

## THE METHODOLOGY OF THE SUBSISTENCE MINIMUM CALCULATION FOR DEVELOPING COUNTRIES AND ITS COMPUTATION ON THE GEORGIAN EXAMPLE

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**ABSTRACT.** This article shows the social importance of subsistence minimum in Georgia. The methodology of its calculation is also shown. We propose ways of improving the calculation of subsistence minimum in Georgia and how to extend it for other developing countries. The weights of food and non-food expenditures in the subsistence minimum baskets are essential in these calculations. Daily consumption value of the minimum food basket has been calculated too. The average consumer expenditures on food supply and the other expenditures to the share are considered in dynamics. Our methodology of the subsistence minimum calculation is applied for the case of Georgia. However, it can be used for similar purposes based on data from other developing countries, where social stability is achieved, and social inequalities are to be actualized.

**Introduction.** Presently unemployment, low levels of income and poverty are the biggest social problems in the world and in Georgia too (SEE [1], [2], [3]).

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Generally, poor families face the high risk of homelessness, drug addiction, health problems and low education level, therefore poverty is related to economic and social problems [6].

Poverty is a lower level of ability to work productively. Its delineation depends on subsistence minimum. Subsistence minimum is a monetary expressed minimum of funds, needed for person to preserve his/her working ability. It is something as a line on the living standard, dividing the poor and the middle classes. In American literature it is called poverty threshold [9].

In the economic literature there are two types of poverty characteristics: the **absolute poverty**, and the **relative poverty** [4], [9].

**The absolute poverty** is the number of people who have low financial resources to live (below the poverty threshold) from those who have better financial abilities to live.

For example we consider population of a country with 3 mln people. Assume that population of the country is 3 mln people, according to the following distribution

People	Income
1 mln people have	500 Euros (EUR, €) and more
1 mln people have	100–500 €
1 mln people have	less than 100 € (the poverty threshold)

If subsistence minimum = 100 €; 1 million people will be in **absolute poverty**.

The **relative (ratio) poverty** is the ratio between the people living below the poverty line, and those living above it. This characteristic depends on the level, where the poverty line is set.

As an example of **Ratio Poverty** consider a country with population of 5 mln people. Assume the following distribution

People	Income
1 mln people have	1000 € and more
2 mln people have	500 €–1000 €
2 mln people have	less than 500 €

We see that 2 mln people have lower level of material provision below the poverty line of 500 €, People above this line are 3 million. Therefore, the ratio poverty is  $2/3$ .

Relative poverty is a population category. It can be expressed sometimes by the ratio of average income for the people from lower level of material provision, and the average income of the people above it in any particular country. Then the ratio poverty may be different number.

Absolute poverty is the number of the household and individuals who have fewer financial resources, than is set by objective absolute minimum (the poverty threshold, or poverty line). To make it clear, the poverty line is a subsistence minimum and the poor is population category, labeled for those people, which incomes does not exceed the subsistence minimum

**Calculation of the subsistence minimum.** Subsistence minimum = minimum (food basket) + minimum (non-food basket, i.e. goods and services). Definitions are given in [5], [10], [11], [12], [13], [14].

In Georgia minimum food basket includes the following products: whole-wheat bread, wheat and corn flour, beans, rice, meat, fish, sausages, milk and dairy products, eggs, oil and so on [2], [8].

Minimum non-food basket includes: clothing and foot-wear, basic household items, necessary personal hygiene products and services, medical care and home first-aid kit, travel expenses and other costs [2], [14]. Here we can also add payments and contributions, which include community taxes (gas, water, electricity, cleansing, telephone and internet), see in [17].

Calculating subsistence minimum may be also shown in following way [15], [16]: subsistence minimum = minimum(food basket) + minimum(non-food basket) + payments and contributions.

Minimum food basket provides food supply which is necessary for human physical development and living and supporting viability, according to physiological requires caloric value and market prices.

Calculating physiological norms of intake for each country is developing by special medical, labor and research institutes, in view of age and gender features, climate conditions, culture, historical traditions in given country.

In Georgia recommended composition of minimum food basket for working age male is daily intake 2300.0 kcal (kilo calories). The food basket includes 40 names of produces [15].

**Effective social policies.** Increasing or decreasing poverty line does not change social situation in the country. Therefore, it is necessary to determine the goals and needs of calculating the “real” subsistence minimum. Subsistence minimum is a measure for implementing certain social policy in order to defeat the poverty. Calculating subsistence minimum is a first step of success in managing

correct policy. Especially it concerns possible prices changes to easy the poor basket filling.

The priority task of the State should be defeating poverty in country and raising standard of living. Then the subsistence minimum serves as a guideline for effective social policies of government which means following:

1. It shows the changes in the standard of living (necessary to determine the less wealth part of population and poor population);
2. Helps to determine minimum number of pensions and benefits, social assistance package;
3. Shows the ways to equalize the minimum number of wages with subsistence minimum;
4. Helps to determine the exemption from income tax below subsistence minimum or income tax exemption limit;

Let us consider subsistence minimum calculation methodology in Georgia.

The subsistence minimum is established based on minimum food basket. The first there is calculated the cost of food in the basket using the average value of 5 cities (Tbilisi, Kutaisi, Batumi, Gori and Telavi). The city's populations are used as weights. The received prices from these calculations show the average value of each product in the country.

Then there should be calculated the month average value of food basket of working middle-aged male workers. It is obtained by combining monthly norms of food basket products with average value of each product. After this it is multiplied the intermediate cost by the hagggle coefficient. For Georgia this coefficient is 0.865.

The portion of food expenses in subsistence minimum value is determined 70%. Hence the portion of non-food expenses is determined to be 30%. The cost of non-food basket is assessed on the following percentages:

0.7 – evaluated cost of food basket

0.3 –X (GEL).

Subsistence minimum = cost of food basket +cost of non-food basket.

In 2013 subsistence minimum was as follows, 149 GEL (see [7] at [http://geostat.ge/index.php?action=page&p\\_id=176&lang=eng](http://geostat.ge/index.php?action=page&p_id=176&lang=eng) ) and in [7] at 67.4 EUR [http://geostat.ge/index.php?action=page&p\\_id=317&lang=eng](http://geostat.ge/index.php?action=page&p_id=317&lang=eng) Subsistence minimum of Georgia has attracted intense criticism from the society, because of subsistence minimum calculating methodology and received value of subsistence minimum. The accusations were that the subsistence minimum does not represent the real picture of the poverty line.

**Examples.** Before offering the new modern methodology to Georgia, let us see examples of some Georgia's neighboring countries. In Armenia minimum food basket includes: pastries, meat, fish, milk and dairy products, eggs, oil, sugar, vegetables, fruits, soft drinks and other food, their energy values are 2232.0 kcal. The proportions of minimum food and non-food baskets is 70/30. The same proportionality (70/30) is also seen in Azerbaijan, where the daily energy value of food is 2200.0 kcal.

In Montenegro minimal energy value of daily food products are 2 211 kcal. The proportions of minimum food and non-food baskets are determined by the ratio 68.9/31.1%.

In Kazakhstan the proportionality of food basket with non-food basket was 70/30 up to 2006, but since 2006 subsistence minimum calculating methodology was changed, and the part of food and non-food baskets in minimum consumer basket is 60/40. It is important that with food basket is also viewed pseudo non-food basket, which includes: clothing; basic household items and rents (including community taxes); Education, health and travel expenses. This methodology repeats examples from USA and Canada, where cost of pseudo non-food basket in the calculation of subsistence minimum is used.

**Explicit calculations.** We reviewed following points in calculation of subsistence minimum in Georgia. In the developed here methodology we use data and recommendations as in [5] (ANNEX 1: Energy requirements for emergency-affected populations. Developing country profile (demography and anthropometry); Kilocalories per day, pg. 38), [3] and [6].

1. First we set daily norms of minimum food basket energy value for a working male. Based on official standards it is 2300.0 kcal. However, it's necessary to identify if it can provide sufficient energy ensuring that a man is able to remain working. Proportionality of food products in minimum food basket must be distributed in a way that the fibers, fats and carbohydrates may provide stability for a working male. For this purpose we reviewed the following issues: **A.** Energy value of daily food products for working male (kcal); **B.** Clarifying the list of food products in minimum food basket; **C.** Define the energy value of each product in the basket, and establish total caloric value of food products for working male. **D.** Eliminate intermediate losses from the weight of production procured in market, or calculate the net weight for consumption (it is inspired by some products losses between procurement and cooking).

According to our calculation, the energy value of daily food products for a male person at working age should not be less than 2500.0 kcal. It is based on the following rules: we divide the population in working age into 3 age categories. Then we take the weight proportional to the number of labor population (these are shown in Table 1) in this group. According to this table, energy values of daily food products for working male is 2541.1 kcal. Rounding the daily norm, we conclude that it should be 2500.0 kcal.

Table 1. Energy Value of Food and Daily Necessities for Working Age Male

Age groups	Daily energy value, kcal ([5] and [6])	Weights of working aged population [3]	Energy value
<b>14–18</b>	2750.89	0.070	192.1
<b>19–59</b>	2533.40	0.883	2237.5
<b>60–64</b>	2373.27	0.047	111.5
total	—	<b>1.0</b>	<b>2541.1</b>

Increasing the kilocalories requires reviewing the composition of minimum food basket and assignment of appropriate calories to each food products.

To the used before 40 products we added some other products, which are necessary for daily ration too. We divided those products into consumer groups (as shown in Table 2).

Table 2. Minimum Food Basket Composition

	Consumer main groups	Energy value, kcal
<b>1</b>	Cereal and cereal products (including bread and baked goods)	600
<b>2</b>	Meat and meat products	500
<b>3</b>	Fish and fish products	250
<b>4</b>	Milk and dairy products	200
<b>5</b>	Vegetable and animal fats	100
<b>6</b>	Vegetables	200
<b>7</b>	Fruits	450
<b>8</b>	Candies	50
<b>9</b>	Alcoholic beverages	50
<b>10</b>	Other products	100
	<b>Total</b>	<b>2500</b>

2. Calculating costs valid for the markets in 8 cities (in 11 markets) according to the information provided by respective regional centers. Kakheti–Telavi; Kvemo Kartli–Marneuli; Shida Kartli–Gori; Imereti–Kutaisi; Samckhe–Javakheti–Akhalkikhe; Samegrelo–Zugdidi; Adjara–Batumi and Tbilisi (Capital).

Table 3. Weights of Average Yearly Number of Georgia Population According to Self-government Units, 2013 [7], in

[http://geostat.ge/index.php?action=page&p\\_id=152&lang=eng](http://geostat.ge/index.php?action=page&p_id=152&lang=eng)

	Regions	% to population of Georgia
1	Tbilisi	26.1
2	Imereti	15.7
3	Kakheti	9.0
4	Adjara	8.8
5	Shida Kartli	7.0
6	<b>Kvemo Kartli</b>	<b>11.4</b>
7	<b>Samegrelo</b>	<b>10.6</b>
8	<b>Samckhe-Javakheti</b>	<b>4.8</b>
	Guria	3.1
	Mtskheta.Mtianeti	2.4
	Racha-Lechkhumi and Kvemo Svaneti	1.0
	<b>Total</b>	<b>100.0</b>

Following the previous method, prices were taken from 5 cities. In our example we added 3 cities from missing regions, according to their centers, because these regions are holding high shares. There are 3 more regions in Georgia (Guria, Mtskheta, Mtianeti, Racha-Lechkhumi and Kvemo Svaneti) which have lower specific weight in population. Their data were not used in our research.

3. During calculation of subsistence minimum targeting the cost of minimum food basket in Georgia, we reviewed the share of food expenses in subsistence minimum ratio (70/30). The shares of minimum food basket and non-food basket expenses in subsistence minimum were determined in 90-s of XX century and since then this method is used. The used then method is already outdated. It needs to be reviewed, as the portion of food expenses in consumer expenses is decreasing, It is confirmed by following shares: in 1997 the portion of food expenses in consumer expenses was 53.5%. In 1998 – 55.0%, and in 2012 this portion decreased to 32.3% (see [7], <http://>

geostat.ge/?action=page&p\_id=184&lang=eng). If food expenses of the average consumer decrease, this must reflect on food and non-food ratio in subsistence minimum.

4. According to our calculation, where we are using a virtual non-food basket based on vital practical research, the ratio between minimum food and non-food baskets must be replaced by 55/45 (instead of earlier 70/30). We take this ratio according to the following considerations:

- A. In 90-s years of XX century the proportion of food and non-food baskets was  $Y = 70/30$ , and the actual proportion of food expenses for an average consumer was  $X = 53/47$ . Today this ratio is  $X = 32/68$ . According to these ratios we get (using the ratio equality) that the minimum consumer basket ratio now should be  $Y = 49/51$ . (e.g.  $X = 53/47 \leftarrow \rightarrow Y = 70/30$  therefore  $X = 32/68 \leftarrow \rightarrow Y = 49/51$ ).
- B. According to our research of household, in line with 97% confidence probability and 3% chance of failure, on average the portion of family food expenses is around 50% to 60%.
- C. We can obtain the same ratio by comparing the minimum food and non-food baskets. Calculating subsistence minimum we get amount of food and virtual non-food baskets cost. We call the minimum non-food basket *virtual non-food basket*, since it is impossible to determine an appropriate complete list of non-food products reflecting the necessity for an average person. We may use some seeming appropriate non-food products for the minimum necessity for a working male, e.g. T-shirt, trousers, foot-wearing, socks and minimum household items such as soap, toothpaste, toothbrush, cleaning, washing-us liquids, matches, plus community taxes and travel expenses.

In calculation of subsistence minimum it's important to view minimum food products as 2 baskets, in regard to agricultural products and seasonal fruits which are not influenced by prices. For instance, watermelon must be included in summer food basket and should be removed from winter food basket. So it's important to divide the basket in following way: minimum food basket I (spring-summer) and minimum food basket II (autumn-winter) (Tables 4 and 5 illustrate this approach).

As a result of the economic development of the country and the improvement of population standard of living, an increase in the variety of products in



Table 4. Calculating Subsistence Minimum (on the basis of food basket I)

	Product names	Daily intake	kcal
<b>Minimum food-basket I (spring-summer food basket)</b>	Bread and cereal products	270	567
	cereals	100	113
	Other crops	40	109
	livestock	55	102
	poultry	60	100
	sausages	40	116
	fish	100	140
	eggs	55	85
	Milk and dairy products	100	116
	Vegetable oil and animal fat	15	104
	nuts	35	182
	Vegetables	400	129
	potatoes	100	130
	spices	2	—
	gravy	30	30
	fruits	510	291
	candies	40	135
	salt	5	—
	Soft drinks	10	1
	Alcoholic beverages	50	50
<b>Total</b>	—	2500	
<b>Minimum non-food basket</b>	Clothing and footwear		
	Basic household items		
	Minimum number of medicines (home first-aid kit)		
	Necessary personal hygiene products		
	Community taxes		
	Food basket	55% of minimum food basket	
	Non-food basket	45% of minimum non-food basket	
	subsistence minimum – (I + II)	100%	

“real” consumer basket is expected. The popular demand on production, which today is considered luxury for many, will increase. Also the variety of products in minimum consumer basket will be constantly renewed, which will determine subsistence minimum for food basket. That is why the food and non-food- baskets need consistent monitoring and periodic revision.

Table 5. Calculating Subsistence Minimum (on the basis of food basket II)

	Product names	Daily intake	kcal
<b>Minimum food-basket II (autumn-winter food basket)</b>	Bread and cereal products	274	573
	cereals	114	125
	Other crops	50	116
	livestock	70	137
	poultry	70	122
	sausages	40	116
	fish	100	140
	eggs	55	85
	Milk and dairy products	100	116
	Vegetable oil and animal fat	15	104
	nuts	35	182
	Vegetables	210	124
	potatoes	100	130
	spices	4	—
	gravy	50	50
	fruits	305	194
	candies	40	135
	salt	5	—
	Soft drinks	10	1
	Alcoholic beverages	50	50
<b>Total</b>	—	2500	
<b>Minimum non-food basket</b>	Clothing and footwear		
	Basic household items		
	Minimum number of medicines (home first-aid kit)		
	Necessary personal hygiene products		
	Community taxes		
	Food basket	55% of minimum food basket	
	Non-food basket	45% of minimum non-food basket	
	subsistence minimum – (I + II)	100%	

**Conclusion.** The main results of this study in brief are:

1. Kilocalories of food products were reviewed and increased from 2300.0 kcal to 2500.0 kcal;
2. Two food baskets were established (conditionally “winter” and “summer”); we propose specific percentage shares of minimum incomes spent on food and non-food in minimum consumer basket that is based on methodologically back grounded discussions and examples.

3. Necessary products were added and the food products (list) were mounted;
4. 11 markets in 8 cities were examined;
5. The proportion of pseudo non-food basket (virtual non-food basket) was determined – ultimately 55/45 based on research and analysis;
6. Pseudo non-food basket was established for determination and revision the proportions between food and non-food.

Appropriate methodology for subsistence minimum calculating is an important guide for social policy in Georgia. It is appropriate for following purposes: To reflect changes of living standards of population; To determine the poorer population for targeted social welfare; To determine minimum amount of pensions and allowances; To unify minimum wages with the subsistence minimum and to determine the exemptions from tax incomes below the subsistence minimum.

The considered methodology for calculating subsistence minimum could be used as in Georgia, as well as in other developing countries. Proposed subsistence minimum calculation based on scientifically credible methodology that will be the guide of targeted social policy for the country.

The new methodological approaches shown in this study and the research results could be used for development of effective social policies. These may be of interest for: governmental and legislative departments; for civil organizations working on socio-economic aspect; for academics like economists, statisticians and for other persons who are interested in this matter.

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