

Выводы

1. Разработанная математическая модель позволяет рассчитывать среднюю термодинамическую температуру в зоне резания при обработке материалов режущими пластинами из корунда.

2. Учет геометрических и теплофизических параметров режущей пластины, обрабатываемого материала, сходящей стружки, теплотерьер радиацией и конвекцией, а также режимов резания позволяет повысить точность определения термодинамической температуры в зоне резания.

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Работа выполнена в рамках государственного финансирования по теме 18SH-2D010 ГКН Республики Армения.

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THE PUBLIC SECTOR AS THE DRIVING FORCE OF ENVIRONMENTAL PROTECTION AND INCREASING THE LEVEL OF ITS ENVIRONMENTAL SAFETY

Abstract. The main forms of activity of public environmental organizations of the Eastern Carpathians are studied aimed at preserving mountain ecosystems and improving the level of environmental safety of the region. It is shown that involvement of public environmental organizations in the assessment of environmental safety, proposed engineering and management solutions in many cases has contributed to the reduction of anthropogenic pressure on the environment.

Keywords: non-governmental environmental organizations, forms of public activity, mountain ecosystems, environmental safety

Introduction and formulation of the Problem

Environmental disasters of the late twentieth century on the territory of Ukraine (Chernobyl accident, chemical illness of children in Chernivtsi under the name of “alopecia”, poisoning of the Dniester River, etc.) prompted society to unite for the protection of their fundamental right - the right to a healthy and safe environment. The political thaw, the opening of the information veil, the removal of the secrecy mark from a number of documents under the “secret stamp” were all facilitated by this. It should be noted that in Ukraine at that time there were a number of “public” organizations such as the “Ukrainian Society for Nature Conservation” (acronym UTOP). Such “utopia” existed not only in nature conservation but also in other sectors of social activity. Chernobyl's alarming bell, fear of unknown threats, has structured society, especially in the western territories of Ukraine. It was here in 1988 in Chernivtsi that the public organization “Green Movement of Bukovina” was created, destined to become the harbinger of the first in Ukraine officially registered in the bodies of justice of the public environmental organization “Green World of Ukraine” [1].

Mass protests by citizens with fair demands to find out the causes of environmental disasters; support for the election of parliament to those political leaders who defended the human right to a clean environment and

many other examples of that period could be cited. These actions created a “ripe soil” into which the seeds of democratic restructuring of society lay through the activation of self-awareness. The days of communist influence on the “hearts and minds” of the people were gone in the summer. The competition of views on public life and the attitude to the natural resource filled the vacuum, a whole system of public organizations was formed, defending the position of the “green movement”. The period of formation was coming to an end, and it was replaced by a period of hard labor of civil society formation.

The catastrophic collapse in the economy of the state, the impoverishment of scientists, the scarcity of funds for scientific environmental studies, etc., that took place in this period, wished to use the available knowledge to preserve the environment. The assistance of the international funds ISAR, Caunterpart, Renaissance, Carpathian Fund and others, which provided grant funds for the implementation of socially significant environmental projects, was facilitated in this

Dozens of new public environmental organizations appear in the Carpathian region of Ukraine: Bukovyna branch of NECU “Krona”, ecological club “Vodograj”, “Stezharul”, “In Harmony with Nature”, Nature monument “Lavra Noble”, “Lion Society”, “Carpathian School”, “Dniester expedition”,

“Ekopravo-Lviv”, “Eco-Ex”, “Ruthenia” and a number of others that formed a kind of business card for the public environmental movement of the Eastern Carpathians region.

In December 1996, at the proposal of the “Krona” eco-NGO, an association of public environmental organizations of Bukovina and Galicia, called the “Green Movement of the Carpathian Region”, was established in the western region of Ukraine. The association included 21 eco-NGOs of Chernivtsi, Ivano-Frankivsk and Lviv regions, the association worked on the principles of the European Parliament [2].

In order to consolidate the efforts of scientists, specialists and the public in the field of improving the environment of the Carpathian region, a number of meetings, conferences of leaders of the environmental movement of Poland, Slovakia, Romania and Ukraine were held. Among them are international conferences “Save the Small Rivers of the Danube Basin” (Chernivtsi, July 1995), “The Role of the Public and Scientists in the Conservation of the Carpathian Nature” (Kosiv, October 1996) and others. All this contributed to the active involvement of the public in decision-making in the field of environmental protection, accelerated ratification of the Aarhus Convention by the Parliament of Ukraine, further improvement of the legislative framework and its harmonization with international legal instruments. It was in such actions that a number of public environmental organizations were formed [3, 4].

Ecofilm Studio (headed by professional film director Volodymyr Fesenko), with the support of international funds, created a series of environmental videos: “Quit Grain”, “Tree of Life”, “Will the Carpathian Forests Survive?” on state Ukrainian and local regional television channels [5].

To date, environmental non-governmental organizations in Ukraine have occupied a proper niche in the process of becoming civil society. They are active participants in hearings in the Verkhovna Rada, roundtables in the media, influence the formation of environmental policy in the country, are involved in discussing the environmental impact assessment of economic activities, etc. [5, 6]. In such circumstances, the public sector is a major driving force behind the combination of organizational, management and engineering solutions to preserve the environment and enhance its environmental safety. That is why the research presented in this article is relevant and important.

Main part

In our activity, environmental NGOs in Ukraine can be distinguished in three main stages of formation: period of birth, organizational strengthening, professionalism and active influence on the decision making (Table 1).

Of great importance for establishing the authority of the eco-NGOs of the Carpathian region of Ukraine was their reorientation from the policy of confronting “one and all” (characteristic of the period of formation of most public organizations) to the implementation of specific international environmental projects. There could be dozens of examples where the ideas of one public environmental organization came together and were put together by others. These include the establishment in the Carpathians of a memorial park and at the honor of the great people of Ukraine, and international environmental camps with the participation of eco-NGOs of Slovakia, Bulgaria, Poland, and international conferences and seminars, the launch of information and resource centers, and the entry of eco-NGOs of Western Ukraine into the association “Ecomist” etc.

Table 1

Periods of formation of public environmental movement in the Pokutsko-Bukovynian Carpathian region

Formation periods	Birth (1988-1993)	Organizational strengthening (1994-2000)	Specialization, Professionalism, Active influence on decision making (2001 - present)
Forms of work	Protests actions, Picketing	Conferences, Exchange of delegations	Scientific substantiation, Participation in the environmental impact assessment
Level international relationships	Introductory	Experience study, Organizational support projects	Legal protection joint projects with border countries

In general, the Carpathian region of Ukraine is today characterized by a sufficiently developed network of public eco-NGOs that have proven themselves in real community development projects.

A number of projects of public environmental organizations have focused on the sustainable, balanced development of mountain areas, in particular the Pokutsko-Bukovynian Carpathians. Table 2 lists only some of them.

Particularly noteworthy is the project implemented in recent years by the public environmental organization Edelweiss from Kosovo,

Ivano-Frankivsk, within the framework of the Local Environmental Action Plans Program. The fact that Kosiv was selected as one of the seven demonstration communities in Ukraine is further evidence of the eco-NGO’s growth in the region.

The beginning of the 2000s was characterized by the active participation of the Carpathian region eco-NGOs in the preparation for the Ministerial Meeting “Environment for Europe” (Kyiv, 2003) and the preparation and discussion of the text of the Carpathian Convention. In recent years, the region's eco-NGOs have been implementing numerous conservation

projects for large mammals in the Eastern Carpathians and establishing eco-networks (“Krona”, “In Harmony with Nature”, “Our Home”, Ivano-Frankivsk), creating and expanding networks of nature reserve fund (NRF) sites, with Nature”, Western Center-Lviv, etc.)

Table 2

Projects implemented by eco-NGOs aimed at sustainable development of the Pokutsko-Bukovynian Carpathians

Project name	Organizations involved	Years	Practical value
«Grove in memory of the initial plastun of Ukraine Yuri Starosolsky»	Bukovyna branch of NECU “Krona” and “Green world of Bukovina” (Chernivtsi city), “Ecoplay” (Yaremche city), “Our House” (Ivano-Frankivsk city)	1993	Establishment of NGO “Green Movement of Carpathian Region”
“Carpathian Green Belt”	Establishment of NGO “Green Movement of Carpathian Region”	1994-1995	Joining forces and communities to conserve and restore the Carpathian forests
Ecological Camps	“Vodohraj” (Baniliv-Pidgirnyj village), “Krona”, “In Harmony with Nature” (Chernivtsi city), “Our House” (Ivano-Frankivsk city)	1993-2018	Environmental education
Pilot project for the formation of the regional ecological network	“Krona”, “Green World of Bukovina”	2004-2006	Network map, Description of elements
The rationale for the creation of the “Cheremoskyj” NPP, The extension of the “Vizhnitskyj” NPP	“Krona”, “Green World of Bukovina”, “Park Friends” (Berehomet district)	2007-2008	Presidential Decree on the Establishment and Extension of the NNP
Local Environmental Action Plan Program	“Edelweiss”, “Center for Community Initiatives” (Kosiv city)	2013-2017	Strengthening local communities

In 2004-2005, a project on the development of a regional eco-network was carried out on the example of the Chernivtsi region (scientific substantiation of the creation of NPP "Cheremoski" and NPP "Khotynskyi") - together with scientists-experts, state administration of eco-resources in Chernivtsi region. Initiative and justification for the location of the Carpathian Convention office in Chernivtsi. And this is the image, investments, international programs for the development of the Carpathian mountain areas.

Summarizing the above, we would like to emphasize once again the main activities of the NGOs in our region. First of all, it is environmental education of the population, education of ecological culture in society, legal protection of the population in ensuring human rights for a clean environment, public environmental expertise, participation in the development of environmental legislation, influence on government structures through specific practical actions, holding specialized environmental camps organizing leisure activities for young people in nature, holding seminars, trainings, summer schools for leaders of eco-NGOs and more.

There is a long-standing need to create powerful specialized environmental service centers in the region

(probably in the country too) that could set up an electronic network and free access to it by NGO partners, provide quality printing services to NGOs, provide training and competitions and organize competitions small grants to support community initiatives, etc.

Ukraine, now entering a new historic period of independent state development, must consider the environmental imperative as one of the most important factors in the survival of the Ukrainian nation. After all, the colonial ecological policy of the power structures of the former imperial center, the high level of concentration of industry and inefficient agriculture, long-term use of natural resources have led to the fact that today Ukraine is ecologically one of the most endangered countries in Europe. Today, in the structure of public opinion of Ukraine, unfortunately, the view of their secondaryity prevails when compared to the problems of state formation, national revival, economic formation and so on. And the lack of objective and complete environmental information, its preparation in the mass media, does not make it possible today to assess the importance and priority of environmental problems to the people of Ukraine.

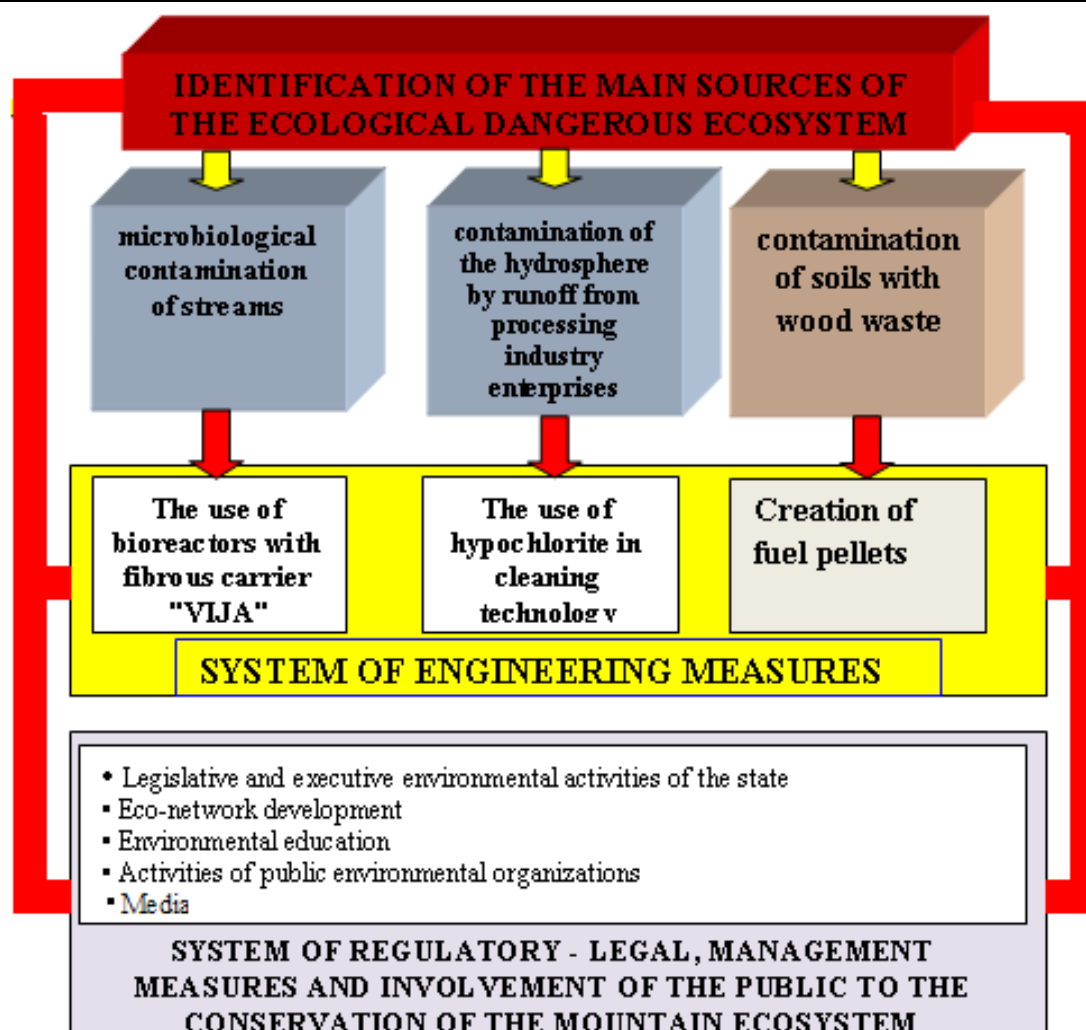


Figure - Relationship of engineering, technical, management decisions and public participation in the formation of ecological safety of the mountain ecosystem of the Pokutsko-Bukovynian Carpathians

Based on our research, we propose a scheme to improve the environmental safety of the Pokutsko-Bukovynian Carpathians, based on the active participation of the public in the environmental protection of the region (fig.).

Using sanitary and microbiological indicators, we identified the major hazards for the mountain ecosystem under study. These challenges were the organic and microbiological contamination of the river network, the discharges of untreated sewage from the processing industry enterprises, the accumulation of wood processing waste in watercourses and soils. Engineering and management solutions have been developed to reduce the level of environmental hazards. Among engineering solutions: development of surface water treatment technology using synthetic fibrous carrier "Vija", use of reagent method of treatment of untreated discharges of processing enterprises based on sodium hypochlorite, improvement of technology of obtaining fuel pellets from wood waste [7-10].

Non-governmental public environmental organizations provide significant assistance in ensuring the sustainable development of the Pokutsko-Bukovynian Carpathians. Their activities are not focused on forming the opinion of the local population

about the prospects and economic feasibility of environmental protection as an alternative way of further development of mountain areas [11].

Involvement of public environmental organizations in environmental assessment, proposed engineering and management solutions has in many cases helped to reduce anthropogenic pressure on the environment. Particular attention should be paid to the initiative of the eco-NGOs in the aspect of expanding the territories of the nature reserve fund and the formation of a regional and cross-border network. Thus, thanks to the proposals of the environmental community, the decision of Chernivtsi Oblast 2001 was proclaimed the Year of Protected Objects of the region, which served as a significant impetus for the increase in the percentage of protected areas from 7.5 to 13.8 over the next ten years.

Ukraine needs a program to overcome the ecological and economic crisis. Such a program should be based on the organic unity of ecological and economic principles of national-state revival and international partnership. In this direction, the environmental community of the Western region of Ukraine offers a kind of "The ten commandments of the cross-border partnership", which reflects the basic

principles of ecologically balanced development of the Carpathian-Danube region. It should always be remembered the prophetic words of one of the founders of the public environmental movement in Ukraine, Professor L. Sandulak, that... "we can build the most democratic country in the world, but no one will live in it" [12].

Conclusions

Involvement of the public in making important decisions and shaping the state's environmental policy, local action plans, implementation of international agreements, conventions (Bonn, Ramsar, Carpathian, etc.) serves as a guarantor of ecologically balanced development of the region with minimal damage to natural ecosystems.

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