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CHALLENGES OF NATIONAL DEFENSE RESOURCE MANAGEMENT

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Abstract:
The trend of permanent development has been known since ancient times. Starting with the gatherer-man/ hunter and reaching the modern man, humanity wanted to consolidate a better life through the cultivation, the production of goods, to ensure its physical and group security by strengthening its defense/ fight-capacity and satisfy their permanent need for knowledge which is largely related to the structure of human being. All these premises inevitably led us to an exponential increase in the quantity of goods, of ideas within the community, and, last but not least, of the mass of the population. But, behind these obvious changes lie the resources, the basis of our entire activities, both physical and ideological.

Key words: *Resources; Defense; Management; Risks; Threats; Challenges.*

1. Introduction

The transformation in the military technologies has deeply impacted the defense sector which makes it necessary to adopt changes in the present system of defense management. Various tools and processes have been inserted into the current regime of defense resource planning process. In the same context, the European nations have also adopted efficient tools matching the futuristic challenging demands. The problems faced by all are similar, as they have risen from the cuts is personnel and spending which is an outcome of the peace dividends at the end of the Cold war. As well as the increased demands for more deployable forces that operate far from their home bases and have to be sustained for longer periods.

It is therefore necessary that the defense organizations need to turn the defense policies into practice and in doing so to develop appropriate and sustainable planning mechanisms. Support systems and infrastructure. Keeping the above in the backdrop a detailed study has been carried out to ascertain the defense resource management in Romania.

2. Defense Resource Management

2.1 The Importance of Resources

Defense management may bring more coherent solutions to dilemmas like "guns or butter" (dealing with the opportunity costs of defense versus other public goods, and with an optimal allocation of national resources), or national self-sufficiency in defense capabilities versus shared responsibilities with other partners or allies and the appropriate delegation of sovereignty. [1]

The achievement of these strategic goals requires better distribution of constrained public resources, a more efficient way of utilising these resources and a more visible and accountable outcome of governmental programs, including defense programs. In more and more nations, the public administration is replacing its rather inflexible and highly bureaucratic form of working on

behalf of the public with more flexible and accountable public sector management. The question then is how governments can 'produce defense' in a more efficient manner. Part of the answer is seen in the introduction of good managerial practices from the business sector into defense, where the achievement of expected results in a competitive environment is paramount for the survival of any organization. [2]

At the level of the defense sector proper, some institutional requirements should be considered in order to grant a fair chance of success to any enterprise to introduce managerial tools and practices. Ministry of National Defense (MoND), has to meet two conditions when developing and introducing such managerial tools and practices: it has to be part of the management framework of the general government and it should provide an organizational structure separate from the defense staff. In other words, a ministry of defense should adopt the same managerial philosophy as the general government, even if the domain of defense makes this ministry distinct among all others in the government. This is important for ensuring an appropriate dialogue between policy makers at all levels of government and for facilitating the flow of resources necessary for implementing the policies. Looking around the Euro-Atlantic community, we can find examples of governments that paid special attention to their ministries of defense in the process of introducing different forms of management, such as resource allocation based on programs and multi-annual planning. [3]

Accounting for these considerations, it is important to clarify what the "ministry" (or MoND) should do. In our country, with a freely elected legislature, the defense institution is first and foremost a governmental body through which the elected executives issue guidance, instructions and orders to the nation's military. Second, it is also an operational headquarters where this guidance is transformed into operational plans and corresponding requirements for funding, human and material resources, legislation and other forms of support. Finally, the ministry should be the "central administration" of national defense in general, dealing in detail with armed forces personnel, finances, logistics, procurement, training, social support and infrastructure.

It has a specific organization and operates under unique norms, regulations and procedures in order to transform financial, material, human and informational resources, dedicated by the society, into a "defense product". All this represents the internal context of defense management. Its particular aspect is that decision making on most important defense issues is not closed within the defense ministry, not even within the government.

Resource decisions are made within a process that in itself needs to be transparent to decision makers, e.g., to allow the preservation of a clear audit trail from national security objectives, through defense objectives to taxpayers' money. [4]

2.2 - About Defense Resource Management

Defense management resides at the nexus of national security policy, strategy, campaigning and strategic leadership. It is how our government translates national security policies and strategies into trained and ready forces for combatant commanders-units of personnel and equipment that mobilize, deploy, conduct and sustain operations, redeploy and demobilize.

However, it is more complicated than managing forces on hand. It involves the development of new ones to address emerging threats, posturing the forces around the globe for ease of employment, and ensuring adequate command, control and support in garrison and during operations. Thus, defense management is less about the details of personnel, equipment and facilities and more about what the overall force can do now (capabilities), how much it can do (capacity) and what it needs to do that it cannot (requirements). Moreover, the forces that services provide for operations must be interoperable for unity of effort and versatile so to adapt and respond to changes in the environment. Defense management is also not a linear process that moves from strategies to forces on hand. Rather, the ends, ways and means co-evolve because the environment changes faster

than the military can develop new capabilities and available resources are never sufficient to satisfy the national strategies. Therefore, defense management is also an exercise in managing risk. Ensure the vital interests are covered, and address the rest when one can. [5]

As an institutional process, the management of defense is situated between defense policy formulation and actual command and control of the military forces. It should address areas of action such as defense resource management, personnel management, acquisition management, where (during defense policy implementation) it is likely that inherent uncertainties require higher flexibility and subsequent decisions and unexpected problems might occur, requiring proper identification and appropriate solutions.

Further, we examine principles and practices of programme-based force development which is equivalent to programme-based defense resource management. It outlines the reasons behind the use of programs and programming, shows what a good programme decision is and how it depends on the design of a programme structure, and singles out key activities in a programme management process and the links among them. [6]

On occasion, the uncertainty may be even higher, e.g., due to very high and unpredictable inflation rates, lack of planning experience and undisciplined implementation. In such cases it may be necessary to review and update programme decisions within the budget planning and implementation cycle. This mechanism is sometimes referred to as pre-programming. Within the budget year, and if allowed by law, this may lead to reallocation of the budget among defense programs. Both mechanisms provide flexibility in defense resource management, while preserving transparency and accountability. Other, qualitative changes in the environment for development of the armed forces - a new threat, creation of or accession to a defense alliance, impact of a disruptive technology, a new political party coming to power, etc. - cannot be accommodated through conventional defense resource management mechanisms.

Thus, the programme-based defense resource management process facilitates accountability and transparency. Military and civilian experts design programs in compliance with policy guidance and their proposals are transparent to decision makers. Once decisions are made, they are responsible for the efficiency of implementation. On the other hand, civilian leaders are bound by their own decisions formulated both in the programming guidance and the programme decision memorandum. All stake-holders understand what the decisions mean. Finally, regular reporting in programmatic format provides for effective implementation oversight.

Programme-based defense resource management is a very efficient tool to manage defense transformation, providing for transparency of decision making, democratic control and accountability of elected officials. It is one of the few available tools to implement effectively capabilities-based planning and to assess implementation of plans, programs and budgets.

In particular, the introduction of the programming phase is seen as crucial to relate defense policy to money allocations, assuring "value for money" budgeting and, potentially, effective democratic oversight of armed forces. The implementation of programme-based defense resource management can be strongly facilitated if the Parliament requests submission of the draft defense budget accompanied by adequate programme description, as well as programme-based performance reports by the executive power.

Finally, programme-based force development and defense resource management promotes civilian participation in the development of defense policy and contributes substantially to the effective, transparent and economically viable management of defense spending.

The challenge to the modern defense institution at present is to provide a new balance between the tasks of the armed forces and the means available in order to create affordable armed forces with sufficient room for operations and capital investments. In an era of ever more constrained resources and changing strategic requirements, there is a growing need to extract

maximum benefit from the money spent on defense. And this is the mission of defense management. [7]

2.3 - Risks and Threats

In an organization, inputs would include resources such as raw materials, money, technologies and people. These inputs go through a process where they are planned, organized, motivated and controlled to meet organizational goals. Outputs would be products, such as force capabilities. Enhanced quality of life or the state of national security would be outcomes. Feedback would be the information from clients or public perception of security provided by the state. This overall system framework applies to any system, including subsystems (departments, programs, etc.) in the overall organization. [8]

In this current and ever-changing security environment, the development of the Romania's Strategy for the Country's Defense 2020-2024 was influenced by many constrains – risks and threats.

Romania's new military strategy was crafted based on the results of the Strategic Defense Analysis 2020 (SDA), and the Romanian Armed Forces Transformation Program until 2040. In this context, the proposed force structure for the time horizon of the strategy is defined as an essential phase for the development of the armed forces in the medium and long term, by 2040. [9]

The Strategy reflects the need to increase the readiness level, strengthening the role of the equipped, trained and motivated soldier as the central element of the defense system, but also the need to digitize processes and the C4ISTAR system.

The objectives aim at specific, tangible actions for the next four years on the development of the military education system, medical facilities, the reserve's training and the adaptation of the legal framework for coordinated action on peacetime, crisis and wartime events. The proposed concepts emphasize the need to transform the military system and prepare the development of high-technology capabilities, with increased striking power and high maneuverability.

Regarding the resources needed to meet military objectives, the Strategy is based on the compliance with the National Political Agreement on increasing defense funding for the period 2017- 2027, on the implementation of conclusions and proposals approved by the Supreme Council of National Defense (SCND) 1 in the SDA report and takes into account the influences drawn from the process of strategic reflection at NATO, from the strategic orientation in the field of security and defense at EU level - Strategic Compass, as well as by the strategic partnership with the USA.

The security environment in which Romania acts for defending its national interests and promotes its national security objectives is characterized by geopolitical competition among players with their global or regional interests, high dynamism, volatility/ instability, unpredictability, and the unprecedented impact of the pandemic of COVID-19, with reverberating effects on all levels of social, economic and political life.

Instability will continue to be a main cause in the occurrence of strategic shocks, to which states must respond using all instruments of power in an integrated and coordinated manner. The exacerbated competition between the great powers, a world in which authoritarian and assertive states are on the continuous offensive. Their actions, aimed to achieve the revisionist foreign policy objectives of expanding power and influence, represent a systemic challenge for consolidated democracies, a challenge that will manifest across the spectrum, from security to economy, but also in societal and ideological terms.

The inventory of the ways of action of the contesting powers of the current world order refers to instruments such as:

- manipulation of information;
- political coercion, trying to create weak and dependent states;
- challenges to consolidated democracies;
- unprecedented development of military capabilities with emphasis on anti-access capabilities;
- use of hybrid strategies and tactics, aggressive pursuit of technological advantage, especially in the field of emerging and disruptive technologies;
- threat to critical infrastructures and energy security of targeted states;
- activation of frozen conflicts;
- violation of arms control;
- use of proxy structures and private military companies;
- the development of offensive cyber and space capabilities, the non-sanctioning of state ordered assassinations and the poisoning of opponents using chemical weapons;
- the diplomacy of masks;
- the anti-COVID-19 vaccine.

New technologies will alter the nature of war. The terrorist threat, in all its forms, will persist, just as pandemic risks, uncontrolled migration and climate change will continue to generate the need whole society approach.

The COVID-19 pandemic has produced a strategic shock for the entire humanity, determining, at least in the first part of its manifestation, the reorientation of political attention and resources to the internal problems of states, fueling international rivalry and confrontation. The pandemic has also accelerated digitization, with the potential to determine, in the future, an economic impact that may lead to diminishing resources that can be ensured for defense. [10]

In the international environment determined by these trends, it is very likely to see further intensification of disputes between states over territory, resources and values.

In this context, the main military risks and threats to national security are determined by the further consolidation of the military potential in the vicinity of Romania (militarization of Crimea and the Black Sea basin by the Russian Federation), running military exercises (especially ones with short-term notification or without notification) and the development of offensive and defensive capabilities on NATO's eastern flank.

Although the risks associated with a conventional aggression on the national territory remain low, this possibility cannot be excluded, considering Romania's geographical position in the vicinity of areas with high security risks, as well as the Romanian state's pledge for an active role in securing NATO's eastern flank and maintaining regional strategic balance. [11]

3. Challenges of National Defense Resource Management

A series of challenges are emerged that can be ranked, from the perspective of the probability of generating security crises, as follows:

- the limited prospects for settling the frozen conflicts in the wider Black Sea region (including Transnistria), correlated with the fragility of the security situation in the Western Balkans, as well as the instability in the Middle East and North Africa;
- the degradation of the economic situation and the social impact caused by the COVID-19 pandemic, with the potential to affect national security, in view of the occurring need to readjust/ decrease military budgets or to reschedule essential endowment programs;

- cyber-attacks on critical infrastructures, facilitated by the integration of disruptive emerging technologies;
- amplification of influence actions and information aggression, as well as actions of hostile intelligence services, in order to destabilize society, fragment social cohesion and intensify divergences of interests and opinions between different social or professional categories, amid reduced resilience to misinformation;
- the offensive/ aggressive behavior within military and politico-military fields of some state entities, which oppose democracy and international law, whose interests are contrary to those of Romania;
- the terrorist threat enhanced by the process of radicalization and illegal migration that allows terrorist organizations to recruit followers and carry out operations on a global scale; easy access by terrorist and organized crime organizations to weapons and dual-use substances, as well as to facilities for the production of weapons of mass destruction;
- the sharpening of rivalries, at global level, among players who have weapons of mass destruction, including as a result of the denunciation/ cancelation of treaties/ international agreements to control them, as well as the trends to maintain and modernize these capabilities.

Economic developments in recent years and financial difficulties at European level have highlighted the need to rethink the way resources are allocated, but especially their use, efficiency being the main criterion. [12]

In the next sections I present some of the newest challenges which can significantly influence the defense resources management according to the main domains.

3.1 - Human resources challenges

Given the crucial importance of human resources in the organization a systemic approach to all planning, recruitment, selection, development and career management of military and civilian personnel, pursued fulfilling the following objectives: human resource planning in correlation with strategic objectives of defense, ensuring quality human resources, strengthening the status of military personnel, the modernization of the military education system and the increase quality of life of staff. Finding the most appropriate way to assess the productivity in the military is a challenge, as the accurate and clear identification of the outcomes of the activity in qualtifiable terms are more difficult than in the production sector.[13]

Some of the prestigious researchers insisted that it was possible to scientifically analyse tasks performed by individual workers in order to discover those procedures that would produce the maximum output with the minimum input of energy and resources.

Building on classical views on management, contemporary theories tend to account for and help interpret the rapidly changing nature of today's organizational environments. [14]

The migratory wave from Turkey (via Bulgaria) to Romania/ Serbia and from Belarus (via Russia) to Poland is created artificially, institutionally, most likely in coordination with Moscow, to put pressure on the EU. It is part of the hybrid war and the situation will probably escalate, because there are no immediate solutions. A change in the situation could come through third-party diplomatic channels, by phone in Moscow. Paradoxically, the lever of Europe could prove to be the Russian pipeline Nord Stream 2. The situation is extremely, extremely complicated, but there will probably be a way to accept some of these immigrants from the border. Thousands of people seeking escape **from Afghanistan or Syria** obviously take advantage of every opportunity to go west - as they shout, especially in Germany, they want to get there, because they have relatives, friends. Or,

from this point of view, taking over the pain and suffering and despair of these people and turning it into a political lever is, indeed, a new peak of cynicism, almost hard to imagine.

The problem within the European Union is that the status of migrants, refugees, especially in complicated political times, is not very clear, so there is no common position within the European Union about what happens to these people when they arrive the borders. It seems that the rules of the European Union, the Dublin Convention, the fact that they are monitored at the EU border once they enter, are at times overtaken by such strategies and tactics, as happened in 2015-2016. So, unfortunately, for the time being, there is no common position within the European Union regarding the attitude of solidarity. And on a national basis, it is clear that the approaches are very different. [15]

In 30 years of democracy, Romania has lost over 15% of its population due to **emigration**. People left, one by one, to rebuild their families, for better salaries, for better working conditions, for dignity, and more recently, to ensure their children the chance for a high-performance education system. Experts say that parents dissatisfied with how school is done in Romania are willing to give up high salaries and the purpose they have made in Romania, with a view to the future of their children. They want good schools for them and that they can't find it in Romania, because the system is corrupt.

Education experts are talking about a new exodus: thousands of Romanians around the age of 35, with higher education, who are leaving not for a better salary, but to provide access to a quality education to their children. [16]

Brain-drain is defined as the migration of health personnel in search of the better standard of living and quality of life, higher salaries, access to advanced technology and more stable political conditions in different places worldwide. [17]

According to Eurostat data (2019), compared to 2008, the number of Romanians with a faculty, doctorate or master, MA or PHD degree living in another state than the one in which they were born was 144% higher in 2017. The number of Romanian high school and vocational school graduates living in 2017 in another EU country increased from 806 thousand people in 2008 to 1,437,000 people, a percentage of 78.18%. Those with a primary and secondary education level also mark almost have doubled their number. We are talking about 933,300 Romanians in 2017, an increase of 90.2%.

Therefore, calculations show that, in 5 years, at a rate of 2,000 doctors who migrate annually, the Romanian society will become extremely vulnerable, because it will lose 20% of the trained workforce which is a survival resource in the national community. The emphasis is progressive, as there are several phases of accelerating the process. In an ideal perspective, a state should note that the migration of doctors, which is a specific phenomenon of the fourth wave of migration in Romania, does not have the same "lucky" features as the previous waves, from which the entire Romanian society benefited.

Moreover, this new dimension of migration management strategy requires specialized knowledge of the phenomenon that is completely missing at present. The situation in Romania involves a fairly careful analysis of the exodus of young people - here the phenomenon of unemployment is significant, especially in small and medium-sized cities. The modern trend is to speed up the process through various policies that do not facilitate the access of young people to education and then to a job.

Hence, there seem to be no advantages for the country of origin. The relationship between the country of origin and the foreign one is quite weak in terms of advantages for the first one.

Romanian analysts concerned about the phenomenon of migration of educated people have reached the following conclusions. From a financial point of view, for every migrant who graduated from a university, Romania loses approximately $50,000/ person. This amount represents the cost of 16-20 years of schooling, money that cannot be recovered by the Romanian society.

Paradoxically, at the Government level, no importance is given to this topic, being generally debated as part of the labour shortage, without any solutions.

Solutions to counterbalance the migration of the most valuable people, by encouraging them to stay in their country or by motivating their return to Romania, must try to remove the causes that determine migration. Therefore, the analysis of national education must look at some clear performance indicators. Solutions could be correlated with intrinsic and extrinsic activities. Research funding is a current problem and could be solved by increasing the percentage of GDP allocated from the state budget according to the minimum value provided by law of 0,8%. These measures could increase the research potential and then take it into account by developing high-tech, value-added industries; this measure can play an important role in the economic healing of the country. [18]

3.2 - Challenges from Material Resources and Energy

Containers crises - Growing up, the term "on a slow boat to China" was often used to describe something that would take a very long time. Unfortunately, we are seeing the opposite term come to fruition off the east and west coasts of the USA at the moment as container ships from China and other Asian ports are lined up in a 40 mile traffic jam off the west coast, waiting to dock.

And it's not just the USA that is affected. There are similar problems up and down in entire world. This is compounded by astronomical rises in shipping costs. It is estimated that the cost to ship a container from southern China to the west coast of the USA is as much as $20,000, up from $3,000 post pandemic. That is a rise of over 650%.

And when the goods finally make dry land, there is a shortage of truck drivers to clear the docks, and storage space to put them.

Our global supply chain is struggling to meet the growing demand from markets such as the USA, as seen in the automotive and high tech industries due to the continuing semiconductor shortage. Or how the recent COVID related shutdown of factories in Southeast Asia have impacted the sneaker and furniture industries.

The topic of supply chains, which has been front and center in all discussions for the past 18 months, will continue to be a major talking point well into 2022.

Trying to bounce back from Covid pandemic, the world has run headlong into an **energy crisis**. The last spike of this magnitude popped the 2008 bubble. **Crude oil** is up 65% this year to $83 per barrel. Gasoline, above $3 per gallon in most of the country, is more costly than any time since 2014, with inventories at the lowest level in five years.

Meanwhile **natural gas**, which provides more than 30% of all U.S. electricity and a lot of wintertime heating, has more than doubled this year to $5 per million Btu.

Even **coal** is exploding, with China and India mining as fast as possible. The price of U.S. coal is up 400% this year to $270 per ton. The situation is considerably worse in Europe, where **electricity** prices have quintupled and natgas prices have surged to $30/mm Btu—the energy equivalent of paying $180 for a barrel of oil.

All this is feeding into the inflation loop, pushing up the prices for **energy-intensive metals** like nickel, steel, silicon. **Fertilizer**, mostly made from natural gas, has ramped past 2008 record highs to nearly $1,000 a ton, obliterating the $300 to $450/ton range of the past few years. China announced this week it would halt fertilizer exports. **Copper**, perhaps the most vital raw material in building out a wind and solar industry, is near a record at $4.50 per pound.

We'll have to deal with inflation after surviving the challenge of not freezing to death this winter. "Only some form of government intervention that mandates large-scale power cuts and rationing to certain sectors can curb gas demand and temper gas prices materially this winter", wrote Amrita Sen of Energy Aspects.

Whom can we blame for this mess? A combination of factors. It starts with central banks persisting with artificially low interest rates and a flood of cheap money despite record levels of consumer spending and a 30% surge in Chinese exports—all of which is straining against pandemic-constricted supply chains. Add to that Russia not flowing nearly as much gas into Europe as expected (perhaps as a passive-aggressive tactic to force approval of Nord Stream 2).

But the roots go deeper. The ESG and carbon divestment craze has so demonized fossil fuels (and nuclear power) that institutional investors and governments have cut them out of portfolios entirely, and have instead been flowing capital to more socially acceptable low-carbon alternatives. Blackrock announced last year it would no longer finance fossil fuel development (though it still owns a lot). But the problem is, renewable energy hasn't proven sufficiently scalable to pick up the slack. In July, according to the U.S. Energy Information Administration, renewable energy sources (excluding hydropower) provided just under 10% of total electricity generation (gas was 42%).

Has it gone too far too fast? Germans now regret shuttering their fleet of nuclear power plants over the past decade, while some Dutch are second-guessing closing down Europe's biggest gas field at Groningen. Meanwhile, North Sea gas drilling has slowed and onshore fracking has been banned in the U.K.

It's hard to blame Big Oil. Accustomed to being demonized, the industry has been falling over itself to shrink oil production and reinvest in renewables even if it means lower margins. Add to that the existential crisis of the 2020 pandemic lockdowns, which temporarily pushed the price of oil below zero because companies ran out of storage tanks to put fuel that no one was using. Forbes contributors last year had a field day debunking predictions from the anticarbon crowd that 2020 would be the year of "peak oil demand." Perhaps it's more evident now that for all their growth, renewables aren't yet scalable replacements for fossil fuels.

Don't expect OPEC to rush into vast new investments. In the wake of the pandemic, the group had to cooperate to hold back millions of barrels per day that would have flooded the market. At the beginning of the year OPEC said its supply cushion stood at around 9 million barrels per day.

We are at the point in the energy transition where the only real options are patience in reducing emissions while using gas as a bridge fuel, or an abrupt turn toward de-growth that would slash emissions but necessitate economic collapse and poor people freezing to death.

Pray for breakthroughs in nuclear fusion and keep in mind that the last time an energy bubble of this magnitude popped (in 2008) it helped usher in the Great Recession. Are we returning to the 1970s, as several commentators have recently claimed? There are surprising similarities.

On closer examination, most of these analogies turn out to be superficial. But there is one where the parallels are striking. We are headed for a global **energy crisis**.

Gasoline prices in the United States are up more than 50 percent in the past year. Natural gas prices in Europe have risen a staggering amount, nearly 500 percent, over the same period. In Asia, Bloomberg News reports that power companies are buying liquefied natural gas at record prices to try to lock in supply. In Europe, a mass producer of fertilizer was already forced to temporarily shut down two U.K. plants due to high energy costs, and there are fears that other industries will follow.

The simplest explanation is that the demand for energy is currently exceeding supply, which makes prices rise. The reasons for this mismatch are many - including extreme and unpredictable weather, as well as bad government decisions about storage, reserves and transmission lines - but there is one common cause. Much of the world has stopped investing in fossil fuels (for good reasons), which has led to less supply of them. But we do not have sufficient green energy to replace fossil fuels today. We will, but not today.

The numbers make this plain. In 2019, over 80% of global energy consumption was provided by the three main fossil fuels: oil, coal and natural gas.

Wind was just over 2% of power consumption, and solar just over 1%. It would require a 2500% increase in production and deployment to have wind and solar fully replace fossil fuels, which is not going to happen in the next few years.

What we need is a transition strategy. Without it, every time there is a shock to the system - bad weather, poor storage - we will face an energy crisis.

Modern societies cannot run without steady access to energy, so when these shocks are felt, governments do whatever it takes to keep the electricity flowing. Germany, which has over decades built an extraordinary supply of renewables, but in the first half of 2021, 56% of its electricity came from the very sources it is trying to eliminate (like coal, gas and nuclear). Coal alone rose from 21% to 27% of German electricity production.

A serious energy strategy would recognize that the most important task is to reduce carbon emissions fast. In the short term, the simplest way to do this is to move from coal to natural gas, which cuts carbon emissions almost by half. In fact, most of the reduction carbon dioxide emissions in the last time was because of the switch from coal to gas, with coal being the biggest producer of carbon dioxide emissions of the three main fossil fuels.

But there is even lower-hanging fruit. The journal Environmental Research Letters did a study of more than 29000 fossil-fuel power plants worldwide and found that just 5% of them were responsible for 73% of global emissions from electricity. We could easily pay to convert those roughly 1400 plants and reap a huge windfall in the reduction of carbon emissions. And the International Energy Agency estimates that over 70% of the methane leakage from oil and gas production can be stopped by using existing technologies.

The goal — in not just the long term, but medium term — must be to power the world with renewables. There is a lot of good news on this front. Solar and wind costs have come down dramatically and are competitive with fossil fuels. They are now easier to deploy than ever before. Storage, once the great problem with these intermittent sources, is being solved as batteries become more powerful and other storage solutions are gaining ground. We still need much larger investments in research and development in this area, but we are making real progress. In the meantime, we still need to cut emissions today while keeping energy flowing. If not, we will face more energy shocks, which could easily develop into a backlash against green policies. [19]

Somehow, in according to this challenge, the USA will build in Romania the first nuclear power plant with small modular reactors (SMR), a new technology used for electricity generation. According to a White House statement, the two countries have entered into a partnership through which the American SMR (small modular reactor) technology will be introduced for the first time in Europe, for the production of electricity. It is a 12 - module nuclear power plant, which will be built in collaboration with the American company NuScale Power. However, the technology has not yet been approved for use in the EU. These advanced reactors can be used for power generation, in the process of heating, desalination or other industrial uses. SMR reactors offer many advantages, such as relatively small carbon footprints, low capital investment, the ability to be located in locations that are not suitable for larger nuclear power plants, and the possibility of incremental power additions. [20]

Wholescale **electricity prices** in the EU have risen by 200% on average over the past year, and the huge dependence on gas imports (90% come from outside the Union, especially from Russia) increases exposure to volatility and market whims. But at the moment, there are no Community solutions to the "short-term" energy counter, but only a compromise to try to "create strategic reserves", to make joint purchases and to analyse the functioning of the electricity and gas market and the trading of CO_2 emissions. Instead, the Community executive has given priority to national measures to enable the intervention of vulnerable persons and companies through aid, subsidies or tax exemptions, without the need to change the current legislative framework. [21]

In Romania, the Parliament already adopted the law that provides for capping of energy prices and the compensations of bills. In addition to household consumers, capped prices will also apply to new categories of consumers, such as hospitals, nurseries, NGOs, public social service providers and private and cult units.

The planet is changing rapidly due to **fossil fuel** and we must contribute to this climate issues. The UN conference on climate change, COP26, from Glasgow, established the future of the planet and how environmental issues can be combated, to limit the increase in global average temperature to below 1,5° Celsius compared to the pre-industrial period. [22]

3.3 - Financial Resources Challenges

These basic conceptual views, theories, principles and functions of management are applicable to a defense organization. Obviously, the origin of the term "defense management" is rooted in the understanding that the defense organization is a large, complex and multi-layer institution as any other governmental or big business organization.

Every big organization needs planning, which is carried out by the manager. In one way or another s/he decides how the business will be run and/ or what his/ her unit will do over a period of time. In other words, the manager sets the objectives towards which s/he and all his/ her subordinates will work. The big difference between industrial and military planning is that the military plans for war are all contingent, at least during peacetime - they are aimed at eventual objectives which will be pursued only in war. The industrial planner, on the other hand, is preparing for actual operations that are certain to take place within the next year or perhaps a year or two later. Defense planning that provides general preparedness for war is closer to industrial planning, because its purpose is to prepare soldiers and material in the right combination, albeit for an eventuality.

Every manager is building, maintaining, organising and staffing his or her organization. A manager must decide what is the most economic combination of resources that would allow planned objectives to be accomplished. The same is applicable to the military commander's vision and concept of operations. Both do this to facilitate control of individuals and units as they work towards the achievement of the planned objective.

Monitoring and controlling the performance give the manager and the commander understanding about the effectiveness and efficiency of their decisions and the necessary corrections in original plans. Whether of a market or a bureaucratic type, the control strategy must provide both managers and commanders with relevant, timely and reliable information on the progress, as well as on changes in the internal and external environment that may require corrective measures or a completely new strategy. [23]

The management of finances for defense has to be examined as part of defense resource management, which is embedded in the overall resource management of a country. This is the basic premise in our examination herein.

More than any other budget allocation in a country, the budget for defense is considered by politicians, taxpayers, the media, the economy and industry, the military and security sector and, last but not least, friendly or unfriendly neighbouring countries and international organizations.

In principle, the national defense budget should be derived from the security and threat situation. In fact, due to the limited resources of a country, the budget is designed not based on threats but on the availability of resources.

Since the end of the Cold War, the reduction or the seldom increase of defense and security budgets became a spectacular game for decision-makers on all governmental levels. On one hand, the lobby for defense or security in democratic countries is usually not very strong vis-à-vis oligarchies. Democracies do not need defense forces to keep their power. What follows from this is that budget cuts or reduction of forces are often very popular political means readily accepted by

voters. In oligarchies, related budgets are placed under the veil of governmental secrecy and thus it is outside any public scrutiny. On the other hand, one has to take into account that today the threat and security situation in Europe has drastically changed and reforms are more than necessary. Hence, the focus should not be placed on defense only, but on security in general.

Consequently, when discussing the management of defense finances, we need to examine all financial aspects of providing internal and external security of a country.

It is important to underline and to explain to citizens that security, both internal and external, including defense, is a public good that is absolutely necessary for existence, freedom and for the positive development of the economy, culture and prosperity of the country. Hence, the public must pay for security and defense.

The security budgets - mainly the defense budget and part of the budgets of the interior, treasury, finance and others - have to be analysed, investigated and understood in their interdependencies.

Defense finance management is influence, directly, by the following facts and constraints:

- clearly defined roles of the Parliament and its committees for defense, security, foreign affairs, etc.
- existing financial, budgeting and administrative laws, regulations and procedures and their consideration and application;
- distinctive definitions and responsibilities in the finance and defense management processes;
- changing international commitments and contributions in the processes of planning, budgeting and controlling;
- the enlargement or reduction of the forces and their structure;
- short-term budget cuttings (e.g., resulting from a smaller income from taxes than anticipated);
- unforeseen state expenditures arising as a consequence of catastrophes, disasters and major damages;
- inflation rates, wage increases;
- available information technology and communication systems;
- obligation for international competitive bidding (e.g., EU and NATO regulations);
- the skills, attitude and mentality of the personnel (working morale, career perspectives, professionalism, corporate identity, no system change desired, loss of privileges, corruption, ethnic problems).

The public services of some countries and many civilian companies gain experience by involving their personnel in this evaluation and renewing process and using their creative potential to find better solutions. The people in the organization have to be encouraged to make recommendations and proposal for improvements, in particular as related to increase of efficiency or quality of working conditions and cost saving. To facilitate such involvement, it is important to have a central organ or an institution with responsibilities to assess the ideas and their possible realisation in a very short time and to reward the people that have made proposals regardless of whether they have been implemented or not. The following merit awards and incentive schemes are conceivable: incentive payment, days off, material gifts, official commendation, promotions and stay in recreation facilities.

The countries in transition economies must be very careful, critical and not in a hurry when taking over "western defense finance systems" partly or in whole. An intensive stocktaking of their situation, resources, aims and abilities should occur at the beginning of the process leading to an eventual decision to revamp their system. Sometimes countries are fascinated by the gratis support offer and are not able to foresee future financial consequences. In some cases the offers are oversized in respect to the actual dimension of the defense organization. The practice has shown that

very often the implementation of proposals from "system and support provider countries" caused a lot of problems or failed later on. [24]

The investment prioritization system used at the ministry level is meant to ensure the realization and development of the capabilities necessary for the Romanian Army in order the fulfillment of the entrusted missions and the commitments assumed in an allied context. Particular emphasis is placed on streamlining the Army's endowment process Romania, as well as on increasing the involvement of the national industry defense in the realization of the endowment.

Commitment of Romania to reach the target of 2% of gross domestic product (GDP) allocated defense spending over 10 years (until 2024), with differences specific to each group of allies (those who already have this level of funding will maintain it, and others will gradually increase it, depending on national economic growth). In addition, the document provides for a commitment to allocate 20% of defense budget for the Acquisition of Major Equipment and Research and Development Activities, as well improving individual results on the level of dislocability and sustainability of one's own forces.

The capabilities of the Romanian Army are developed in the following areas:

- command, control and communications;
- employment;
- information;
- force projection;
- support and strength training.

Essential investment programs designed to ensure the security interests of Romania are:

- armored troop conveyor;
- light armored and unarmored off-road vehicles;
- C4I systems with ISTAR integration capabilities;
- multi-role aircraft for the Air Force;
- mine hunter;
- ground-to-air missile systems - HSAM;
- multifunctional corvette;
- helicopters;
- revitalization and modernization of IAR-99 aircraft from the MoND.

To these are added the programs approved by CSAT through the Endowment Plan of The Romanian Army, as well as the other investment programs whose estimated value exceeds 100 million euros for which the MoND obtained prior approval by Parliament to initiate the award procedure. [25]

For the period 2021-2024 they are allocated:

Indicator code	**Indicator name**	**2021**	**2022**	**2023**	**2024**
1	Total MoND (thousand lei), from which:	22.7 46.269	23.9 13.104	25.6 28.051	27.5 25.605
2	Acquisitions major equipment (thousand lei)	5.36 4.881	6.23 2.702	7.33 2.096	8.76 0.461

*Source: https://sgg.gov.ro/1/wp-content/uploads/2020/10/CARTA-ALBA-A-APARARII.pdf

3.4 - Informational Resources and Cyber Challenges

New and disruptive technologies come bundled, in addition to the benefits offered, and number of threats. The most important threat is the loss of strategic advantage through science and technology. We also find irresponsible behavior in space and cyberspace, the development and unethical use of technologies, especially those that undermine democratic values, and the unilateral way or imposing autocratic approaches to international norms, rules and laws in the field of new technologies.

The online environment is interactive, engaging, captivating. Technology is just a 21st century tool that can be used both for good things and to create imbalances. In the absence of the information we receive in the real environment - facial expressions, body language, etc. we are less aware of the situations we are in and the decisions we make.

This century is highlighted by the need for a presence in the digital environment, a dependence on social networks, the need for appreciation in the online environment (likes, distributions, followers, number of views, etc.). We want the sensational, we are in constant search of anything that could make us stand out. The constant search for people to get what they want and to meet their needs in the online environment, lacking knowledge and control mechanisms, can lead to loss of sight of certain critical details and cause damage at the strategic level.

One of the processes that digital behavior triggers is the active audience that contributes to digital amplification through:

- bots networks (a botnet is a network of computers infected with a malware application that allows cybercriminals to access them remotely without that the rightful owners be aware of this);
- fabricated accounts;
- like factories;
- fake writers;
- fake followers;
- fake influencers;
- fake crowds.

Our entire digital behavior is a factor in amplifying digital content; the user enters the cycle of distributing news/ digital content through: like, comment, share, react, tweet, retweet, friend, unfriend etc. [26]

It is very difficult to be aware at every step of why we do what we do or the effects that a certain action can have. But based on a few principles to guide our behavior, we have a good chance of not getting into situations we don't want. Some of the measures that can be taken in this regard are:

- regulating the use of data by media users;
- digital literacy;
- emotional skepticism;
- digital behavior control;
- cultivating a security culture adapted to current realities;
- awareness programs for people in institutions with a strategic position;
-investment in the education of the young generation.

Fake news is false or misleading information presented as news. It often has the aim of damaging the reputation of a person or entity, or making money through advertising revenue. However, the term has been applied more broadly to include any type of false information, including unintentional and unconscious mechanisms, and also by high-profile individuals to apply to any news unfavourable to their personal perspectives.

Once common in print, the prevalence of fake news has increased with the rise of social media, especially Facebook News Feed. Political polarization, post-truth politics, confirmation bias, and social media algorithms have been implicated in the spread of fake news.

Fake news can reduce the impact of real news by competing with it. It also has the potential to undermine trust in serious media coverage.

Combating false news involves multiple approaches in detecting and counteracting them at different levels. These can be financial, media and technical issues. It is even said that it is worth fighting this problem by increasing the level of information literacy of the population. [27]

The main problem facing lawmakers is the balance between human freedoms and the preservation of public interests. Even in countries where the constitution prohibits the adoption of laws restricting freedom of expression, attempts are now being made to regulate false news, which is perceived ambiguously.

Some states have taken a different path, namely not to apply legislative measures, but only to verify the facts and counteract the false portals. [28]

4. Conclusions

As an institutional process, the management of defense is situated between defense policy formulation and actual command and control of the military forces. It should address areas of action such as defense resource management, personnel management, acquisition management, where-during defense policy implementation - it is likely that inherent uncertainties require higher flexibility and subsequent decisions, and unexpected problems might occur, requiring proper identification and appropriate solutions.

Over time and in different nations, managerial systems were introduced and tested for their relevance in terms of planning, efficiency and accountability. Developed specifically for the public sector or borrowed from the business practices, systems such as Planning, Programming, Budgeting System (PPBS), Performance Management System (PMS) or Total Quality Management (TQM) have a history of successes and failures that deserve a critical treatment in a book on defense management. The main observation is that no theoretical approach to defense management in general provides for a specific management system or management philosophy. What is essential for a nation, that has identified a genuine need for improving the performance of its defense sector, is to understand that introducing a managerial culture in the sector is even more important than the managerial tools that nation chooses to implement.

From both theory and practice, we may conclude that there are only two main management approaches, and these two approaches are not mutually exclusive. One can be described as identifying problems and finding solutions to those problems, and the other one can be described as finding solutions for how to do things better.

Defense management brings clarity to areas of activity with high uncertainty as to whether the path taken to meet the objectives is the right one, or the problems encountered are properly identified and solved, while leaving other areas to function as they were. Table 1 depicts different levels of management within ministries of defense, in comparison with two other important areas of organizational activity, namely policy formulation and planning.

There is strategic defense management, which is the locus where strategic problems are identified and strategic solutions are analyzed, decided and implemented. Life is full of examples of such problems. The most important ones, in strategic terms, are usually described as addressing different aspects of the question 'how much is enough?' Defense management may bring more coherent solutions to dilemmas like 'guns or butter' (dealing with the opportunity costs of defense versus other public goods, and with an optimal allocation of national resources), or national self-

sufficiency in defense capabilities versus shared responsibilities with other partners or allies and the appropriate delegation of sovereignty.

Then there is an operational management, addressing the problems of defense performance, especially at the services level, but also at the general level, e.g., in dealing with manpower or logistics. And there is, of course, defense management at the current level, dealing with day-to-day problems and solutions in any defense command or unit.

It is expected that these types of management be differentiated according to their level at least in terms of mechanism and procedures, while the managerial tools re- main the same (they were developed regardless of their level of application). In practice, these levels might be identified more by the nature of managerial function than the mechanisms employed.

The challenge to the modern defense institution at present is to provide a new balance between the tasks of the armed forces and the means available in order to create affordable armed forces with sufficient room for operations and capital investments. In an era of ever more constrained resources and changing strategic requirements, there is a growing need to extract maximum benefit from the money spent on defense. And this is the mission of defense management.

The requirements for effectiveness and efficiency are certainly not unique to defense organizations. Any business has to be effective and efficient in order to prosper, or even to survive. And yet, defense organizations cannot be managed purely like businesses. National defense has a comprehensive and in many cases vital role for a nation. It often has a strong impact on political, social, nation and state-building developments and is managed like a profit-oriented corporation.

Every manager is building, maintaining, organizing and staffing his or her organization. A manager must decide what is the most economic combination of resources that would allow planned objectives to be accomplished.

The national system defines the roles and mission of a defense institution, its strategy and organization and provides available resources based mainly on the social perception for security-insecurity. Chronically insecure societies are suspicious, irritable and radical in terms of their social and political behavior. Generally speaking, they are prone to making greater cutbacks of civil and democratic freedoms and radical decisions on regulations, defense budgets, and large-scale restructuring and contingency measures are adopted with relative ease. The defense institution itself should be capable of assimilating all these inputs using its cognitive capacity and producing outputs that both the national and international system expect to be rational and adequate in the circumstances.

The defense institution itself can be examined as a specific social system. It possesses all characteristics of the entire society such as traditions, culture, dynamics, internal relations, including the particularities during political transformation from totalitarianism towards democracy. The defense institution is crafted by people with their particular culture, interests and priorities that vary not only from one country to another but also, depending on a certain "historical time", personal agendas or goals.

It has a specific organization and operates under (frequently) unique norms, regulations and procedures in order to transform financial, material, human, and informational resources, dedicated by the society, into a "defense product". All this represents the internal context of defense management. [28]

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