

CONSIDERATIONS ON THE IMPACT OF MILITARY ACTIONS ON THE ENVIRONMENT

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Abstract: *From a systemic point of view, it can be said that the natural environment is dynamic, constantly changing and evolving and directly influenced by natural or anthropogenic disturbances. As an integral part of the society, the military organization has an important role in the implementation of Romania’s environmental strategy. Consequently, the fulfilment of its functional tasks will be carried out in accordance with the incident normative framework, having as a priority the protection of the environment. In this vein, focus is placed on the respect of specific standards, as well as on the elimination of potential environmental risks that may occur during military actions. Specific military activities can cause significant environmental damage through the deterioration of environmental factors, i.e. soil degradation, water quality, environmental damage through the disposal of large quantities of waste, and degradation of flora.*

Keywords: environment, organization, military actions, impact, pollution

1. Introduction

The protection of the environment has been a permanent concern for the Romanian people and its rulers, so the first evidence is found in the old writings of Ion Neculce and Dimitrie Cantemir who talk about the *Law of the Forest* issued by Stephen the Great, the ruler of Moldavia, according to which grazing, hunting, and fishing were conditioned by the owners of the domains. With the economic and social evolution of Romania, as well as with scientific discoveries, the responsible forums and institutions implemented regulations and normative acts in the field of environmental protection, of which we mention:

- “*Law No 9 of 20 June 1973 on environmental protection*”, which states that environmental protection is a matter of national interest and a factor of vital importance to society;

- “*Law No 137 of 29 December 1995 on the protection of the environment*”, which states that environmental protection is a matter of public interest and is the main factor leading to the sustainable development of the Romanian society.

“*Law no. 265 of 29 June 2006 for the approval of the Government Emergency Ordinance no. 195/2005 on environmental protection*” is currently in force and is being applied in the form of a set of legal regulations on environmental protection, based on principles and strategic elements that will lead to the sustainable development of Romania.

Moreover, a very important aspect is the implementation of international environmental standards in organizations, including the military.

These will provide coherent instruments for working on environmental issues, an

example being the ISO 14000 set of standards, which consists of documents relating to the environmental management system.

In virtue of its specific components, the military organization will ensure effective environmental protection management both through the prevention of negative phenomena and through technical-organizational and educational measures, as well as through the reconstruction of environmental factors damaged because of planning errors, negligence or natural disasters.

2. The impact of military actions on the environment

As a concept, the environment can be defined as all the natural conditions and elements of the earth, i.e. air, water, soil, subsoil, landscape features, organic and inorganic matter, and the natural living systems with which they interact, which can affect human well-being and health.

The environmental protection activity at the level of the Ministry of National Defence is regulated by “*Order No. M.230 of 29 December 2022*” and by “*Provision for approval of the Instructions on the management of environmental protection activity in the Ministry of National Defence No. A-1 of 23.01.2023*”.

This regulatory framework is in correlation with the national legislation which stipulates that “*environmental protection falls under the obligation and responsibility of central and local public administration authorities, as well as of all natural and legal persons*” [1].

The military organization continuously monitors and manages specific activities that may have an impact on the environment through actions aimed to eliminate the risk of pollution and mitigate other consequences that may affect environmental factors, during daily activities as well as during the conduct of

exercises, firing, tactical applications, and military training, etc.

These aspects fall under the responsibility and competence of commanders and heads of military structures and are implemented through commitments based on principles and objectives, planning of actions and resources, education of personnel, and regular monitoring and evaluation.

In this respect, the managerial activity will be carried out by applying national and departmental legislation, taking into account the following requirements:

- military activities and actions will be covered by the environmental management system;
- environmental impacts will be actively identified and managed;
- there will be an environmental manager designated and made accountable through an internal decision, at the level of each military entity;
- there is a system for managing and reporting environmental data.

The influence of factors such as the periodicity and level of risk, the ability of management to control the impact, and the degree of influence of the organization on the impact of military activities will also be taken into account.

In order to reduce the impact of military actions and eliminate environmental risk, military entities will apply and comply with the regulatory framework taking into account the following elements:

- the application of the environmental policy at the level of their structures;
- training of military and civilian personnel in environmental protection as part of general military training, through briefings, presentations, debates, etc;
- identifying the main sources of pollution in military objectives;
- permanent monitoring of sectors and activities which could have a negative impact on the environment;
- completing, updating and submitting data for the “*Waste Management Programme*”;

- monthly updating the *“Waste Management Record Book”*;
- updating the *“Environmental Report”* programme;
- training of military and civilian personnel for the implementation of environmental management systems (ISO 14001);
- participating in collaborative actions with the *National Environmental Guard* and the *County Commissions*.

In this regard, managers will always attach particular importance to the issue of environmental protection, due to the consequences that military activities can produce in terms of environmental damage in peace, exceptional situations and war.

Therefore, there is a risk of environmental damage through pollution of the atmosphere, water, soil, flora and fauna, and various measures are taken to reduce the impact of military activities on the environment.

Reducing the environmental impact of military actions is achieved at every stage of the action through environmental risk management.

This impact can affect air quality, soil, water quality, vegetation, and human settlements.

With regard to the impact on air quality, we consider the following to be relevant:

- pollution of breathing air with various gases, such as: carbon monoxide, sulphur oxides, nitrogen oxides, organic solvent vapours, particulate matter, etc., gases with direct negative effects on human health;
- ozone depletion;
- climate change and the greenhouse effect;
- medium to high acid rain.

Among the military activities with an impact on the atmosphere, we distinguish the following:

- running military equipment (vehicles, armoured vehicles, other types of equipment) which produces exhaust gases containing carbon monoxide and carbon dioxide, sulphur monoxide and sulphur

dioxide, nitrogen monoxide and nitrogen dioxide (CO, CO₂, SO_x, NO_x), soot;

- training activities requiring the use of explosives, smoking materials, incendiary materials;
- fuel storages, where flammable vapours are produced;
- battery charging station activities, where sulphuric acid aerosols are produced;
- the use of liquid or solid fuel-fired power stations producing CO, CO₂, SO_x, NO_x and soot particles;
- maintenance or technical-productive activities;
- radioactive sources producing ionising radiation effects, if the rules for their handling, transport and storage are not respected;
- crematoria;
- poor exercise of the internal management control function with regard to environmental protection.

Impact on soil will mainly concern the following:

- hydrocarbon pollution - organic pollutants;
- soil compaction/deterioration by vehicles;
- contamination by liquid and solid waste;
- contamination with hazardous materials and waste, toxic substances, munitions debris, heavy metals.

Potential sources of soil damage and pollution during military actions are:

- hazardous material or hazardous waste dumps from various activities, particularly at CBRN, engineer and missile defence structures;
- movement and stationing of military equipment;
- training ranges and training grounds where live ammunition applications, exercises or firing, use of explosive, incendiary and smoke substances, and the execution of engineering works on the ground are carried out.

It is well known that water is an important resource.

It is the element that sustains life on earth, so the specific activities of military entities

can lead to direct and negative impacts on water quality, such as:

- pollution of surface and groundwater with domestic water, wastewater from maintenance or production facilities, decontamination substances, organic solvents, liquid fuels, lubricants, chemical fertilizers, pesticides, etc.;
- contamination with hydrocarbons (fuels, lubricants) resulting during the use of equipment in tactical applications and training exercises;
- damage to banks and beaches;
- eutrophication of waters due to organic pollutants and decrease in the percentage of oxygen in the water with effects on aquatic fauna.

In practical terms, potential sources of water pollution can be:

- waste water discharged directly into the environment;
- fuel supply or storage points;
- hydrocarbons and bilge water;
- technical washing stations and ramps;
- domestic waste and waste discharged directly into the environment;
- hazardous material and hazardous waste sites;
- accidental spills of hazardous materials or wastes.

A very important issue is the impact on vegetation through its destruction by military vehicles, burning or cutting of vegetation, forests, trees or shrubs, use of explosive, flammable, hazardous materials and substances, and the carrying out of landscaping works.

There is also a risk in terms of impact on human settlements by:

- noise pollution through the production of noise from firing, tactical exercises, the running of combat equipment or vehicle technology;
- stress or discomfort caused by air pollution, firing, use of roads, land belonging to local communities;
- electromagnetic radiation pollution caused by the operation of radiolocation and

communication stations and aerial research equipment.

3. Measures to avoid and limit environmental damage

Developments in society, scientific research, and advanced technologies have led to the continuous degradation of the environment, in particular through pollution of water, air and soil, reduction of forest area, increased emissions of greenhouse gases and biodegradable pollutants.

As a result of the increasingly bad consequences, environmental issues are becoming gradually more important and are now considered by most experts to be the number one priority, ahead of economic and social issues.

At the same time, there is a direct correlation between the environment and the sustainable development of organizations, particularly in terms of the continuous improvement of the quality of life and existence on the planet for both current and future generations.

Failure to meet the requirements for ecological balance can overturn all the value scales of economic and social systems, in some cases even leading to their total destruction.

There is a moral and legal responsibility to protect the environment and be a good steward of natural resources, at individual, social group and global level.

Within military structures, environmental protection is integrated into the organization and is ensured during the performance of functional duties, with competences and responsibilities at all hierarchical levels, with the aim of avoiding or eliminating environmental risk.

There are several approaches to the concept of environmental risk, and I consider the following approach to be relevant: *“Environmental risk results from the interaction between human activities and the environment and is based on the fact that an organization’s activities may generate some*

form of environmental change, thus inducing a potential hazard” [3].

For environmental protection activities to be effective a commitment based on established principles and objectives is required; the implementation of an environmental management system, action planning, education, resources, monitoring and evaluation are all systematically organized activities.

A very important aspect is the training of military and civilian personnel, as well as providing them with updated information on the relevant regulatory framework, which will be carried out in accordance with the following principles:

- the protection of environmental factors is a moral duty of every citizen;
- responsibility for environmental damage can be both collective and individual, and penalties can be both contraventional and criminal;
- the polluter pays;
- remedying environmental damage involves costs;
- any environmental incident has repercussions on the image of the military structure involved.

Managers of different structures will establish concrete and practical measures to avoid environmental degradation, mainly aimed at preserving air and water quality, protecting the soil, flora and fauna, and human settlements.

Maintaining adequate air quality is beneficial for the health of staff and the civilian population and the following measures will be taken to this aim:

- limiting the operation of the engines of the vehicles in the fleet in order to reduce the level of noxious emissions;
- reducing fuel consumption when running the equipment by proper maintenance of the vehicles by nature of the manoeuvres;
- prohibiting the burning of waste from daily activities, stubble or other forms of dry vegetation;

- avoiding activities, such as generating dust, smoke, etc. as much as possible.

We consider that soil protection requires special attention, as it is a sensitive factor of great economic and ecological importance, eliminating the risk of erosion, intense compaction, excessive irrigation, etc.

During the performance of missions, and not only, soil protection can be done by observing the following rules and measures:

- traveling, during marches on foot or by vehicle, must be carried out only on existing roads and paths, avoiding widening them;
- prohibition of carrying out landscaping works in areas of historical importance or nature reserves;
- using existing access routes, avoiding travel across fields or other agricultural land;
- avoiding access to areas with a high degree of danger;
- checking vehicles before crossing water areas, to avoid contamination;
- clearing vehicles of dirt and mud when entering national roads and highways;
- prohibiting the direct dumping of any type of waste on the ground, which should only be deposited in specially designated places;
- avoiding the direct loading of vehicles on the ground (if necessary, all measures should be taken to prevent spillage);
- taking measures to absorb hazardous substances or waste in the event of accidental spillage, using appropriate materials – sand, earth, textiles, etc.; removing contaminated soil and materials used for absorption and storing them properly for decontamination.

Protection is necessary to improve and maintain water quality in order to avoid negative effects on the environment, human health and material goods.

Limiting harmful effects will be based on compliance with the following rules:

- prohibition of discharge or spreading of toxic and hazardous substances in all situations;

- prohibition of washing vehicles or machinery containing oil in natural waters;
- prohibition of refueling or repair of equipment near water courses;
- prohibition of digging on the banks or in the beds of watercourses without a water management permit or without complying with its provisions;
- avoiding the dumping of materials and waste of any kind on or near water banks;
- stopping the leaking or spillage of polluting substances and neutralizing the affected area;
- avoiding the discharge of contaminated water into surface waters by establishing the appropriate protective distance between water sources and the location of the camp or unit/sub-unit.

In order to protect fauna and flora, the following rules must be observed during field activities:

- carrying out movements in such a way as not to cause damage to vegetation and to avoid destroying plant roots;
- paying particular attention to seedlings and to the periods of mating, hatching, nesting, etc;
- acting quickly on the discovery of a forest fire to extinguish it and monitoring the area for another hour to ensure that the fire does not reignite;
- using only individual and collective means of camouflage;
- using only fallen wood for the campfire. If this is insufficient, cut low branches without breaking them;
- no destruction of burrows, feeding places for animals and birds.

The protection of human settlements aims to ensure a healthy living environment by improving the rural and urban microclimate, respecting the following:

- avoiding conducting military activities at night in the vicinity of settlements;
- the planting or maintaining protective curtains in training grounds or areas;
- avoiding unnecessary and intense noise;

- keeping all activities that may cause damage to civilian land or buildings under control;

- prohibiting the use of training devices, especially smoke or incendiary devices, near the premises.

As a result of the above, we believe that in addition to the duty to protect the environment, military structures are also obliged to carry out environmental reconstruction and rehabilitation activities regardless of the situation, i.e. peace, war, disasters or natural calamities. This aspect is also materialized in other scientific research studies, for example: *“The potential of engineering structures to provide military capabilities to local and central authorities, according to the types of probable risks, in order to limit and liquidate the consequences of disasters and natural calamities...”* [4].

4. Conclusions

Protecting the environment becomes an important factor in the proper functioning of the military organization, as it has an obligation to protect and conserve natural resources.

In the view of some skeptics, the correlation between military action and the environment seems implausible, yet it is possible to perform daily activities, training, exercises, applications, and combat drills and other specific activities in accordance with the rules of environmental life to a high standard.

At the same time, responsible civic behaviour towards the environment requires the knowledge and implementation of measures and rules to be observed in daily activities, both within operational structures and in training ranges or fields, in order to prevent environmental degradation or limit pollution.

This is where environmental education comes in, which aims to improve the quality of life of personnel, which will help the individual gain the knowledge, skills,

motivation and values needed to manage natural resources effectively, as well as take

responsibility for maintaining or improving the quality of environmental factors.

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