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NATIONAL SECURITY AND CRITICAL INFRASTRUCTURE PROTECTION

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Abstract:*The link between national security and the protection of critical infrastructure is vital to the progress of any society and its proper social functioning. The term critical infrastructure was developed by the United States in the 1990s and it has evolved in time; nowadays, most of the current definitions include the security dimension in their content. Along with its many benefits, the technological advancement has brought with it the diversification of threats that could lead to the malfunctioning of critical infrastructures. The new weapons of the 21st century and the new asymmetric threats constitute real dangers to the good functioning of every critical infrastructure. Once they may be interrupted, the normal functioning of the whole society would be endangered because of the domino effects it causes. In this article we will look at how the link between critical infrastructure and national security is reflected in national regulations and crisis scenarios, highlighting the main strengths and the existing legislative gaps along with discussing their applicability.*

Keywords: critical infrastructure, national security, legislation

1. Introduction

The literature regarding national security has been revived because the number and gravity of the terrorist attacks have grown, but also because of a rate of social change as the world has never known in its history. It is obvious that we are in a time of profound transformations in which the classic security paradigms required adaptations to provide added value. To examine only the last century, we can notice that the world crossed two wars, for the first time in the world - a cold war and numerous regional conflicts. But perhaps all of these have failed to cause so many social changes as technology has succeeded.

The world really turned into that global village that McLuhan was talking about half a century ago [1]. There is no singularity and independence today. It all immerses itself in a global world whose interdependencies are found and intertwine in all dimensions of social life. New military technologies, migration flows, climate change, the depletion of essential reserves, the demographic explosion, the emergence of digital space, new forms of virtual interrelation are all the determining factors for re-conceptualizing security. Having such prerequisites, malicious actions such as terrorism, organized cross-border crime, cyber-attacks, psychological warfare become extremely dangerous and can lead to the simultaneous damage of the security of several states or regions. In this context, the protection of fundamental entities for the good life of communities has gained a great deal of importance.

In the classical sense of the concept, security meant a set of measures taken by a person, a group, a state or a coalition of

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states aiming at protecting and promoting their fundamental interests. If security is a state of peace, insecurity is accompanied by feelings of fear, instability and threat. Traditionally, states considered themselves secure if they are able to survive the war and win it. But the emergence of weapons of mass destruction made this approach impracticable as the nuclear weapon affects all combatants alike. Gradually, the military approach has lost importance, being replaced by policies that would lead to the defense and promotion of national interests by alternative means. The military force metamorphosed from an instrument of the war into its prevention tool.

The attempts to redefine the concept have often been confiscated by the redefinition of the political agendas of nation-states. This way a lot of attention has been received by issues such as human rights, the environment, epidemics, in addition to the traditional concern of security regarding external military threats [2]. With the inclusion in the security sphere of measures specific to several social subsystems: defense, public order, intelligence and counterintelligence, as well as diplomacy, education, economy, health, critical infrastructure, demography and so on, security has ceased to represent an exclusively political issue of the states, but has become the common responsibility of several social actors.

According to *Romanian National Defense Strategy for the period 2015-2019*, our country implemented this paradigm shift, being interested in ensuring **extended security**, which was defined by *"interests that converge towards national security, manifested in the following areas: defense (understood in double normative quality, national defense and collective defense), public order, intelligence activity, counterintelligence and security, education, health, economic, financial, environmental, critical infrastructure"*[3].

In this paper we will analyze the field of critical infrastructure, approaching them as an essential element for the good functioning of society and from the perspective of the connection they have with national security. To this end, we will highlight how the national security - critical infrastructure binomial is reflected in the Romanian legislation, in order to approximate the awareness of this symbiosis by the decision makers in our country.

2. Critical infrastructure review

Along with the extension of the significance of the national security concept by including spheres other than military in its meaning, the experts' attention was naturally channeled to those entities that contribute to the welfare of citizens and to their basic needs. Institutions in charge of food, water, energy and transport have become visible, but their vulnerability and the difficulty of protecting them against the proliferation of asymmetric threats have also been made aware.

This type of threats was, in turn, a new reason for transforming the traditional security paradigm as long as the existence of powerful military forces no longer represents a guarantee for social peace today. With a limited number of people and resources, attackers can jeopardize the smooth running of essential entities for society. Terrorist attacks in recent years, coupled with natural cataclysms caused by climate change, have led to awareness of the need for special protection of these institutions. Furthermore, the September 11 moment was a telling example of how little resources are needed to cause significant damage to a country and to create a state of insecurity and fear among its inhabitants.

At the same time, the movement of perils, capital, interconnection of transport facilities, distribution of resources, oil, natural gas or electricity map, epidemiological trajectories of different pandemics have crossed the borders of a single state. As pioneers of the study of the critical infrastructure field, the United

States has realized that no state, no matter how powerful, will be able to defend itself such infrastructures and initiate an international mobilization movement in the field [4].

Although the interest of the United States for critical infrastructures has dated back since the 1980s when critical entities were identified, the notion of critical infrastructure was first used in this sense in July 1996 in the preamble of *"Executive Order No. 13010 for the Protection of Critical Infrastructure"* being considered "*Certain national infrastructures are so vital that their incapacity or destruction would have a debilitating impact on the defense or economic security of the United States."*At that time, *the Presidential Commission for Critical Infrastructure Protection* considered that electricity, communications and computers are the three elements on which the security of the industrialized world depends.

The theoretical developments specific to the 90s were transposed by the Clinton administration into the *Presidential Directive (PDD) no. 62 – "Protection against Unconventional Threats to Homeland and Americans Overseas*," and *the Presidential Directive (PDD) no. 63 "Critical Infrastructure Protection*," promulgated on May 22, 1998.

Soon, important international organizations have understood the importance of this issue and have taken the first steps towards protecting critical infrastructure. The impact of the United States ideas was first taken over by NATO, which conducted a series of studies on the preparation of member states to protect their own critical infrastructure.

In Europe, the first critical infrastructure protection initiatives were taken in 2004 when the European Commission adopted a *Communication on Critical Infrastructure Protection in the fight against terrorism*, aimed at preventing terrorist attacks and at ways to respond to such potential attacks. A *Green Paper* on the European Critical Infrastructure Protection Program (PEPIC) and the Critical Infrastructure Warning Information Network (CIWIN) was launched a year later (17 November 2005). *The Council Directive 114 of 8 December 2008 on the identification and designation of European Critical Infrastructures* and the assessment of the need to improve their protection was adopted as a framework for regulating critical infrastructure of all types having an emphasis on energy and transport. According to *Council Directive 2008/114/EC,*art.2a, a **critical infrastructure** means *"an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions*."

However, the social and technological developments have called for the periodic review of the Directive to include or enhance the identification and protection of certain types of critical infrastructure. Periodically, member states have the obligation to notify the European Commission on major investment projects in the field of energy, district heating, and carbon capture.

The criticality of the infrastructure is assessed in terms of the effects induced by its impact in a time span, even if within a very short time. Critical infrastructure assessment can be based on criteria as: 1. Physical: the critical infrastructure location among others compared by size, dispersion, endurance, reliability; 2. Functional: what is the role of the infrastructure in question; 3. Security: how the infrastructure may influence the safety and security of the system; 4. Flexibility: there is a possibility of transforming from ordinary infrastructure into critical one or vice versa; 5. Unpredictability: depending on certain conditions, some common infrastructure may become critical [5].

As a rule, multi-risk analysis is used for risk assessment, their matrices being fed with risks that may generate domino or cascade effects, on the basis of which scenarios of evolution of the situations under consideration can be constructed and the associated indicators can be identified. [6] Since natural disasters have been more frequent in recent decades, the protection of critical infrastructures against this kind of events is a priority and this is the reason why the European Commission has adopted the *Risk assessment and risk mapping guide for disaster management* in 2011, where several risk assessment methodologies for disaster management are included.

3. The dyad critical infrastructures - national security in Romanian legislation

Critical infrastructure protection has become a major topic on the international scene, following a terrorist attack that symbolically paralyzed the United States. Hence, since the beginning the overwhelming role of critical infrastructure protection in assuring national security has been recognized.

Still, explicit references to legal texts to empower this powerful link are relatively insignificant.

The analysis of European legislation reveals the lack of any reference to national security. *The Council Directive 2008/114/EC of 8 December 2008 on the identification and designation of European Critical Infrastructures* has been transposed in *Emergency Ordinance no. 98 from 3th of November 2010, on identification, designation and protection of critical infrastructure,* approved through *Law 18/ 11th of March 2011 on identification, designation and protection of critical infrastructure* (published in the Official Monitor 183 of March 16, 2011).

Despite the fact that European documents do not include any explicit link between critical infrastructures and national security, in the explanatory part of *Emergency Ordinance 98/2010* it is stated that: *"failure to adopt such an emergency regime could harm national security due to the significant impact of the inability to maintain those functions until the regulatory framework for the protection of critical infrastructures has been established".*

However, in the same legislative text, Romania defines the concept of **critical infrastructure,** considered to be: *"an element, system or component thereof located on national territory which is essential for the maintenance of the vital functions of society, health, safety, security, social or economic well-being of persons and whose disruption or destruction would have a significant impact at national level as a result of the inability to maintain those functions".*

Therefore, the Romanian definition of Critical Infrastructure is a transposition of the European approach, being conceptualized by reference to the safety and security of the citizen; the national security, mentioned in the argument of the text, is no longer discussed within it.

The internalization of the ideas supported by the representatives of the Copenhagen School probably led to a similar approach, Buzan arguing in favor of the idea that securing individual security is the same thing with securing the state or the international system[7].

Moreover, *Ordinance 98/2010* lists national security as a critical infrastructure sector with the following subsectors: *"1. Defense, public order and national security, 2. Integrated system for state border security, 3. Defense industry, capacities and facilities for production and storage*," which were complemented by Law 225/2018, which added migration and asylum, emergency situations, justice and prisons.

An explicit link between critical infrastructures and national security emerged, however, in less than a year in *Government Decision no. 718 of 13.07.2011 on the National Strategy for Critical Infrastructure Protection* which

assumes that: *"The complexity of critical infrastructure protection and its importance for social stability, namely citizens and state security, has generated the concrete correlation of strategies initiated at the level of states and organizations"* concluding that protection is *"an essential element for avoiding serious societal disturbance"*.

This time, the citizen-centered approach, specific to the previous legislative acts, is overcome and the level of discussion is raised with the introduction of the state as an essential actor. We appreciate this reorientation of approaching critical infrastructure issues is correct. Thus, *"the complexity of critical infrastructure protection and their importance for social stability, namely citizen and state security, generated the concrete correlation of strategies initiated at the level of states and organizations"*.

The same approach is specific for *the National Defense Strategy 2015-2019. A strong Romania in Europe and in the world*, which operates with the expanded security concept. However, this strategy highlights the need for conceptual clarifications. The notion of critical infrastructure appears to be inadequately clarified and is used in a manner that can generate confusion. Expanded security is defined by reference to interests converging towards national security, manifested in defense, public order, intelligence, counter-intelligence and security, education, health, economic, energy, financial, environment, critical infrastructure.

In the same way, when national security objectives are listed, the notion of critical infrastructure is misleading: some sectors are named as such, the rest are probably included in the umbrella concept of critical infrastructure. The lack of explicit explanations regarding the reasons why some are explicitly named and others only suggested causes ambiguity. The references to national security are on the one hand as to a sector of critical infrastructure, but also as a result of the good functioning of society. Every understanding should be detached from the context in which the term is found. However, considering the scope of such legislative text, we believe that a conceptual clarification would be welcomed.

The European Program for Critical Infrastructure Protection (EPCIP) sets out the European Critical Infrastructure Protection Framework. *Ordinance no. 21 of 2004 on the national emergency management system*, which was adopted before the European directive, makes no reference to the critical infrastructure issue as expected, nor does it envisage the possibility of establishing a public-private partnership to remedy the potential problems.

4. Conclusions

In this paper we have assumed the unanimous acceptance of the fact that critical infrastructure represents a fundamental dimension for ensuring national security and we studied the Romanian legislation on critical infrastructure to highlight how this link is reflected within it.

Our analysis reflects the fact that, despite the correct definition of the term in the national legislation, the uses of the critical infrastructure concept are different in different Romanian legislative texts. We consider that a revision of the Romanian law in this field is mandatory in order to streamline the way in which the mutual influences between national security and critical infrastructure are currently approached.

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References

[1] McLuhan, Marshall, *The Gutenberg Galaxy: The Making of Typographic Man*; 1st ed.: University of Toronto Press; reissued by Routledge & Kegan Paul, 1962.

[2] Baldwin, David A., The concept of security, *Review of International Studies*, Vol. 23, pp. 5-26, 1997.

[3] *Strategia Națională de Apărare a Țării pentru perioada 2015-2019. O Românie puternică în Europa și în lume*, art.3, Hotărâreanr. 33/2015, available at http://www.presidency.ro/files/userfiles/StrategiaNationala_de_Aparare_a_Tarii_1.pdf, accesed 08.03.2019.

[4] Toma, Virgil, *Evoluția conceptului de infrastructurăcritică*, available at https://www.igsu.ro/documente/publicatii/articole_de_specialitate/Evolutia_conceptului_de_infrastructura_critica.pdf, accesed 27.02.2019.

[5] Alexandrescu, Grigore; Văduva, Gheorghe, *Infrastructuri critice. Pericole, amenințări la adresa acestora. Sisteme de protecție*, Editura Universității Naționale de Apărare „Carol I", București, p. 8, 2006.

[6] Gritzalis, Dimitris, Theocharidou, Marinthis&Stergiopoulos, George (eds.),*Critical Infrastructure Security and Resilience. Theories, Methods, Tools and Technologies,* Springer, 2019.

[7] Buzan, Barry, People, States, and Fear: The National Security Problem in International Relations, *International Journal*, Vol. 40, No. 4, pp.756–758, 1985.