



## DEMOGRAPHICS – DEVELOPMENT – SECURITY: THE IMPACT OF NEGATIVE DEMOGRAPHIC TRENDS ON THE SECURITY OF POLAND IN THE 21ST CENTURY

DEMOGRAFIA – ROZWÓJ – BEZPIECZEŃSTWO. WPŁYW  
NEGATYWNYCH TRENDÓW DEMOGRAFICZNYCH  
NA BEZPIECZEŃSTWO POLSKI W XXI WIEKU

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— ABSTRACT —

The aim of this article is the characterization of the demographic trends taking place in Poland and the attempt to answer the question: how do they influence the security of the country? The conducted analyses of Statistics Poland and Eurostat data show that over the last few decades in Poland, the intensification and the accumulation of the following negative demographic trends can be observed: 1) a population decline, 2) an increasing number of older people (including so-called double ageing), and 3) changes in the structure of the population age. The above demographic processes determine the new demographic order which will influence almost all areas of the country operation and will permanently change the social context of individuals' functioning and, in the future, will have an increasing impact on the defence capabilities of the country and the functioning of the armed forces.

— ABSTRAKT —

Celem artykułu jest charakterystyka trendów demograficznych zachodzących w Polsce i próba odpowiedzi na pytanie: W jaki sposób wpływają one na bezpieczeństwo kraju? Przeprowadzone analizy danych GUS i Eurostatu pokazują, iż w Polsce na przestrzeni ostatnich dekad obserwujemy nasilenie i kumulację negatywnych trendów demograficznych: 1) procesu depopulacji, 2) rosnącej liczby osób starszych (w tym tzw. podwójnego starzenia się), 3) zmian w strukturze wieku populacji. Powyższe procesy ludnościowe wyznaczają nowy porządek demograficzny, który istotnie wpłynie niemal na wszystkie obszary aktywności państwa i trwale zmieni społeczny kontekst funkcjonowania jednostek, a w przyszłości będzie wywierał coraz większy wpływ na zdolności obronne państwa i funkcjonowanie sił zbrojnych.

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**Keywords:** security; development; demographic changes; implications of demographic regression; Polish Armed Forces

**Słowa kluczowe:** bezpieczeństwo; rozwój; zmiany demograficzne; konsekwencje regresu demograficznego; Siły Zbrojne Rzeczypospolitej Polskiej

## INTRODUCTION

The issue of national security of a country is complex and multidimensional. One of the most crucial non-military threats having an impact on the development of the contemporary security environment of Poland is demographics. Poland belongs to the group of European countries which are at the highest risk of population decline and demographic ageing. It is also a country in which demographic changes are accumulated and occur exceptionally dynamically (Okólski, 2018, p. 14). These factors cause that the transition between a relatively good demographic situation, even in the 1980s, and the dynamic decrease of the population, accompanied by the changes in the age structure, which is predicted to take place after 2020, is happening in a relatively short period of time. Marek Okólski (2010, p. 37) claims that the population parameters – the size and the dynamics of population and its basic structural characteristics – constitute the biggest challenge for our country in the nearest future.

There are many arguments for demographics to constitute a useful lens to understand and analyse the national security of a country. First of all, demographics constitutes an important part of the national security of a country, which has an impact on all aspects of its potential. Secondly, it is becoming a strategic problem at international level, where demographic processes transform into a form of assets in the international competition and are imposed on the map of the new civilizational divisions. Thirdly, nowadays, demographics constitutes a key element of social foresight and diagnosis. It is also crucial for understanding many problems related to social tension and, at the same time, for formulation of accurate political programs and decisions. Without it, social potential hidden within human resources, so important to efficient functioning of a country, could not be noticed. Finally, in scientific literature – related to demographics, political studies, economics, sociology, and gerontology – there is a unanimity as to the prediction that, in the future, the “ageing society” will be significantly qualitatively different from the contemporary one. This situation will create numerous challenges to the extent which is difficult to imagine today. Therefore, the identification of the spectrum of problems which will arise due to

this new situation in Poland, as well as the specific nature of each of them require the involvement of the scientific community.

The cognitive aim of this article is to establish the scope and character of contemporary demographic trends determining national security of Poland and the identification of the challenges and the threats which they generate. It constitutes an attempt to face the research problem, the meaning of which is related to the questions: How are the contemporary demographic trends shaped and in which areas their implications can be expected to occur? More specific problems: How are the dynamics of the population of Poland and changes of the age structure shaped? What kind of impact does demographic regress have on the socio-economic development of Poland and what kind of implications, related to that, should be expected at a macro level (a country), mezzo level (a local community), and micro level (a family, a household)? How does demographic regress influence particular dimensions of security? How does demographics influence the defensive capabilities of Poland and what kind of challenges for the Armed Forces does it generate? The main research hypothesis is: Contemporary demographic trends have negative impact on national security of Poland and have numerous implications which are identified at different levels of an analysis.

Desk research, which is a research method based on the analysis of the available data, has been used for the purpose of this article. The analysis is based on documents including public statistics, reports, analyses, and scientific publications. It includes: 1) content analysis (which starts at the stage of searching the sources), 2) the analysis of already existing statistical data, as well as 3) cross-sectional analyses and comparison of historical data, which allowed to present the changes occurring over time and to identify key demographic trends in Poland and the challenges of security which they result in.

## DEMOGRAPHICS: THE DYNAMICS OF POLISH POPULATION AND CHANGES IN THE AGE STRUCTURE

Why should demographic issues be prioritised? Poland, nowadays, is in a difficult demographic situation and experience unprecedented accumulation of the following demographic processes:

- 1) the decrease of the size of the population (population decline);
- 2) changes in the age structure of the population;

3) the increasing number of older people, including the increasing number of people at the age of 80 or older.

The changes in the number and the age structure of the population of Poland are the result of demographic revolutions – including the first and the second demographic transitions<sup>1</sup>, – and are related to the decline of fertility, the increase of life expectancy (the reduction in mortality) as well as migration processes. The Statistics Poland data (2021) show that, between 1989 and 2021, the overall population size decreased (see: Table 1). More detailed analyses indicate a steady decline of the population of Poland since 2011.

**Table 1.** Population of Poland between 1989 and 2020:  
The Structure of Population by the Economic Age Groups

Age Groups	1989		2000		2010		2019		2020
	N (in M)	%	N (in M)	%	N (in M)	%	N (in M)	%	N (in M)
Pre-working age (0–17)	11.2	29.5	9.3	24.4	7.2	18.8	6.9	18.1	6.9
Working age (18–59/64)	21.9	57.8	23.3	60.8	24.8	64.4	23.0	60.0	22.8
Post-working age (60/65+)	4.8	12.7	5.7	14.8	6.5	16.8	8.4	21.9	8.4
Total population size	37.9	100.0	38.3	100.0	38.5	100.0	38.4	100.0	38.2

**Source:** Author's own elaboration on the basis of the Demographic Yearbooks of Poland; Statistics Poland.

What draws attention in particular are the changes within the economic age groups which determine significant transformations of the age structure (Table 1). The sharp decrease in the pre-working age population and the increase in the post-working age population – where after a significant phase of increase, an advancing process of decrease has begun – can be noticed.

<sup>1</sup> The so-called first demographic transition consisted in the transition from a high to a low birth and death rate and the stabilization of fertility to a regular rate of the reproduction of the population. The concept of the so-called second demographic transition refers to the discontinuity of the reproduction of the population, reflected mainly in the decrease of the fertility rate below the regular reproduction rate (based on: Okólski & Fihel, 2012, pp. 113–126).

The size and the structure of the working age population (potential labour resources) were shaped by the two population booms: the post-war boom in 1940<sup>s</sup> and 1950<sup>s</sup>, which determined the change of immobile labour force (the population between the age of 45 and 59/64), and the boom in 1970<sup>s</sup> and 1980<sup>s</sup>, constituting a noticeable effect of the previous one, which influenced the increase of the population at mobile working age (between the age of 18 and 44) (Kotowska, 2021a, p. 27; Kotowska, 2021b, p. 19). Since 2012, there has been a downward trend in potential labour force, which will be continuing and growing due to low birth rates that remain stable and the process of transition of the post-war boom generation into the post-working age.

At the same time, the process of ageing of the population of Poland is advancing and, regardless of the way of describing or measuring it, is reflected in the increase of the percentage of older people in the population – that is the reason why social sciences representatives write about “the greying population” (Giddens, 2005, p. 185) or “the greying generations” (Stuart-Hamilton, 2006, p. 14). A steady growth of the post-working age population is taking place, which is the effect of the decrease of mortality rate and the increase of life expectancy, as well as the transition of the post-war boom generation into the post-working age (Rosset, 1982). This group of people increased by 3.7 million between 1989 and 2020. What is also noticeable is the decrease of fertility and the change in the number of births. The selected characteristics of the ageing process of the population of Poland are presented in the table below:

**Table 2.** Selected Characteristics of the Ageing Process of the Population of Poland

Characteristics of the ageing process of the population		1990	2000	2010	2019
Population in the age group	60+ (in millions)	5.7278	6.4225	7.5111	9.7032
	60+ (in %)	15.0	16.8	19.7	25.3
	65+ (in millions)	3.8730	4.7360	5.1904	6.9470
	65+ (in %)	10.2	12.4	13.5	18.1
	80+ (in millions)	0.7790	0.7801	1.3280	1.6917
	80+ (in %)	2.0	2.1	3.4	8.8
Median age (in years)		32.3	35.4	38.0	41.3
Old-age demographic dependency ratio		14.7	17.2	18.9	27.2

**Source:** Author’s own elaboration on the basis of the Demographic Yearbooks of Poland; Statistics Poland.

Population projections for Poland, which are prepared and compiled every few years by different institutions (Eurostat, 2020; UN, 2019; Statistics Poland, 2016) indicate, unanimously and regardless of the projection's horizon, the following: 1) a systematic decline in the population; 2) a constant decline in the number of children and teenagers as well as their share in the total population; 3) further decrease of working age subpopulation and its share in the total population; 4) ageing of potential labour force; 5) acceleration of the ageing process (!); 6) intensification of so-called population double ageing process (the increase of the number of people at the age of 80 or older).

In this article, the future changes regarding the population of Poland will be analysed and discussed on the basis of the most recent EUROPOP2019 population prognosis by Eurostat, which was published at the end of April 2020. The starting point of the preparation of the projection is the data regarding the population residing in Poland in 2019. The results of the projection are discussed on the basis of the so-called baseline scenario. The author restricts herself to the analysis of the results for the years 2020–2050.

The conducted analyses of the results of the projection confirm the accuracy of the future population changes in Poland mentioned above (see: Table 3).

First of all, **the decline in the population of Poland**, from 37.94M of people in 2020 to 34.10M in 2050, is predicted as a result of the decreasing birth rate and low fertility of women (Eurostat, 2020). Maintaining the population size requires the fertility rate of women to be 2.1, whereas in 2020, it reached 1.37 (Statistics Poland, 2021).

Secondly, **the age median (the population median age) will increase**<sup>2</sup>. It is projected that in 2050, the median age will increase to 48.6 in case of men and 53.1 in case of women, which means the increase of 8.9 and 10 years respectively on the national level in comparison with 2020. The median age for the whole population will be 50.9 years (Eurostat, 2020).

Thirdly, **the rate of ageing will increase**. It is projected that the number of people over the age of 65 in the population of Poland will increase from 18.6% in 2020 to 30.4% in 2050, which equals 3.4M (Eurostat, 2020).

Fourthly, **the population double ageing phenomenon will intensify**. The number of people at the age of 80 and older will increase almost twice, from

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<sup>2</sup> The median age is an age that half of the population has not yet reached and the other half has already attained.

1.71M in 2020 to more than 3.34M in 2050, which means that there will be a significant percentage of older people in the population (Eurostat, 2020).

Fifthly, **the decline in labour force** is expected, due to the change of proportions between particular age groups. It is projected that there will be a decrease of the pre-working age population (from 20.1% in 2020 to 16.4% in 2050) and the working age population (from 61.4% in 2020 to 53.3% in 2050). On the other hand, the post-working population will increase. The percentage of older people (at post-working age) in the population will be almost two times bigger than the percentage of the youngest people (at pre-working age) (Eurostat, 2020).

Sixthly, it is projected that **the dependency ratio of the population of post-working age will increase**. In 2050, for every 100 Polish residents at pre-working and working age, there will be more than 52.2 people at the age of 65 and more – in 2020, this ratio was 26.4 (Eurostat, 2020).

**Table 3.** Projected Changes in the Population of Poland between 2020 and 2050: Selected Demographic Characteristics

Changes in the age structure of the Polish population 2020–2050 (mln, %)														
Year	2020		2025		2030		2035		2040		2045		2050	
Age (in years)	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0–19	7.6	20.1	7.4	19.8	6.9	18.6	6.4	17.5	5.9	16.5	5.7	16.2	5.6	16.4
20–64	23.3	61.4	22.1	58.9	21.7	58.6	21.3	58.7	20.7	58.1	19.5	56.0	18.1	53.3
65+	7.0	18.6	8.1	21.3	8.4	22.8	8.7	23.9	9.1	25.4	9.7	27.7	10.4	30.4
80+	1.7	4.5	1.7	4.5	2.1	5.8	2.8	7.7	3.3	9.2	3.4	9.6	3.3	9.8
Population dynamics in Poland 2020–2050 (mln)														
Year	2020		2025		2030		2035		2040		2045		2050	
Total population size	37.9		37.6		37.0		36.4		35.7		34.9		34.1	
Median age (in years)														
Year	2020		2025		2030		2035		2040		2045		2050	
Median	41.3		43.3		45.5		47.5		49.1		50.3		50.9	
Older people dependency ratio														
Year	2020		2025		2030		2035		2040		2045		2050	
Dependency ratio	27.5		32.7		35.6		37.1		40.2		45.5		52.2	

Source: Author's own elaboration on the basis of Eurostat (2020).

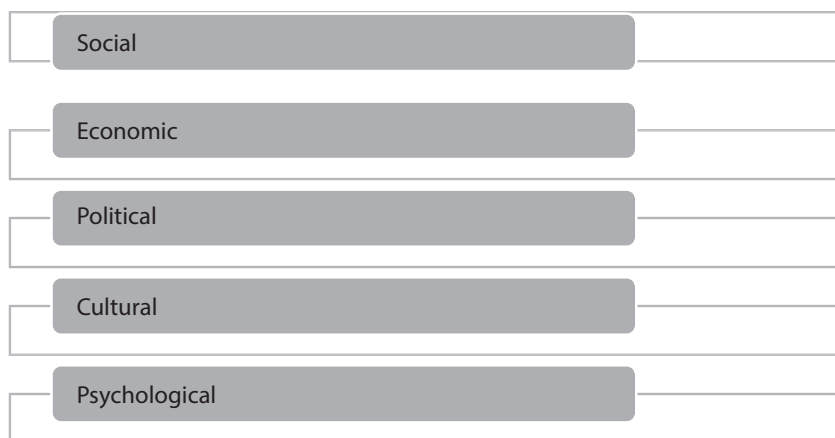
The projection of social phenomena trends is a difficult task, especially with regards to the horizon which is remote in time. It is a result of the complexity of the aforementioned phenomena and the variability of both the elements that this variability consists of and the relationships between them. However, it applies – only to a relatively small extent – to the tendencies of the changes in human population structure. The structure has a very inertial character and constitutes a combined effect of the demographic phenomena taking place in the near and distant future. Its changes in the future can only be insignificant.

#### DEVELOPMENT: REMARKS ON THE MAIN CHALLENGES GENERATED BY THE DEMOGRAPHIC CHANGE IN POLAND

The research shows that there is a correlation between socio-economic changes and population processes of the era of modernization: the latter are the result of socio-economic development and also have an impact on its further course (Okólski, 2018, p. 36). In this article, socio-economic development is understood as a long term process of positive changes – the growth of volume and the increase of quality – including actions aiming at maximization of the level of needs of a particular society (as well as the level of satisfaction of these needs), the increase of the operational conditions of economic entities, and the pursuit of progress in general. This process can be analyzed from different perspectives, such as social, economic, political, cultural, and psychological ones.

The correlations can also be observed within the dyad: security and development. Security and development are inseparable elements of the existence of any political subject and they are key spheres of a country's activity. Despite the fact that each of these spheres has its own character, there is a strong correlation between them. Without ensuring the security, the development is impossible and without the development, ensuring the security would be difficult to achieve. Researchers observe slow but gradual blurring of the line between the security domain and the development domain (Koziej & Brzozowski, 2015, pp. 11–12). It is influenced by, among others, the modernization process, the increasing pace and complexity of societal changes as well as the multidimensionality of potential threats, the centre of gravity of which has considerably shifted towards social, economic and trans-sectoral aspects in the recent decades. As a result, more threats, risks and chances are becoming common for these two spheres and they can be analyzed in the same areas (see: Figure 1)





**Figure 1.** Common Areas of the Analysis of Development and Security

**Source:** Author's own elaboration.

The demographic trends have far-reaching consequences for different dimensions of social life, particular systems, public policies, and the areas of security. “Complex shrinkage” concept, which locates demographic regress in a wide socio-economic context, seems to be useful in the performed analyses (Grasland et al., 2008; Copus et al., 2021). According to its objectives, the decrease of the population in a particular area equals the decline in economic activities, the decrease of the employment rate, the reduction of productivity and innovativeness, the decline of many social institutions and services, the erosion of values, etc., which limits socio-economic development and poses a threat to the security of the analyzed area. According to the representatives of this concept, some social or institutional processes are not easy to estimate quantitatively and require more qualitative or narrative approach.

The effects of demographic regress can be sought in phenomena and processes taking place beyond the individual – on different levels of social life. At the micro level, small social structures and small-scale social phenomena (e.g., small social groups, such as a family or a community of neighbours; types of social interactions and the ways of performing social roles) are analysed. Local communities belong to the intermediate level (*mezzo level*), whereas the processes and phenomena regarding the whole society or its significant part, as well as institutions (e.g., countries) created by them, belong to the macro level. The

exploration of these three levels requires taking into consideration the changes which have already occurred or which are predicted to occur in different structures of the society and social institutions. The function of a security system and one of the elementary responsibilities of a country is responding to challenges resulting from excessive complexity of the social environment and the increasing number of potential threats.

In Polish scientific literature, a lot of attention has been paid to the implications of negative demographic trends (Baranowska, 2013, 2017; Błędowski, 2002; Błędowski & Szweda-Lewandowska, 2016; Cichoracki, 2012; Gałuszka, 2013; Szukalski, 2013, 2014; Czekanowski, 2013; Okólski, 2018; Wasilewska-Ostrowska, 2013; and many others). The multitude of these implications is presented in Table 4 – however it focuses exclusively on the presentation of chances and threats associated with the ageing process of the population of Poland. The table below includes two dimensions of the analysis: 1) the division based on the scope of threats (micro, mezzo, and macro) and 2) the division based on the “subject” of the threats (social, economic, political, cultural, psychological).

**Table 4.** The Analysis of the Consequences Following the Ageing of the Population of Poland

The scope of the analysis	Threats	Chances
<b>Micro social level: FAMILY/HOUSEHOLD</b>		
social	<ul style="list-style-type: none"> <li>• A change of a family structure and roles assigned to its members</li> <li>• Changes in fulfilling a reproductive function of a family</li> <li>• A problem with maintaining the caring function of a family</li> </ul>	<ul style="list-style-type: none"> <li>• An increase of the importance of social bonds outside the family (senior citizens organisations)</li> <li>• An increase of the importance of social capital (relations outside the family built during the initial phase of the old age)</li> </ul>
economic	<ul style="list-style-type: none"> <li>• A problem of poverty among older people</li> </ul>	<ul style="list-style-type: none"> <li>• A change of direction of financial transfers</li> </ul>
political	<ul style="list-style-type: none"> <li>• Inability to change political views</li> </ul>	<ul style="list-style-type: none"> <li>• New intergenerational solidarity mechanisms including, apart from a family, social and public actors</li> </ul>
cultural	<ul style="list-style-type: none"> <li>• McDonaldization and institutionalisation of disease and death</li> </ul>	
psychological	<ul style="list-style-type: none"> <li>• A problem of loneliness among older people</li> </ul>	<ul style="list-style-type: none"> <li>• A change of direction of emotional transfers</li> </ul>

The scope of the analysis	Threats	Chances
<b>Mezzo social level: LOCAL</b>		
social	<ul style="list-style-type: none"> <li>• Malfunction and inefficiency of local social institutions, organisation of space and public communication</li> </ul>	<ul style="list-style-type: none"> <li>• Commonization of forms of cooperation between different generations outside a family (in a local community, in a public space, at work)</li> </ul>
economic	<ul style="list-style-type: none"> <li>• A decrease of the number of taxpayers</li> <li>• A necessity of maintaining a network of local institutions, which are financed by a significantly lower number of people</li> </ul>	
political	<ul style="list-style-type: none"> <li>• An extension of the list of tasks for local policy regarding senior citizens, including:               <ul style="list-style-type: none"> <li>– labour market policy,</li> <li>– healthcare policy,</li> <li>– housing policy,</li> <li>– educational and cultural policy</li> </ul> </li> <li>• A lack of diagnosis enabling the implementation of accurate social policy towards senior citizens at a local level</li> </ul>	<ul style="list-style-type: none"> <li>• An increase of activation (and other related) services as a part of local social policy</li> <li>• Local implementation of policies regarding active citizenship of older people</li> <li>• Local implementation of policies regarding socio-cultural integration of older people</li> <li>• Local implementation of policies regarding care for the elderly</li> <li>• An update of the map of institutions and organisations for senior citizens by addition of new entities</li> </ul>
cultural	<ul style="list-style-type: none"> <li>• A decrease in the level of human, social, cultural, and symbolic capital in the local community</li> </ul>	<ul style="list-style-type: none"> <li>• The use of the cultural capital of the older people for the benefit of the local community</li> </ul>
psychological	<ul style="list-style-type: none"> <li>• Social withdrawal and isolation of older people in the local community</li> </ul>	
<b>Macro social level: COUNTRY</b>		
social	<ul style="list-style-type: none"> <li>• A decrease of (work, sector, territorial) flexibility of labour force</li> <li>• A generational conflict regarding the division of public funds</li> </ul>	<ul style="list-style-type: none"> <li>• Migration of people from developing countries (favourable to “rejuvenation of workforce”)</li> <li>• Development of medicine, increasing the average life expectancy in good health, which is favourable to prolonging the professional activity</li> </ul>
economic	<ul style="list-style-type: none"> <li>• A decrease of the innovativeness of the economy</li> <li>• A decline of labour force</li> <li>• A drop in overall value of consumption</li> <li>• A change of the structure of consumption of goods and services</li> <li>• Problems related to public finance</li> </ul>	<ul style="list-style-type: none"> <li>• Development of new forms of professional activity of senior citizens</li> <li>• Silver economy development</li> <li>• An increase of professional activity and entrepreneurship of people at pre-retirement and retirement age</li> <li>• Technical development and work automation;</li> <li>• “Age management” (human resources management, considering the needs and abilities of employees of different age)</li> </ul>

The scope of the analysis	Threats	Chances
political	<ul style="list-style-type: none"> <li>• A necessity to reject the current model of social policy</li> <li>• Failure of social welfare system</li> <li>• Failure of healthcare system</li> <li>• Failure of pension scheme</li> <li>• Problems with immigrants</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of civic and social activity of older people</li> </ul>
cultural	<ul style="list-style-type: none"> <li>• A change in the social perception of senior citizens (ageism)</li> <li>• A necessity of introduction of changes in the formal education sector</li> </ul>	<ul style="list-style-type: none"> <li>• A change in the social perception of senior citizens (greater respect for older people)</li> <li>• Lifelong learning</li> </ul>
psychological	<ul style="list-style-type: none"> <li>• Psychological difficulties in adapting to civilizational, social, and cultural changes</li> </ul>	

Source: Author's own elaboration

The presented catalogue of expected consequences has a review character and includes many simplifications. Above all, the division into particular areas common to development and security, which are consecutively discussed, is quite “problematic” since, in fact, they are closely related and constitute a system of interconnected vessels.

Demographic regress poses a threat to the socio-economic development of Poland and implies the need of reorganisation of the way that the social system works in many of its spheres (family, education, labour market, health, international migrations, housing, public finance, etc.). Population change leads to re-orientation of the tasks of the state, e.g., taking new priorities in social policy as well as introducing changes in public finance sector in order to fulfil the needs of the increasing number of old people. The revelation of the consequences of demographic regress causes politicization of demographic issues, that is, introducing them into the political discourse and the subjects to the actions of political institutions, at the same time making these institutions change their programmes and the activities that they undertake. As a result, pro-development projects can be replaced by the projects addressing immediate needs.

What is more, demographic processes, the ageing of population in particular, have an “electoral dimension”. The increasing number of old people, who tend to constitute a disciplined electorate, leads to focusing the political parties’ programmes on their needs. It can happen at the expense of young people, which

will inevitably generate new conflicts and social divides, in case of which each generation will represent its own distinct interest.

In response to the new social conflict, young generations may increase their participation in public life, however due to the decreasing number of this group in the population, their political activities may turn out to be unsuccessful. The increase of the number of old people, usually more active in the public sphere, may (although does not have to!) lead to the increase of conservatism and traditionalism in the government policy, the reluctance to make brave political decisions and socio-economic reforms which are needed today.

### SECURITY: HOW DEMOGRAPHICS INFLUENCE DEFENSIVE POTENTIAL OF POLAND

From the strategic point of view, human resources are an essential element of the military strength of a country as they directly influence its defensive potential. The most serious challenge the Polish Army is facing is solving staff shortages in already existing military units and creating the new ones. The Ministry of National Defence presumes that, in the future, Poland will have a professional army of 250,000 soldiers and Territorial Defence Forces of 50,000 soldiers. Currently, there are approximately 140,000 servicemen, including the Territorial Defence Force (Kozubal, 2022). According to the Report of the Supreme Audit Office (Part 29 “National Defence”), which analyses the implementation of the budget for 2020, the average number of army employees in full time equivalent units was, at the time of publication, 153,354 people<sup>3</sup>. It was 1.5% higher than in 2019, but it was not sufficient to meet the needs of the Ministry of National Defence – 4,704 vacancies were not filled (Supreme Audit Office, 2021). In reference to the assumptions included in “The Programme of Personnel Changes in the Armed Forces of the Republic of Poland in 2020”, the level of calls to professional military service was 14% lower than predicted. At the same time, it was reported that the number of dismissals from professional military service was 14% higher than the one in the projection specified in the budget decision (Supreme Audit Office, 2021). The situation regarding the employment of civilian staff of the army does not look better. In 2020, the basic employment limit was increased to 47,394 vacancies. The average annual employment level was 44,874

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<sup>3</sup> The number includes both professional soldiers as well as civilian staff of the army.

(in 2019 – 44,433), and the actual number of employed staff, at the end of 2020, equalled 45,312 people. The report has shown that the army has also a problem with recruitments to Territorial Defence Force (Supreme Audit Office, 2021). The base of potential recruits is proportional to the size of the cohort of young people (particularly men). The projected further decline in working population of Poland will exacerbate the staffing problems and lead to the inevitable reformation of recruitment policy, for example by the revision of qualification parameters (unfortunately, very often, lowering them) or the increase of the number of women in the army and offering them the access to the new job posts.

The Army, as an employer, will have to increase its competitiveness in comparison with the private sector. There is no simple recipe or solution to achieve that. If the government tries to stop the decrease of the number of soldiers by paying them higher salaries, it can bring similar demands from the representatives of other professional categories. What is more, that would have serious fiscal consequences. These issues pose range of questions, the answers to which can bring the key solutions: To what extent is the modern army an attractive workplace for young people? Are young people, who cherish such values as freedom and individualism, willing to wear the uniform and submit to military rigour and discipline? Can the army offer them financial gratification (among other benefits) comparable to the one offered by the civilian labour market? Young people, being rational, take into consideration current socio-economic conditions and potential consequences of their decisions when choosing a job (as well as a career path). From possible alternatives, they select the one which gives them maximum utility of the available options (Baranowska, 2020, p. 83). In order to win the fight for employees, the army has to identify the expectations of young people and address them. It has been noticed that there is a need for empirical research and theoretical reflections on the problem of familiarity with working conditions in the army, the problem of familiarity with the character of military profession and the right motivation for choosing it, the problem of perseverance in a chosen career, or the form and content of campaigns promoting the profession of a soldier.

The army will have to use more technologies, such as robots, drones, surveillance equipment, which require less and less involvement of personnel. Military technology took a quantum leap at the end of the 20<sup>th</sup> century. However, it was the beginning of the 21<sup>st</sup> century, when the capabilities related to military operations were fundamentally changed. The way of fighting the war was redirected to a brand new evolution path due to new innovative solutions for fantastic

improvement of effectiveness and efficiency, not only of the machines but also people. Łukasz Kamiński (2009, 2014) describes the scope of the usage of military robots by American army in Iraq and Afghanistan. They were used for such tasks as: direct fire support, equipment transportation, fougasse dismantling, evacuation of the injured or reconnaissance in the area occupied by the opponent. The current war in Ukraine shows that unmanned aerial vehicles constitute an effective weapon on the battlefield, which still impresses with its capabilities. Their application is universal – a military drone can be useful for observation and intelligence gathering, arms and medical materials transportation as well as fighting on a battlefield. However, there are certain tasks which cannot be completed exclusively by modern technologies – for example, medical assistance.

When discussing the development of modern technologies, it is important to mention the attempts of their application in order to fulfil the military needs – understood as the realisation of typical aims and tasks of the military. Rafał Kasprzyk (2020a, 2020b) emphasises that recently an algorithm arms race can be observed. The main function of artificial intelligence, machine learning in particular, is enabling the processing and analysing of huge amounts of data, in order to gain knowledge of a particular area, and its application to achieve specific goals. The spectrum of implementation or potential applications of artificial intelligence within the framework of the adaptive approach of the armed forces to the introduction of new technologies is already very broad. Kasprzyk (2020b, p. 49) notes that the current approach to planning and scheduling of the Armed Forces of the Republic of Poland is based on the so-called operational capabilities. Taking into consideration the above assumption, the model application of artificial intelligence is presented according to the taxonomy of the so-called capability areas: Command and Control, Reconnaissance, Fire Power, Survival and protection of the army, and Logistic security of military action. The author emphasises that the necessary condition for a proper transformation of the Armed Forces ready for the future challenges – including the demographic ones – is the systemic approach to artificial intelligence.

Due to the development of new technologies, the increasing number of military personnel will need to gain relevant expert knowledge and skills. Hiring people with such qualifications will pose a challenge, considering the decline of younger age groups. Historically, armies have been strong proportionally to their size measured by the number of soldiers. After the industrial revolution, the quality of equipment became a critical factor. As the army is entering the information era, the abilities of integration of software and information (communication)

systems as well as technical experts who participate in battles have become an independent factor in the assessment of the power of the army.

The demographic situation carries the threat of collapsing of some of the institutional functions of the army and the tasks it performs. The increasing staff shortages, together with the advancing population ageing process, can have a negative impact on such aspects as combat capabilities of the army, fulfilment of the tasks related to the defence of the country by the armed forces, fulfilment of alliance commitments, or engagement in peace operations. Our allies, who perform comprehensive analyses of the influence of global demographic trends on the armed forces, are aware of the aforementioned facts (Libicki, Shatz, & Taylor, 2011).

Another implication for the armed forces, which results from the ageing of the population, is a possible reduction of the budget allocated to the defence. Negative demographic trends not only have an adverse impact on the economic development of a country but also cause the increase of retirement schemes and health care costs. Successive governments will face the necessity of keeping the balance between ensuring sufficient defence capabilities of the country and meeting social and economic needs of the citizens.

## CONCLUSION

The demographic situation in Poland is difficult and, in the foreseeable future, the changes which would guarantee a stable demographic progress should not be expected. It is confirmed by, for example, the Statistics Poland study about socio-economic situation in the country in the first quarter of 2022, according to which 77,000 children were born in Poland between January 2022 and March 2022. It is almost 5,000 fewer children than in the first quarter of 2021 (Statistics Poland, 2022, p. 15). The birth rate decreased by 0.4 points and equalled 8.2‰ (Statistics Poland, 2022). This situation is influenced by many factors, including COVID-19 pandemic and the war in Ukraine, which cause uncertainty that is a serious discouragement to procreation.

Mitigating the effects of demographic changes – in case of our country, mainly the problems of ageing and population decline – is a strategic challenge for the authorities. The importance of demography is always noticed when asymmetry or imbalance of demographic processes occur – when the birth rate is exceptionally low or high and when the dynamics of the increase and the



decrease of births takes the form of too rapid fluctuation. Each of these situations generates different problems. The demographic regress which we experience is related to many alarming social processes, including changes in public finance, changes in consumption and investment patterns, labour productivity, innovativeness, political preferences, shortages in labour force, changes in the education sector, decrease of defensive potential and strategic importance of a country. A significant growth of demand for the services offered by public welfare and health care sectors occurs. Constant low birth rates over a longer period of time cause that the reproduction of the population is endangered, generational change in the labour market ceases to exist and the economy has to be supported by the import of labour force. As a consequence, the new class of social problems related to the presence of immigrants, increasing cultural hybridization of the society and generational imbalance arises. Therefore, the identification of the spectrum of problems (and, maybe, opportunities as well) resulting from the changes of the demographic structure is necessary.

The growing demographic crisis should be treated as one of the most important and, at the same time, the most difficult problems that contemporary Poland has to solve. Our country is facing the necessity of careful consideration and reevaluation of current economic policies and political programmes which have to adopt significantly further reaching perspective.

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