

Contemporary environmental threats – a challenge for the environmental security

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Abstract

The report aims to examine the environmental threat as an extremely important factor in achieving environmental security. This goal is achieved by performing basic tasks related to terminological clarification of key concepts and the consequences of negative environmental impacts and damages on environmental protection. The research methodology includes the use of a systematic and comparative approach, the analysis and assessment of the impacts and on this basis conclusions are made for increasing the environmental security, both in a global aspect and in Europe, and in particular in the Republic of Bulgaria.

Key words: environmental threat, environmental security, impacts, harms, challenges, approaches, strategies, measures.

Introduction

The study of natural resources, the problems related to their use, pollution and depletion, the possibilities for minimizing and eliminating the negative impacts and harms on the environment are current problems and challenges of green policies, environmental threat and security in each country.

The aim of the report is to examine the environmental threat as an extremely important factor in achieving environmental security. This objective is addressed by performing key tasks related to the terminological clarification of these key concepts and the consequences of negative environmental impacts and damage on environmental protection. The research methodology includes the use of a systematic and comparative approach, the analysis and assessment of the impacts and on this basis to draw conclusions about environmental security, both globally and in Europe, and in particular in the Republic of Bulgaria.

However, this is not the case with the concept of “environmental security”. The concept of “environmental security” (Tomov, Hristov & Nenova, 2007), (Tomov & Vladimirov, 2007).

It can be applied to many areas such as: medicine, industry, technology, agriculture, services, international relations, etc. In other words, “environmental protection” is steadily entering our lives and its importance and relevance are growing.

Many authors have given an interpretation of this term, but there is still no legal definition in the Bulgarian legal framework of what is meant by “environmental security” (Vladimirov, 2006). Many countries have a legal definition of this term, such as the Russian Federation, where “environmental security” (Federal Law “On Environmental Protection”, 2002) refers to “the state of environmental protection and the vital interests of people and citizens from the possible negative impact of economic or other activities; and threats of natural and man-made emergencies and their consequences”. Another, shorter definition of environmental security is given by Reimers: “Environmental security is a set of actions, states and processes that do not lead to vital damage to individuals or to all of humanity”. It is understandable that these definitions provide guidance for understanding the nature of environmental security and protection. However, it must be borne in mind

that there are a number of factors and processes which, without being caused by man, also pose a serious threat to environmental security, such as natural disasters and catastrophes.

Environmental security is also defined in (Vladimirov, 2006), (Vladimirov, 2007). It is presented as “a state of a given object of generating risk factors, in which no differential and integral criticalities are established and no critical situations and events appear for the objects of impacts – people, animals, vegetation, materials, waste, located in the environment”. A research method is proposed, which is based on the determination of differential and integral criticalities. For the first time, reasoned definitions of critical situations and events are given. If we use the definition of Peter Hristov that environmental security is defined as “the ability of the state to protect citizens and society from the destructive effects of natural phenomena, as a consequence of unreasonable human interference in the environment” (Tomov, Hristov & Nenova, 2007) and having in mind the above, we can summarize that “environmental security” is the ability of the state to protect the interests of citizens and society from the negative impact of natural and man-made processes and their consequences. It is also important to note that the environmental security of each country is part of the environmental security of the world in general, because environmental issues have no borders, which is why this issue becomes global. A threat is generally a real possible dangerous, negative event capable of causing damage to the site. Threats to environmental security are understood as the probability of occurrence of phenomena and processes, the realization of which may lead to negative impacts on the environment and the health of the population. These phenomena and processes may be expressed in intentional or unintentional impact on the environment of the activities of individuals and legal entities or in other countries or may be the result of natural disasters and catastrophes.

In this report, we pay special attention to the environmental threat and the damage they entail as a factor of environmental security, as recently the origins of threats to security and comfortable human existence are increasingly associated with adverse environmental conditions. In first place, this is the risk to human health.

Results and Discussion

What exactly is an environmental threat?

The ecological threat is the ability of the state to protect citizens from the destructive activity of natural phenomena and the unreasonable interference of man and his environment (Vladimirov, 2006, p. 233-287). The main source of ecological threat and for ecological security, is air pollution.

Air pollution occurs when chemical and biological substances enter in the air's natural composition. It is the biggest environmental problem. Its main pollutants are:

- carbon dioxide (CO₂) – a chemical compound of carbon with oxygen, an odorless gas, but in strong concentrations with a sharp and suffocating odor, is obtained as a product of respiration of living organisms and combustion, and its accumulation in larger than normal amounts in the atmosphere leads to a greenhouse effect;

- sulfur dioxide (SO₂) is a colorless gas with a pungent suffocating odor and it is used for the production of SO₃ to produce sulfuric acid, damaging the ozone layer;

- carbon monoxide (CO) is a colorless and odorless gas, but at high concentrations the gas is dangerous to humans and animals, although it is produced in small quantities in normal animal metabolism and is considered to have normal biological functions, but if inhaled in large enough quantities, it causes suffocation and can cause death;

- nitrogen dioxides (NO₂) – a chemical compound of nitrogen with oxygen and it is formed during combustion processes. The main sources are the use of vehicles, thermal power plants, some of the industrial enterprises. It is also obtained by breathing living organisms. It is the biggest air pollutant, dangerous to human life and health. Its high concentration in the air leads to diseases risking the lives of people – coronary heart disease, stroke, lung disease, asthma, bronchitis;

- methane (CH₄) – is formed during the decomposition of plant material, in the absence of oxygen, as well as during the digestion of live animals (cows, sheep, goats). It is one of the most

common hydrocarbons (gasoline, phenol, toluene). One of the biggest causes of global warming – 19%. Due to its huge reserves, it is in great demand;

- ozone (O₃) – is formed by a chemical reaction between an oxygen atom (O) and molecular oxygen (O₂). It is a highly reactive gas that forms the ozone layer in the stratosphere.

Carbon dioxide (CO₂) has the largest share in air pollution – 63%. It is produced in case of incomplete combustion of coal, timber, operation of motor vehicles, thermal power plants (TPP), nitrogen fertilizer plants and kerosene. It leads to acid rain and snow. It has long been known that an excess of it leads to dangerous diseases (cancer and heart disease). It has been proven that the population in areas with dusty and dirty air suffers illnesses the most and lives the shortest. This type of pollution causes premature death of over 400 thousand people a year in the countries of the European Union.

Another of the most common and dangerous air pollutants is sulfur dioxide (SO₂). Sources for its production are the burning of minerals containing sulfur, such as coal, oil, pulp and paper. It is also emitted by trains, ships and all kinds of engines that run on heavy fuels with a high sulfur content.

Bulgaria is in the top 20 of the largest sulfur dioxide pollutants in the world. The region of Pernik and Bobov Dol have the greatest contribution to this.

According to many world-renowned scientists, the presence of air with a high concentration of fine dust particles, sulfur and nitrogen oxides, is one of the causes and field for the development of the disease of the century – coronavirus (COVID 19).

It is much smaller than even the particles of fine dust, sticks to the body and enters directly into the lungs when inhaled. It has been proven in China that one of the main tools to control the disease is air purification.

As we have already mentioned, the main air pollutants are human activities as a result of:

- the work of industrial enterprises, thermal power plants and other industrial activities;
- use of oil bases and stations, vehicles, aircraft, vessels;
- chemical, organic, biological and nuclear waste;
- burning of wood for heating, etc.

The emission of large amounts into the atmosphere (from 280 to 400 million particles) of carbon dioxide, elements of methane, nitrous oxide (known as “paradise gas” – a chemical compound of nitrogen with the formula N₂O), water vapor, etc., leads to the presence on greenhouse gas. It is significant that the EU ranks fifth in the world, after China and the United States. Of the EU member states, the largest quantities are found in Germany, France, Italy, Poland and Spain. Its emissions in 2017 are distributed: – 82% carbon dioxide, 11% methane, 5% nitrous oxide, 2% hydrofluor carbon (HFC) (NewScientist).

Greenhouse gas is a process in which the passage of rays through the planet's atmosphere warms the earth's surface and raises the average temperature of the earth. Carbon dioxide has the largest share for its formation. Other sources in greenhouse gases are emitted in smaller quantities, but they capture the sun's rays much more effectively, which means that their effect on climate change is also important.

The presence of greenhouse gas in the atmosphere has both positive and negative consequences. Without it, the average temperature would be (-18 °) than it is now (+15 °). Thanks to this, life on earth is possible.

Its concentration in the atmosphere is constantly increasing and already reaches levels unattainable for hundreds of years. Warming above the average temperature of the atmosphere and the world's oceans is leading to global warming.

In the 20th century, the temperature rose by 0.85 ° than it did in the 19th century. This process is constantly growing and according to many scientists, increasing it by 2% is considered a threshold above which there are dangerous and catastrophic changes for the environment.

What the consequences of global warming are:

- rapid melting of huge ice blocks off the coast of Greenland. Its habitats are being destroyed – walruses, penguins, polar bears;

- extreme weather events occur, with rains causing floods and deteriorating water in some areas, while in others there are heat waves and droughts, declining water resources and increasing forest fires.

Along with the traditional threats to environmental security, a number of new threats have emerged in recent years, which we can generally call “modern threats to environmental security”.

Scientists from Cambridge, UK have identified some of the most dangerous environmental threats in the near future. The full list contains about 25 items, with nanomaterials, man-made viruses and biorobots being considered the riskiest ones.

Among the most serious problems for the ecological future of the planet are the experiments to combat climate change, such as the construction of a shield protecting the Earth from the sun, fertilizing the ocean, etc., growing biomass for biofuel, the destruction of marine ecosystems, the use of genetically modified organisms, etc. The main criteria in compiling this list are such characteristics as the probability of occurrence of the specific threat, the possible adverse impact, the current state of the problem and others.

The threat of the use of nanoparticles, which scientists believe can seriously harm the environment and human health, is also assessed at high risk (Vladimirov, 2007).

Nanotechnologies are an extremely innovative and promising segment in modern science with hundreds of varieties and what they have in common is that they use particles the size (Report of the US National Research Council “Question of Size”) of molecules, determining the quantum properties of substances that are radically different from the properties manifested in the macro and crypto world (Georgiev, 2018, p. 62). Nanoparticles have a huge application in electronics – for the production of computer chips and quantum computers, in aircraft construction, as an impregnating material in the textile industry, in the military in night vision devices, etc.

The application of nanoparticles in medicine is especially wide: in the treatment of malignant tumors with gold nanoparticles, as a carrier of chemotherapeutics for the treatment of metastases, for the preparation of long-acting drugs, for the study of cellular structures, for the creation of artificial muscle and many more etc. It is interesting to use them as toxin hunters in detecting bioterrorists. Despite the great importance of nanoparticles for modern science and technology, they have many side effects that are not well studied. The use of these particles poses many unexplained risks to the environment and human health. The risks are related to the ability of nanoparticles to penetrate cell membranes and move through the bloodstream, leading to uncontrolled chemical reactions in living organisms and to gross interference in a number of biological and natural processes. In addition, there is a lack of information on their impact on health in the long run, which is one of the main problems in the environment. More precisely, the fact that the effects of human activity on the environment appear years later, so that future generations must pay for the mistakes of previous ones.

The threats that threaten humanity and the planet as a whole are global. Undoubtedly, the biggest threat at the moment is climate change and its accompanying consequences. The UNDP Human Development Report warns that “the world is moving to a climax where the poorest countries and their people may find themselves caught in a reversal that leaves hundreds of millions hungry without clean water, doomed to environmental threats and loss of human life” (Report of the United Nations Development Program (UNDP)).

In the field of genetic engineering, a significant threat is the development and uncontrolled entry of genetically modified organisms (GMOs) into human life (Directive 2004/35/EC).

It is possible that the modification of organisms (plants and animals) with foreign genes will have unexpected negative effects on the human body and the environment. Undoubtedly, the use of GMOs leads to an intensification of agriculture and provides invaluable advantages in solving some global social problems, such as world hunger, etc., but the threats from their application must be taken into account as well.

In this report, we will look at water, soil and forests, which are both traps and sources of carbon and other air pollutants, leading to serious environmental problems.

The water we can't live without!

The hydrosphere covers 71% of the planet's surface. It is a collection of all waters – oceans, seas, rivers, dams, lakes, swamps, groundwater, water in the atmosphere. Of these, 97% are salty seawater, 2.4% are freshwater (mainly from glaciers) and only 0.6% from rivers, lakes and underwater waters.

Water, as part of the hydrosphere, is necessary for everyone and everything, without it life on the planet is impossible. It is an incomparable wealth for our planet, an environment for growth and development of the diverse world in it, as well as in the life of all living beings.

Water is an important environmental factor and a key role for the climate, as:

- captures carbon dioxide from the atmosphere – 0.038%;
- evaporation of warm seas leads to rain and snow;
- Ocean currents help to warm or cool the air in different areas.

The water also serves for:

- production needs (industrial production, construction, utilities);
- transport connections by rivers, seas and oceans;
- household and sanitary needs.

Waters are highly dependent on all environmental resources. Pollution is a global problem. In many countries around the world, pollution is taking on alarming proportions as a result of weathering and the human factor. It occurs when physical, chemical or biological substances are introduced or formed in water bodies.

Pollution poses a serious danger to humans, flora and fauna in water bodies. The main water pollutants are mainly from human activities:

- waste disposal or discharge (industrial, municipal or agricultural type);
- disposal of solid radioactive waste;
- oil from spills and leaks during its transportation in water basins (oceans and seas);
- pollution during production activities in the mining and oil industry;
- sewerage and septic sector.

Pollution compromises the quality and quantity of water resources.

Fresh water is mainly from glaciers – 68%, groundwater (10%), lakes and rivers mainly the rest. It becomes pure, after its purification in drinking water treatment plants, passing through the sedimentation of large particles (silt, sand, humus), coagulation, machining, disinfection.

Clean water is extremely important for humans. It contains 70% of his body. It has been proven that a person should take between 1.5 – 2 liters of water daily.

As already mentioned, only 0.6% of water is freshwater. It is used by man for drinking water, for domestic use, by industry for industrial purposes, by agriculture for irrigation. In recent years, its drastic decline has been noticed, leading to a global problem. A problem that is primarily related to population growth, a consequence of abrupt climate change, its use for industrial and agricultural purposes and its constant pollution.

The biggest water costs are made by industry and the urbanization of agriculture. For example, for the production of 1 ton of synthetic fibers, 500 cubic meters of water are needed, and for 1 ton of cast iron – 100 m³.

1/3 of the world's population is short of freshwater. The shortage applies not only to hot areas, but to everyone else. While in Bulgaria there are 2000 m³ of water per person, for those in the Sahara this quantity is only 60 m³.

The continuous improvement of water quality is also important.

According to the Executive Director of the European Environment Agency (EEA), Hans Bruyninckx: "Given the vital role of water in all aspects of our lives, adopting a more integrated policy approach will help us protect and preserve the resource that makes our planet unique – water".

The soil without which life on earth is impossible!

The soil is part of the land, which is not covered by oceans, seas, large rivers, dams and lakes. Arable land amounts to over 4 billion hectares (9% of the land). It is vital for both humans and nature, in which almost all plants and many other living organisms grow.

Soil is closely linked to global economic problems – climate change, biodiversity loss, water management and more.

Its most important functions are to:

- absorbs, accumulates and reflects solar energy;
- be the living environment of various organic substances, including degradable ones;
- retains nutrients and water necessary for plant growth;
- filters groundwater;
- be a living environment for different plants.

Because the soil is static, it is easily absorbed by harmful substances from nature or human-induced processes and phenomena through water.

The pollution of the topsoil is primarily due to human activity, which threatens its ecological function, especially after the rapid development of industry and agriculture.

The main soil pollutants are:

- agricultural activity (use of fertilizers, pesticides, chemicals);
- household and industrial waste;
- metals and their compounds;
- radioactive substances.

Soil areas are constantly declining. One of the reasons is erosion due to natural processes and is the result of human activity. It affects the surface processes that remove the top surface layer, rich in nutrients from one place to another. While erosion is a natural process, as a result of human activity, its manifestation is ten times faster on a global scale.

We distinguish several types of erosion:

- Water erosion as a result of destructive activity of running water, especially where the soil is not well protected with vegetation.

It manifests itself in three forms:

- surface. In Bulgaria it affects 60% of the agricultural lands, it is a result of the destructive activity of the waters flowing on the surface. It is obtained when located on homogeneous slopes and the presence of rock masses;

- furrowed (jet). It forms furrows 10-15 cm deep, as a result of small water jets obtained during precipitation, melting snow or irrigation;

- flat (linear). It occurs when there is more melting snow and heavy rains. The furrows obtained in it are usually 25-30 cm. They complicate the mechanical processes during tillage.

- Wind erosion (affects 34%) of agricultural land in Bulgaria. It is a process of separation and removal of surface particles from the soil under the influence of strong winds. They reduce the humus layer, which leads to deterioration of the soil structure.

It should be noted that water erosion and wind erosion are at the root of land degradation. Combined, they are responsible for the damage of 94% of it.

- Landslides and processes of destructive activity of sea and ocean waters on the rocky shores. They are due to natural factors (earthquakes, movement of various groundwater fluctuations) and man-made (deep excavations, mining, congestion of embankments and new constructions). They most often occur after heavy snowfalls or heavy rainfall.

It is extremely important both to protect the soil and to reduce its area. It is known that 50% of it is found in deserts or polar regions, where its use is almost impossible. If we add to them those that are too rocky, steep, shallow, poor for food production, we will get a real idea of how little of it is used to feed the population.

The trend of land depletion, especially in Europe – 8% or 14 billion hectares – is a matter of serious concern.

Soil seals also have an impact (these are soils used for permanent construction of settlements, industrial and infrastructural construction, road and railway network). Soil compaction (mainly affects agricultural land when cultivated with heavy agricultural machinery).

According to Jose Rubio, President of the European Society for Soil Conservation, “it has a

crucial role to play in global environmental issues, such as climate change, water management and biodiversity loss". Moreover, the soil is an exceptional factor in purifying the water we drink and the air we breathe.

In turn, healthy soil reduces the risk of floods and protects against groundwater reserves by neutralizing and filtering its potential contaminants. The biggest problem with soils is climate change. As temperatures rise worldwide, permafrost begins to melt. Melting causes the decomposition of organic matter in the earth's soil, which leads to huge amounts of greenhouse gas in the atmosphere.

Soils are a source of oxygen and a consumer of carbon dioxide. It is particularly important that it releases carbon when its arable land is expanded through pastures, forest areas, abandoned land, etc.

There is also a problem of reduction in the form of lakes and swamps, as a result of the increased melting of snow (115 thousand m²). A typical example is the Tibetan field.

The forests, the lungs of the planet!

Forests play an important role in environmental security. They are a source of various resources that accumulate hydrocarbons, regulate the climate, purify water and protect against natural disasters. They help regulate the climate by absorbing some of the carbon dioxide from the atmosphere.

Natural forest ecosystems reproduce in forests, a major factor in climate change. It is difficult to give them a precise definition, as they are immeasurable concepts and everything related to forests and their inhabitants is a separate ecosystem. They cover the whole set of forest organisms, trees, shrubs, mosses, bacteria, etc., which together with the surrounding air, soil, water, rock massifs, etc., reproduce many systems existing in certain climatic conditions. The larger the ecosystem, the more diverse the components.

Forests are the main natural ecosystem of the earth and appear as ecological functions that are of particular importance for climate change, conservation of biodiversity, soils and water resources.

Timber forests cover about 9.5% of the world's area and about 30% of the land area. Equatorial deciduous rainforests are extremely important for ecological security. They are the largest forest system, covering 15 million m². They have a leading role in controlling carbon dioxide in the atmosphere.

The largest rivers that flow into the world's oceans pass through them, 70% of the outflow of all rivers in the world (Amazon – South America – 40%), Zaire (Africa – 15%), Ganges (Asia).

In Bulgaria, forests occupy 38% of the country's territory and are of particular importance for its existence and accelerated development. They provide and maintain the quantity and quality of 85% of the country's water outflow or about 36 billion cubic meters of clean drinking water.

Due to deforestation, their beneficial ecological effect is lost and the greenhouse effect is intensified. In the last 20 years, they have absorbed about 15% of the country's greenhouse gases.

The reduction and destruction of forest areas are due to:

- natural disasters (fires, floods, hurricane winds, diseases, etc.). Hundreds of thousands of forests have been destroyed as a result of the fires alone;

- the human factor – mainly for economic purposes. The reckless destruction of forests worldwide has resulted in the deforestation of 7.3 million hectares per year. At the same time, about 30% of the cut-out forests are afforested, which represents half of the area from 1,100 years ago. It relies on self-afforested areas. For the last 20 years, their size is 8.8%.

According to the World Wide Fund for Nature (WWF), between 2 and 3 million cubic meters of wood are illegally cut out each year.

Particularly drastic worldwide reduction of forest areas occurred after the emergence and development of agriculture. More than 15 billion trees are cut down every year, which means that their number has almost halved.

The situation in Bulgaria is no different. Forest areas are declining at an alarming rate. In the last few years alone, 60,000 decares have been destroyed. It is due to their short-sighted management, illegal logging and corruption in the forest management system. These actions are at the root of their

destruction. Their recovery is extremely insufficient. We are under the impression that it relies mostly on self-afforested areas. One of the objective reasons for this is the lack of resources.

The protection of forests and their restoration must become a state policy. Apparently from the actions for now the state policy is extremely unsatisfactory and unacceptable. The Executive Forest Agency (EFA) must also find its role in this. A new forest policy, a new strategy and a new management are needed. The role of forest and agricultural land management needs to be recognized as gaining an increasing and important role in retaining carbon emissions and climate change. “We need leaders to show that the economy and the environment are not opposed to each other”.

The conclusion to be drawn is that all environmental problems ultimately contribute to global warming (rising average temperatures in the atmosphere, land and ocean).

The United Nations (UN) and the member states of the European Union (EU) are consistently fighting to prevent and reduce environmental problems and dangers. Annual conferences on climate change and global warming are held under the auspices of the United Nations.

The most significant of them is the Paris Climate Agreement – the UN Framework Convention on Climate Change in 2015. It was adopted and signed by 195 members, among which was also Bulgaria. The parties are still unable to achieve the desired results. There are serious differences between member states, between developing and developed countries, between the United States and China.

The normative documents developed and adopted by the European Union in the field of environment (Lyondev, 2019, p. 29-38).

They have the highest standards. Their number is about 300, in the form of Directives (70 of which have been repeatedly amended), Regulations, Recommendations and Decisions. They are all at the heart of protecting the environment from global warming. We will list only some of them that we consider particularly important:

- EU Directive 2004/35/ on environmental liability for water, which requires polluters to pay, excluding from the rules, damage from natural disasters of an inevitable and unpredictable nature, as well as those from military conflicts;
- Operational Program for Environment (OPE) for the period 2014-2020;
- Establishment of a European Environment Association to provide timely, targeted and reliable environmental information.

The EU has adopted a vision for environmental safety and security until 2050 aimed at:

- increasing energy efficiency through a radical change in energy production methods, a drastic reduction in that of solid fuels, the expansion and use of renewable sources;
- reduction of emissions, especially of carbon dioxide, their capture and storage in order not to burden the atmosphere;
- improving air quality and ensuring the safety of freshwater;
- creation of an efficient waste management system;
- setting quotas for greenhouse gas emissions, based on the fact that environmental security is a factor for national security.

The EU has some of the highest environmental standards in the world. The EU and national governments have set clear targets for European environmental policy until 2020 and a vision for the period thereafter – by 2050 – with the support of specific research programs, legislation and funding:

- protection, conservation and enhancement of the Union’s natural capital;
- making the EU a resource-efficient, environmentally friendly and competitive low-carbon economy;

- protecting EU citizens from environmental impacts and risks to their health and well-being.

The Republic of Bulgaria has focused its attention on environmental protection, achieving ecological balance and global warming through:

- Fulfillment of the requirements of the normative documents from the European Union;
- Fulfillment of the set goals and requirements of the Environmental Protection Act (Law on Environmental Protection, 2020);

• Compliance with Article 4, item 7 of SANS “danger to environmental security” (Law on the State Agency for National Security, 2020).

Due to their uniqueness and wide range of actions, environmental problems need an individual approach in solving each of them. As there are no universal instruments in practice, a greater effect would be obtained with a combination of the two regulatory instruments – control and prohibition and economic measures. They must be guided by the 'polluter pays' principle, whether the polluter being a producer or a consumer.

What should be the focus of **the legislative efforts in creating new and changing the current control and prohibition measures**. We will focus only on one of them:

- more flexible forms should be sought in setting standards, setting subsidies, quotas, permissible peak pollution, etc.;
- to increase the efficiency and responsibility in the actions of the control bodies at all levels;
- directing efforts towards more rational use of energy, fuels, improving water quality, storage and disposal of solid and liquid waste, etc. in strict compliance with environmental requirements;
- expanding the measures for solving local environmental problems, leading to increased efficiency.

It is important to solve environmental problems and to **introduce new and update existing economic instruments** (taxes, fees, sanctions and fines).

For now, in the practice, these economic instruments are present to a greater extent as fees and to a lesser extent as taxes, sanctions, fines. The most frequently used fees are under the laws on water, waste management, protected areas and others, as well as revenues from sales of greenhouse gas emission allowances and services for the operation of waste incineration plants and others.

Achievements are not small, but the introduction of new charges can be considered, for example for harmful emissions that are not yet covered, for some of the most common wastes, such as plastic bags and bottles, etc. The participation, influence and control of environmental taxes should be strengthened and increased in order to reduce environmental problems. It can be explained by several reasons:

- it is easier to apply the fundamental principle of environmental policy “the polluter pays”;
- they allow more efficient allocation of financial and other resources to achieve the set goals;
- their consumption stimulates the demand for clean fuels and greater use of public transport.

These are indirect taxes based on a physical unit of something that has a proven specific negative effect on the environment and infrastructure. The environmental tax is an additional cost that is added to the price when buying or using polluting products or activities, which discourages their consumption or production.

Conclusions

In conclusion, several main conclusions can be drawn:

1. The ecological threat is the ability of states to protect citizens from the destructive activity of natural phenomena and the unreasonable interference of man and his environment.
2. The ecological security of each country is part of the ecological security of the world in general, because environmental problems have no borders, which is why this problem acquires a global character.
3. Along with the traditional threats to environmental security, a number of new threats have emerged in recent years, which we can generally call “modern threats to environmental security”.
4. Water, soil and forests, without which we cannot exist, are both traps and sources of carbon and other air pollutants, leading to serious environmental problems and challenges.
5. Due to their uniqueness and wide range of actions, environmental problems and challenges need an individual approach in solving each of them, as in practice there are no universal tools, but a greater effect would be obtained by a combination of the two regulatory instrument – control and prohibition measures and economic measures, which are guided by the principle of “who pollutes, he pays”, the polluter being either a producer or a consumer.

6. The European Union has some of the highest environmental standards in the world.

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