

The Demographic Structure of the Blagoevgrad District and the Challenges to the Protection of the Environment

*Michail A. Michailov**, Galina Bezinska, Veselina H. Dalgacheva

South-West University "Neofit Rilski", Faculty of Mathematics and Natural Sciences, Department of Geography, Ecology and Environmental Protection, 66 Ivan Mihailov Str., 2700 Blagoevgrad, BULGARIA

*Corresponding author: michail.a.michailov@gmail.com

Abstract. Demographic problems are at the root of the various challenges in terms of the environmental protection. That is why the prospect of developing all kinds of activities in this direction requires much more serious analysis and evaluation. According to these reasons, an analysis of the available information on the demographic structure of the Blagoevgrad region, it offers a specific commentary and forecast of the prospects for the future activities for of the environmental protection.

Key words: demographic problems, environmental protection, demographics, Blagoevgrad.

Introduction

On the eve of 2020, it is important to pay more attention to the increasing issues of our environment. Looking at the situation more accurately, even with the naked eye, it is found that it is already 1/5 years (i.e. 20%) of the 21st century. Society is developing at an unknown pace, compared to the previous XIX and XX centuries, and quite different in the Middle Ages, and so on. In such a context, new objectives and tasks need to be set in front of the environmental protection activities and the forms and ways of their implementation need to be updated. It is no longer sufficient to take into account, as successes in this respect, the commitments for the construction of municipal waste water treatment plants, as these are the main commitments of the structures of urbanization and regional development. And if these commitments were not implemented or realized in the last twentieth century, for

some reason, this should not reassure us that adequate measures are taken to protect our environment in modern society.

In the context described, it is interesting to discuss a different treatment of the situation. We believe it would be useful to interpret the phrase of France's first female cosmonaut, Clonie Enire, that we no longer have to ask ourselves "how will we act", but just "by whom we will act"? what will society be to respond to the challenges of protecting our environment in the future.

In connection with the above, the question of the influence of the Man, incl. and the Society. And while this issue of climate change is still debating, there is enough argument for the role of Man and Society in our environment.

That is why we propose to make more specific analysis and comment on the information on population growth and the development of the Society (Fig. 1).

Regarding the presented figure (Fig. 1) (prepared from a number of sources, such as (WPS, 2019), and tailored to the topic discussed), it is necessary to note that studies on population growth trends in the world are quite popular in the world and in our country. But usually they are aimed at different demographic problems and those related to economies, the labor market and more. In this case, this type of information is discussed from the point of view of environmental protection activities and approaches to assessing anthropogenic impact on it.

It is noteworthy that the two-fold increase in population has committed periods of a very different duration - between more than 1000 years to 40 years. Over a long historical period (before the New Age and around the 17th Century) there was a two-fold increase in population in 10-20-40 and more generations, whereas in the nineteenth century and then, the double increase in population was recorded for much shorter period (less than 100 years) - that is, from 1 to 5 generations.

Information on the double increase in population can also be an additional criterion for the role of Man in the environment in which he lives and the Society in which he develops. The amendment to this criterion, incl. and the dynamics with which it changes can be used as an additional indicator for assessing the impact of different human activities on environmental components (Fig. 2).

If we introduce the term "growth rate," we will find a very interesting trend.

For example, it is remarkable that the rate of population growth is very different and that environmental impact can be assessed through it.

Three very different periods can be distinguished.

One, very long, up to the 17th century - with a very small, almost invisible, rate of population growth (below 5 people/year).

The other, in the seventeenth century and early twentieth century - with a small

population growth rate (below 20 people/year).

The third, after the second half of the twentieth century - with a high rate of population growth (more than 60 people/year) and the beginning of the 21st century (more than 240 people/year).

The comparison between the first and third periods makes it possible to draw some important conclusions. For thousands of years, one has been able to live and develop in harmony with nature. Modernity puts a very interesting task to us - one must protect the surrounding environment (ie nature) in order to live and develop.

Material and Methods

The present study used (collected, processed and analyzed) data ([Administrative Atlas of the Republic of Bulgaria, 2002](#); [NSI, 2019](#)) for the territory of the country (including Blagoevgrad region), presenting the results obtained and making recommendations to draw the public's attention to the need for its involvement in the idea of improving environmental activities.

Therefore, it is necessary to analyze in more detail the work on impact assessments on our environment. It should be noted that there are several "discrepancies" in the legal framework regarding the term "impact" in the field of our environment.

The information presented above shows that after the second half of the twentieth century it is naïve to expect that the various impacts on our environment may be "insignificant". Even the simple actions of ordinary people to meet their everyday needs, with the current number of people in the world, can have a "significant" impact on the components of the environment (depending on the specifics of the region).

Therefore, it should be noted that not complicating the procedures for environmental assessments ([MICHAILOV, 2002](#)) and the search for and application of quantitative measures will increase the role and importance of the overall activity on them.

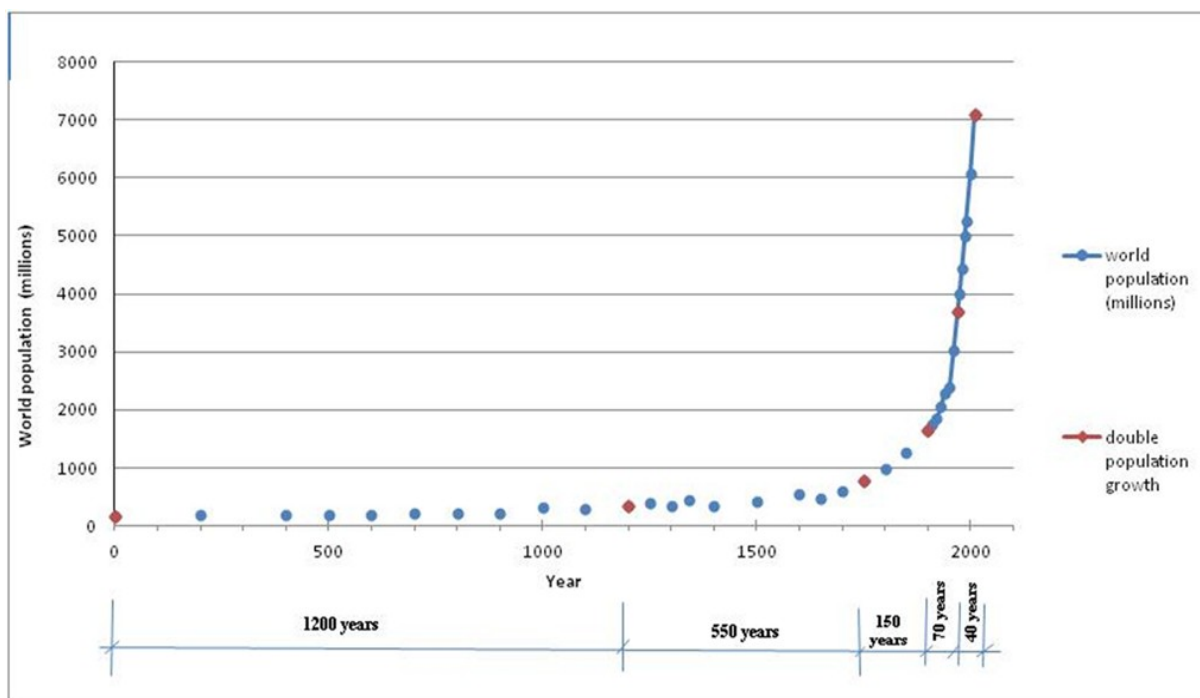


Fig. 1. World population growth tendencies (data obtained from WPS, 2019).

Population of Blagoevgrad region by year 2011 (by age groups)

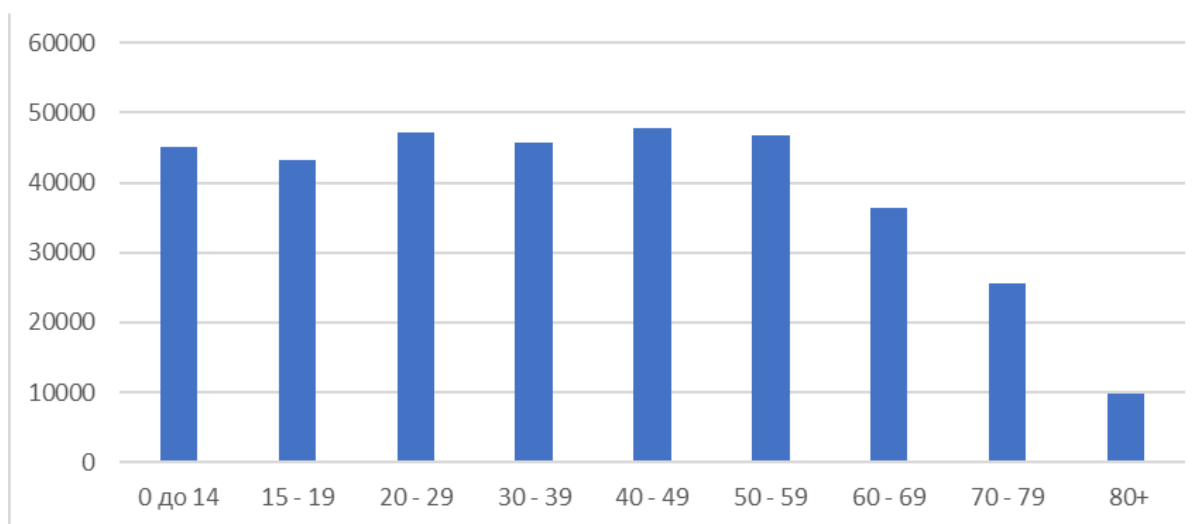


Fig. 2. Age structure of Blagoevgrad region.

Demographic structure of some villages in Blagoevgrad region

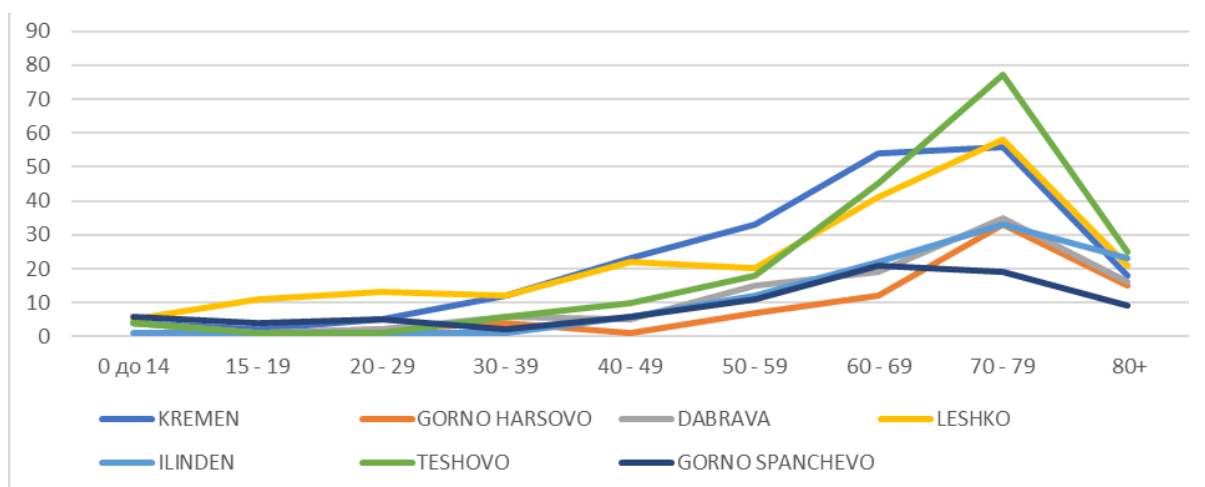


Fig. 3. Demographic structure of some villages in Blagoevgrad region.

Based on the comment made, we conducted a more specialized study on the future initiatives in the field of environmental protection at a relatively low regional level (Ordinance #256, 2010).

From the attached figure (Fig. 2), it is clear that the majority of the population of the Blagoevgrad region (in 2011) is up to 59 years of age, ie. young people, and in active age, and a much smaller proportion - aged 60 to 69, and even fewer - over 80 years of age.

These values are quite different for individual settlements, especially for some villages in the region, which can be illustrated by the data on some villages (Fig. 3). The structure of the population in this locality is completely different - the relative share of the young population (up to 29 years) is significantly smaller than the proportion of the adult population (over 60).

The above gives us reason to propose for a more serious discussion the subject of the meaning of the different activities for preservation of the components of our environment.

In this regard, as an indicator, we propose to use the so-called the *Anthropogenic Load Index* ($C_{anthrop}$), which takes into account the impact of the different

municipalities, by processing the information on the number of inhabitants in the settlements and the activities they carry out in the construction of the various sites of the transport network, in the construction of infrastructure sites in settlements, as well as mining sites and landfills, and not least through agricultural activities, for manifestations of the population through which an *activity of anthropogenic character* is carried out.

$$C_{anthrop} = \frac{F_{agr.ar.} + F_{set.ur.} + F_{tt.inf.} + F_{m.w.}}{N_{mun}}$$

(ha/inhabitant),

where:

- $C_{anthrop}$ - anthropogenic load factor (index);
- $F_{agr.ar.}$ - agricultural areas in the municipalities;
- $F_{set.ur.}$ - area of settlements and other urbanized areas;
- $F_{tt.inf.}$ - territory for transport and infrastructure;
- $F_{m.w.}$ - area for minerals and landfills for waste;
- N_{mun} - residents of the municipality.

Results and Discussion

The results obtained are presented graphically (Fig. 4).

It is noteworthy that two distinctly different areas are differentiated, one

focusing more on the abscissa axis and the other one more on the ordinate axis.

This, on the abscissa axis, refers to the municipalities of $C_{antrop} < 10$ and the other, developed more by the ordinate axis, for the municipalities with $C_{antrop} > 10$ th.

The group with $C_{antrop} < 5$ until $C_{antrop} < 10$ includes 67 municipalities (about 25% of the municipalities in Bulgaria), of which 9 municipalities in Plovdiv region (11 municipalities), 8 municipalities in the Pazardzhik region (11 municipalities), 7 municipalities in the Blagoevgrad region (14 municipalities), 6 municipalities in the Sofia region (22 municipalities), 6 municipalities in the Smolyan region (10 municipalities) and 1-2 municipalities - in the other districts (usually the municipality of the district town).

According to the proposed criterion, C_{antrop} located mostly on the ordinate axis, is about 75% of the municipalities in Bulgaria. They include Treklyano municipality with $C_{antrop} = 130.37$ i.e. the anthropogenic activities of the population of the municipality are quite modest compared to the territory of the municipality. Compared to the other group, for Varna municipality, this coefficient is the opposite, $C_{antrop} = 0.51$ i.e. with very distinct anthropogenic interference.

Curious results are obtained using this coefficient, also determined by population data by the end of 2017 ([Ordinance #256, 2010](#)). The following (more interesting) classification may be offered.

Extreme values for the level of anthropogenic interference are only available for three municipalities. These are the municipalities of Plovdiv, Varna and Sofia-city, for which the coefficient (index), C_{antrop} is less than 1.

It is worth noting that with the increase and decrease of the population in the different types of urbanized territories (irrespective of whether they are cities or villages) there are problems in the management, development and protection of the surrounding environment.

The different values obtained by the proposed criterion (coefficient, index), C_{antrop}

are quite varied, which is an indication of the necessity of changes in regional policy for all activities, including these for protection each local environment.

In the near and far-off perspective, we will have much more serious and far-reaching tasks that will require much more serious attitude towards the education of specialists, which will be able to solve the problems of Society related to them - organizational ([Environmental Protection Law, 2002](#)), legal ([Administrative Atlas of the Republic of Bulgaria, 2002](#); [MICHAILOV, 2002](#); [NSI, 2019](#)), technical, social ([NSI, 2019](#); [Ordinance #53, 2003](#)), etc.

Due to the above findings and conclusions, it is necessary to take into account the specific position of the Blagoevgrad region (Fig. 5, Table 1) in relation to the discussed issues. This area is one of the most distinctive areas with more significant anthropogenesis of the individual municipalities, which will (inevitably) affect the environmental protection activities in the future. It is therefore appropriate to note the need for a deeper study of the processes on its territory, especially given the demographic projections for a population decline in the area in 2080 by about 45%.

The situation described here is quite intriguing. On the one hand are the problems of the Society - demographic, economic, educational, social and others. and on the other hand, the challenges of the environment. Regardless of the different types of forecasts, we cannot expect significant changes in the trends in the movement of the population towards the larger cities and economically developed territories, including the depopulation of other settlements and territories, but at the same time, the challenges facing the different activities they will become increasingly important in protecting our environment.

In this regard, it is imperative to declare that it is necessary to envisage (forecast), plan, and implement activities in the field of environmental protection in all spheres of the Company's activities - administrative,

educational, production, social, etc. Because conservation is the rational use of raw materials and resources. the basic rule is - the best means of

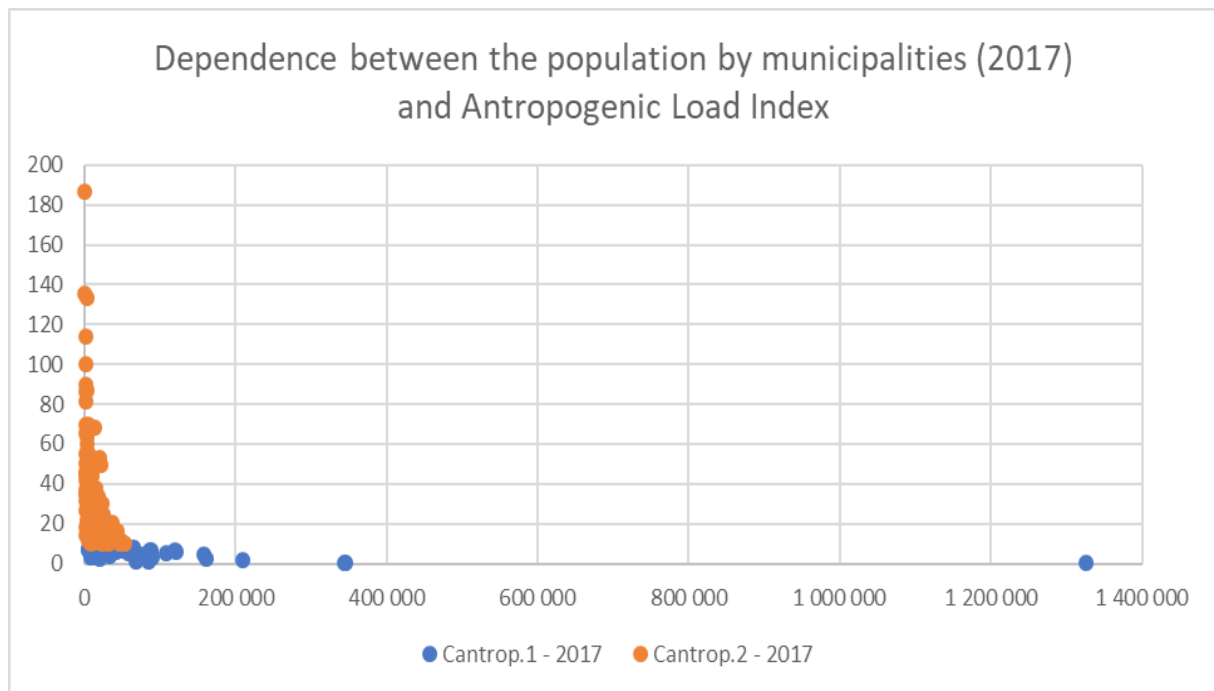


Fig. 4. Anthropogenic Load Index (C_{antrop}) – according by municipalities populations (2017).

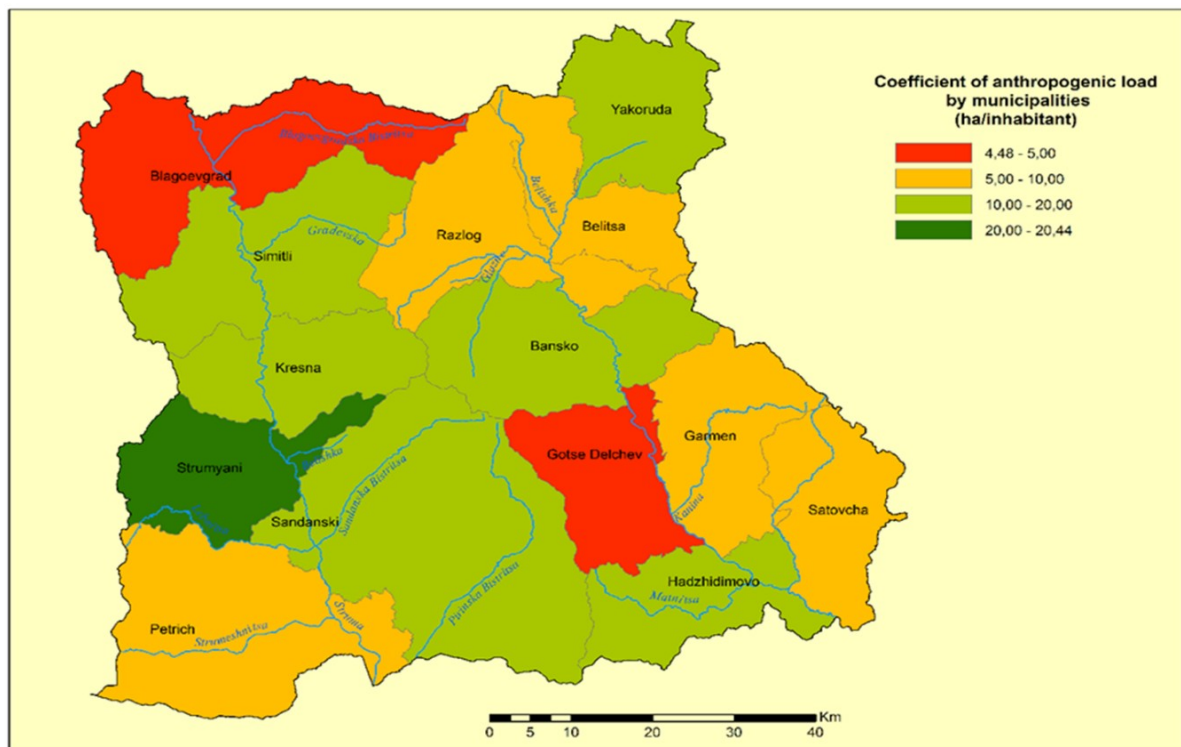


Fig. 5. Levels of anthropogenic impact of the municipalities in the Blagoevgrad region.

Table 1. Levels of anthropogenic impact of the municipalities in the Blagoevgrad region.

Municipality	C_{antrop}
Bansko	14.11
Belitsa	7.37
Blagoevgrad	4.48
Gotse Delchev	4.58
Garmen	7.75
Kresna	15.42
Petrich	5.92
Razlog	8.74
Sandanski	10.33
Satovcha	8.70
Simitli	12.50
Strumiani	20.44
Hadjidimovo	16.25
Iakoruda	11.50

Conclusions

The following conclusions and recommendations can be proposed:

1. The current attitude towards demographic problems is not in line with the challenges of the various activities and the problems they raise with regard to the maintenance of life and the need to preserve our environment.

2. It is imperative to update some subnormal documents (ordinances, guidelines, etc.) related to environmental protection activities due to significant discrepancies with the requirements for these activities.

3. In relation to the issues under consideration these forecasts are not very encouraging.

4. It is desirable to continue the analyzes and the above considerations for the other municipalities in Bulgaria, in order to obtain more detailed information on the level of environmental protection activities, as well as the expectations of the Society for achieving a favorable environment for life.

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Received: 02.09.2019

Accepted: 05.12.2019