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ENVIRONMENTAL IMPACT OF WARS AND ARMED CONFLICTS

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Abstract: *The article presents the consequences of wars for the natural environment. Research and experience with more and more modern combat equipment are always associated with losses incurred by nature. Subsequent armed conflicts cause that new substances, dangerous for nature and man, enter the ecosystem. Warfare not only destroys the environment, but also frustrates and prevents any action to protect it. After some time, the conflicts that begin are resolved, and the restoration of degraded environments is very difficult, and often even impossible. Wars not only kill soldiers and civilians with weapons, but also put lives at risk by destroying natural resources, impoverishing land and making it impossible to use them for agricultural purposes.*

Keywords: armed conflicts, war, environment

1. Introduction

Armed conflicts have contributed to environmental degradation for thousands of years. In the past, because of the weapons used, nature very quickly compensated for the losses. Modern scientific and technical achievements have led to the creation of advanced technologies that, when used in hostilities, destroy ecosystems for a very long time.

The purpose of this article was to determine the effects of wars on natural environment. However, the research problem is to show to what extent armed conflicts change the normal functioning of ecosystems and the indication of long-term effects on the environment

The environment and natural resources have always been and still are silent victims of war. Warring parties set fire to crops, poison wells and soil, cut forests and kill animals. This is accompanied by various goals: gaining a strategic advantage over the enemy, intimidating the local population, suppressing resistance, or simply feeding the soldiers, but the consequences - even if unintended - are equally dire. We have already witnessed the total physical destruction of ecosystems through, among other things, the use of poisonous and dangerous substances. We have also witnessed social disasters, such as the build-up of refugee populations, which pose an additional threat to natural resources. And since most of the conflicts take place in poor countries, we have also witnessed the destruction of the economy of vulnerable sections of the population who are least able to face environmental devastation and the destruction that hinders their development.

2. The essence of phenomenon and examples

War is a phenomenon that has existed since the beginning of humanity. As civilization progressed, military activities took on an increasingly larger scale and an increasingly sophisticated form. For a long

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time, produced in relatively small quantities, weapons only indirectly affected the environment. Most often it was associated with the extraction of ores necessary for its implementation, which, with fairly intensive exploitation, could have led to serious ecological losses. Still, the weapon itself was not a serious threat to natural ecosystems. It was only the industrial revolution that launched mass production and use of warfare, which often contributed to enormous environmental damage. Negative effects of this type of activity, on an unprecedented scale in history, took place during World War I. The huge number of artillery shells fired at that time carrying many tons of metals, explosives and chemicals contaminated the soil for many years.

Chemical analyzes carried out in Flanders showed that the concentration of copper in the 0-0.5 m layer of soil in the areas directly affected by the fighting was about 18 mg / kg, i.e. it was 6 mg / kg higher than in non-military areas. Similar studies conducted by German specialists in the territory of Verdun indicated the presence of 17 mg / kg of copper, 26 mg / kg of lead, 33 mg / kg of zinc and 176 mg / kg of arsenic in the surface layer of the earth. The Balkan conflict that took place in the early 1990s also left its mark on nature. As a result of bomb attacks carried out, among others, on refineries and chemical plants, huge amounts of poisonous substances got into the atmosphere, soil and water. In addition, the burning of aviation fuel and fires covering the whole of Kosovo have further burdened the environment [1].

Experiments with atomic weapons carried out in the 1950s and 1960s have caused radioactive isotope contamination in large areas of our globe, especially the oceans and seas. In the years 1945–1948, the Allied forces placed chemical weapons stockpiles taken over from the Germans in the Baltic Sea. A merchant ship filled with chemical munitions was also sunk in the Norwegian Sea, as well as over 40 units on both sides of the Skagerrak Strait. Just before the end of World War II, the Germans placed two ships filled with ammunition containing flock at the bottom of the Little Belt Strait. Further flooding in the waters of the Basin and Gotland, made this time by the Soviet army, took place in 1947-1948. However, in 1952, the navy of the then German Democratic Republic, as a result of a series of oversights, led to the dispersion of around 200-300 tons of poisonous substances throughout the Baltic Sea [2]. Probably they were sunk by chemical forces in 1946 near Bornholm, chemical weapons ships. Pursuant to the provisions of the London Convention, the discharge of radioactive waste (admittedly only low-level waste) into sea waters lasted until 1983. Estimates from scientists have shown that the rust levels on the walls of some containers containing poisonous substances can reach 70-80 percent. This poses a real threat of serious pollution of the marine ecosystem. In addition, the Baltic Sea belongs to closed reservoirs, which translates into long-term storage of polluted waters.

The disastrous consequences of the use of nuclear weapons were discovered in 1945, when the US Army dropped the "Little Boy" uranium bomb on Hiroshima and the "Fat Boy" bomb on Nagasaki. In the case of the latter city, after 45 years of research, 90Sr, 137Cs and 240Pu were found in samples taken up to a depth of 4.5 meters, but the vast majority was at a depth of 30 cm from the surface [3].

As a result of nuclear tests conducted intensively in the 1960s, and later less often until the 1980s, significant amounts of plutonium, considered one of the most dangerous radioactive elements, got into the environment. Small particles introduced into the stratosphere containing this element systematically covered the Earth's surface creating so-called global radioactive fallout. At present, all of the plutonium dispersed in the atmosphere is located in the surface layer of soil, where it undergoes migration

and resuspension processes (lifting to the surface layer of the atmosphere).

In 1961, the Soviet Union detonated the largest atomic bomb in human history, called the "Tsar bomb." Its power was estimated at about 50 megaton, which is 2,500 more than in the case of bombs dropped on Japanese cities in 1945. The explosion was visible from a distance of about 900 km, and the seismic wave caused it circled the earth three times. Thermal radiation could cause third degree burns 100 km from the explosion site, and the atomic mushroom was about 60 km high and 30-40 km in diameter [4].

From the point of view of the duration of human life, plutonium released into the environment in the form of radioactive waste produced by nuclear power plants will forever remain in the ecosystem. To at least minimize the risk of harmful effects of toxic waste.

The natural environment also suffered as a result of the Vietnam War. Herbicides and defoliants used at that time, which Americans sprayed forests and fields, destroyed all vegetation in the area of over 350,000 hectares of arable land. In addition to disrupting the ecological balance, the use of herbicides has led to soil erosion, extinction of many plant and animal species. Only 20 of the more than 150 species of birds remained, fish disappeared from the rivers, and amphibians and insects from the forests. Some of the toxic substances used at the time, such as dioxins, for a long time will destroy the natural resistance of organisms, generate cardiovascular diseases, cancer, miscarriage and the birth of dead or deformed children. Vietnamese organizations estimate the number of people affected by herbicides at 3-4.8 million, including 400,000. fatalities and from 150,000 up to 500 thousand children with birth defects [5]. The destruction of large forest complexes in these areas had an impact not only on the local environment, but also on climate change throughout the planet.

Another example of the negative impact on nature and human health were war operations conducted in the Gulf region, which for the first time on such a large scale caused environmental effects, resulting from both conventional military operations and intentional activity against nature, known as ecoterrorism. As a result of the fighting in these areas, significant amounts of liquid and solid waste got into the water reservoirs and soil. Analyzes of the impact of war on the natural environment have shown that the destruction of oil wells had the most serious environmental consequences. It is estimated that about 60 million barrels of oil have leaked from the burning and leaking shafts, which has created nearly 300 backwaters with a total area of 49 km^2. Every day, as a result of evaporation, half a million tons of pollutants leaked into the atmosphere, most of which went into soil and groundwater. Fumes and gases emanating from burning oil wells caused the precipitation of "acid rain" [6]. The heavy fighting and transport equipment used during the war, as well as the fortifications constructed at that time, accelerated the process of wind erosion of sandy desert soils. Pollution caused a diverse phenological response in desert plants, from stunting to bulky, while areas with long slime and oil were deprived of all forms of life. Birds also suffered from oil contamination from the Gulf. During military operations, among others, missiles containing depleted uranium were used. When the armor is pierced, the uranium core turns into fine dust that threatens man and the surrounding environment.

Research and experience with increasingly modern combat equipment are always associated with losses incurred by nature. Subsequent armed conflicts cause new substances dangerous to nature and man to enter the ecosystem. Warfare not only destroys the environment, but also prevents and prevents any actions to protect it. Commenced conflicts are averted after some time, and restoration of degraded

environments is very difficult, and often impossible. To sum up, the main environmental impacts of the war are:

- *Earth* - war leaves remains of missiles in it, and thus - heavy metals that cause contamination. Further effects of soil contamination are degeneration of plants growing in the surrounding areas, and in the final hit to the food chain of animals and people, which sooner or later may lead to damage to internal organs. In addition to heavy metals, soils of war gases that were used during the fighting remain in the soil. As toxic as when they were used.
- *Water* - it's no secret that unused chemical ammunition goes to the bottom of the seas and oceans. Most combat agents have been dormant for several years - but not forever. Sooner or later, shells of bullets, bombs and mines filled with chemicals rust, and harmful substances enter the marine ecosystem.
- *Air* - contamination after the use of nuclear weapons has already affected the environments of Hiroshima and Nagasaki, areas of today's Kazakhstan and the New Earth, where the Russians conducted their nuclear tests and the Pacific Ocean islands, where the same Americans did. Let us add that the plutonium introduced in the form of radioactive precipitation remains in the ecosystem forever. Well, unless we consider the time of 100,000 years to be short - so much for it to stop being toxic. And this is just one of many examples of air pollution resulting from hostilities.
- *Flora and fauna* - it's basically a subject-based article. Clearing forests, deaths of animals inhabiting them are just one of many aspects that are not a consequence of the above-mentioned effects of warfare on land, water and in the air. To this could be added the overexploitation of marine fauna - for example, in Somalia, this has led to a disturbance of the marine ecological balance and impoverishment of species biodiversity.

3. Conclusions

War time is an "unusual situation". Therefore, then many "typical issues" are pushed to the background. Thus, while during peace the norms imposing the proper use of nature are taken into account, during hostilities they descend to distant places. War makes man forget, and “the exploitation of the earth, the planet we live on, requires some rational and honest planning. At the same time, this exploitation, not only for industrial purposes, but also for military purposes, through an uncontrolled, comprehensive and genuinely humanistic development of technology, often brings with it a threat to the natural environment of man, alienates him from nature, separates him from it.

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