

# Logistics as a key element of crisis management

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**Abstract**— Nowadays, logistics plays a special role in almost all spheres of social and economic life. Logistics is the foundation for the functioning of numerous public and private entities, such as the army, health care facilities and the entire food industry. Without logistics and related activities, such institutions would not be able to fully implement the tasks entrusted to them, and this would consequently threaten to destabilize the normal functioning of the state. We can therefore notice that in the modern world, logistics plays a fundamental role. Moreover, it is even more visible in unusual situations, i.e. crisis situations, which pose a challenge to public, private and social institutions.

The aim of this article is to present the importance of logistics in the crisis management system. The author will focus on discussing the existing research related to this topic, and will also indicate his own observations, the aim of which will be to verify the adopted research hypothesis assuming that logistics plays a special role at all stages (phases) of crisis management.

**Keywords**— logistics, crisis management, army, industry

## I. LOGISTICS – CONCEPT

According to Jacek Szołtysek and Sebastian Twaróg, the term "logistics" has many meanings, depending on the source and field of application. Nowadays, the source of the term "logistics" is sought in the Greek words - logistikos, logos or logicos (counting, the art of counting, correct thinking), the French - logistiqué, loger or logis (quarters, accommodation),

or the Latin - logisticus (intelligent, rational, i.e. capable of logical thinking)" (Szołtysek, Twaróg 2013). Moreover, the term "logistes" was used to describe an official who controlled the accounts of his subjects" (Rak 2014). However, it should be remembered that since ancient times, logistics has functioned as a theory and practice of a war economy focused on conducting military operations. It was in this context that logistics was practiced by the ancient Greeks, Romans and rulers in the Far East. Sun Tzu, in his reflections, postulated planning military operations in such a way as not to destroy one's own economic potential and pointed to some principles of military organization, including: norms of provisions, use of local resources, as well as skillful use of time and space. Alexander the Great realized that efficient provisioning and deployment of the army could have a decisive impact on the outcome of each battle. During numerous expeditions and conquests, the Macedonian leader established many supply bases, which later developed into the cities that exist today, including: Alexandria or Kandahar. Nevertheless, the work "Outline of the Art of War" by Antoine -Henri Jomini, a general of the French and Russian armies, is considered to be the source of the theoretical foundations of military logistics. In his work, AH Jomini wrote about the importance of locating and supplying warehouses, planning and implementing marches, as well as preparing transport facilities, communication routes and roads, and supplying military units. Military operations



conducted during World War I and II showed that without efficient logistics, military goals cannot be effectively achieved (Szołtysek, Twaróg 2013).

In today's armed forces, the term "logistics" is used to describe theoretical and practical activities and projects aimed at supporting and maintaining the combat readiness of soldiers. Military logistics is understood as a process that consists of (Szołtysek, Twaróg 2013):

- 1) item of supply (equipment, devices, materials),
- 2) activities (determination of needs, supply, distribution),
- 3) functions (planning, organizing, controlling).

It can be noted that the main areas of interest in military logistics are transport, accommodation, equipment and food for soldiers. The situation is slightly different in economics, i.e. economy and management sciences, where logistics is focused mainly on the production and distribution of goods.

In Western European countries, as well as in Poland, the development of (non-military) logistics took place with varying intensity. Initially, logistics mainly referred to activities in the enterprise (business logistics), and its goal was to coordinate the flow of raw materials, materials and other processes related to the storage, storage and distribution of goods. The modern world economy is characterized by an increasing importance of logistics. The processes related to the exchange of goods are becoming more and more complex, and adapting to the requirements and needs of consumers goes hand in hand with forced cost reduction. The logistics industry forces the constant introduction of modern technologies, as well as the search for new applications for existing processes, in order to shorten customer service time while maintaining the highest level of services provided. Moreover, the importance of logistics increases with the increase in market competition (Słowiński 2008).

One of the numerous definitions of logistics was proposed by Martin Christopher. According to the researcher, logistics is the process of strategic management of the supply, storage and transport of materials, as well as parts and finished products, within a given organization, through its marketing channels, ensuring the maximization of current and future profits and the most effective execution of orders (Christopher 2000).

Next, as Katarzyna Nowicka and Maciej Szymczak say, "logistics is the process of planning, implementing and controlling the efficient and economically effective flow of raw materials, materials, finished products, as well as appropriate information from the point of origin to the point of consumption in order to meet customer requirements" (Nowicka, Szymczak 2020).

With regard to considerations on logistics in crisis management, it is worth recalling the universal definition by Stanisław Krawczyk, who rightly pointed out that logistics includes planning, coordination, and control of the course (both in time and space) of real processes implementing the adopted goals (Krawczyk 2021).

To sum up, remember that logistics in crisis management is different from business logistics. It is worth noting that in both cases we are dealing with the flow of, i.e. transport, supply, distribution of various types of goods, but the specificity of

logistics in crisis management is more reminiscent of military logistics than economic logistics.

## II. CRISIS MANAGEMENT – LEGAL BASIS, DEFINITION, PHASES

Pursuant to Art. 2. Act of 26 April 2007 on crisis management, the very concept of crisis management is "the activity of public administration bodies constituting an element of managing national security, which consists in preventing crisis situations, preparing to take control over them through planned actions, reacting in in the event of crisis situations, removing their effects and restoring critical resources and infrastructure.

In Poland, at the central (state) level, the body responsible for crisis management is the Council of Ministers, and in special situations the Minister of Internal Affairs in cooperation with the Government Crisis Management Team and the Government Center for Security (RCB). Within the voivodeship (regional/local) government administration, responsibilities related to crisis management are carried out by voivodes, who are supported by voivodeship crisis management centers and teams. Subsequently, at the powiat level, these tasks are carried out by elders and in communes by commune heads, mayors or city presidents, together with their crisis management centers and teams ( Molek , Stec, Marciniak 2011). It can therefore be noted that crisis management is implemented at every administrative level, and the entities responsible for it are among the most important government or local government administration bodies.

When analyzing the definition of crisis management, we can point to four phases of crisis management. These are:

- 1) prevention phase
- 2) preparation phase
- 3) reaction phase
- 4) reconstruction phase

The prevention phase is the one that initiates the entire crisis management cycle. What is worth noting is that prevention is permanent, i.e. it is carried out continuously without breaks for any other activities. It should also be added that this is the most important of all four phases of crisis management, which begins far before any disaster or crisis situation. Moreover, the prevention phase is a set of measures aimed at securing the conditions for the normal functioning of the state by eliminating or limiting risk factors and all potential threats. The results of prevention are the starting point for the second phase, i.e. preparation (Gołębiewski 2015). Tasks specific to the prevention phase include:

- 1) analyzing possible threats,
- 2) identification of elements of technical infrastructure (including critical infrastructure), social environment and natural environment that are particularly sensitive to the effects of disasters caused by a crisis situation,
- 3) analyzing and assessing applicable legal provisions in terms of their effectiveness in crisis situations, as well as developing and introducing new legislative solutions,

- 4) monitoring areas extremely susceptible to the effects of disasters,
- 5) supervision over the performance of preventive tasks (Ślusarczyk 2018).

According to Joanna Makowska, the preparation phase consists in planning appropriate activities, as well as constant monitoring of potential threats through appropriate bodies and institutions, as well as procedures and legal conditions (Makowska 2016). Part of the preparation phase is training the services responsible for security. The tasks specific to the preparation phase include: (Ślusarczyk 2018):

- 1) developing, checking and updating documents, i.e. crisis management plans,
- 2) monitoring threats and their consequences,
- 3) training of crisis response structures and emergency services,
- 4) maintaining warning and alarm systems in a state of readiness,
- 5) analyzing activities carried out in the past and drawing conclusions from them in order to increase effectiveness in the event of subsequent crises,
- 6) organizing and conducting exercises aimed at preparing crisis management structures to conduct operations,
- 7) creating and maintaining material storage databases, as well as a database on the possibilities of obtaining funds and materials,
- 8) creating and maintaining conditions for the survival of the population in crisis situations, in particular in the field of water, food, clothing, medicine, energy, cleaning products and temporary accommodation for evacuees,
- 9) indication of financial, material and technical needs necessary to implement the adopted tasks, as well as meeting these needs.

The response phase is a set of activities that result from the occurrence of a crisis situation. The aim of the response phase is to provide assistance to injured people as quickly as possible and to limit direct and secondary damage and losses. Janusz Ziarko and Jolanta Walas-Trębacz rightly noticed that services such as the fire brigade, police, army, medical services and municipal technical services are the main crisis response forces. Moreover, the response period is the time during which planned and coordinated actions should be taken to stop emerging threats, as well as to limit losses and damage resulting from the crisis situation. Additionally, as part of the response, it is important to remember to provide emergency assistance to the affected population in order to ensure a minimum standard of living for them in this difficult period. The response phase includes rescue activities directly related to the liquidation and control of a given crisis situation (Ziarko, Walas-Trębacz, 2010).

The last of the four phases of crisis management is the reconstruction phase. According to Waldemar Walczak, at this stage, actions are taken after the crisis situation is under control, and their aim is to restore the state of normal functioning of the state, i.e. the place (area) affected by a disaster, disaster or threat, and to rebuild critical infrastructure that was damaged and/or destroyed. As rightly noted by W. Walczak, it is

important to thoroughly analyze the premises that formed the basis of the crisis situation, and the undertaken projects and actions should include the removal of the effects and focus on eliminating the causes influencing the occurrence of a given crisis situation (Walczak 2008).

### III. CONCLUSION

Janusz Ryszard Rak noted that logistics in crisis situations that are not caused by military threats primarily includes activities undertaken to help the injured population. It is also worth emphasizing here that non-military threats include: natural disasters such as floods, fires or earthquakes, technical failures, e.g. damage to the nuclear reactor in a nuclear power plant, social unrest, e.g. nationwide strikes or attacks terrorist (Rak 2014).

It is worth analyzing the importance of logistics in individual phases of crisis management. The prevention phase focuses on actions before a crisis occurs. In this phase, logistic activities are not as visible as in the other three phases, but this does not mean that they do not occur at all. Logistics tasks will include, among others: monitoring areas extremely susceptible to the effects of disasters. Nowadays, most of this type of activities are carried out using modern technologies, but until recently it was necessary, for example, to constantly monitor the water level by appropriately trained units. Therefore, it was necessary to ensure appropriate equipment and facilities for this type of entities.

Next is the preparation phase, in which entities carrying out crisis management tasks are responsible for, among others, creating and maintaining material storage databases, as well as a database on the possibilities of obtaining funds and materials, as well as creating and maintaining conditions for the survival of the population in crisis situations, in particular in the supply of water, food, clothing, medicines, energy and cleaning and temporary products places of accommodation for evacuees. It cannot be denied that the tasks listed above are inextricably linked to logistics. We can only imagine what a great tragedy would befall people who lost all their belongings as a result of a flood or fire and were not provided with basic living conditions. In the second of the four phases of crisis management, care should also be taken to finance the costs of individual activities. Due to the fact that logistic activities involve providing the injured population with e.g. food, clothes, medicines, etc., a significant part of all costs are the costs of logistics and goods that are delivered to the injured population. You should also remember to constantly maintain warehouse bases, without which it would be impossible to carry out the entrusted activities.

The response phase mainly involves activities aimed at providing help to the injured people as quickly as possible. The essence of this phase is to direct appropriate forces and resources to rescue operations, the aim of which is to neutralize threat outbreaks, as well as to launch the evacuation process and manage the elimination of the consequences. It can be said that in this phase, logistics plays a major role because it is

responsible, first of all, for:

- 1) transporting appropriate forces and resources to the place of response as quickly as possible to counteract the crisis situation,
- 2) evacuation of the affected population.

Moreover, the aim of logistics is also to create temporary conditions for the survival of evacuees and injured people.

Bearing in mind that a crisis situation is a kind of "fight against time", it is necessary to provide appropriate means of transport for both the services and the injured population. We can imagine a situation in which we have exemplary trained services that are ready to cope with any crisis situation, but if we do not take care of the means of transport, even the best trained units will not be able to help the injured, and the entire operation will end in failure. Therefore, we can venture to say that logistics plays a more important role than the level of training of the services responsible for crisis response.

The reconstruction phase involves actions aimed at restoring the pre-crisis situation. It should be noted that in this phase, logistics will be responsible for, among others: distribution of funds, i.e. food, clothing, cleaning products from humanitarian aid to injured people. Additionally, it will be necessary to restore the forces and means and resources of the rescue services to a level that guarantees their full readiness for further operations. In the case of logistics, we can talk about, for example, repairing damaged equipment, replenishing fuel reserves or stock levels.

To sum up, we can note that logistics plays a leading role in crisis management activities. Without efficient logistics, some of the assigned tasks would be impossible to complete. Thus, the hypothesis put forward in the introduction that logistics plays the main role in crisis management was positively verified.

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