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Military logistics system in a crisis situation

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Abstract. The article characterizes the processes of logistical support of the flood-affected public and the processes of logistical security of the separated military groupings for support of internal security, assistance to the civilian population in mitigating the consequences of the flood and accelerating the reconstruction of infrastructure. The research niche of this article is a cross-sectional view of the new areas implemented by the military logistics potential in the 2024 floods in Poland. The purpose of the research was to identify and evaluate the scope of tasks of the military logistics system of the Polish Armed Forces envisaged for the implementation of tasks in support of government administration, local government, rescue services as well as the affected civilian population, and the tasks of logistical security of troops residing in flood areas and acting for the benefit of local authorities and society. Achieving such a defined objective required answering the following research question: what was the role of elements of the military logistics system supported by civilian logistics capabilities during the 2024 floods in Poland? The paper adopts the following research hypothesis: the proper use of military and civilian logistics capabilities can improve the efficiency of the process of support and logistical security of the injured population and other participants carrying out emergency tasks, and is determined in particular by the ability of military logistics capabilities to respond flexibly to the dynamically changing situation during a crisis situation and the preparation of the right quantity and quality of resources that are necessary to meet the needs of the injured and those involved in rescue operations. In order to solve the defined research problem and verify the adopted hypothesis, the following research methods were used: analysis, synthesis, abstraction, inference, generalization, and conclusions drawn from participant observation in a military operation supporting civilians affected by the 2024 flood disaster in the southwestern region of Poland.

Keywords: crisis management, crisis logistics, floods, military support, military support tasks

Introduction

The scale of today's threats indicates the necessity to maintain readiness not only in ready infrastructure but also in forces and means for the realization of population protection tasks in case of extraordinary life and health threats, including occurring natural disasters. From an objective point of experience, we conclude that crisis situations caused by natural disasters occur more often, that is why ensuring effective population protection requires coordinated actions of many public services. The elements that support the non-military defensive system are the Police, the National Fire Brigade, specialized rescue units, and the Polish Military Armed Forces, having manpower, organizational power, and equipment, which in short terms can be used to support civilian institutions and support the population in crisis tasks realization. Effective realization of crisis management requires versatile support, the key element of which is logistic support. The subject of logistic tasks in crisis is first of all affected party, however besides taking care of injured population given logistic elements also take care of other aspects like rescuing of property, rebuilding critical or transport infrastructure and also saving cultural heritage and the natural environment (Chakir, I., El Khaili, M., & Mestari, M., 2020). The aim of logistic support of injured population is to give necessary supplies and provide logistic and medical services in right time, place and in the appropriate quantity and the appropriate form. To achieve that aim it is needed a preparation and consequently ensuring optimal use of appropriately calculated logistical potential (Nowak, 2013, p. 24).

The aim of the article is to identify and evaluate the scope of tasks of the military logistics system of the Polish Armed Forces envisaged for the implementation of tasks in support of government administration, local government, rescue services as well as the affected civilian population, and the tasks of logistical security of troops residing in flood areas and acting for the benefit of local authorities and society. Achieving such a defined objective required answering the following research question: what was the role of elements of the military logistics system supported by civilian logistics capabilities during the 2024 floods in Poland? The paper adopts the following research hypothesis: the proper use of military and civilian logistics capabilities can improve the efficiency of the process of support and logistical security of the injured population and other participants carrying out emergency tasks, and is determined in particular by the ability of military logistics capabilities to respond flexibly to the dynamically changing situation during a crisis situation and the preparation of the right quantity and quality of resources that are necessary to meet the needs of the injured and those involved in rescue operations. In order to solve the defined research problem and verify the adopted hypothesis, the following research methods were used: analysis, synthesis, abstraction, inference, generalization, and conclusions drawn from participant observation in a military

operation supporting civilians affected by the 2024 flood disaster in the southwestern region of Poland were used.

Legal conditions for the use of the Polish Armed Forces in the event of a natural disaster

The basic features of a crisis are surprise, suddenness, psychological tension, a significant number of rapidly occurring events, a deficit of information, and vulnerability. The extraordinary situation related to it is a special legal regime aimed at reversing or mitigating the effects of specific threats if ordinary constitutional measures are insufficient (Klasa, 2021, pp. 92-93). It should be noted that in the legal system of the Republic of Poland, there is no unified legal act that comprehensively defines the tasks related to the use of the military and the functioning of the armed forces during crisis situations. The catalog of such tasks for the armed forces is contained in Article 25 of the Crisis Management Act, which indicates 15 areas in which it is possible to use forces and resources, including specialized equipment available to the military to carry out tasks related to crisis management. However, the legislator has clearly stated that the use of the military is justified only if the use of other forces and means is impossible or may prove insufficient. In this case, unless other regulations provide otherwise, the Minister of National Defense, at the request of the voivode, may assign subunits or units of the Armed Forces of the Republic of Poland at his disposal along with directing them to perform tasks related to crisis management (Legal Act, 2007). A very important legal act regulating the place and role of the Armed Forces of the Republic of Poland in the national security system, including tasks related to crisis management, is the Act of March 11, 2022, on the Defense of the Fatherland. This law also includes records directly referring to the possibility of using armed forces in crisis management (Szczyrek, 2023). The latest legal act concerning the issue of crisis situations is the law of December 5, 2024, on the protection of the population and civil defense (Legal Act, 2007). This law does not directly define the tasks for the Armed Forces of the Republic of Poland, however, Article 5, paragraph 1 specifies that the tasks of civil protection and emergency management are performed by civil protection and emergency management authorities and entities, depending on the type and scale of threats and the characteristics of these authorities or entities, according to the principles set out in this law and other legal regulations, in particular in the Act of April 26, 2007 on crisis management, the Act of April 18, 2002 on the state of natural disaster (Journal of Laws of 2017, item 1897 and of 2024, item 1717), and the Act of June 21, 2002 on the state of emergency (Journal of Laws of 2017, item 1928), the Act of August 29, 2002 on martial law and the competencies of the Supreme Commander of the Armed Forces and the principles of his subordination to the constitutional

authorities of the Republic of Poland (Journal of Laws of 2022, item 2091 and of 2024, item 1907) and the Act of March 11, 2022 on the defense of the Fatherland (Journal of Laws of 2024, item 248, as amended).

The multitude and ambiguity of the records of legal acts regulating the use of the armed forces' potential in crisis situations make huge challenges for the organizers of the crisis management system of the national defense ministry. Currently, this system, which is headed by the Minister of National Defense, constitutes an integral part of the National Crisis Management System. From June 25, 2018, according to the decision of the Minister of National Defense, the Territorial Defense Forces became an integral part of the Crisis Management System of the Ministry of National Defense, while the forces and resources of the Territorial Defense Commander from the territorial brigades were included in the National Defense Crisis Management Plan. The procedure for their activation is carried out in accordance with Article 25 of the Act of April 26, 2007, on crisis management, and is the same as in the case of other types of armed forces. However, it was only the Homeland Defense Act, which came into effect on April 23, 2022, that entrusted the Territorial Defense Forces with the non-military part of crisis management tasks within the Ministry of National Defense. Upon the implementation of the law, the Commander of the Territorial Defense became the Head of the Crisis Management Center of the Ministry of National Defense, while the Territorial Defense brigade commanders replaced the current heads of the Provincial Military Headquarters in the described capacity and became representatives of the Ministry of National Defense for the voivodes in the coordination and implementation of support that the military can provide.

The above normative acts were the basis for the use of the Polish Armed Forces during the natural disaster caused by the flood that took place in September and October 2024. The flood that occurred in September 2024 is a river flood caused by prolonged and intense rainfall. During this flood, there was also an overflow of water through flood control structures, as well as the failure of flood control structures (Report, 2024). The use of the military increased as the crisis situation developed. At the beginning of the second decade of September 2024, based on the assessment of the situation and the application of the voivodes sent to the Ministry of National Defense, task groups were formed to support services in areas most threatened to people and property. The army has started operations in the Opole, Lower Silesia, and Silesia provinces. 4,600 soldiers and specialized equipment were allocated to crisis management HQ. Eight engineering teams were created in the operational forces to support military task groups organized by the Territorial Defense Forces. In addition to support operations in endangered areas, soldiers from other operational military units and units of the stationary and mobile logistical potential of the armed forces were allocated. The main activities of the military included: strengthening flood barriers, supporting evacuation efforts, and assisting public administration

and local authorities in crisis situations. On September 23, 2024, based on a decision of the management of the Ministry of National Defense, the Armed Forces of the Republic of Poland launched operations „FENIKS”. Based on the records of the Law on the Defense of the Fatherland, the Commander of the Territorial Defense Force was appointed as the overall commander of the forces involved in the operation. About 24,000 soldiers were directed to action in the operation.

In summary, attention must be paid to the complexity of the legal situation determining the use of the Armed Forces of the Republic of Poland in the event of a natural disaster. Numerous legal acts and the dynamics of the crisis situation resulted in a series of legal dilemmas regarding making quick and legal decisions, which undoubtedly affect the effectiveness of the tasks being carried out.

Logistic support for government authorities, local governments, and society struggling with the disaster of flooding

Logistic support for government and local administration, but above all for the society affected by the flood, can take various forms. All these actions are carried out under immense time pressure and depend on the current situation. Defined in crisis logistics theory, it is an increasingly popular and developing issue that should be considered on three levels. The first is as a logistics of crisis situations, which in this case takes on a subjective function, leading to the perception of it as an independent field dealing with the management of physical processes in crisis situations. Secondly, as a logistical support for crisis situations - that is, the direct protection of the health and lives of injured people, the protection of the environment, property in the disaster area, supporting the appropriate management authorities as well as rescue services and teams. The third as logistical support for crisis situations – often identified with the logistical security of crisis situations, but it is a narrower concept, concerning the direct use of logistic services in the very center of the crisis situation during the mitigation of losses and negative effects that occurred during the state of crisis (Ficoń, 2015, pp. 150-151). In crisis logistics, the aim is to prepare and carry out all actions in such a way as to take control over the arising threat, and then to mitigate its negative effects. Achieving the highest possible efficiency and effectiveness of actions requires focusing from the very beginning on the overall goals of logistics management in crisis situations (Sienkiewicz-Małyjurek, 2014, pp. 430).

In the scope of external tasks within the PHOENIX operation, warm all-day meals were provided for the affected population. For this purpose, three meal distribution points were organized in Stronie Śląskie, Łądek Zdrój, and Nysa. Over 1500 meals were prepared daily, and during the operation, more than 72 thousand meals were distributed to civilians (www.media.terytorialsi.wp.mil.pl/informacje/841086/

ruszyła-operacja-feniks-tysiące-terytorialsow-w-akcji/ [access March 22, 2025]). Due to the fact that the flood caused damage to the water supply network in many towns, there was a shortage of water, so a very important task was to supply the affected population with water. The task was carried out by providing bottled water, but this did not meet the needs of the population; therefore, by using 15 m³ water tanks and 10 m³ water cisterns at disposal of logistics units, drinking water was delivered to several localities. Over the first two weeks, more than 7 million liters of water were distributed for this task, and more than 30 water tankers vehicles and water tanks were used. Soldiers from the logistics units transported and set up over 100 pieces of various types of specialized containers, which were handed over to the affected residents by the Government Strategic Reserves Agency. Among them were residential, sanitary, office, and storage containers. Additionally, as part of the support for those in need, heaters were transported and distributed to provide warmth to residents during colder days.

A very important task carried out in support of government and local government organizations was to organize a supporting HUB. The financial and accounting documentation remained under the competencies of the employees of the provincial office in Opole, while all tasks related to setting up the warehouse, receiving aid materials, and distributing them to those in need were carried out by the soldiers of the 10th Opole Logistics Brigade. The work involved receiving supplies and equipment, storing them in the warehouse by assortment, then forming new cargo units and transporting them to local government offices, schools, hospitals, and other places indicated by the coordinator – the representative of the voivode. Transport was carried out using a mixed method, both through civilian carriers and military forces. Soldiers of the 10th Logistics Brigade transported equipment and supplies in case there was a need to reach hard-to-access areas. The HUB began operations on September 19, 2024, and ended on January 10, 2025. During this period, 51 heavy-loaded trucks with trailers, 15 trucks, and 55 delivery vans were shipped in total. Some shipments were delivered “loose” so the soldiers arranged all the delivered materials into new loading units. It was necessary to classify goods, separate food items from household chemicals, and form cargo units using EUR pallets. Such an organized warehouse allowed for efficient distribution of goods. A total of 215 trucks and 186 delivery vehicles were sent to those in need, resulting in a total of 401 transports. On September 30, 2024 there were 700 EUR pallets stored in the warehouse. The largest logistical effort was carried out on September 23, 2024, on that day 7 heavy-loaded trucks with trailers, 4 trucks, and 9 delivery vans were received. At the same time, 5 trucks and 12 vans were prepared and sent to those in need. The next task carried out for the affected residents was the relocation and set the military field hospital in Nysa. It was the military’s response to the destruction caused by the flood situation in the region, which led to the flooding and closure of the District Hospital, resulting in the deprivation of round-the-clock (24/7) access

to health services for the 45,000 inhabitants of the city and surrounding areas. The Temporary Field Hospital was organized by the forces of the 2nd Military Field Hospital in Wrocław, the 25th Air Cavalry Brigade from Tomaszów Mazowiecki, and the 10th Logistics Brigade from Opole. Based on the Decision of the Minister of National Defense dated September 19, 2024, the Field Hospital came under the jurisdiction of the 116th Military Hospital with the Outpatient Clinic in Opole as part of Operation PHOENIX. The hospital supported the medical assistance to the civilian population until the re-opening of the District Hospital in Nysa. During its operation, more than 1100 patients aged from 3 months to 100 years old were accepted. Minor surgical procedures, interventional vaccinations, initial patient care, stabilization of vital parameters, and in situations requiring it, medical evacuation to higher-level medical facilities were performed. (www.116szpital.opole.pl/2024/10/21/tymczasowy-szpital-polowy-w-nysie/ [access April 06, 2025]). In the field of vaccination, four mobile vaccination teams operated under the direction of the Medical Support Group of the 10th Logistics Brigade. Vaccinations were carried out against hepatitis and typhoid.

In summary, one can point to the key role of military potential in supporting government authorities, local governments, and society struggling with the flood disaster. Once again in history, the engagement of military forces and resources has guaranteed the conditions for the execution of tasks by all involved entities and significantly minimized the effects of the emergency situation.

Logistic support for designated military task groups to assist local authorities and communities struggling with the flood disaster

Based on information from the voivodes, it was estimated that 749 localities with 2 million 390 thousand residents were affected by a natural disaster state. Approximately 57,000 people were affected by the flood (www.money.pl/gospodarka/prawie-60-tys-polakow-dotknionych-powodzi-sa-oficjalne-dane/ [access April 06, 2025]). About 24,000 soldiers from the territorial defense forces and operational forces have been sent to assist the victims, which constitutes a ratio of nearly one soldier for every two victims. Such a situation determined the engagement of the logistics system in assisting the victims as an absolute priority conducted studies reveal that the scale and scope of logistic tasks were significantly greater in the internal area and concerned the logistical security of the military groups of territorial defense forces and operational forces. The amount of military forces and resources underwent dynamic changes, especially during the stage of deteriorating conditions, the number of personnel and equipment involved in the operation increased rapidly, which posed a significant challenge for the logistics system in terms of providing logistic support to those affected by the flood disaster, but also in securing logistics

In order to effectively operate in the above mentioned two areas, upon the commencement of the PHOENIX operation, a Logistics Task Group was formed in Oleśnica, which started its activities on September 22, 2024, becoming a key element of the operation. From the first days of operation, the main task of the group was to provide comprehensive logistic support not only for the affected population but primarily to ensure logistic support for the operational troops and territorial defense forces engaged in activities in the flood-stricken areas. With the start of the Logistics Task Group activities, 185 soldiers and 230 units of equipment were directed to carry out the tasks. Throughout the entire duration of the Logistics Task Group's operation, a total of 1274 soldiers and 126 military personnel participated on a rotational basis (every 3 weeks). In order to carry out a wide range of tasks related to logistic support for the affected population and logistic security for the deployed troops for operations, the structure of the established formation was based on the prepared logistical modules presented in figure 2.

During the operation, many logistics processes were carried out, including the food module of the material subsystem, which provided food for both the civilian population and soldiers performing tasks to assist flood victims, and the number of personnel being fed changed daily. For example, on October 7, 2025, the nutrition status was 13,000 fed in 16 locations, 11,500 soldiers, and 1,500 civilians. The details are presented in figure 3.

Since the beginning of the group's activities, continuous meal provision was ensured for the civilian population and soldiers based on stationary and field catering points, among others in Głucholązy, Nysa, Stronie Śląskie, and Łądek Zdrój. A total of 115,490 meals were served. Additionally, military catering was provided as an external service in several locations. The service was contracted by the 2nd Military Economic Unit. In terms of nutrition throughout Operation Phoenix, 1.6 million kilograms of food and approximately 1.3 million liters of water were issued. Details are presented in table 1.

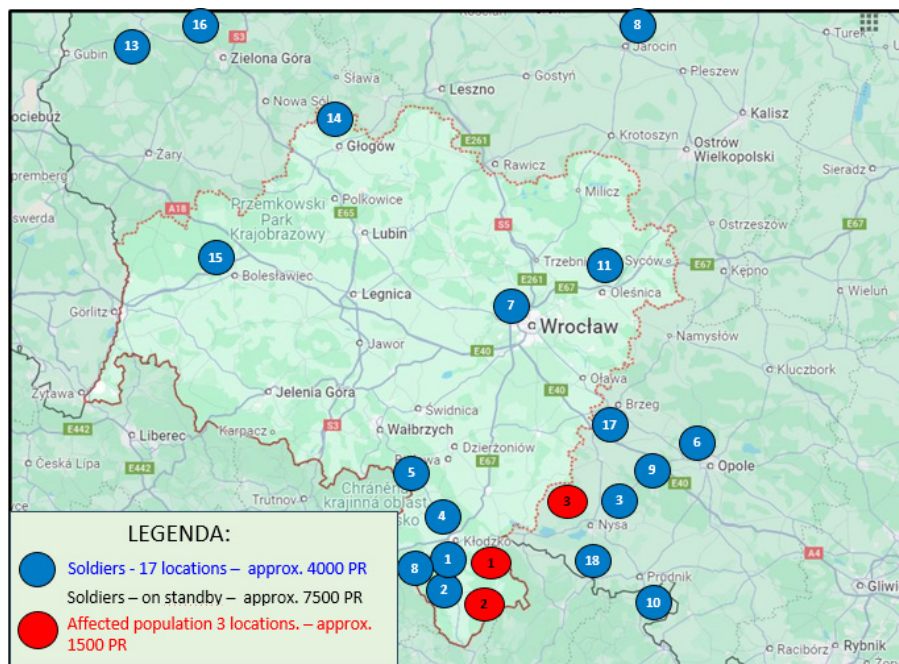


Fig. 3. Nutrition of soldiers and civilians in Operation Phoenix, dated on Oct. 07, 2024

Source: own study

Table 1. Amount of food distributed in Operation Phoenix

No	Specification	Amount (l/kg/piece)	NOTES
1.	For the nutrition of the civilian population		Task completed on Nov. 08, 2024.
	- food	63, 420 kg	
	- water	92, 850 l	
	- food rations	3, 000 pcs	
2.	For the nutrition of soldiers and the military personnel		
	- food	1 578, 436 kg	
	- water	1 183, 827 l	
	- food rations	76, 960 pcs	
3.	For the nutrition of police officers		One-time task
	- food rations	500 pcs	

Source: own study

The tasks of exchanging uniforms were carried out by the uniformed module of the task groups, whose capabilities and equipment are shown in Figure 4. In addition, mobile outfitting points were launched, where approximately 900 sets of uniforms and about 1100 pairs of boots were exchanged. Soldiers were provided the opportunity to wash their uniforms thanks to container field laundries that were set up in three locations: Nysa, Kłodzko, Łądek Zdrój. A total of over 2700 bags were washed.

UNIFORM MODULE	
<u>Abilities:</u>	
the exchange of 1000 uniforms and 1000 boots	
washing 300 uniforms per day	
<u>Equipment:</u>	
FIELD LAUNDRY	EXCHANGE STORAGE
▪ container laundry field KPP-600	▪ transportation container – 5 pcs
▪ washer-dryer – 8 pcs	▪ transport basket – 35 pcs
▪ washing machine – 8 pcs	▪ field uniforms – 1000 pcs
▪ laundry bags	▪ boots – 1000 pcs
▪ laundry detergents	

Fig. 4. Capabilities and equipment of the uniform module of task group

Source: own study

The supply of the military equipment with fuel was carried out as part of a stationary and mobile refueling system – approximately 70,000 tons of diesel fuel were used, including refueling helicopters, and the tasks were carried out in eleven locations. As part of the operation, refueling of allied troops was also carried out. The Logistics Task Group in Oleśnica coordinated the repairs and evacuation of the military equipment involved in the operations – a total of 380 requests were received, which were verified and then directed for regular or emergency repairs. Mobile service groups were allocated to quicken the repairs of equipment necessary for removing the effects of the flood. The transport module performed tasks related to the transportation of heavy equipment, including engineering equipment involved in rescue operations. A total of 36 units of equipment were transported to locations where they were most needed at that time. Additionally, 242 containers were transported. The Logistics Task Group vehicles covered 52,502 kilometers

as part of transportation tasks. The transport module handled the unloading of approximately 180 containers (transport, residential, sanitary, and office). As part of the electric module's operation, generators and lighting masts were delivered and provided to function in the operational area. During the crisis situation, tasks in the infrastructure subsystem were also carried out. In many locations, accommodation (tents, sanitary facilities) was prepared in the initial period, for example, from September 13, 2024, accommodation and parking areas for equipment and subunits arriving at the 10th Logistics Brigade were secured. The buildup of forces is presented in table 2.

Table 2. Accumulation of personnel and military equipment stationed at the 10th LogBde

No	Date	Amount of soldiers	Amount of military equipment
1.	Sep. 13, 2024	24	5
2.	Sep. 15, 2024	204	13
3.	Sep. 16, 2024	324	17
4.	Sep. 17, 2024	374	36
5.	Oct. 01, 2024	372	34
6.	Oct. 10, 2024	417	39

Source: own study

The scale and complexity of the tasks being carried out was evidenced by the fact that within a single day accommodation conditions were prepared for approximately 500 soldiers based on stationary infrastructure and a tent base. As part of the Logistics Task Group, there was an infrastructure module that was prepared to build accommodation capabilities based on living containers, for both the affected population and a group of soldiers. The capabilities and equipment of the module are shown in figure 5.

In conclusion to this part of the work, it is worth emphasizing once again the scale of tasks carried out by the military forces. Nevertheless, despite the commitment of significant military resources, they proved to be insufficient, and only the implementation of a series of tasks in a military-civilian framework guaranteed the effectiveness of tasks carried out in special conditions.

INFRASTRUCTURE MODULE	
<u>Abilities:</u>	<u>Equipment:</u>
Accommodation of 800 pax	▪ field bath,
Bath services of 60 pax	▪ field bed – 800 pcs
	▪ club table – 200 pcs
	▪ multi-hanger – 70 pcs
	▪ barrack stool – 400 pcs
	▪ transportation container – 4 pcs
	▪ sanitary container – 20 pcs (if needed)
	▪ living container – 200 pcs (if needed)

Fig. 5. Capabilities and equipment of the infrastructure module of the Logistics Task Group

Source: own study

Civilian logistical potential is an important determinant of securing military groups carrying out tasks related to flood disasters

The tasks carried out by logistics units in terms of securing military groups, which operated in the first phase of the crisis situation as well as during Operation PHOENIX, would not have been possible without the mutual cooperation of the military logistics system with the civilian potential of the national economy. The military, providing essential assistance to the injured in the form of manpower and using military equipment, would not have been able to carry out its tasks without the involvement of civilian companies and entities. The first area where civilian potential was used was infrastructure. Soldiers were stationed based on the facilities of nearby military units, but the capabilities turned out to be insufficient. At the peak of the involvement in fighting against the flood disaster, 24,000 soldiers had to be provided with conditions for rest. For this purpose, 31 contracts were signed through the territorially competent District Infrastructure Board, including 14 cost contracts worth approximately 11 million zlotys and 17 non-cost contracts. 39 different types of facilities were used such as:

- hotel facility – 6
- sports gym – 10

- tourist complex – 2
- student dormitory – 3
- warehouse, workshop facility – 8
- others – 10 (e.g. holiday home, health resort facility, volunteer fire department station, recreational, youth hostel, school, aeroclub area).

Essentially, these facilities were used to accommodate soldiers, but also for other purposes such as storing and servicing equipment or using the aeroclub's runway to handle aircraft. The infrastructure subsystem, through regional infrastructure management and military economic units, secured task forces based on civilian logistics potential as well of:

- rental of sanitary equipment,
- purchase of equipment for removing mud and post-flood garbage,
- purchase of equipment for the operational command center (Territorial Defense Command),
- purchase of materials for land hardening.

The material subsystem basically carried out its tasks by using its own food resources; however, during the peak of military operations by task groups, there was a necessity to contract catering services. Civilian companies provided meal services for soldiers of some task groups. Research shows the positive effects of the military logistics system, including the flexibility and interchangeability of the logistics system, where soldiers prepared and distributed meals to the affected population, but also used the catering system themselves through contracts signed with civilian companies. The contracting of this service fell within the competencies of the relevant territorial military economic unit. Another area without which it is difficult to imagine the functioning of the military is the technical subsystem. The military equipment used in the operation required not only ongoing maintenance but also immediate repairs, which is why ad hoc purchases of technical materials and provide repair services for various types of equipment, particularly automotive and engineering equipment, became necessary. Despite the set-up of the repair module for Logistics Task Group, studies clearly indicated that this part of the logistical support could be effectively implemented by outsourcing most repairs to civilian facilities under service contracts. The total number of reported repair needs involving routine and emergency repairs was 380. Repairs carried out by the repair subunits of the military logistics system accounted for only 30% of the needs, while the remaining 70% were fulfilled based on contracting procedures with civilian companies. This data shows how important civil logistical potential and the competencies of the personnel in logistical units are in terms of contracting logistics services and procuring the parts and materials necessary to maintain military technology in the required operational readiness. During the flood operation and Operation PHOENIX, the territorially responsible 2nd Military Economic Unit spent over 11

million zlotys on the purchase of goods, especially the procurement of services in the civilian market to support the military logistical potential securing the activities of the task groups to assist the population in the context of the flood disaster. The largest funds were allocated for the nutrition of designated military task groups in a contracted manner. The structure of expenditures on the most important supply sectors is presented in Figure 6.

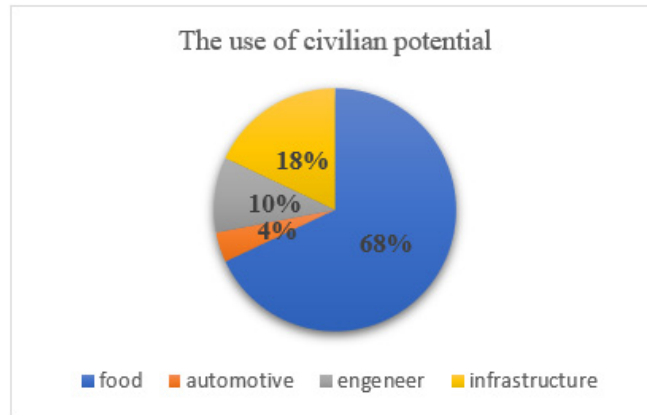


Fig. 6. Use of civilian potential to secure military task groups during Operation PHOENIX

Source: own study

In summary, considering the logistics of military-civil cooperation in the analyzed crisis situation, one can emphasize its key role and significance. Without support from the civilian potential, the expected effectiveness would not have been achieved. However, the collected research material clearly indicates a lack of formal procedures in this regard and the implementation of a number of tasks in a legal but unsystematic manner.

Conclusions

In the different phases of the crisis situation related to the occurrence of floods in the southwestern part of Poland, the main effort of the military logistics system underwent changes. In the preparation phase, it was clearly focused on internal actions related to the logistical support of task groups assigned to crisis response operations. In the prevention phase, this effort was still focused on securing the troops by providing them with appropriate conditions for carrying out their tasks and social-living conditions, including the possibility of rest. In the response phase, the main effort was focused on providing logistic assistance to the affected population

and meeting the needs reported by local authorities. During this period, the execution of tasks was determined by time, and therefore, internal logistics support tasks for the military usually took a back seat. The reconstruction phase was a process stretched over time and the actions of logistics units in this phase were focused on securing the designated groups, ensuring the needs of personnel, and maintaining equipment in proper working order, which was essential for operation. This was a strained period of operation for the logistic elements of the material subsystem and was particularly demanding for the technical subsystem. Based on the observations of logistic support for the affected population in the flood disaster and the planned organizational and systemic changes in the logistics system, it is justified to formulate the following conclusions:

Support for the civilian population and local authorities is primarily the responsibility of the territorial defense forces; therefore, those defense brigades should have subunits equipped with the means to carry out this type of task. Additional analyses should provide an answer to what specialized equipment should be provided, depending on the specifics of the regions in which they are deployed within permanent areas of responsibility.

The technical security of military groups was essentially implemented through contracting services in the civilian market, which shows a clear trend of reducing the capabilities of military repair units, and thus requires urgent revision of their functioning. It seems necessary to assign high importance to the creation of modern subunits with specialized military and civilian personnel capable of servicing and repairing new military technology.

The failure of the maintenance and repair subsystem requires immediate actions aimed at raising the salaries of civilian specialists in the repair workshops of regional logistics bases, which will be a measurable argument for competitiveness in relation to repair facilities operating in the civilian market.

High costs of accommodation and catering for the military under the contracted system provide a basis for the assertion that it is necessary to continue investing in military infrastructure to increase accommodation capabilities, food supply for the troops, and equipment deployment.

Full support for the military units assigned to flood prevention tasks in terms of infrastructure, equipment repair, and military nutrition was possible only by using civilian logistic potential through ad hoc contracting of services by the logistics units of the stationary logistics system of the Polish Armed Forces.

There is an urgent need to tighten cooperation between the entities of the transportation subsystem (military transport commands) and the territorial defense units in their areas of responsibility regarding the communication of current information on the state of road infrastructure during the ongoing crisis situation.

The experiences gained from Operation PHOENIX confirm the importance of logistic support for the military; therefore, in the authors' opinion, the responsibility

for conducting intensive research and conceptual work to eliminate areas that do not guarantee the proper effectiveness of military logistical support, including logistical support in crisis situations, rests on the shoulders of those responsible for shaping the logistical system, key commanders of the Polish Armed Forces, and the scientific community.

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