

## Scenarios for Resource Allocation to Bulgaria's Defense in the Horizon of 2035

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### Abstract

As part of the formulation of a vision for Bulgaria's force development in the horizon of 2035, the authors were tasked to study the evolution of the economic environment and provide a view on the potential resource allocation to defense. Our study resulted in three scenarios—"Bulgaria in the gray zone of the European economic space," "Peripheral economy," and "Catching up economy"—each one plausible under a set of driving factors and conditions. The paper presents the process of scenario design, the scenarios, the respective defense budget levels and the impact on Bulgaria's defense and armed forces.

**Keywords:** Defense policy; Foresight-based defense planning; Scenario; Drivers; Defense expenditures

### Introduction

In the period of the Cold war, Bulgaria was member of the organization of the Warsaw Pact, aligning closely its security and defense policy and decisions on force development with the Soviet Union. Considerable investments in defense—in terms of personnel, money, infrastructure, R&D and industrial development—were managed under Moscow's comprehensive influence, in a non-transparent manner and lacking public oversight. This started to change slowly in the process of democratization after 1989. But with the interest of the political class in market reforms and privatization, and given the lack of civilian expertise and the high esteem for the armed forces, the military remained largely unreformed in the 1990s. With a population of eight million, a decade after the fall of the Berlin Wall Bulgaria continued to maintain over 100 thousand active military personnel and to spend more than three percent of the GDP on its armed forces.

Reforms introduced in 1999 put an end to the inertia. By 2004 the Bulgarian Armed Forces were reduced to 45,000 active duty personnel, and then even further, while Bulgaria remained among the few NATO countries spending over 2 percent of its growing GDP on defense. That changed abruptly with the financial crisis of 2008. The defense budget was reduced first to 1.8 and then dropped further to 1.3 percent of the GDP, although the 2010 Defense White paper stated that the defense budget should be maintained at levels above 1.5 percent. It could be argued, that this drop is in line with trends exhibited by other NATO members in a relatively stable security environment and the expected termination of the ISAF mission in Afghanistan, at least as seen till the end of 2013.

In this relative stability, the Ministry of Defense of Bulgaria launched a review of force structures, aiming to provide guidance to force development in the perspective of 2035. Not surprisingly, the big unknowns in this environment related to the levels of ambition of the country within NATO and as security provider on the borders of the European Union, and the respective levels of defense resource allocation.

While the review was conducted, the Russian Federation invaded Crimea and provided support to separatists in Ukraine's South-East, only a few hundred kilometers from the borders of Bulgaria. Developments in Syria and Iraq only added to the changing security

landscape, with considerably higher levels of threat to Bulgaria and its allies.

This paper is focused on the options for the development of Bulgaria's defense from the economic point of view. The next section examines the types of scenarios considered in the process of formulating defense policies. We then present methods for scenario design and the results of their implementation in the study of alternatives for resource allocation to Bulgaria's defense, described by three distinct scenarios. The final section elaborates on the challenges in incorporating alternatives in defense policy formulation

### Scenarios in Defense Policy Formulation

Defense policies are formulated and executed in a fluid and complex environment. The evolution of this environment is uncertain and unpredictable, particularly in long term. A number of methodological approaches have been developed over the last decade to deal with uncertainty, with two main strands: (1) use of scenarios to represent uncertainty [1,2]; and (2) investing in the agility of defense and security organizations [3].

This paper presents a specific instantiation of the first approach. To clarify what type of scenarios has been constructed and how they could be used further, we will start with the examination of the types of scenarios considered in defense policy making and planning.

The first types are the so called "normative scenarios." Developed as vision statements, they describe a desired future and serve to guide the efforts of diverse players towards the achievement of that future. They have been used widely in the public policy community, in particular in

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the 1960s and the 1970s, with the belief that a convincing and widely shared vision is attainable if stakeholders do their best towards its achievement. One of the more recent and well known example comes for the UN Millennium Project [4].

The second type of scenarios allows to represent the complexity of the future world through particular instantiations of likely future threats and challenges, and then to derive requirements to defense [1,2,5]. These are known as force planning scenarios [6] or, in the NATO parlance, as "planning situations" [5,7]. The use of this type of scenarios is already a well established practice and 'state-of-the-art' approach in NATO's defense planning, as well as defense planning in NATO nations, Australia and New Zealand [1], South Korea [8], and other countries. In the design of this type of scenarios planners accept a certain view of the future world, and all scenarios included in the planning process are considered likely in that future world within the respective timeframe.

The third type of scenarios comes to address a deeper level of uncertainty, when the defense planning context may change considerably over time. These scenarios describe alternative contexts, and are often designated as "alternative futures." The first application in the field of defense policy making and planning, we are aware of, is by RAND Corporation [9]. The UK Ministry of Defence launched a "Strategic Trends Programme," and the fifth report in that program describes strategic contexts out to 2045 [10]. NATO, through its Allied Command Transformation, coordinated another study on multiple futures [11]. The approach has been used also for national defense planning purposes [12,13].

The elaboration of "alternative futures" typically deals with the evolution of the security environment, the nature of military conflict, technological development, demographic trends, migration and social cohesion [9-14], while less attention is paid on the capacity of a country to sustain a defense effort. In Bulgaria's recent experience, however, the level of resources allocated to defense is often the driving factor for key decision of force structure and investments in new defense capabilities [15].

In the fall of 2013, Bulgaria's defense ministry launched a force structure review, supported by the formulation of a "Vision for Force Development 2035" (Vision 2035). The authors of this paper were assigned to lead the working group on "Economy and Resources." The expectation of the leadership of the review and the 'Vision 2035' study was that we will provide an indication on the level of resources (expressed primarily as the percentage of the GDP allocated to defense) the country will dedicate to defense in the 2035 timeframe.

However, the authors' own experience and the bulk of the respective literature convincingly show that long-term point predictions are bound to fail. Therefore, we embarked on exploring the space of possible solutions, and the trends, drivers, and strategic shocks that influence the capacity of the country to sustain a defense effort, as well as the factors that shape decision making on defense budgets. Within the classification of the types of scenarios presented above, we decided to explore the possible alternative futures, design respective scenarios and assess their impact on the resource aspects of Bulgaria's defense policy in the 2035 timeframe.

This paper presents the three resulting scenarios, and the methods applied to construct them. Details on the underlying economic analysis are presented elsewhere [16].

## Methods for Scenario Design

The definition of scenarios of the context for decision making on defense resource allocation involved a number of methods, implemented in the following consequence (for detailed explanation see [17,18]):

1. The process starts with identification of relevant factors (trends, drivers, potential shocks) and selection of key factors that form the dimensions of the space to be explored. Ideally, dimensions are selected in a way to avoid strong mutual influence between any two of them. This is the first step of the so-called morphological analysis [19].

2. Definition of the range of values along each dimension and selection of distinct values, or states, for each factor, that are of particular interest to the study.

3. Identification of plausible combinations of states. This step includes expert assessment of probabilities of distinct states, assessment of compatibility of each pair of states along each two dimensions and, as a result, ranking of configurations of states in terms of plausibility. The application of clustering and linear programming methods allows to speed up the exploration of the scenario space and shortlist candidate scenario configurations.

4. Selection of representative configurations. Experts select from the shortlist a small number of configurations—usually three to five—that span the scenario space. At this step experts may consider interim configurations, i.e. configurations combining features of two or more of the original states for each factor.

5. Writing the text of the scenarios.

The following sections present the implementation of this sequence of steps to the problem at hand, while the final section addresses briefly the use of the scenarios in defense policy making and planning.

## Scenarios for Defense Resource Allocation in the Horizon of 2035

The level of resources allocated to defense, including the defense budget, depends of two main groups of factors: (1) the capacity of the economy to provide resources for developing, maintaining, and using (when necessary) defense capabilities; and (2) the understanding of defense needs by the political class and its willingness to dedicate resources to defense, balancing the needs of defense and those of other public sectors.

Hence, and based on detailed analysis of economic status, drivers, and trends, in the first step of the scenario design process we defined the following five dimensions of the problem space:

### First step

**Economic policy:** This dimension accounts for the degree of introduction of advanced management methods, the implementation of the principles of good governance, as well as the level of shadow economy and corruption. Constraining the shadow economy and corruption was assessed as key for allowing free economic initiative and growth. On the other hand, the level of governance is indicative for the way the political class exercises its responsibilities, and the level of transparency, accountability and integrity in balancing various public needs and appreciating the needs for adequate defense.

**Level of economic development and competitiveness of Bulgaria's economy:** This is the key factor defining the capacity of the

country to meet the burden of defense by allocating resources not only as a percentage of the GDP, but also in terms of real purchasing power. It also reflects the institutional capacity to innovate, to specialize and deliver competitive products in high-technology niches, and cooperate with leading European and North American companies.

**Level of integration in the European economic space and in the region:** The strengthening of the economic relations between Bulgaria and the countries in South Eastern Europe (SEE)—Albania, Bosnia and Herzegovina, Croatia, Greece, Macedonia, Moldova, Montenegro, Romania, Serbia, Turkey, and Ukraine—is seen as a means to overcome backwardness and maximizing the advantages of the membership in the European Union. Further integration and specialization in the EU in the production and delivery of defense products and services will strengthen the defense technological and industrial base and facilitate the acceptance of higher levels of defense spending, in particular defense investments, with participation of local defense industries and R&D organizations.

**Structural dynamics:** This dimension addresses the level of modernization of the economy, both in terms of technologies and management practices, and the respective levels of productivity, labor-, material-, energy- or knowledge-intensive production and services. Currently 30-35 percent of the production of Bulgarian industries is in the group of lowest technology levels, and 45-50 percent is resource-intensive, i.e. requiring significant use of capital, energy, and materials. Only 10-15 percent is at the medium technological level, and just a symbolic part is high-tech. The ability to transform this structure of production may serve as an indicator for the capacity of the economy to sustain the national defense.

**Status and perspectives for the volume and quality of foreign investments:** The level of investments in Bulgaria's economy, in particular foreign investments, is seen as a driver for economic security, macroeconomic stability, and the capacity to sustain defense efforts. The structure of the foreign investments—technology levels, value added, expected return, investors' horizon, international cooperation—is also an indicator of possible levels of defense budgets and the type of defense capabilities the country may develop and sustain. Another aspect of this dimension is the capacity of the national economy to invest abroad, primarily in South-Eastern Europe.

In the second step of the process we defined the value range of interest and distinct states along each of the five dimensions:

## Second step

### **Economic policy (e.g. shadow economy, corruption):**

- Preserving the distance to the average EU level of shadow economy
- Small reduction of the gap between the level of shadow economy in Bulgaria and the average for the EU
- Active and effective counter-corruption policy and reduction of the shadow economy to the average levels in the EU

### **Level of economic development and competitiveness of Bulgaria's economy:**

- Preservation of the current dynamics of the GDP and maintaining or increasing the distance between Bulgaria and the remaining EU member states
- Average growth of about 3 percent, not allowing increase of the rift with the EU member states

- Average growth of about 4 percent, increasing competitiveness and reducing the distance between Bulgaria and the EU average
- Average annual GDP growth of 5–6 percent; increasing competitiveness and substantial reduction of the economic differences between Bulgaria and the EU

### **Level of Integration in the European economic space and in the region:**

- Preservation of the current level of integration within the EU and SEE, that leaves Bulgaria in the second tier of countries in terms of integration
- Preservation of the level of integration within the EU and certain increase of the regional integration, which however does not have a substantial impact in the integration processes in the European Union
- Increased integration in the SEE region and the EU, with positive impact on the place of Bulgaria in the European Union
- Substantial deepening of the integration processes in the region and the EU, that will afford joining the group of EU countries of medium development

### **Structural dynamics:**

- Preservation of the branch structure of the economy, with features of a 'servicing economy' for the European Union
- Change in individual economic sectors, with preservation of the branch structure and the features of a 'servicing economy' for EU member states
- Change in the technological profile of individual economic sectors, with a positive impact on the branch structure of the economy and a tendency to reduce the gap to EU countries of medium development
- Emergence of breakthrough economic sectors; change in the structure of the economy and achievement of compatibility with the economies of EU member states
- Structural re-orientation through substantial increase on medium- and high-tech economic sectors; closing the gap with EU countries of medium economic development

### **Status and perspectives for the volume and quality of foreign investments:**

- Low level of foreign investments, primarily in branches with low added value and high dependency of labor, facilitating the preservation of the economic status-quo
- Preservation of the level of foreign investments in branches with low added value, with some investments in branches with higher added value; no potential for changing the economic status-quo
- Increasing levels of foreign investments both in branches of high dependency on labor and those with higher added value, providing stability of Bulgaria's competitiveness on the investments markets
- Increasing levels of foreign investments in branches with higher added value, stabilizing the competitiveness of Bulgaria's economy on the investments markets and guaranteeing attractive returns of investments

- Considerable increase of the levels of foreign investments in branches with higher added value, increasing competitiveness of Bulgaria's economy on the investments markets and turning it into an important investor in the SEE region

On the third step of the process, and based on expert assessments of likelihood and compatibility, we defined plausible configurations of states and, on the fourth step, selected three representative configurations (presented in the Table 1 below). Each color in the Table 1 represents a selected configuration and, respectively, a scenario.

### Third step

The three scenarios were entitled respectively

- Bulgaria in the gray zone of the European economic space;
- Peripheral economy; and
- Catching up economy.

The three scenarios are respectively negative, neutral, and positive, and all three are plausible under certain set of conditions (defined by the respective states along the five dimensions). A short description of the three scenarios and their impact on defense resource allocation follows.

**Scenario 1. Bulgaria in the gray zone of the European economic space:** This is a negative scenario. Relatively high levels of corruption and shadow economy hinder economic initiative and growth and lead to inconsistent and ineffective economic policy, combined with a deficit in the capacity of the system of state bodies. Lower levels of production in most economic sectors as a result leads to reduction of exports and increase of imports, and thus to negative trade balance, considerable fluctuations of the economic growth and low average level of the GDP, both in absolute terms and growth rates. The transformations in Bulgaria's economy are insignificant, with no impact on its structure, production specialization and cooperation, as well as on productivity. Worse characteristics of the labor market, in terms of both quantity and quality, will drive economic marginalization of big social groups and the increase of labor emigration. The material base of the economy will be obsolete, with low added value and a low share of high-tech production. The country will be in need of more investments of higher quality, including foreign investments and know-how, due to relative political instability (compared to the countries in Central and Eastern

Europe), widespread corruption and weak institutions, in particular in the area of justice and law enforcement. Other negative influences come from the underdeveloped infrastructure and the cultural factor, as well as the negative image of Bulgaria established in the last two decades. Peripheral roles in the integration processes in the EU and SEE and low levels of utilization of EU funds do not afford to get direct economic benefits and to turn the country into a net beneficiary of the EU budget. As a whole, the distance between Bulgaria and the EU average will be preserved in terms of both economic growth and competitiveness.

Petty crime, ideological and ethnic tensions in the country will be on the increase. Most members of the political class will not understand the concept, principles and means of modern defense policy. The defense budget will be further reduced to well below 1 percent of the GDP and the armed forces will be marginalized.

**Scenario 2. Peripheral economy:** This is a neutral scenario, largely a result of extrapolating current status and trends. The economic policy of the country will guarantee primarily stability of the economic system through slow evolution of the institutional capacity of the state bodies, as well as the main economic structures. This will lead to reduction of the share of shadow economy, but the distance to the average level for the EU will be preserved. The economy grows consistently, with 3-4 percent per year on average. The country is not able to mobilize its internal reserves and to use fully the available labor force. The structure of the economy is shaped primarily under the influence of the markets, and not as a result of a goal-oriented structural and technological modernization and high levels of investment. As a result, the share of the 'service economy' is significant, with separate islands of high-tech production, for example in the IT industry, used by foreign companies as an outsourcing destination. The deeper and more intensive intra-regional cooperation and integration in South-Eastern Europe and the EU is one of the ways to overcome existing gaps, maintain a competitive environment, stimulate innovation and productivity growth, create jobs and increase the efficiency in using the labor force (primarily by decreasing unemployment), and develop niches of specialization. Thus, the gap between Bulgaria's economic development and that of the EU will not increase.

Under the pressure to meet its obligations as an ally in NATO and contribute to EU's Common Security and Defense Policy, and as a result of the economic stabilization, the downward trend in defense

A. Economic policy, shadow economy, corruption	B. Economic development and competitiveness	C. Level of Integration in the European economic space and in the region	D. Structural dynamics	E. Volume and quality of foreign investments
A1. Substantial level of the shadow economy	B1. Preservation of the current dynamics of the GDP	C1. Preservation of the current level of integration	D1. Preservation of the branch structure; 'servicing economy' for the European Union	E1. Low level of investments in branches with low added value
		C2. Preservation of the level of integration within the EU and certain increase of the regional integration	D2. Change in individual economic sectors, with preservation of the branch structure; 'servicing economy' for the EU	E2. Low level of investments in branches with higher added value
A2. Small reduction of the gap between the level of shadow economy in Bulgaria and the average for the EU	B2. Average growth of about 3 percent	C3. Increased integration in the SEE region and the EU	D3. Positive change in the structure of the economy	E3. Increasing levels of foreign investments both in branches of high dependency on labor and those with higher added value
	B3. Average growth of about 4 percent, increasing competitiveness		D4. Breakthrough economic sectors; compatibility with the economies of EU member states	E4. Increasing levels of foreign investments in branches with higher added value
A3. Effective counter-corruption policy; shadow economy at the average EU level	B4. Average annual GDP growth of 5-6 percent and increasing competitiveness	C4. Substantial deepening of the integration processes in the region and the EU	D5. Substantial increase on medium- and high-tech economic sectors	E5. Considerable increase of the levels of foreign investments in branches with higher added value

Table 1: Representation scenarios in the space of morphological analysis.

budgets will be terminated and the budget will stabilize at a level of 1–1.2 percent of the GDP. The technological obsolescence of the armed forces, however, cannot be compensated. Bulgaria buys armaments and equipment from foreign suppliers, with just a few examples of incorporating Bulgarian companies in the supply chain of Western primes.

**Scenario 3. Catching up economy:** This is a positive scenario. Bulgaria emerges as a regional leader in good governance. Its economic policy is export oriented, transparent, responsible and predictable, aimed at creating a stable economic environment, allowing effective functioning of economic entities and adherence to international treaties in the conditions of economic and political-military integration within the EU and NATO. The shadow economy and acts of corruption are constrained, and the improved position of Bulgaria in SEE and EU in that regard facilitates economic initiative and growth. The country has institutionalized the prerequisites for a vibrant economy, innovation and technology insertion, development of competitive production sectors with lower use of material, energy and capital, high productivity, specialization and cooperation. The EU structural funds and foreign investments are directed towards enhancing the competitiveness of the Bulgarian economy in several areas of specialization, supported by clusters with strong education, R&D, technology development and production. With a relatively high and stable annual economic growth of 5-6 percent, Bulgaria is closing the gap of economic development with the EU-average.

The defense policy of the country is effective, with increasing efficiency. The armed forces specialize in capabilities, corresponding to two-three national clusters (see above). Bulgaria's defense policy is formulated in a rational and transparent manner, with clear understanding of security and defense needs and requirements. If and when necessary, Bulgaria's economy can sustain defense expenditures of around 2 percent of the GDP.

### On the Theoretical and Practical Challenges in Incorporating Alternative Scenarios in the Formulation of Defense Policy

The three alternative scenarios for defense resource allocation, along with similar studies of the security, technological, and socio-demographic developments may serve to define alternative futures, in which Bulgaria's defense policy will be formulated and implemented. The rigorous, theoretically sound incorporation of alternative futures in defense policy making is still a challenge. Nichiporuk [9] and Tagarev and Ivanova [17] provide certain guidelines for reflecting alternative futures in policy making.

In the particular case, the leadership of the review of force structures disregarded the uncertainty related to the future capacity of Bulgaria's economy to support defense efforts and the respective budget levels. It decided on a single future context and a rather ambitious force structure, both in terms of size and technological level. The unspoken assumption seems to be that this vision will serve as a normative scenario and thus will guide more detailed force and investments planning. There are three points in that respect that need to be emphasized:

- The use of single point predictions, i.e. a single defense policy making context, in particular when looking 20 or more years into the future, is not justified theoretically, nor is it supported by practical evidence in Bulgaria's experience [15];
- The realization of the vision, i.e. of the normative scenario,

would require defense expenditures that consistently exceed 2 percent of the GDP—an assumption that trumps even the most positive of our three scenarios; and

- There is a wide gap between the declarations in this strategic, long-term vision and ongoing decisions and actions of the defense ministry, and the ruling coalition as a whole (e.g. further reduction of the defense budget, increasing social benefits, postponing planned investments, etc.).

The brief explanation for these discrepancies involves lack of political leadership, immature defense institutions, wishful thinking among the group of active and reserve flag and senior officers involved in the review, and lack of accountability.

By the time this article was being finalized, the Bulgarian Government resigned. It is safe to predict that the results of the review of force structures, available so far, and in particular the Vision 2035, will be discarded by the incoming government. We can only hope that the methodology, presented here, and the three scenarios describing alternative defense resource allocation contexts, may serve the interests of defense practitioners and researchers, and may be even of practical use in the next defense policy making cycle in Bulgaria.

### Conclusion

The development of the armed forces is based on a complex set of norms, institutions, procedures and tools, intended to capture diverse requirements, reflect various interests, account for the momentum in force development and the uncertainty in the environment. One of the tools is taking a long-term view and deciding, inter alia, on policy goals, ambitions, and main parameters of the force structure, that will drive in turn force development decisions.

This was the intended approach in Bulgaria's review of force structures and the development of the supporting Vision 2035. Being in the lead of the "Economy and Resources" expert group in the team, developing the vision, the authors decided to reflect the inherent uncertainty by implementing the scenario approach. As a result, we formulated three scenarios describing alternative contexts for decision making on defense resource allocation. The working process and the three scenarios are presented in this paper. We consider these scenarios valuable for the forthcoming cycle of defense policy making and planning in Bulgaria, while the methods, the process of scenario development and the structure of the exploratory space may be of benefit to fellow researchers involved in supporting defense decision making.

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