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Information brief
Readiness of Territorial Communities of Kyiv Region to Overcome Natural Disaster Risks in Conditions of Warfare

The project will be implemented in cooperation between the Institute of Problems on Education of the National Academy of Educational Sciences of Ukraine, the Chornobyl Radiation and Ecological Biosphere Reserve, the NGO 'Ecological Space-2020', the NGO 'Veterano Service', the Polissia Village Council and Ivankiv Village Council of the Kyiv Region.

Given the increase in the number and scale of forest fires across European countries caused by anthropogenic climate change, and particularly the aggravating factor of warfare leading to forest fires throughout Ukraine, it is no longer sufficient to rely solely on individual institutions or specialized units to overcome forest fire risks. Therefore, territorial communities and their residents must be engaged in forest fire risk management.

The involvement of the entire community through the participation of different categories of residents, not only individual representatives or volunteers, should be integrated into the overall system of forest fire risk management implemented by state structures at various levels.

1. Project Objectives.

The purpose of this project is to provide an innovative and scalable solution to reduce the risks of natural disasters and increase the readiness of territorial communities bordering forests and located in areas of potential forest fire risk, to overcome them by involving and training residents in forest fire risk management practices through a community-based learning system designed for different categories of residents of these communities.

The project aligns with the implementation of the *Sendai Framework for Disaster Risk Reduction 2015–2030*.

Specific Objectives.

1. To study the characteristics of social processes and interactions within territorial communities located in forest fire risk areas, including the psychological aspects of men's and women's behaviour under such risks, the fire situation, and the prior experiences of communities in preventing and overcoming forest fires, and to develop recommendations material taking these features into account.
2. To develop and implement a *Concept* and *Strategy for strengthening the resilience of territorial communities to natural disaster risks by involving residents in forest fire risk management practices*.
3. To develop a Concept of risk-oriented education in communities, along with a training program for community residents on forest fire risk management practices titled *'Educational and Socio-Psychological Support for Territorial Communities in Potential Forest Fire Risk Areas'*, as well as content modules, educational products,

and socio-psychological recommendations and practices for main age categories of community residents, including man, women, and vulnerable groups.
4. To implement the Concept of risk-oriented education in communities by establishing an organizational model, training system, and socio-psychological support mechanisms targeting various categories of residents of territorial communities in the Kyiv Region through educational institutions, service departments, NGOs, and their local branches.
5. To identify the impact of implementing the Strategy for strengthening the resilience of territorial communities to natural disaster risks by involving residents in forest fire risk management practices and risk-oriented education in communities of the Kyiv Region on the objective state of the fire situation, its reduction as a result of decreasing the negative impact of environmentally unsustainable economic activities, and timely forecasting, differentiation, localization, and safe extinguishing of fires, the awareness of community residents on forest fire risks, and the readiness of communities to overcome them, the level of social cohesion within the communities.
6. To introduce necessary adjustments to the Strategy, the Concept of risk-oriented education, the training program, the organizational model, and the learning system, and to develop a plan for implementing innovative practices for scaling across different regions of Ukraine, EU member states, and associated countries.

By implementing risk-oriented education, residents of territorial communities bordering forests and located in potential forest fire risk areas gain the ability not only to be informed about past disasters, natural disaster risks, the condition of forests affected by the anthropogenic climate crisis, and monitoring data on fire-damaged forests, but also to acquire practical skills in monitoring, forecasting, prevention, early response, and safe extinguishing of forest fires. In addition, they will develop competencies in effective communication, interaction, and socio-psychological support.

The development of the Concept of such education, including a training program for community residents in forest fire risk management practices, content modules, educational products, and socio-psychological recommendations and practices for a community-based learning system targeting various categories of community residents, represents an educational innovation in reducing natural disaster risk. It builds upon technological progress in forest fire safety, as well as the achievements of sociology, psychology, pedagogy, and the experiences of European countries.

The educational component of the project will contribute to raising public awareness of natural disaster risks through information on forest fire risks. It has no direct analogue in the current system of adult education and education in territorial communities. Citizens can successfully apply the educational products developed within the project for self-education, as well as in the educational activities of educational institutions.

2. Methodology.

The project’s provisions align with and implement the principles of the Sendai Framework for Disaster Risk Reduction, relevant Ukrainian legislative acts that

ensure its implementation in Ukraine, as well as the Concept and *the Sustainable Development Goals (SDGs).*

The development of the Sustainable Development Goals (SDGs) and the methods for achieving them have highlighted the importance of balancing different spheres of development (economic, social, and environmental) and the necessity of joint efforts by representatives of various sectors for their practical implementation. Based on this approach, the project proposes to solve the problem of reducing natural disaster risks, particularly forest fires, by developing and implementing a mechanism that involves territorial communities in solving environmental challenges.

The Concept of risk-oriented education in communities is based on an interdisciplinary approach, integrating data from climatology, ecology, forestry, and forest pyrology. Its implementation will include the development of a training program, *'Educational and Socio-Psychological Support for Territorial Communities in Potential Forest Fire Risk Areas',* along with program modules and educational products.

The program will be based on a new approach developed within the framework of the *HORIZON 2020 project FirEUrisk – 'Developing a Holistic, Risk-wise Strategy for European Wildfire Management'*, which emphasizes three key aspects of forest fire risk management: assessment, reduction, and adaptation to fire risks.

The project will also incorporate and apply innovative technologies to enhance forest fire response, including improved forecasting, monitoring, extinguishing, and damage assessment processes. They cover: monitoring forest fires in Ukraine using satellite data; collecting information on thermal anomalies detected by MODIS and VIIRS sensors to identify fire locations and dates; delineating fire perimeters visually by comparing pre- and post-fire images through time series (TS) of cloud-free Copernicus Sentinel-2 (Level-2A) imagery; assessing forest fire risk; modeling forest fire development and their radiation consequences; using the LANDS CAPEFIRES web platform, a regional-level fire management information system for Northern Ukraine; decision support systems for prevention, early response, and safe extinguishing of forest fires in the Chornobyl Exclusion Zone; mapping carbon losses in the Chornobyl Exclusion Zone; forest management in areas contaminated with unexploded ordnance; deployment of drones for forest monitoring and early forest fire detection.

Developing the organizational model and community-based learning system, the Concept of risk-oriented education in communities, the training program, content modules, and educational and other products for main age groups of residents, as well as for different categories of forest fire risk management stakeholders (local government officials, emergency services, etc.), will be grounded in a complex set of approaches that integrate multiple scientific disciplines: social sciences, psychology, pedagogy. Among these are the following approaches: systemic, integrated, activity-based, competence-based, gender-based, inclusive, age-specific, communicative, and andragogical.

The gender-based approach will be implemented at the research stage. In particular, the project will explore the safety needs of residents in communities located in areas with potential forest fire risks, the manifestation of gender roles under such conditions, and how men and women experience the consequences of natural disasters.

At the innovation stage, the gender-based approach will be realized through preparing both men and women to engage in forest fire risk management practices. Gender equality will be ensured by engaging both men and women in risk management training, designed to be targeted and sensitive to gender roles. The gender-based approach will be reflected in strengthening the gender dimension of educational products, as well as in developing recommendations tailored to women with young children, male volunteers, and other relevant groups. Information campaigns will also be designed for different categories of residents, taking into account their gender needs and the communication characteristics of both sexes.

This approach will ensure equal access for women and men to community-based learning, equal responsibility for strengthening the resilience of territorial communities and implementing forest fire risk management practices under wartime conditions, and a reduction in the vulnerability of different categories of residents by addressing their specific needs, capacities, and experiences.

3. **Tools and Solutions.**

The existence of objective natural disaster threats does not automatically ensure readiness to overcome them. We propose addressing the problem of reducing natural disaster risks, particularly forest fires, by developing a mechanism to engage local communities in solving environmental challenges. The core of this process involves the involvement of residents from communities located in areas with potential forest fire risk, as well as in forest fire risk management practices. At the same time, we distinguish between the implementation of such practices at the level of individual actions and at the level of community-wide activities.

The primary tool for engaging and preparing community residents in forest fire risk management practices is a community-based learning system, delivered through a dedicated program. We anticipate that for residents of communities exposed to high forest fire risk, it is essential to understand forest fire risks as a complex issue and to acquire a wide range of practical skills, including: sustainable economic practices that reduce fire risk; skills for early detection, differentiation, localization, and extinguishing fires; effective collaboration and communication; strengthening social cohesion to solve environmental safety and the sustainable development of community.

Through inclusive learning, every community member, taking into account age, education, and other differences, will be able to achieve a sufficient level of competence necessary to participate in forest fire risk management practices.

Результатом навчання в громаді стане готовність жителів територіальної громади до реалізації практики управління ризиками лісових пожеж, що в цілому забезпечить необхідний рівень адаптації територіальної громади до ризиків лісових пожеж, готовність до їх подолання, підвищить

культуру її функціонування, якість реалізації громадою екологічної функції. The outcome of community learning will be the readiness of residents to implement forest fire risk management practices, which will overall ensure the necessary level of community adaptation to forest fire risks, readiness to overcome them, enhance the culture of community functioning, and strengthen the community's ability to fulfill its ecological function.

The second component of this solution is to ensure the readiness of relevant structures to interact with communities on this issue. Therefore, the community-based learning system, in addition to targeting different categories of residents, will also include professional stakeholders of forest fire risk management. These include: local government officials, emergency service personnel, representatives of NGOs, and staff of educational and other institutions.

The ability of all forest fire risk management actors to achieve mutual understanding, cooperation, communication, and coordination of actions is a necessary condition for ensuring community readiness to overcome forest fire risks.

4. Project's pathways towards impact.

Due to the project and its results, a unique contribution will be made to raising awareness among citizens and local authorities about natural disaster risks, particularly forest fires, as well as to enhancing forest fire risk management at the level of the territorial community.

The community-based learning system and educational products under the thematic direction *'Forest Fires'* will be based on technological achievements in various fields, an interdisciplinary approach, integration of national experience in overcoming forest fires, knowledge and practice exchange with European partners, and the outcomes generated within this project.

The developed mechanism for reducing natural disaster risks, particularly forest fires, will enhance citizens' awareness of these risks and strengthen the preparedness of territorial communities to overcome them. This will be implemented through risk-oriented community education, delivered by a community learning system that will cover the main categories of residents. In particular, the learning process will ensure: awareness of the impact of climate change on forest conditions and fire safety; knowledge of monitoring results of fire-damaged forests; familiarity with technologies of monitoring, forecasting, prevention, early response, and safe extinguishing of forest fires; acquisition of practical skills for the use of such technologies; environmentally safe economic practices; effective communication and cooperation skills; social-psychological support competencies. Participation in such learning will enable community residents to reach a sufficient level of competence to engage in forest fire risk management practices. Overall, this will facilitate community adaptation to forest fire risks and readiness across different phases: prevention, risk assessment, precautionary measures, early response, and safe extinguishing.

Community interaction based on the organizational model and the learning system will improve social processes, strengthen cohesion, increase responsibility, shape civic positions, and enhance psychological well-being.

Project implementation will contribute to the innovative development of

communities, improve cooperation between citizens and local authorities, and ensure the preservation and sustainable development of protected forests. Reducing forest fire risks will result in a decrease in forest damage and in economic losses associated with firefighting and forest restoration.

The target groups that will benefit from the project include: current and future residents of participating territorial communities, who will live in safer and more innovative communities; neighbouring communities, which will gain ecologically safe surroundings; educational institutions at all levels, which will gain access to valuable educational products on open resources; local government officials, who will achieve better connections and more substantial support from communities; emergency service personnel, who will gain opportunities for knowledge and experience exchange with partners from other countries; civil society organizations, which will attract new members and resources; research institutions, which will gain new practices in socially significant areas; Ukrainian society at large. The project will also benefit a significant portion of the European population, as it will provide tools and solutions to enhance citizen awareness of natural disaster risks and strengthen community readiness to face them in wartime conditions.

The developed organizational model of interaction among all forest fire risk management stakeholders (local authorities – community – educational institutions – emergency services – NGOs – research institutions), the community learning system, the educational program, and educational products may be used beyond the lifetime of the project by other territorial communities located in forest fire risk areas.

The project has broad practical, educational, socio-psychological, economic, and ecological significance, representing an essential contribution to developing mechanisms for community resilience.

The research results of the project are relevant to sociology, psychology, pedagogy, knowledge integration, and interdisciplinary research. Research data exchange will be conducted in accordance with the principles of open science.