0,6</td>
</tr>
<tr>
<td>Sawdust (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Petrol and diesel fuel (thousand tons)</td>
<td>239,1</td>
<td>105,8</td>
<td>3,9</td>
<td>0,6</td>
<td>111,3</td>
<td>17,5</td>
</tr>
<tr>
<td>Lubricants (oil) (thousand tons)</td>
<td>0,7</td>
<td>0,7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
</tbody>
</table>
Table III-12 Reserves of energy resources as of December 31, 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Processing industry</th>
<th>Construction</th>
<th>Transport &amp; communication</th>
<th>Other sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel wood (thousand m³)</td>
<td>9,0</td>
<td>7,4</td>
<td>0,4</td>
<td>0,0</td>
<td>0,0</td>
<td>1,2</td>
</tr>
<tr>
<td>Coal (thousand tons)</td>
<td>0,9</td>
<td>0,1</td>
<td>0,1</td>
<td>0,0</td>
<td>0,0</td>
<td>0,7</td>
</tr>
<tr>
<td>Liquefied gas (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>Kerosene (thousand liter)</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Manure (livestock waste)</td>
<td>0,4</td>
<td>0,4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Corn leaves (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bushes (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cotton-plant cane (thousand tons)</td>
<td>5,9</td>
<td>5,9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sawdust (thousand tons)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Petrol and diesel fuel (thousand tons)</td>
<td>0,2</td>
<td>0,2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
IV. ANALYSIS OF FULL COVERAGE RESULTS OF THE LEGAL ENTITIES

4.1 Survey results

According to the results of the full coverage of the legal entities, the number of entities provided information on the purchase, production, reserves and consumption of the energy resources in 2016 amounted to 21045 units. The legal entities structure by regions was as follows: 35.7% in Soghd Region, 25.5% in Khatlon Region, 15.9% in Dushanbe, 20.3% in the RRS and 2.6% in GBAO.

Figure 1 Structure of the number of legal entities by region, in %

The legal entities structure provided information by types of economic activity showed that 17.2% falls on agriculture, 9.6% - industry, 6.0% construction %, 2.8% - transport and 64.4% for services sector (including the trade sector).

Figure 2 Breakdown of legal entities provided information by the types of economic activities, in %

**ELECTRIC POWER.** Tajikistan has great reserves of water and accordingly the hydropower is the main source of energy in the country. Data analysis on power generation showed that in 2016 the power generation in the Republic of Tajikistan was 17.2 billion kWh.

Power is mainly generated by the hydropower plants.
The flagship of the Tajik hydrowenergetics is the Nurek HPP, the highest and seismically reliable dam in the world with a capacity of 3000 MW. Beneath the HPP there is a section line of Baypazinskaya HPP with a total capacity of 600 MW, Sangtudinskaya HPP-1 with a capacity of 670 MW, Sangtudinskaya HPP-2 with a capacity of 220 MW, followed by a cascade of power plants with a lower capacity: Main HPP with 240 MW, Back Drop HPP with a capacity of 29.5 MW and the Central HPP with a capacity of 15.1 MW.

Figure 3 Power generation structure by HPPs, in %

Power generated by small power plants in 2016 amounted to 27.9 million kWh. Moreover, in 2016, power was generated by thermal power plants TPP-1 and TPP-2 with an annual production of 600.2 million kWh.

It should be noted that the export of power to neighboring countries in 2016 amounted to 1,427.4 million kWh (Afghanistan - 1323.7 million kWh, Kyrgyzstan - 103.7 million kWh). At the same time, the import of power from the Kyrgyz Republic for this period amounted to 103.2 million kWh.

The energy loss amounted to 2736.6 million kWh during this period, which is 15.6% of the total annual production and shows that Tajikistan suffers huge energy loss.

It should be noted that in general, the power consumption in the Republic of Tajikistan by all categories of users was more than 12 billion kWh.

The survey of the energy consumption by the legal entities showed that this category of users consumed 7,265.3 million kWh of power to perform its activities.

The structure of the electric power consumption by the legal entities by economic sectors showed that the share of power purchase falls on the industry (69.1%), agriculture (18.2%), construction (0.9%), transport and communications (0.7%), as well as trade and services (11.1%).
There are four districts of the coal-bearing strata exploration on the territory of the Republic of Tajikistan, each of which differs by a wide range of characteristic features of geological zoning: South Fergana, Zarafshan-Hissar, Southern Hissar and Pamir-Darvaz. The total coal reserves in the Republic of Tajikistan are estimated at 4.3 billion tons.

In 2016, the following types of coal were produced: stone coal, anthracite and brown coal.

During the analyzed period, 1,361,300 tons were produced out of which 1275,0 thousand tons of stone coal, 50.4 thousand tons of brown coal and 35.9 thousand tons of anthracite.

In 2016, coal consumption amounted to 850,4 thousand tons, out of which 754,7 thousand tons of stone coal, 50.9 thousand tons of brown coal, 36.2 thousand tons of anthracite and 8,6 thousand tons of coal-bearing coal.
Out of the total volume of the consumed coal, the share of the industrial consumption was 92.9%, services – 6.9% and the share of other sectors was 0.2%.

Figure 6 Structure of coal consumption by sectors of economy, in %

The volume of coal reserves as of December 31, 2016 amounted to 467.0 thousand tons, out of which 97.2% were stone coal, 2.2% - anthracite and 0.6% - brown coal.

Coal reserves are mainly observed in industry (97.1%), in the services sector (2.8%) and in other industries (0.1%)

LIQUEFIED AND NATURAL GAS. The volume of natural gas production in the Republic of Tajikistan in 2016 was 2.9 thousand m$^3$ out of which 2.2 thousand m$^3$ were used in the industrial sector and 0.7 thousand m$^3$ in the services sector.

It should be noted that the volume of liquefied gas production is insignificant. Liquefied gas is mainly imported from Kazakhstan and the Russian Federation. During 2016, the import of liquefied gas amounted to 349.3 thousand tons out of which 254.1 thousand tons or 71.9% from Kazakhstan, 81.1 thousand tons or 24.3% from the Russian Federation and 14.1 thousand tons, tons or 3.8% from Turkmenistan.

In 2016 the legal entities purchased 384.9 thousand tons of liquefied gas. The consumption of this type of energy resources in this period amounted to 131,0 thousand tons. The structure of consumption showed that the main share falls on transport (64,1%), industry (14,0%), services (20,4%) and other sector of economy (1,5%).
OIL PRODUCTS. The survey results showed that 746,800 tons of oil products were purchased by legal entities out of which the main type are petrol (60.2%) and diesel fuel (34.1%) as well as fuel oil (masut) (2.7%), bitumen (1.1%), kerosene (0.4%), lubricants (0.1%) and others. The share of domestic production of oil products is insignificant in the Republic of Tajikistan, although necessary measures are taken to increase the volume of domestic production. In 2016, the production of oil products amounted to 18.2 thousand tons out of which 0.7 thousand tons accounted for gasoline, 4.6 thousand tons - diesel fuel, 7.0 thousand tons - fuel oil (masut), 2.7 thousand tons - bitumen and other oil products - 3.2 thousand tons.

In total, the general consumption of oil products in 2016 amounted to 402.1 thousand tons out of which: gasoline - 189.2 thousand tons (47.0%), diesel fuel - 168.1 thousand tons (41.8%), fuel oil (masut) - 22.6 thousand tons (5.7%), bitumen - 7.2 thousand tons (1.9%), kerosene - 2.7 thousand tons (0.7%), other oil products 7.8 thousand tons (1.8%), lubricants - 3.9 thousand tons (1.0%) and other gas oil - 0.6 thousand tons (0.1%).

Figure 8 Breakdown of consumption of oil products by types of oil products in %
BIOFUEL (BIOMASS). The production of biomass by business entities in 2016 amounted as follow: wood and wood materials - 4,900 m$^3$, livestock waste - 0.3 thousand tons.

In addition, during this period, 45.4 thousand m$^3$ of firewood were purchased, including 38.7 thousand m$^3$ (85.2%) of wood pellets, 3.9 thousand m$^3$ (8.6%) of wood residues, 2.8 thousand m$^3$ (6.2%) of wood briquettes. The purchase of livestock wastes amounted to 5.4 thousand tons.

Figure 9 Structure of the purchase of biofuels, in%

Consumption of biomass was 42.7 thousand m$^3$ out of which 36.1 thousand m$^3$ were wood pellets, 4.1 thousand m$^3$ - wood residues and 2.5 thousand m$^3$ - wood briquettes.

The structure of consumption by sectors of the economy showed that 80.2% is the services sector, 7.4% - construction, 4.8% - agriculture and 7.6% - other industries.
### 4.2 Tables “Consumption of energy resources by legal entities”

#### Table IV-1 Purchasing of energy resources for 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Industry</th>
<th>Construction</th>
<th>Transport and communication</th>
<th>Other sectors (services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric power (mln.kv.h)</td>
<td>7265,3</td>
<td>1303,2</td>
<td>5054,6</td>
<td>48,5</td>
<td>67,3</td>
<td>791,7</td>
</tr>
<tr>
<td>Coal total (ths.ton)</td>
<td>875,1</td>
<td>0,3</td>
<td>797,1</td>
<td>1,5</td>
<td>0,1</td>
<td>58,1</td>
</tr>
<tr>
<td>Anthracite (ths.ton)</td>
<td>38,6</td>
<td>0,2</td>
<td>7,5</td>
<td>0,1</td>
<td>0,0</td>
<td>30,8</td>
</tr>
<tr>
<td>Metallurgical coal (ths.ton)</td>
<td>8,6</td>
<td>0,0</td>
<td>8,5</td>
<td>-</td>
<td>-</td>
<td>0,1</td>
</tr>
<tr>
<td>Other bituminous coals (ths.ton)</td>
<td>757,6</td>
<td>0,1</td>
<td>718,6</td>
<td>1,4</td>
<td>0,1</td>
<td>37,4</td>
</tr>
<tr>
<td>Semibituminous coal (ths.ton)</td>
<td>1,3</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>1,3</td>
</tr>
<tr>
<td>Brown coal (ths.ton)</td>
<td>69,0</td>
<td>0,0</td>
<td>62,5</td>
<td>0,0</td>
<td>0,0</td>
<td>6,5</td>
</tr>
<tr>
<td>Liquefied gas (ths.ton)</td>
<td>384,9</td>
<td>0,5</td>
<td>18,3</td>
<td>1,7</td>
<td>1,7</td>
<td>362,7</td>
</tr>
<tr>
<td>Motor petrol (ths. ton)</td>
<td>449,5</td>
<td>1,0</td>
<td>12,7</td>
<td>2,6</td>
<td>129,4</td>
<td>303,8</td>
</tr>
<tr>
<td>Kerosene (ths.ton)</td>
<td>2,9</td>
<td>2,5</td>
<td>0,0</td>
<td>0,1</td>
<td>0,0</td>
<td>0,3</td>
</tr>
<tr>
<td>Diesel fuel (ths.ton)</td>
<td>254,7</td>
<td>48,5</td>
<td>33,1</td>
<td>41,0</td>
<td>7,4</td>
<td>124,7</td>
</tr>
<tr>
<td>Other gas oil (ths.ton)</td>
<td>0,6</td>
<td>0,1</td>
<td>0,1</td>
<td>0,1</td>
<td>0,0</td>
<td>0,3</td>
</tr>
<tr>
<td>Fuel oil (masut) (ths.ton)</td>
<td>19,9</td>
<td>0,0</td>
<td>17,7</td>
<td>0,3</td>
<td>0,7</td>
<td>1,2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Agriculture, hunting and forestry</td>
<td>Industry</td>
<td>Construction</td>
<td>Transport and communication</td>
<td>Other sectors (services)</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------</td>
<td>----------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>-----------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Lubricants (ths.ton)</td>
<td>5,9</td>
<td>0,1</td>
<td>0,8</td>
<td>1,9</td>
<td>0,0</td>
<td>3,1</td>
</tr>
<tr>
<td>Bitumen (ths.ton)</td>
<td>8,4</td>
<td>-</td>
<td>0,0</td>
<td>5,0</td>
<td>1,9</td>
<td>1,5</td>
</tr>
<tr>
<td>Other oil products (ths. ton)</td>
<td>4,9</td>
<td>0,0</td>
<td>0,0</td>
<td>4,9</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>Fuel wood (ths.m³)</td>
<td>42,7</td>
<td>1,2</td>
<td>0,1</td>
<td>3,1</td>
<td>0,1</td>
<td>38,2</td>
</tr>
<tr>
<td>including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel wood granules (ths.m³)</td>
<td>36,1</td>
<td>0,9</td>
<td>0,1</td>
<td>3,1</td>
<td>-</td>
<td>32,0</td>
</tr>
<tr>
<td>Wood briquettes (ths.m³)</td>
<td>2,5</td>
<td>0,0</td>
<td>-</td>
<td>0,0</td>
<td>-</td>
<td>2,5</td>
</tr>
<tr>
<td>Other wood residues (ths.m³)</td>
<td>4,1</td>
<td>0,3</td>
<td>-</td>
<td>0,0</td>
<td>-</td>
<td>3,8</td>
</tr>
<tr>
<td>Manure (livestock wastes) (ths.ton)</td>
<td>5,2</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5,2</td>
</tr>
<tr>
<td>Other plant materials and residues (ths.ton)</td>
<td>0,8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,8</td>
</tr>
</tbody>
</table>
### Table IV-2 Own production of energy resources, in 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Industry</th>
<th>Construction</th>
<th>Transport and communication</th>
<th>Other sectors (services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric power (mln.kv.h)</td>
<td>17196,8</td>
<td>-</td>
<td>17196,8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Coal total (ths.ton)</td>
<td>1361,3</td>
<td>-</td>
<td>1361,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Anthracite (ths.ton)</td>
<td>35,9</td>
<td>-</td>
<td>35,9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Metallurgical coal (ths.ton)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other bituminous coals (ths.ton)</td>
<td>1248,0</td>
<td>-</td>
<td>1248,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Semibituminous coal (ths.ton)</td>
<td>27,0</td>
<td>-</td>
<td>27,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Brown coal (ths.ton)</td>
<td>50,4</td>
<td>-</td>
<td>1361,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Liquefied gas (ths.ton)</td>
<td>0,0</td>
<td>-</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Motor petrol (ths.ton)</td>
<td>0,7</td>
<td>-</td>
<td>0,7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kerosene (ths.ton)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Diesel fuel (ths.ton)</td>
<td>4,6</td>
<td>-</td>
<td>4,6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other gas oil (ths.ton)</td>
<td>0,0</td>
<td>-</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel oil (masut) (ths.ton)</td>
<td>7,0</td>
<td>-</td>
<td>7,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Agriculture, hunting and forestry</td>
<td>Industry</td>
<td>Construction</td>
<td>Transport and communication</td>
<td>Other sectors (services)</td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>----------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>----------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Lubricants (ths. ton)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bitumen (ths. ton)</td>
<td>2,7</td>
<td>-</td>
<td>2,7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Black oil</td>
<td>25,0</td>
<td>-</td>
<td>25,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other oil products (ths. ton)</td>
<td>3,2</td>
<td>-</td>
<td>3,2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel wood (ths.m³)</td>
<td>2,9</td>
<td>-</td>
<td>2,9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>including:</td>
<td>1,6</td>
<td>-</td>
<td>1,6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel wood granules (ths.m³)</td>
<td>5,1</td>
<td>2,3</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>2,7</td>
</tr>
<tr>
<td>Wood briquettes (ths.m³)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other wood residues (ths. m³)</td>
<td>4,5</td>
<td>1,7</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>2,7</td>
</tr>
<tr>
<td>Manure (livestock wastes) (ths. ton)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other plant materials and residues (ths. ton)</td>
<td>0,3</td>
<td>0,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table IV-3 Energy resources consumption, in 2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Industry</th>
<th>Construction</th>
<th>Transport and communication</th>
<th>Other sectors (services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric power (mln.kv.h)</td>
<td>7158,9</td>
<td>1303,2</td>
<td>4948,2</td>
<td>48,5</td>
<td>67,4</td>
<td>791,6</td>
</tr>
<tr>
<td>Coal total (ths.ton)</td>
<td>850,4</td>
<td>0,3</td>
<td>790,1</td>
<td>1,5</td>
<td>0,1</td>
<td>58,4</td>
</tr>
<tr>
<td>Anthracite (ths.ton)</td>
<td>36,2</td>
<td>0,2</td>
<td>7,3</td>
<td>0,1</td>
<td>0,0</td>
<td>28,6</td>
</tr>
<tr>
<td>Metallurgical coal (ths.ton)</td>
<td>8,6</td>
<td>0,0</td>
<td>8,5</td>
<td>-</td>
<td>-</td>
<td>0,1</td>
</tr>
<tr>
<td>Other bituminous coals (ths.ton)</td>
<td>753,4</td>
<td>0,1</td>
<td>729,3</td>
<td>1,4</td>
<td>0,1</td>
<td>22,5</td>
</tr>
<tr>
<td>Semibituminous coal (ths.ton)</td>
<td>1,3</td>
<td>-</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>1,3</td>
</tr>
<tr>
<td>Brown coal (ths.ton)</td>
<td>50,9</td>
<td>0,0</td>
<td>45,0</td>
<td>0,0</td>
<td>0,0</td>
<td>5,9</td>
</tr>
<tr>
<td>Liquefied gas (ths.ton)</td>
<td>131,0</td>
<td>0,2</td>
<td>18,3</td>
<td>1,7</td>
<td>84,0</td>
<td>26,8</td>
</tr>
<tr>
<td>Motor petrol (ths. ton)</td>
<td>189,2</td>
<td>0,8</td>
<td>12,8</td>
<td>127,9</td>
<td>2,0</td>
<td>45,7</td>
</tr>
<tr>
<td>Kerosene (ths.ton)</td>
<td>2,7</td>
<td>2,5</td>
<td>0,0</td>
<td>0,1</td>
<td>0,0</td>
<td>0,1</td>
</tr>
<tr>
<td>Diesel fuel (ths.ton)</td>
<td>168,1</td>
<td>46,5</td>
<td>33,4</td>
<td>39,1</td>
<td>41,0</td>
<td>8,1</td>
</tr>
<tr>
<td>Other gas oil (ths.ton)</td>
<td>0,6</td>
<td>0,1</td>
<td>0,1</td>
<td>0,1</td>
<td>0,0</td>
<td>0,3</td>
</tr>
<tr>
<td>Fuel oil (masut) (ths. ton)</td>
<td>22,6</td>
<td>0,0</td>
<td>20,4</td>
<td>0,3</td>
<td>0,7</td>
<td>1,2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Agriculture, hunting and forestry</td>
<td>Industry</td>
<td>Construction</td>
<td>Transport and communication</td>
<td>Other sectors (services)</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
<td>----------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>---------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Lubricants (ths.ton)</td>
<td>3,9</td>
<td>0,1</td>
<td>0,8</td>
<td>1,9</td>
<td>0,0</td>
<td>1,1</td>
</tr>
<tr>
<td>Bitumen (ths.ton)</td>
<td>7,2</td>
<td>-</td>
<td>-</td>
<td>7,2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other oil products (ths.ton)</td>
<td>7,8</td>
<td>2,6</td>
<td>0,3</td>
<td>4,7</td>
<td>0,0</td>
<td>0,2</td>
</tr>
<tr>
<td>Natural gas (ths.m³)</td>
<td>2,9</td>
<td>-</td>
<td>2,2</td>
<td>-</td>
<td>-</td>
<td>0,7</td>
</tr>
<tr>
<td>Heat (gigajoule)</td>
<td>1,6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,6</td>
</tr>
<tr>
<td>Fuel wood (ths.m³)</td>
<td>45,4</td>
<td>1,6</td>
<td>0,1</td>
<td>3,1</td>
<td>0,0</td>
<td>40,6</td>
</tr>
<tr>
<td>including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel wood granules (ths.m³)</td>
<td>38,7</td>
<td>1,3</td>
<td>0,1</td>
<td>3,1</td>
<td>0,0</td>
<td>34,2</td>
</tr>
<tr>
<td>Wood briquettes (ths.m³)</td>
<td>2,8</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2,8</td>
</tr>
<tr>
<td>Other wood residues (ths.m³)</td>
<td>3,9</td>
<td>0,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3,6</td>
</tr>
<tr>
<td>Livestock wastes (ths.ton)</td>
<td>5,4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5,4</td>
</tr>
<tr>
<td>Other plant materials and residues (ths.ton)</td>
<td>0,8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,8</td>
</tr>
</tbody>
</table>
### Table IV-4 Energy resources reserves, for 31.01.2016

<table>
<thead>
<tr>
<th>Energy resources</th>
<th>Total</th>
<th>Agriculture, hunting and forestry</th>
<th>Industry</th>
<th>Construction</th>
<th>Transport and communication</th>
<th>Other sectors (services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal total (ths. ton)</td>
<td>467,0</td>
<td>0,0</td>
<td>453,6</td>
<td>0,0</td>
<td>0,1</td>
<td>13,3</td>
</tr>
<tr>
<td>Anthracite (ths. ton)</td>
<td>10,4</td>
<td>0,0</td>
<td>0,2</td>
<td>0,0</td>
<td>0,0</td>
<td>10,2</td>
</tr>
<tr>
<td>Metallurgical coal (ths. ton)</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other bituminous coals (ths. ton)</td>
<td>453,4</td>
<td>0,0</td>
<td>448,5</td>
<td>0,0</td>
<td>0,1</td>
<td>4,8</td>
</tr>
<tr>
<td>Semibituminous coal (ths. ton)</td>
<td>0,4</td>
<td>-</td>
<td>0,0</td>
<td>0,0</td>
<td>-</td>
<td>0,4</td>
</tr>
<tr>
<td>Brown coal (ths. ton)</td>
<td>2,8</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>2,8</td>
</tr>
<tr>
<td>Liquefied gas (ths. ton)</td>
<td>98,4</td>
<td>0,0</td>
<td>0,1</td>
<td>0,0</td>
<td>0,0</td>
<td>98,3</td>
</tr>
<tr>
<td>Motor petrol (ths. ton)</td>
<td>12,6</td>
<td>0,1</td>
<td>0,8</td>
<td>1,5</td>
<td>0,6</td>
<td>9,6</td>
</tr>
<tr>
<td>Kerosene (ths. ton)</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>Diesel fuel (ths. ton)</td>
<td>7,4</td>
<td>0,3</td>
<td>1,5</td>
<td>2,3</td>
<td>0,4</td>
<td>2,9</td>
</tr>
<tr>
<td>Other gas oil (ths. ton)</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td>Fuel oil (masut) (ths. ton)</td>
<td>6,8</td>
<td>-</td>
<td>6,7</td>
<td>0,1</td>
<td>-</td>
<td>0,0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Agriculture, hunting and forestry</td>
<td>Industry</td>
<td>Construction</td>
<td>Transport and communication</td>
<td>Other sectors (services)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>----------------------------------</td>
<td>----------</td>
<td>--------------</td>
<td>----------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Lubricants (ths. ton)</td>
<td>0,5</td>
<td>-</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,5</td>
</tr>
<tr>
<td>Bitumen (ths. ton)</td>
<td>2,2</td>
<td>-</td>
<td>0,4</td>
<td>1,7</td>
<td>0,1</td>
<td>-</td>
</tr>
<tr>
<td>Other oil products (ths. ton)</td>
<td>0,1</td>
<td>-</td>
<td>0,1</td>
<td>-</td>
<td>-</td>
<td>0,1</td>
</tr>
<tr>
<td>Natural gas (ths. m3)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heat (gigajoule)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel wood (ths. m3)</td>
<td>8,7</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>8,7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel wood granules (ths. m3)</td>
<td>6,7</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>6,7</td>
</tr>
<tr>
<td>Wood briquettes (ths. m3)</td>
<td>1,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,0</td>
</tr>
<tr>
<td>Other wood residues (ths. m3)</td>
<td>1,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,0</td>
</tr>
<tr>
<td>Livestock wastes (ths. ton)</td>
<td>0,3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,3</td>
</tr>
<tr>
<td>Other plant materials and residues (ths. ton)</td>
<td>0,0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0,0</td>
</tr>
</tbody>
</table>
### V. FUEL AND ENERGY BALANCE FOR 2016

**Table IV-5 Fuel and energy balance for 2016**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>36</td>
<td>1275</td>
<td>50</td>
<td>3675</td>
<td>587</td>
<td>3</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Import</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>127</td>
<td>349</td>
<td>196</td>
<td>35</td>
<td>211</td>
</tr>
<tr>
<td>Export</td>
<td>-</td>
<td>0.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inventory changes</td>
<td>-1</td>
<td>-</td>
<td>-1</td>
<td>1814</td>
<td>187</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-95</td>
<td>-9</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td><strong>General primary power supply</strong></td>
<td>35</td>
<td>1176</td>
<td>50</td>
<td>5489</td>
<td>774</td>
<td>3</td>
<td>25</td>
<td>127</td>
<td>254</td>
<td>188</td>
<td>35</td>
<td>218</td>
</tr>
<tr>
<td><strong>Transfer</strong></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Statistical discrepancies</strong></td>
<td>-3</td>
<td>9</td>
<td>0</td>
<td>15</td>
<td>-1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-1</td>
<td>-120</td>
<td>0</td>
<td>-167</td>
</tr>
</tbody>
</table>

#### Transformation sector – Costs

<table>
<thead>
<tr>
<th></th>
<th>Oil refinery plant</th>
<th>Hydroelectric power stations</th>
<th>TPS of producers</th>
<th>Other power plants</th>
<th>TPS of autonomous producers</th>
<th>1</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Consumption in the energy sector (own needs)**

|                      | -                 | 11                            | -                | -                  | -                             | - | - |

252
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Own use in the oil refinery plant</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Own use by hydroelectric power plants (basic occupation)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Own use at the TPS plants (main activity)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Own use at the TPS autoproducers</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Own use at the heat plants of MA</td>
<td>-</td>
<td>11</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Used for pumping</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unspecified above (own use for energy production)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Distribution losses</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total final energy consumption</strong></td>
<td><strong>35</strong></td>
<td><strong>775</strong></td>
<td><strong>50</strong></td>
<td><strong>3611</strong></td>
<td><strong>724</strong></td>
<td><strong>3</strong></td>
<td><strong>0</strong></td>
<td><strong>127,0</strong></td>
<td><strong>254</strong></td>
<td><strong>188</strong></td>
<td><strong>35</strong></td>
<td><strong>218</strong></td>
</tr>
</tbody>
</table>

- Sector of industry
- Iron-and-steel industry
- Chemical industry (including petrochemical)
- Non-ferrous-metals industry
- Non-metallic mineral products
- Transport equipment
- Mechanical engineering
- Mining operations
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, beverages and</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>tobacco</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper, pulp industry</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>and printing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood and wood products</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Construction</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Textile and leather</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unspecified above</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>21</td>
<td>-</td>
<td>35</td>
<td>145</td>
<td>35</td>
<td>48</td>
</tr>
<tr>
<td>industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport Sector</td>
<td>-</td>
<td>3</td>
<td>0.0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>35.1</td>
<td>145</td>
<td>35</td>
<td>-</td>
<td>48</td>
</tr>
<tr>
<td>International air</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National air</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road transport</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>88</td>
<td>145</td>
<td>-</td>
<td>48</td>
<td>-</td>
</tr>
<tr>
<td>Railway transport</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other Sectors</td>
<td>30</td>
<td>440</td>
<td>6</td>
<td>5460</td>
<td>785</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>144</td>
<td>148</td>
<td>0</td>
<td>260</td>
</tr>
<tr>
<td>Commercial and</td>
<td>30</td>
<td>29</td>
<td>6</td>
<td>47</td>
<td>10</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>48</td>
<td>-</td>
<td>57</td>
<td>-</td>
</tr>
<tr>
<td>communal services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing sector</td>
<td>-</td>
<td>410</td>
<td>-</td>
<td>5349</td>
<td>693</td>
<td>-</td>
<td>-</td>
<td>107</td>
<td>-</td>
<td>83</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Agriculture/Forestry</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>64</td>
<td>82</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>17</td>
<td>-</td>
<td>189</td>
</tr>
<tr>
<td>Fishing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Unspecified above</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(other)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-energy use</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transformation sector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Energy sector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
<td>------------------</td>
<td>------------------------------------------</td>
<td>----------------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>-------------------------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Transport Sector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sector of industry</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other sectors</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
VI. SURVEY DESIGN IN LINE WITH THE GSBPM MODEL

Figure VI-1 Survey design according to the GSBPM model
Necessity and advantages in GSBPM application

Following the results of the survey process description, the following conclusions can be drawn:

- processes standardization;
- avoiding duplication;
- documenting processes from the beginning to end;
- work quality audit (both internal and external);
- identification of weaknesses and gaps;
VII. ANNEXES
Data dissemination algorithm for the sample surveys conducted

The following two sample surveys were conducted from October 9 and November 7, 2017 in the Republic of Tajikistan:

1. Household Survey “Energy resources utilization by the households in 2016”;

2. Individual Entrepreneurs Survey “Status of the energy sector and its utilization efficiency in 2016”

Data dissemination for household surveys

The household survey was conducted in all regions of the Republic of Tajikistan covering 3,000 households.

The sampling was carried out based on the territorial principle on the sampling totality formation. In order to ensure an even distribution of sample throughout the territory of the Republic of Tajikistan, the sampling was carried out separately for urban and rural areas on the basis of the population census data.

The sampling design was developed in such a way as to ensure the representation of the territorial structure of the republic and the sufficiency of the sample size to obtain representative data on the main key features of the survey program of the main administrative units of the Republic of Tajikistan - Gorno-Badakhshan Autonomous Oblast (GBAO), Sughd Region, Khatlon Region, Dushanbe ton, Rayons of Republican Subordination (RRS).

The probability sampling method was used during household selection, that is, the units of observation were determined based on the probability proportional to the population size in each administrative-territorial unit.

A two-stage probability sample has been used: a sample of primary sampling units (PSU) was formed at the first stage while at the second stage - a sample of addresses of households within the PSUs selected of the first stage.

The sampling unit at the first stage in the urban area is the census portfolio (the enumeration area) and in the rural areas - the household book.

The households were selected at the second stage of the sample. The households sample by the urban area was obtained based on the lists of the selected census portfolios while in the rural areas - according to the lists of the household books in the jamoats.

In order to avoid biased households selection it is not allowed to replace the addresses at subsequent stages of work.
According to the questionnaires, the following responses options were put:

<table>
<thead>
<tr>
<th>Codes of visit results</th>
<th>Responses option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The survey is completed</td>
<td>Response (n1)</td>
</tr>
<tr>
<td>2. The survey is postponed to another day</td>
<td>Apartment used for other purposes</td>
</tr>
<tr>
<td>4. Refusal</td>
<td>Non-response (n2)</td>
</tr>
<tr>
<td>5. Im possibility to participate (due to health reasons)</td>
<td>Non-response (n3)</td>
</tr>
<tr>
<td>6. No one at home</td>
<td>Non-response (n4)</td>
</tr>
<tr>
<td>7. Apartment is used for other purposes</td>
<td>Totality error (n5)</td>
</tr>
</tbody>
</table>

The results obtained on the type of the household participation in the survey and on substrates (regions) are given below:

<table>
<thead>
<tr>
<th></th>
<th>Number of households in total (N)</th>
<th>Number of households in the sample (n)</th>
<th>n1</th>
<th>n2</th>
<th>n3</th>
<th>n4</th>
<th>n5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gorno-Badakhshan</td>
<td>31331</td>
<td>240</td>
<td>238</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Autonomous Region (GBAO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sughd Region</td>
<td>385805</td>
<td>860</td>
<td>851</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Khatlon Region</td>
<td>385579</td>
<td>880</td>
<td>875</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Dushanbe</td>
<td>145006</td>
<td>400</td>
<td>400</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rayons of Republican</td>
<td>249466</td>
<td>620</td>
<td>619</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Subordination (RRS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the sample statistical surveys, it is very important to receive information from all respondents; however the experience in this field shows that practically it is impossible to interview all respondents. Therefore, it is necessary to calculate the level of non-responses:

\[
K = \frac{n2 + n3 + n4 + n5}{n}; \quad \text{where,}
\]

260
n2, n3, n4, n5 – the number of non-response;

n - Number of households in the sample.

For household surveys the level of non-response is calculated as follow:

\[ K = \left( \frac{8 + 2 + 7}{3000} \right) \times 100 = 0.6\% \]

Thus, the level of non-response was only 0.6%, which is deemed as a very good result.

The propagation ratio for each substratum j (region) is calculated as follows:

\[ W = \frac{N_j - n_j5}{n_j - n_j2 - n_j3 - n_j4}; \quad \text{or} \]

\[ W = \frac{N_j - n_j5}{n_j1}; \quad \text{where,} \]

W – The propagation ratio for each substrate j;
Nj – Total number of households in the substrate j;

nj1 – Number of households with responses, in the substrate j;

nj2 – Number of households with non-response, in the substrate j (refusals);

nj3 – Number of households with non-response, in the substrate j (impossibility of participation);

nj4 – Number of households with non-response of type 4, in the substrate j (No one at home);

nj5 – Number of households included due to totality errors, in the substrate j (Apartment is used for other purposes).

The calculated propagation ratios are given below:

<table>
<thead>
<tr>
<th>The propagation ratio for each substratum j (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gorno-Badakhshan Autonomous Region (GBAO)</td>
</tr>
<tr>
<td>Sughd Region</td>
</tr>
<tr>
<td>Khatlon Region</td>
</tr>
<tr>
<td>Dushanbe</td>
</tr>
<tr>
<td>Rayons of Republican Subordination (RRS)</td>
</tr>
</tbody>
</table>
The survey was conducted in all regions of the Republic of Tajikistan including Dushanbe and covered 7,670 individual entrepreneurs.

The individual entrepreneurs sampling was carried out based on the principle of the stratified random sample according to which the general totality is divided into strata that characterize the area of activity of individual entrepreneurs (types of economic activity). In accordance with the classification adopted in the Republic of Tajikistan, three groups of entrepreneurs were identified, namely:

- Entrepreneurs working based on the patent;
- Entrepreneurs working based on the certificate;
- Entrepreneurs working based on the certificate in agriculture

Within these strata, the substrates are identified according to the requirements of a particular survey, namely, types of economic activity in accordance with the General Classifier of Economic Activities of the Republic of Tajikistan (OKED, rev.1).

To ensure the representativeness of sample thought the territory of the Republic of Tajikistan, the sampling was based on the administrative-territorial division of the country.

When selecting individual entrepreneurs, the probabilistic selection method was used, that is, the units of observation were determined based on the probability proportional to the population in each administrative-territorial unit.

For the dissemination of data, each region will be analyzed separately, namely:

- Gorno-Badakhshan Autonomous Oblast (GBAO),
- Sughd Region,
- Khatlon Region,
- Dushanbe city,
- Rayons of Republican Subordination (RRS).

All entrepreneurs of the same region are divided by type of activity.

In this case, we will obtain the propagation ratio for each region, broken down by economic activities.
According to the questionnaires, the following responses were put:

<table>
<thead>
<tr>
<th>Codes of visit results</th>
<th>Responses options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The survey is completed</td>
<td>Response (n1)</td>
</tr>
<tr>
<td>2. The survey is postponed to another day</td>
<td>The possible answer depends on what was done on the following day</td>
</tr>
<tr>
<td>4. Refusal</td>
<td>Non-response (n2)</td>
</tr>
<tr>
<td>5. Impossibility to participate (due to health reasons)</td>
<td>Non-response (n3)</td>
</tr>
<tr>
<td>7. The room is registered for other purposes</td>
<td>Totality error (n4)</td>
</tr>
</tbody>
</table>

The results obtained on the type of entrepreneurs' participation in the survey and on substrates (types of economic activity) are given below:

<table>
<thead>
<tr>
<th>Region</th>
<th>Economic Activity</th>
<th>The total number of entrepreneurs, for each region i (Ni)</th>
<th>The number of entrepreneurs in the sample for each region i (ni)</th>
<th>ni1</th>
<th>ni2</th>
<th>ni3</th>
<th>ni4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Agriculture</td>
<td>135264</td>
<td>5410</td>
<td>5402</td>
<td>3</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>Fishery</td>
<td>114</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>D</td>
<td>Manufacturing industry</td>
<td>6097</td>
<td>243</td>
<td>242</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>F</td>
<td>Construction</td>
<td>535</td>
<td>22</td>
<td>22</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G</td>
<td>Wholesale and retail trade</td>
<td>19474</td>
<td>782</td>
<td>772</td>
<td>3</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>H</td>
<td>Hotels and restaurants</td>
<td>3248</td>
<td>130</td>
<td>130</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>I</td>
<td>Transport, storage and communication</td>
<td>15330</td>
<td>612</td>
<td>610</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>J</td>
<td>Financial intermediation</td>
<td>52</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>K</td>
<td>Other commercial activities</td>
<td>263</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As in the case of the household survey, it is necessary to calculate the level of non-response:

\[ K = \frac{n2 + n3 + n4}{n}; \]

where,

\[ n2, n3, n4 \] – the number of non-response;

\[ n \] - Number of entrepreneurs in the sample.

The propagation ratio for each substrate \( j \) (type of economic activity), for each region \( i \), is calculated as follows:

\[ W_{ij} = \frac{N_{ij} - n_{ij4}}{n_{ij1} - n_{ij2} - n_{ij3} - n_{ij4}}; \]

\[ W_{ij} = \frac{N_{ij} - n_{ij4}}{n_{ij1}}; \]

where,

\[ W_{ij} \] – the propagation ratio for each region \( i \), by type of economic activity \( j \);

\[ N_{ij} \] - Number of entrepreneurs in the region \( i \), by type of economic activity \( j \);

\[ n_{ij1} \] - Number of entrepreneurs with responses, in region \( i \), by type of economic activity \( j \); (refusals);

\[ n_{ij2} \] - Number of entrepreneurs with non-response, in region \( i \), by type of economic activity \( j \); (impossibility to participate)

\[ n_{ij3} \] – Number of entrepreneurs with non-response, in region \( i \), by type of economic activity \( j \);

\[ n_{ij4} \] - Number of entrepreneurs included due to totality errors, in region \( i \), by type of economic activity \( j \);

Since it was initially determined that the sample is 4% of each substrate,

\[ W_{ij} = \frac{N_{ij}}{n_{ij1}} = 4\%; \]

then the propagation ratio will be the same for each substrate \((\pm 25\%)\), with a small correction for the number of non-responses.

The calculated propagation ratios are given below:

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>3361</th>
<th>136</th>
<th>133</th>
<th>1</th>
<th>2</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Health and social services</td>
<td>224</td>
<td>9</td>
<td>9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N</td>
<td>Other types of services</td>
<td>490</td>
<td>19</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>O</td>
<td></td>
<td>7529</td>
<td>300</td>
<td>298</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Substrate</td>
<td>Gorno-Badakhshan Autonomous Region (GBAO)</td>
<td>Sughd Region</td>
<td>Khatlon Region</td>
<td>Dushanbe Rayons of Republican Subordination (RRS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------</td>
<td>--------------</td>
<td>----------------</td>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Agriculture</td>
<td>25.4</td>
<td>25.1</td>
<td>25.0</td>
<td>25.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Fishery</td>
<td>-</td>
<td>15.0</td>
<td>26.3</td>
<td>-</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Manufacturing industry</td>
<td>30.0</td>
<td>25.5</td>
<td>25.1</td>
<td>24.9</td>
<td>25.1</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Construction</td>
<td>23.5</td>
<td>26.0</td>
<td>22.8</td>
<td>24.0</td>
<td>23.3</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Wholesale and retail trade</td>
<td>23.5</td>
<td>25.7</td>
<td>24.8</td>
<td>25.0</td>
<td>25.6</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Hotels and restaurants</td>
<td>27.3</td>
<td>25.0</td>
<td>25.2</td>
<td>25.0</td>
<td>24.4</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Transport, storage and communication</td>
<td>26.0</td>
<td>25.1</td>
<td>25.1</td>
<td>25.0</td>
<td>25.2</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Financial intermediation</td>
<td>-</td>
<td>27.0</td>
<td>-</td>
<td>13.0</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Other commercial activities</td>
<td>21.3</td>
<td>26.1</td>
<td>24.5</td>
<td>25.3</td>
<td>24.7</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Education</td>
<td>14.0</td>
<td>23.7</td>
<td>26.5</td>
<td>25.5</td>
<td>35.0</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Health and social services</td>
<td>-</td>
<td>23.8</td>
<td>26.6</td>
<td>24.2</td>
<td>28.7</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Other types of services</td>
<td>24.3</td>
<td>25.3</td>
<td>24.9</td>
<td>25.6</td>
<td>25.0</td>
<td></td>
</tr>
</tbody>
</table>
ONE-TIME STATE STATISTICAL OBSERVATION

SURVEY QUESTIONNAIRES
“ENERGY RESOURCES UTILIZATION BY HOUSEHOLDS IN 2016”

CONFIDENTIALITY IS GUARANTEED BY THE RECIPIENT OF INFORMATION

<table>
<thead>
<tr>
<th>Code (to be entered by the interviewer)</th>
<th>Questionnaire identification number</th>
<th>Region (2 signs)</th>
<th>Districts, city (2 signs)</th>
<th>Type of locality where you lived during 2016</th>
<th>№ number of household</th>
<th>Interviewer’s code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESULTS OF VISITS

1. Result of the first visit
2. Time scheduled for the second visit «___»___________at____ o’clock_____ min.
3. Result of the second visit
4. Time scheduled for the third visit «___»___________at____ o’clock_____ min.
5. Result of the third visit

Codes of the visit results:
Survey is completed.................................1
The survey is postponed to another day............2
Refusal ..................................................4
Impossibility to participate (due to the health reasons)...............................5
No one at home........................................6
Apartment is used for other purposes ............7

Approved by the Order of the Director of the Agency on statistics under the President of the Republic of Tajikistan No. ___ dated___ ______ 2017.

TAJSTAT

AGENCY ON STATISTICS UNDER PRESIDENT OF THE REPUBLIC OF TAJIKISTAN
1. HOUSING CONDITIONS

1.1. Type of housing: 
- apartment in many-storeyed house .......................................................... 1
- separate house ......................................................................................... 2
- boarding house ...................................................................................... 3
- communal apartment .............................................................................. 4
- part of the house ................................................................................... 5
- other ........................................................................................................ 5

1.2. When the building where your house is located was built: □ □ □ □ □ year

1.3. Material of the external walls of the building:

<table>
<thead>
<tr>
<th></th>
<th>Concrete, Monolith, Panel</th>
<th>Stone</th>
<th>Brick</th>
<th>Clay</th>
<th>Mixed material</th>
<th>Other material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4. How many rooms does your housing unit have?

1.5. What is the total area of this housing unit, sq.m? 
- Do not know, refused to answer ................................................................. 999

1.6. How many living rooms (out of their total number) does your household occupy?

- Number of living rooms: ..............................................................................
- Do not know, refused to answer ................................................................ 99

1.7. Are there any other types of amenities in this housing unit?? □

Yes    No    Do not know, Refused to answer

1. Water pipes ....................... 1 ...... 2 ...... 9
2. Sewerage ......................... 1 ...... 2 ...... 9
3. Bath and/or shower ............. 1 ...... 2 ...... 9
4. Hot water supply ................ 1 ...... 2 ...... 9
5. Central heating ................. 1 ...... 2 ...... 9
6. Stove heating .................... 1 ...... 2 ...... 9
7. Gas network ....................... 1 ...... 2 ...... 9
8. Liquefied gas (cylinders) .... 1 ...... 2 ...... 9
9. Electric stove ..................... 1 ...... 2 ...... 9
2. USE OF ELECTRICITY

2.1. Do you use electricity in your house?  
Yes   2.2  No   3.1

2.2. What equipment consumes electricity in your home?  
(please specify all possible options  V)

- lighting fixtures (lamps…) Yes  No  
- washing machine Yes  No  
- fridge, freezer, Yes  No  
- TV set Yes  No  
- heater, oil heater Yes  No  
- computer, laptop Yes  No  
- electric stove and kettle Yes  No  
- microwave oven Yes  No  
- air conditioner Yes  No  
- vacuum cleaner Yes  No  
- specify other

2.3. How much kilowatt-hours of electricity did you consume in your household in 2016:  

2.4. Does your household have a generator?  Yes  No

3. USE OF LIQUEFIED OIL GAS

3.1. Do you use liquefied gas in your house? 
Yes   3.2  No   4.1

3.2. What equipment consumes liquefied petroleum gas in your household?  
(please specify all possible options  V)

- Cooker for cooking Yes  No  
- Boiler for central heating and hot water heating Yes  No  
- Heater Yes  No  
- Please specify other

3.3. How much liquefied petroleum gas did you consume in 2016:  

4. USE OF OIL PRODUCTS FOR HEATING, HOT WATER AND OTHER NEEDS

4.1. Do you use oil products in your house for heating, heating of hot water and for other needs?  
Yes   4.2  No   5.1

4.2. What kind of oil products do you use for heating and heating of hot water?  
- household furnace oil  
- diesel fuel  
- other oil products  

4.3. How many liters of oil products did you use for heating and heating of hot water in 2016: petrol l; diesel fuel l; other l

4.4. How many liters of oil products did you spend for other needs in 2016: petrol l; diesel fuel l; other l

- incl. for motor transport: petrol l; diesel fuel l

5. USE OF COAL

5.1. Do you use coal in the household?  
Yes   5.2  No   6.1

5.2. What equipment do you use to consume coal in your household?  
(please specify all possible options  V)

- cooker for cooking Yes  No  
- boiler for central heating Yes  No  
- boiler for hot water heating Yes  No  
- room stove Yes  No  

5.3. How many kilograms of coal did you use in 2016:  


6. USE OF WOOD FUEL AND LIVESTOCK WASTE

### 6.1. Do you use wood fuels and livestock waste in your household?

- **Yes**
- **No**

6.2. What kind of wood fuel did you use in your household? How many kilograms did you spend in 2016? (Please specify all possible options)

<table>
<thead>
<tr>
<th>Type of Wood Fuel</th>
<th>Use</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firewood</td>
<td>Yes</td>
<td>m³</td>
</tr>
<tr>
<td>Wood briquettes</td>
<td>Yes</td>
<td>kg</td>
</tr>
<tr>
<td>Wood pellets</td>
<td>Yes</td>
<td>kg</td>
</tr>
<tr>
<td>Wood residues</td>
<td>Yes</td>
<td>kg</td>
</tr>
<tr>
<td>Guzapai (cotton stalk)</td>
<td>Yes</td>
<td>kg</td>
</tr>
<tr>
<td>Leaves of corn</td>
<td>Yes</td>
<td>kg</td>
</tr>
<tr>
<td>Manure</td>
<td>Yes</td>
<td>kg</td>
</tr>
</tbody>
</table>

7. USING ALTERNATIVE SOURCES OF ENERGY

7.1. Does your household use solar collectors or batteries for power supply?
- **Yes** → 7.2.
- **No** → 7.3.

7.2. What is the power and area of the solar collectors used?

- **kW** - **m²**

7.3. Do your household use wind or mini-hydro generators for power supply?
- **Yes** → 7.4.
- **No**

7.4. What is the power of the used:
- **Wind** - **kW**
- **Mini-hydro** - **kW** - generators
### 8. VOLUME OF STOCK, PURCHASES, SALES, PRODUCTION AND CONSUMPTION OF ENERGY RESOURCES

<table>
<thead>
<tr>
<th>Types of fuel</th>
<th>Unit</th>
<th>Volume of stock of energy resources</th>
<th>Volumes of energy resources</th>
<th>Total consumption of energy resources</th>
<th>Volume of stock of energy resources as of 31.12.2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>As of 01.01.2016</td>
<td>Were purchased in 2016</td>
<td>Own production in 2016</td>
<td>Sold in 2016</td>
</tr>
<tr>
<td>1</td>
<td>Fuel wood (m³)</td>
<td>270</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Coal (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Liquefied gas (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Kerosene (l)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Petrol (except for vehicles) (l)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Diesel oil (except for motor vehicles) (l)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Fuel oil (masut) (l)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Manure (livestock waste) (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Corn leaves (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Shrubs (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>Cotton-plant cane (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>Wood shredding (kg)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>Gasoline and diesel fuel for refueling of a't (l)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Other types: please specify</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) 2)
Approved by the Order of the Director of the Agency on Statistics under the President of the Republic of Tajikistan No. ___ dated___ 2017.

AGENCY ON STATISTICS UNDER PRESIDENT OF THE REPUBLIC OF TAJIKISTAN

ONE-TIME STATE STATISTICAL OBSERVATION

QUESTIONNAIRE FOR THE INDIVIDUAL ENTREPRENEURS SURVEY TO STUDY THE “STATUS OF ENERGY SECTOR AND ITS EFFICIENCY USAGE IN ___________ 2016”

CONFIDENTIALITY IS GUARANTEED BY THE RECIPIENT OF INFORMATION

<table>
<thead>
<tr>
<th>Questionnaire identification number</th>
<th>Region (2 signs)</th>
<th>Districts, city (2 signs)</th>
<th>State register number</th>
<th>Taxpayer identification number</th>
<th>Enterprises code (identification code)</th>
<th>Main type of economic activity</th>
<th>Interviewer's code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code (is entered by the interviewer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESULTS OF VISITS

1. Result of the first visit
2. Time scheduled for the second visit «___»___________at____o’clock_____min.
3. Result of the second visit
4. Time scheduled for the third visit «___»___________at____o’clock_____min.
5. Result of the third visit

Codes of the visit results
Survey is completed.................................1
The survey is postponed to another day............2
Refusal.................................................4
Impossibility to participate
(due to the health reasons)..........................5
The room is registered for other purposes........7
8. GENERAL INFORMATION

1.1. Please specify on what conditions does (did) your business operate during 2016:
- patent................................................................. 1
- certificate............................................................ 2
- не помню.............................................................. 3

8.2. How long have you been engaged in business?

- Started up to 2000 .............................................. 1
- 2000-2010 ........................................................... 2
- 2010-2015 ........................................................... 3
- 2016 ................................................................. 4

8.3. How many persons are engaged in your business?

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Yes</th>
<th>No</th>
<th>Do not know</th>
<th>Refused to answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot water supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central heating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stove heating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquefied gas (cylinders)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric stove</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.4. Are there any other types of improvements in your household? ☐

- Yes ☑ No ☐ Do not know, Refused to answer

- started up to 2000 .......... 1
- 2000-2010 .......................... 2
- 2010-2015 .......................... 3
- 2016 ........................................ 4

8.5. Do you use power generating units/machines in your business?

- Yes ☑ No ☐ Do not know, Refused to answer

- electrical ☑ No ☐
- petrol ☑ No ☐
- diesel ☑ No ☐
- steam ☑ No ☐
- mixed ☑ No ☐

9. USE OF ELECTRICITY

2.1. Do you use electricity?

- Yes ☑ No ☐

2.2. What equipment consumes electricity in your household? (please specify all possible options ☑)

- lighting fixtures (lamps …) ☑ No ☐
- fridge, freezer ☑ No ☐
- TV set ☑ No ☐
- heater, oil heater ☑ No ☐
- computer, laptop ☑ No ☐
- electric stove and kettle ☑ No ☐
- microwave oven ☑ No ☐
- air conditioner ☑ No ☐
- vacuum cleaner ☑ No ☐
- please specify other _________________________________

2.3. How much kilowatt-hours of electricity did you consume in your household in 2016: __________ kWh

2.4. Does your household have its own power generator?

- Yes ☑ No ☐

10. USE OF LIQUEFIED OIL GAS

3.1. Do you use liquefied gas? ☑

- Yes ☑ No ☐

4.1. What equipment uses liquefied petroleum gas in your home? (please specify all possible options ☑)

- cooker ☑ No ☐
- Boiler for central heating ☑ No ☐
- boiler for hot water heating ☑ No ☐
- heater ☑ No ☐
- please specify other _________________________________

3.2. How much liquefied petroleum gas did you use in 2016:

- kg or ______ m³
11. USE OF OIL PRODUCTS

4.1. Do you use oil products for the needs of the household?
Yes □ → 4.2

4.2. No □ → 5.1

11.2. What kind of oil products do you use for the needs of the household?? *(please specify)*
- petrol □ 1.
- diesel fuel □ 2.
- kerosene □ 3.
- liquefied gas □ 4.
- specify another □

4.3. How many liters of oil products did you use for the household in 2016: petrol l; diesel fuel l; other l
- incl. for autotransport:
  - petrol l; diesel fuel l; liquefied gas l

12. USE OF COAL

5.1. Do you use coal?
Yes □ → 5.2

5.2. No □ → 6.1

12.2. What equipment do you use to consume coal in your household? *(please specify all possible options)*
- cooker for cooking Yes □ No □
- boiler for central heating Yes □ No □
- boiler for hot water heating Yes □ No □
- room stove Yes □ No □
- please specify other □

5.3. How many kilograms of coal did you use in 2016: kg

13. USE OF WOOD FUEL AND LIVESTOCK WASTE

6.1. Do you use wood fuels?
Yes □ → 6.2

6.2. No □ → 7.1

13.2. What kind of wood fuel did you use in your household? How many kilograms of wood fuel did you spend in 2016: *(please specify all possible options)*
- firewood Yes □ No □ if yes m³
- wood briquettes Yes □ No □ if yes kg
- wood pellets Yes □ No □ if yes kg
- wood residues Yes □ No □ if yes kg
- guzapai (cotton stalk) Yes □ No □ if yes kg
- leaves of corn Yes □ No □ if yes kg
- manure Yes □ No □ if yes kg

14. USING ALTERNATIVE SOURCES OF ENERGY

7.1. Does your household use solar collectors or batteries for power supply?
Yes □ → 7.2

7.2. No □ → 7.3

7.3. Does your household use wind or mini-hydro generators for power supply?
Yes □ → 7.4

8.1. No □ → 8.2

14.2. What is the power and area of the solar collectors used?
- kW - m²

What is the power of the used
a) wind - kW;
b) minihydro - kW - generators
<table>
<thead>
<tr>
<th>Types of fuel</th>
<th>Unit</th>
<th>Volume of stock of energy resources</th>
<th>Volume of energy resources</th>
<th>Total consumption of energy resources</th>
<th>Volume of stock of energy resources as of 31.12.2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>As of 01.01.2016</td>
<td>Were purchased in 2016</td>
<td>own production in 2016</td>
<td>Sold in 2016</td>
</tr>
<tr>
<td>Fuel wood</td>
<td>m³</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>kg</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquefied gas</td>
<td>kg</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerosene</td>
<td>l</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasoline (excluding for motor vehicles)</td>
<td>l</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel oil (except for motor vehicles)</td>
<td>l</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel oil (masut)</td>
<td>l</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manure (livestock waste)</td>
<td>pcs.</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn leaves</td>
<td>kg</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shrubs</td>
<td>kg</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotton-plant cane</td>
<td>kg</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood shredding</td>
<td>kg</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasoline and diesel fuel for refueling of a't</td>
<td>l</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other types: please specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>General Classification of Management Documentation</td>
<td>Unique Identification Number</td>
<td>General Classifier of Enterprises and Organizations</td>
<td>Common Classifier of Economic Activity</td>
<td>General Classifier of Administrative Territorial Entities</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>(OKUD)</td>
<td>(UIN)</td>
<td>(OKPO)</td>
<td>(CCEA)</td>
<td>(OKATO)</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Form 4⁴ - provision
Approved by the Order of the Director of the Agency on statistics under the President of the Republic of Tajikistan dated November 7, 2014 № 36

Annual
Enterprises and organizations submit no later than March 10 following the reporting date:

1) local statistical offices
# REPORT ON PURCHASE, PRODUCTION, SALE, RESERVE AND CONSUMPTION OF FUEL AND ELECTRIC POWER

For **2016**

<table>
<thead>
<tr>
<th>Type of energy</th>
<th>Low calorific value</th>
<th>Purchase (t)</th>
<th>Own production</th>
<th>Sale (t)</th>
<th>Reserve (As of the 1st January of the beginning of the year)</th>
<th>Total consumption (Dec 31 of the end of the year)</th>
<th>including</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Transport</td>
</tr>
<tr>
<td>Anthracite</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metallurgical coal</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other bituminous coals</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-bituminous coal</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lignite / Brown coal</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal briquettes</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furnace coke</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas coke</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lignite briquet</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquefied gas</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor petrol</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other kerosene</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>А</td>
<td>Б</td>
<td>В</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor diesel fuel</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other gas oil</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel oil-(masut):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-sulfur fuel oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-sulfur fuel oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White spirit and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gasoline for industrial and technical purposes</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bitumens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid paraffins</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other oil products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biogas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Natural gas</td>
<td>m³</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Biogasoline</td>
<td>m³</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Other liquid fuels)</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Charcoal</td>
<td></td>
<td>m³</td>
<td>m³</td>
<td>m³</td>
<td>m³</td>
<td>m³</td>
<td>m³</td>
</tr>
<tr>
<td>Wood pellets</td>
<td></td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Other wood residues</td>
<td></td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Livestock waste</td>
<td>t</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
</tr>
<tr>
<td>Other plant materials and residues</td>
<td></td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Geothermal energy</td>
<td>GJ</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
</tr>
<tr>
<td>Solar energy</td>
<td>m²</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Industrial waste</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
</tbody>
</table>
REPORT
ON THE RESULTS OF ONE-OFF SAMPLE SURVEY ON "THE STATE OF THE ENERGY FACILITIES AND EFFICIENCY OF USE IN 2016 »

Agency on Statistics under the President of the Republic of Tajikistan,
734025, The Republic of Tajikistan,
Dushanbe, Bokhtar Str., 17

Tel.: (992 372) 223-02-45, e-mail: stat@tojikiston.com, http://www.stat.tj

Responsible:
- for the preparation of the main document
  Asmatbekov F.Ya. – Head of the Trade and Services Statistics Department
  Tel.: (992 372) 227 82 66