

THE MANAGEMENT OF CRITICAL INFRASTRUCTURES IN THE CONTEXT OF THE COVID-19 PANDEMIC

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Abstract: In the current critical period, in which we are in the midst of the COVID-19 pandemic, subdue the whole society, not only the health system, but also the economic one, to risks, to situations that are difficult to predict and manage. It is necessary and opportune now to know the national critical infrastructure and the ways in which it can be managed, protected, strengthened. Critical infrastructure is vital for economic development, for maintaining the vital functions of society, for maintaining the safety of citizens.

The paper presents general aspects regarding critical infrastructures but also the influence of the COVID-19 pandemic on these types of infrastructures and how they can be managed during this period.

Keywords: critical infrastructure, COVID-19 pandemic, management, globalization, knowledge

1. INTRODUCTION

The concept of infrastructure, derived from the French language, has, depending on the field of association, several meanings: set of elements that support the main part of a building, the set of elements that constitute the technical-material basis of a company, etc. Most of the time the term infrastructure is differentiated into social infrastructure (which includes the field of health, education, etc.) and economic infrastructure (which includes the field of transport, energy, communications, etc.).¹

Knowledge belongs to those who do not stop asking questions, to those who have the courage to look at the unknown, at the unpredictable. Studying the dangers, the threats on the critical infrastructures is one of the challenges of today's society. Globalization, which has generated an increase in the complexity and interdependence between infrastructure sectors, increases the share of dangers and threats to critical infrastructure.²

Sustainable socio-economic development is also based on a solid, stable technological infrastructure³.

National critical infrastructure⁴ represents a system, a component of it that is located on the national territory and which is essential for maintaining the vital

¹ Puia, A. M. - Infrastructure Investments: A Logistic Imperative, Revista de Marketing Online – Vol. 4 Nr. 4, available at <https://core.ac.uk/download/pdf/6480710.pdf>

² Andriciu, R. - Considerații privind protecția infrastructurii critice, 2009, available at https://books.google.com/books?hl=ro&lr=&id=uZx54SZQ3RIC&oi=fnd&pg=PA3&dq=+INFRASTRUCTURI+ECONOMICE&ots=7CJxM_deAo&sig=kBjU01_S8ZEqSUIRH-1S4z-ARH8

³ Dumitru, I. - Unele considerații privind evoluția actuală a infrastructurii și know-how-ului din România, Lucrările celei de-a X-a ediții a Conferinței anuale a ASTR, 2015

⁴ Guvernul României - Ordonanța de urgență nr. 98/2010 privind identificarea, desemnarea și protecția infrastructurilor critice

functions of society, for maintaining health, security, social and economic well-being of people. Any disruption of this system or its components can have a major impact at national level, with unpredictable effects.

European critical infrastructure⁵ it is the national critical infrastructure whose disruption would significantly affect at least two EU Member States.

Critical infrastructure management has the role to protect critical infrastructure to ensure its functionality. It is necessary to remove any risk, any threat, any vulnerability.

During the COVID-19 pandemic we are in today, it is necessary to ensure the functioning of organizations, which in turn have as a priority to ensure the safety and well-being of employees. It is necessary to support employees, support them to access internal and external resources, services (transport for late hours), rewards for employees who take over other duties (care of sick employees).

The pandemic has affected, and may affect, large geographic areas, which may become inaccessible even for long periods of time. That is why it is necessary to identify the chain of activities, the interdependencies between people, processes and elaborate possible strategies to reduce the effects.

2. THE MANAGEMENT OF CRITICAL INFRASTRUCTURES IN THE CONTEXT OF THE COVID-19 PANDEMIC

The COVID-19 pandemic affects humanity, the economic environment, our health, our lives. During this period, it is important for the public and private sectors to work together to cope well with the pandemic. Companies need to implement health and safety measures established by international agencies, national and local agencies.

In the context of the pandemic, we are talking about critical infrastructure, essential sectors but also key employees. Key employees⁶ are from: the national energy system, telecommunications, social assistance, transport, food trade, production and distribution of medicines and sanitary equipment, supply of the population with gas, electricity, heat, water, pharmaceutical units, etc. This type of critical infrastructure exists in every country, within each physical or virtual system, in all areas of activity.⁷

The construction of a Romanian knowledge-based society will depend and on the performance of the critical infrastructures of the Romanian economy⁸.

The identification of national critical infrastructures is based on several criteria ⁹:

⁵ Guvernul României - Ordonanța de urgență nr. 98/2010 privind identificarea, desemnarea și protecția infrastructurilor critice

⁶ Guvernul României - Ordonanța de urgență nr. 30 din 18 martie 2020 pentru modificarea și completarea unor acte normative, precum și pentru stabilirea unor măsuri în domeniul protecției sociale în contextul situației epidemiologice determinate de răspândirea coronavirusului SARS-CoV-2

⁷ Badea, A., Chiuță, I., Valciu, A, Păun, G. - Managementul infrastructurii critice a sistemelor electroenergetice, Buletinul Agir, Supliment, 2012

⁸ Gheorghe, A. V. - Analiză de risc și de vulnerabilitate pentru infrastructurile critice ale societății informatice – societate a cunoașterii, available at https://www.researchgate.net/profile/Adrian_Gheorghe2/publication/237411346_Analiza_de_risc_si_de_vulnerabilitate_pentru_infrastructurile_critice_ale_societatii_informatice_-_societate_a_cunoasterii/links/02e7e534dd48282d4a000000.pdf

⁹ Guvernul României - Ordonanța de urgență nr. 98/2010 privind identificarea, desemnarea și protecția infrastructurilor critice

- number of human casualties;
- effects on the population: disruption of daily life, physical suffering, impact on public confidence;
- economic effects generated: economic losses, degradation of products and services, environmental degradation.

Areas where there is critical infrastructure at the national level are ¹⁰:

- ✚ energetic;
- ✚ information and communication technology;
- ✚ water supply;
- ✚ food;
- ✚ health;
- ✚ national security;
- ✚ administration;
- ✚ transport;
- ✚ chemical and nuclear industry;
- ✚ space and research.

The owners, operators, administrators of critical infrastructures have attributions of: protection, reduction of vulnerabilities, ensuring the necessary resources for carrying out activities. It is also mandatory to maintain a link between owners, operators, critical infrastructure managers and responsible public authorities.¹¹ The responsible public authorities together with the owners, operators, managers of critical infrastructures shall carry out an assessment of the risks and threats of critical infrastructures together with proposals to improve their protection. The types of risks, threats and vulnerabilities are identified for each area where critical infrastructure is located.

The COVID-19 pandemic forced employees to work from home to limit their exposure, to prevent or reduce the spread of the virus. The pandemic forced the complete closure of organizations in a certain area (especially in the hospitality industry), forcing a large number of employees to work remotely over a long period of time. Thus, companies need to invest more and more in the necessary infrastructure, which will make it easier for employees to work from home.

Carrying out educational activities in the online environment, in the context of the COVID-19 pandemic requires the development of the necessary infrastructure ¹². Globalization has increased the level of interconnection between companies worldwide: outsourced services, international service providers, customers from abroad. The COVID-19 pandemic made us all more vulnerable due to the unforeseen situations generated. Companies have had to come up with alternative plans for internalizing, or

¹⁰ Guvernul României - Ordonanța de urgență nr. 98/2010 privind identificarea, desemnarea și protecția infrastructurilor critice

¹¹ Guvernul României - Ordonanța de urgență nr. 98/2010 privind identificarea, desemnarea și protecția infrastructurilor critice

¹² Zamfir, C., Căce, S. (coordonatori)- Covid19 în România date, analize, evoluții și statistici, Editura Expert, București, 2020, available at <http://www.iccv.ro/wp-content/uploads/2021/01/Covid-19-in-Romania.pdf>

replacing services provided by international, or sometimes domestic, providers in areas affected by the pandemic, finding customers in the domestic market, adapting to new, often critical conditions, unheard of.

Communication is essential during any crisis, to maintain customer confidence, to maintain its place in the market, to maintain employee confidence in the company. It is necessary to communicate with customers, across multiple channels, using the necessary infrastructure, to emphasize that customer interests are the priority of any company, providing prompt information attenuating any concerns.

The existence of an economic infrastructure is essential for the good development of a country, region, etc., which requires significant investments¹³.

It is important that managers of organizations, whether or not they have critical infrastructure, in the current COVID-19 pandemic, take at least the following actions to meet the challenges:

- ✓ communication with employees, to increase awareness;
- ✓ elaboration and application of the strategy, of the necessary actions, in case of pandemic;
- ✓ evaluation of processes that depend on international suppliers, or located in vulnerable areas;
- ✓ effective communication with local, national, international authorities;
- ✓ implementation of crisis management, for managing critical situations;
- ✓ training employees to work even remotely.

The COVID-19 pandemic is generating ¹⁴ both constraints, costs, but also opportunities. Accelerating digitization is an opportunity, in the pandemic increasing the volume of online services, promoting and selling products through online networks. The volume of card payments has increased. Organizations have rethought their strategies, plans, actions to meet national needs. National security strategies have been rethought to stimulate national companies to ensure food needs, population security. Companies in the fields of national interest are supported: food industry, IT, agriculture. The work environment is made more flexible. It includes telework (distance work), e-learning, especially in the fields that allow this fact (fields with high qualifications: financial and IT activities, professional and business services). The opportunity arises to make changes in education, to prepare students for today's life.¹⁵

¹³ Dobrescu, E. M., Pociovalisteanu, D. M., Sorici, C. O. - Perspectives of Economic Evolution at the Level of the Development Regions in Romania, Annals Constantin Brancusi University, Targu Jiu, Letters & Soc. Sci. Series 3, 2010

¹⁴ Albu, L. L. (coordonator) - Evaluări ale impactului macroeconomic al COVID-19, Academia Română, mai 2020, available at https://academiaromana.ro/SARS-CoV-2/doc/d08-Impactul_macro-economic_al_COVID-19.pdf

¹⁵ Albu, L. L. (coordonator) - Evaluări ale impactului macroeconomic al COVID-19, Academia Română, mai 2020, available at https://academiaromana.ro/SARS-CoV-2/doc/d08-Impactul_macro-economic_al_COVID-19.pdf

The well-being of society increasingly depends and on the proper functioning of critical infrastructures ¹⁶, these being sensitive and to the crises that still appear, the last being the COVID-19 pandemic.

CONCLUSIONS

A national critical infrastructure represents any critical element for the population, for the Romanian state and whose absence or malfunction could generate a crisis of any kind for the population, in all fields: health, energy, economic, food supply, etc. The COVID-19 pandemic has generated even greater concern for the protection of national critical infrastructure.

Key areas and key employees are the most important components of a company, which must be protected and the continuity of activities must be ensured. These areas are essential for the very existence of society as a whole.

The management of critical infrastructures in the context of the Covid-19 pandemic must face in real time all the challenges, especially the pandemic. Our future life and existence also depend and on the performance of the management of these critical infrastructures in the current pandemic context.

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¹⁶ Barbu, D. C. - Îmbunătățirea protecției infrastructurilor critice din sectorul TIC prin creșterea rezilienței, Revista Română de Informatică și Automatică, 2016

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