RESEARCH OF THE PURCHASING ABILITY POPULATION OF THE KYRGYZ REPUBLIC IN PURCHASING POWER PLANTS BASED ON RENEWABLE ENERGY SOURCES

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Abstract: *The problem of the purchasing power of the population plays a dominant role in the economy of the republic as a factor influencing the number of important indicators of the country. The results of this work are given in this work. authors of studies on the definition of the dynamics of development of the living standards of the population of the Kyrgyz Republic for the last 20 years. It is clear that under the conditions of a low level of national income per capita, a large value has a reduction in the cost of impact on energy installations. It is also established that the main criterion for the wide realization of energy installations among the population is an increase in the share of energy produced by installations based on renewable energy sources in the overall energy balance.*

Keywords: budget, income, power plants, energy, renewable energy sources, life level.

1. INTRODUCTION

The National Development Program of the Republic of Kyrgyzstan provides for an increase in the level and quality of life of citizens by ensuring sustainable economic growth leading to the creation of conditions for full employment of the population, receiving high and stable incomes, the availability of a wide range of social services, compliance with high living standards in a favorable health and environment [1-3].

The most important indicator characterizing the state of living standards of the population and the labor market is wages. In 2020 the average monthly nominal wage increased by 4.9 percent compared to the previous year. Real wages in 2020 compared to 2015 increased by 20.1 percent, with an increase in the average monthly nominal wages for this period by almost 1.3 times. According to the results of an integrated sample survey of household budgets and labor force, annually conducted in all regions of the republic, in 2020. monetary incomes per capita in nominal terms were 1.4 times higher than in 2015. As in previous years, the most important source in the formation of monetary income is income from labor activity, both in urban settlements (77.9 percent) and in rural areas (65.3 percent). The second most important source in the income formation of the population living in rural areas was income from the sale of products of personal subsidiary plots, the share of which decreased from 21.9 percent in 2015 to 15.2 percent of all income in 2020. The share of social transfers in the structure of the population's income decreased from 16.2 percent in 2015. up to 15.8 percent - in 2019. The share of consumer spending in the structure of cash expenditures in 2019 accounted for 84.5 percent, payment of taxes - 8.6 percent, other expenses - 6.9 percent. These data were obtained through an integrated sample survey of household budgets of Kyrgyzstan.

Over the past five years in the social sphere of the state, there has been a noticeable increase in the main indicators of the standard of living of the population. So, in 2015-2020 per capita money income of the population of Kyrgyzstan, according to a sample survey of household budgets, increased 1.4 times.

Kyrgyzstan belongs to the developing countries, i.e. reducing property inequality is one of the most important areas for improving the standard of living, since at present in the republic there is a high level of stratification of the population by property and social characteristics. Over the past five years, the number of the poor in the republic has decreased from 50% in 2003 to 25.6% in 2018. This trend is encouraging to move towards progress.

The standard of living of the population of the Kyrgyz Republic over the years of sovereignty has been characterized ambiguously [1]. The general standard of living of the population is influenced by the gross domestic product per capita, the consumer price index, the deficit (surplus) of the state budget and their dynamics (table 1).

Table 1. Ratio of growth (decline) rates of gross domestic product, consumer price index and budget deficit (surplus) of the Kyrgyz Republic

№	Indicators	1995	2000	2005	2010	2015	2020
1	Growth (decline) in gross domestic product per capita	12	9,5	10,0	-0,5	5,1	5,6
2	Consumer goods and services price index	76	101,8	95,8	101,7	106,5	101,5
3	Deficit (surplus) of the budget	-	-	0,86	18,5	4,8	4,2

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Along with the purchasing power of the population, the standard of living also depends on the level of poverty of the population. At present, poverty is not amenable to precise definition; a family lives in poverty when its basic needs exceed the means available to meet its needs. In recent years, there has been some progress in overcoming poverty.

Unfortunately, the growth of incomes of the population does not yet provide normal standard consumption. In this regard, it would be advisable to find new non-traditional ways to improve the standard of living, based on real and substantiated principles of improving the social situation of the population.

The minimum consumer budget for a month, established by the Decree of the Government of the Kyrgyz Republic dated August 30, 2018, was 7492.6 soms per person, while per capita income in the same year was 4739.4 soms, i.e. the lack of the size of the consumer budget per capita indicates the need to increase the level of consumption (in prices of the National Bank of the Kyrgyz Republic as of April 15, 2021 at the rate of $ 1 = 84.80 soms). The main welfare of the population is housing and providing it with vital equipment.

In rural areas, more than 90% of families live in separate apartments or single-family houses. At the same time, the quality of living conditions in most settlements does not correspond to modern requirements, i.e. low level of arrangement of utilities (hot water supply, electrification, gasification, untreated drinking water, etc.).

In raising the standard of living of the population, an important place is given to employment and the reduction of unemployment. Employment is the provision of work for the able-bodied population, the creation of an opportunity to earn a living and the maintenance of the labor initiative of citizens, assistance and encouragement in the development of their ability to productive creative work.

The state of employment directly affects the income of the population, the structure of which, depending on the type of activity of people, can change (wages, income from entrepreneurial activity, social transfers, receipts from the sale of agricultural products, feed, livestock, income from property and other cash receipts). According to the data of the National Statistical Committee of the Kyrgyz Republic, the average per capita income in households is shown in table 2.

Table 2. The structure of workers 'and employees' incomes in 1995-2020 (in %)

Income indicators	1995	2000	2005	2010	2015	2020	2020 by 1995, in %
Cash income	100	100	100	100	100	100	100
including:							
1. Remuneration	42,1	39,5	61,0	61,4	64,9	69	164,3
2. Social transfers	18,4	8,3	9,4	13,6	16,2	16,4	89,1
3. Property income	1,5	1,5	-	-	0,6	0,5	33,3
4. Income from the sale of agricultural products	37,4	50,2	19,7	17,3	14	10	26,7
5. Others	0,6	0,5	9,9	7,7	4,3	4,1	683

As you can see from the table. 2, in recent years, income from labor activity has grown 1.6 times, and other incomes - 6-7 times.

Cash income of the population is spent mainly (about 80%) on consumer spending - the purchase of food, industrial goods and payment for services, tax. The rest of the costs are distributed between the costs of purchasing livestock, poultry, agricultural implements, fodder and other means for running a personal subsidiary farm.

Consequently, in the current prevailing socio-economic conditions, the involvement of renewable energy sources in the overall balance of energy consumption is of great economic and social importance for Kyrgyzstan.

However, for these reasons, the widespread implementation of expensive metal installations and a tangible solution on this basis to energy, economic and social problems in Kyrgyzstan is impossible.

2. METHODOLOGICAL BASIS OF RESEARCH

Analysis of the data shows that the level of well-being of the population is also characterized by the provision of durable items for cultural and household and economic purposes. This indicator indirectly reflects the level of well-being of the household and its cash income for a certain period of time. According to the survey, in 2020. on average, there were 111 televisions, 92 refrigerators, 79 washing machines, 14 tape recorders and 39 electric vacuum cleaners per 100 households. On average, each household had two cell phones and one in four had a car. Half of all items of cultural, household and economic purposes were things with a service life of up to 10 years, which include computers, television and radio equipment and electrical household appliances. Durable items such as furniture and vehicles had a lifespan of more than 10 years.

The above data allows us to conclude that the population of Kyrgyzstan is able to purchase and use for economic needs power plants of small capacities operating on renewable energy sources.

Therefore, the development of inexpensive installations based on renewable energy sources and their widespread implementation among the population is of great importance.

As you know, the annual energy demand (E) of the country can be estimated by the expression [2]

$$E = E_o N \quad (1)$$

where $E_o -$ is the average energy consumed by one person; N - is the number of inhabitants of the country.

The average energy consumed by one person here includes the energy needed in the production sector, in the service sector and in everyday life. The standard of living in the country, which obviously depends on the average energy consumed by one person, can be, as a first approximation, estimated by the value of the national income (S) per capita:

$$S = f_1 E_o \quad (2)$$

where f_1 - is a coefficient, a non-linear function of many parameters. It can be seen as the efficiency of using energy for the production of living goods. Therefore, it is desirable that its value be as large as possible.

From (1) and (2) we get:

$$E = \frac{1}{f_1} SN \quad (3)$$

The above expression refers to energy derived from conventional sources.

When using renewable energy sources along with traditional sources, the consumed energy consists of energy from traditional sources E_{tr} (electricity, coal, oil products, natural gas, etc.) and from renewable sources E_v (solar, wind energy, biomass energy, etc.) [4-13]

$$E = E_{tr} + E_v \quad (4)$$

In turn, E_v can be considered as the energy generated by the used installations on renewable sources:

$$E_v = nE_u \quad (5)$$

where n - is the total number of used (sold) installations on renewable sources; E_u- average (conditional) energy generated by one conditional installation.

If C_o is the cost of one conventional installation on renewable sources, which generates a conventional value of energy E_u, then the total cost of all installed installations will be nC_o.

Obviously, the total number of implemented installations is also proportional to the national income:

$$nC_o = f_2 S \quad (6)$$

$$n = f_2 \frac{S}{C_o} \quad (7)$$

where f_2- is a coefficient, also a non-linear function of many parameters and depending on the popularity of solar power plants among consumers, their competitiveness with devices based on traditional energy sources. Then

$$E_v = f_2 \frac{S}{C_o} E_u \quad (8)$$

So, the total amount of energy consumed by the country will be equal to

$$E = E_{tr} + E_v = \frac{1}{f1} SN + f_2 \frac{S}{C_o} E_u$$

$$E = S\left(\frac{1}{f1} N + f_2 \frac{1}{C_o} E_u\right) \quad (9)$$

Expression (9) considers the cost of power plants installed in renewable energy sources, as well as the possibility of population settlements in the acquisition of these facilities for household needs.

3. EXCLUSIONS

Thus, from this expression, we can draw the following conclusion that in conditions when the level of national income per capita S is low, it is of great importance to reduce the cost of solar plants C_o in order to make them widely sold among the population and increase the share of energy generated by renewable sources E_v in the overall balance of energy consumption.

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