

# THE IMPORTANCE OF FORESTRY IN TERMS OF BIOECONOMY, AND SOCIAL AND ECOLOGICAL ASPECTS IN REGIONAL DEVELOPMENT

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## Abstract

Human society influences the state of forests daily, and forests, in turn, influence human society. As part of the development of society, we intervene in the state of forest ecosystems and change their appearance. The state of forests and forestry has a significant impact on the development of a region. Sustainably developed forestry offers sufficient jobs and creates products and services for society not only in the given region. Forestry significantly contributes to improving the economic well-being of the territory, which is one of the goals of regional development. Many people living not only in rural areas are employed in forestry. The forest is a place where most of us enjoy relaxing very much and often for free. The aim of the contribution is to present and explain the importance of forestry in terms of bioeconomy, social and ecological aspects in regional development using practical examples. Explained by the authors on their own project results with examples from Europe and Central Asia (Georgia, Ukraine, Czech Republic).

Keywords: Forestry, Bioeconomics, Regional Development, Sustainability

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## Introduction

Forests and their condition affect our daily lives. Forests represent one of the most important components of the biosphere. Human society influences the condition of forests daily, and forests, in turn, influence human society. As part of the development of society, we intervene in the condition of forest ecosystems and change their state.

Forestry and forest management are the most important targeted tools by which human society regulates the ability of forests to produce functions and provide ecosystem services. It is an interdisciplinary field and activity, focusing on a specific group of ecosystems, i.e. forests as such and the benefits from them.

Forestry is the science of protecting and managing forest ecosystems for current and future generations. It is work, art and entertainment. It is a philosophy using the knowledge of previous generations by current generations for those to come. Forestry is a huge mission with high responsibility and the need to respect the laws of nature and people.

Forestry, as well as other forms of landscape management such as agriculture or water management, represents a synthesis of knowledge and skills from a diverse range of natural, technical, economic and, to a certain extent, also social fields, reflected in special forestry disciplines.

Forestry includes a whole range of forestry disciplines. One of them is, e.g., forestry policy, which can be defined as an analytical political process that includes the stages of formulating goals of human activity in the care and use of forests through their implementation to feedback evaluation (Krott, 2005). At the beginning of this process stands the existence of various conflicts of interest (such as forest products and services, forest as part of the landscape and the environment), which should be regulated through relevant programs (or sets of plans). For this purpose, forest policy works with information tools (consulting, education, research, public relations, regional forest management plans, etc.), economic instruments (e.g., financial subsidies, management and marketing, evaluation, certification), and regulatory instruments (e.g., legal norms or laws, strategies, forest management plans, regulations, directives, etc.).

Forestry is particularly typical of rural areas, where it contributes to local economic and social development (Nambiar, 2015). Rural development is a multifaceted concept encompassing economic, social, cultural and environmental dimensions. Developing economic, social, cultural and environmental dimensions can increase the well-being of rural communities.

According to Iacob (2015), sustainable use of forests contributes to the socio-economic development of rural areas. In the long term, there is a need to focus more on the adoption of sustainable production methods capable of reconciling economic, social and environmental interests.

The European Commission (2025) defines rural development as part of the second pillar of the Common Agricultural Policy. This pillar includes income support and market measures to increase the social, environmental and economic sustainability of rural areas. The European Commission (2025) sees rural development through this pillar as an effort to:

- increase the competitiveness of agriculture and forestry;
- ensure sustainable management of natural resources and climate action;
- achieve balanced territorial development of rural economies and communities, including job creation and retention.

In addition to financial instruments, strategic and spatial planning are important for rural development. Supporting regional forestry policy and territorial development can improve:

- the use of framework planning, eliminating errors in framework and detailed planning;
- solving optimal management while fulfilling other important forest functions (e.g., preserving the gene pool as an element for forest regeneration);
- improving the use of information for management by creating a comprehensive forestry system that will offer a wide range of information about forest ecosystems, their condition, natural conditions, an overview of potential environmental risks with the possibility of their prevention, adaptation to these conditions, etc.;
- contributing to appropriate motivation of management to maintain and strengthen good economic results while fully respecting natural conditions, which should lead to economic stabilization, i.e., achieving results that are part of the bioeconomy;
- enabling the full use and strengthening of management expertise in ensuring ecological, economic, but also social indicators (e.g., considering the use of forest ecosystems for recreation).

Finally, it should help eliminate shortcomings in management and enable the introduction of positive long-term systemic changes, again with a significant impact on the bioeconomy.

The Czech Republic is a Member State of the European Union and, as such, has signed, like all EU Member States, the so-called Lisbon Treaty (2007). The Lisbon Treaty strengthens cooperation between EU Member States in the field of development policy, which is part of the EU's external action, with the aim of increasing its effectiveness. This policy is closely linked to objectives such as providing humanitarian aid, promoting European interests and values in the world and responding to threats to the security of citizens, while respecting the foreign policy interests of individual Member States. An important part is the provision of foreign development cooperation. This is defined at the national level (as an example of the approach of an EU Member State) by Act No. 151/2010 Coll., on Foreign Development Cooperation and Humanitarian Aid Provided Abroad and on Amendments to Related Acts of the Czech Republic, defined as: a summary of activities financed from the state budget, the aim of which is to contribute to the eradication of poverty in the context of sustainable development, including the achievement of the Millennium Development Goals (later Sustainable Development Goals), to economic and social development, to environmental protection, as well as to the promotion of democracy, respect for human rights and good governance in developing countries.

According to these two legal norms (the Lisbon Treaty and Act No. 151/2010 Coll.), the Czech Republic has, among other things, set its priority countries where it will implement international development cooperation. These countries include Georgia and Ukraine. In both countries, the Czech Republic considers the development of forestry to be one of the priority sectors.

The aim of this study is to introduce the results of several projects focused on development in forestry in Ukraine and Georgia (through activities supported within the framework of foreign development cooperation by the Czech Republic) and thus the development of the bioeconomy, further with an emphasis on social aspects (especially employment in the region) and ecological aspects (sustainability and care of the forest landscape). These projects are evaluated with a gap of several years after their implementation.

## Material and Methods

### Georgia and Ukraine as Eastern Partnership Countries

The Eastern Partnership is a joint initiative of the European Union and six partner countries: Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine, with the aim of strengthening the economic integration and political association of the partner countries. The Eastern Partnership was launched in 2009 and is based on shared values, rules, building mutual relations, and certain commitments. It also supports reform processes in the member countries and is a significant contributor to increasing stability and prosperity in the mentioned regions.

The Czech Republic selects countries for the implementation of foreign development cooperation based on historical ties, experience, but also current possibilities and the necessary willingness to accept development aid.

As part of the presented study, two foreign development cooperation projects implemented in the forestry sector in Georgia and Ukraine were selected. Both projects have an impact on regional development, implement results related to the production of goods and services within the forest bioeconomy, and are related to employment in rural areas and the ecological stability of the forest ecosystems in which they were implemented.

Georgia is currently one of the countries in more or less the best situation in terms of the implementation of development projects and the possibilities of cooperation within the framework of the EaP, although part of the country is still experiencing an unresolved conflict within the dispute over North and South Ossetia and Abkhazia. Georgia has a high forest cover and significant diversity, geographically situated in the varied conditions of the South Caucasus Mountains, along with the coastal area by the Black Sea. The country's forestry and timber potential can be directed towards strengthening and building its own internal capacity, while at the same time taking advantage of the situation from a geographical point of view, namely the low forest cover of neighbouring Azerbaijan and Armenia, and thus focusing on the export of products with higher added value.

From the perspective of the countries mentioned – Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, and Ukraine – Ukraine appears to be the country with the greatest development potential in the forestry and wood-processing industry, but it first needs to end the war and stabilize the situation in terms of social aspects and infrastructure. Ukraine, due to its large area and relatively high forest cover in the west and in the northeast, is among the most important of the countries mentioned.

### **Forest and Wood-Based Sector in Georgia and Needs for Development**

According to UNESCO (2019), Georgia is a mountainous country located in the southern foothills of the Caucasus, bordering the Black Sea. It has a population of 3.7 million and an area of 69,700 km<sup>2</sup>. It is classified as a middle-income country with a GDP per capita of USD 4,057. The country's forest cover is over 40% (2.8 million ha), the highest of any country in the Caucasus. Despite this, there are only 0.76 ha of forest per Georgian.

The vast majority of the 2.8 million ha of forest are mountain forests, and only 2% are lowland forests. As a result, about 80% of the country's forests have a protective function. Most of Georgia's forests are of natural origin, of which 2.6% have been reported as planted or artificial forests. The forests here are rich in biodiversity and host a high level of endemism (UNECE, 2019). Georgia is also ranked among two biodiversity hotspots – the Caucasus and the Irano-Anatolian region.

All forests in Georgia are state-owned, and the vast majority are managed by the National Forest Agency. In Georgia, 8.6% of the area (595,963 ha) is declared as protected areas, of which 45% (267,000 ha) is covered by forest. It is estimated that around 500,000 ha of primeval forests are found throughout the country. They are mainly located in inaccessible, steep areas in the mountains.

According to the Ministry of Foreign Affairs of the Czech Republic (2018), thanks to the good macroeconomic policy of the governments (flat taxes, reduction of bureaucracy, zero taxation of reinvested profits, etc.), GDP growth has been between 4–5% for the last 15 years. In recent years, Georgia has ranked in the top ten of the World Bank's Doing Business ranking. The biggest economic problem remains the lack of job opportunities (the main reason for emigration) and more than 50% employment of workers in the inefficient agricultural sector. The negative impacts of extreme climatic phenomena in Georgia are exacerbated by long-term unscrupulous management of the landscape (deforestation, grazing land conversion, inappropriate spatial planning). The country has wide mineral resource potential, but general awareness of the need to use it sustainably is very low. In mountainous areas, there is extensive soil erosion and a high risk of landslides. Vast areas are threatened by floods. The Georgian government is constantly addressing the problems of tens of thousands of ecological refugees. Georgia has several valuable ecosystems and basic infrastructure for protected areas. Over the past decade, Georgia has made significant progress in protecting the most endangered ecosystems, but areas with permanent settlements within ecosystems at a lower level of protection are still not sufficiently covered. At the same time, these areas represent significant potential in terms of economic development (sustainable tourism) and agriculture (organic production).

### **Forestry Development Projects in Georgia Supported by the Czech Republic**

The Sustainable Development Program for the Aragvi Protected Landscape Area and its Communities was one of the largest and most comprehensive projects of Czech development cooperation. The program was tasked with creating a framework and conditions for the stable development of the Aragvi Protected Landscape Area (hereinafter referred to as PLA) and the Pshavi, Khevsur, and Gudamakari regions. Since

2018, the project has managed to establish the Aragvi Protected Landscape Area Administration, train staff, supply the necessary equipment for administrators, and develop the PLA management plan itself. Furthermore, the project helped to establish the Aragvi Local Action Group, develop the main outline of the forestry plan, share experiences on forest management approaches, and, in cooperation with local people, also start data collection and a final forest inventory. The last major step so far was the creation of the Aragvi Region website for easier access to information about the PLA and the development program (Ministry of Foreign Affairs of the Czech Republic, 2023).

Another significant project, also in the Aragvi PLA area, was the Implementation of Sustainable Forestry for the Aragvi Protected Area. The aim of the project was to protect native forests in foothill areas, which are facing extensive socio-demographic problems. The aim of the project is to implement sustainable forest management in foothill areas while preserving and allowing the natural development of forest ecosystems. The application of the planned measures is preceded by an analytical part concerning research into the state of forests, their use, and the preparation of a forest management plan. The plan is then to follow up on these events by building capacities for wood processing and logging. Among other things, the project also includes ongoing broad education regarding the issues of wood processing and awareness of the broader functions of the forest (CZDA, 2021).

The third significant and first forestry project in Georgia implemented through the Czech Republic was Forest Inventory Management in Georgia – Protected Areas in Tusheti. This project was focused mainly on the introduction of sustainable management of natural forest resources in the Tusheti Protected Landscape Area. The project aimed to set a basic model of sustainable forest management together with local support in relation to forests and their subsequent use. The project is the subject of the evaluation of this study.

#### **Forest Inventory and Sustainable Forest Management in Protected Areas Tusheti, Georgia**

The project was implemented in the period from 2015 to 2018, with an impact for the years 2019 to 2025 (ID No.: GE-2015-098-DO-31210). The aim of the project was to set up a basic model of sustainable forest management based on currently obtained data on the state of forest ecosystems reflected in the forest management plan. As part of the project, a simple forest management plan was to be compiled, which should provide an overview of the possibilities of using wood for the local population within the forest categories, taking into account the current state of forest stands (qualitative and quantitative assessment, description of forest types). Emphasis was placed on capturing negative factors, especially the occurrence of insect pests in the forest, i.e. the issue of forest protection.

The expected outputs of the project were to be the creation of a series of maps and methodologies for forest inventory (determination of forest status) and forest management planning, the evaluation of the status of forest ecosystems from the perspective of their threat from biotic factors (especially bark beetles), the design of a methodology for basic management planning with an emphasis on forest protection and ensuring the fulfilment of its other functions – management of forest stands in the interests of close-to-nature management.

An integral part of the outputs was also to be a series of training sessions for stakeholders, in which they were to be introduced in detail to individual methodologies, map outputs, their use, and trained in basic field collection of necessary data and their processing. The aim was also to increase the qualifications of protected area administration staff.

The project also included the implementation of an international workshop with the aim of resolving the issue of the dying off of Colchian boxwood (*Buxus colchicus*) because of attacks by the boxwood borer (*Cydalima perspectalis*) and the fungus of the genus *Cylindrocladium buxicola*. Furthermore, the project was continuously expanded with activities related to additional training of the target group, the purchase of some necessary tools and, in particular, the purchase of a forestry tractor with a forestry attachment for work in the forest (with this, training was supplemented, including training on occupational safety and health protection), and a plan for specific logging operations was created (implementation of the use of the tractor), etc.

The overall objective of the project was: i) the introduction of sustainable management of natural resources of forest ecosystems of protected areas, with an emphasis on supporting local communities in relation to forests and forest use, including potential use of wood; ii) preservation of the forest habitat of the Western Caucasus.

A Forest Management Plan was created (text, table, and map parts for selected pilot areas in all protected areas in Tusheti – Tusheti National Park, State Nature Reserve Tusheti, and Tusheti Protected Landscape Administration) on a total area of 2,353 ha.

#### **Forest and Wood-Based Sector in Ukraine and Needs for Development**

In Ukraine, forests cover more than 9.7 million hectares, which is about 16.5% of the total area of the country, which is mainly engaged in agriculture (FAO, 2016). Half of the forests are classified as semi-natural, of which 4.9 million hectares (50.3%) are planted forests (Timber Trade Portal, 2015). The most forested areas include mixed forests in the north and west of the country in the Carpathians. Coniferous forests

cover 42% of the total area, deciduous forests 43%, and the rest is softwood forests together with shrubs (Vančura, 2005). The main representatives of conifers are Scots pine (*Pinus sylvestris*), silver fir (*Abies alba*) and Norway spruce (*Picea abies*). The main deciduous tree species include English oak (*Quercus robur*), European beech (*Fagus sylvatica*), European maple and sycamore (*Acer platanoides* & *Acer pseudoplatanus*) and ashes (*Fraxinus* sp.).

Forest ownership is divided into seven categories. The first and most represented forest owner is the State Forestry Agency with 73% of ownership. Next are local municipalities with 13% and reserve lands with 7%. The rest is divided between the Ministry of Energy and Environmental Protection of Ukraine with 2%, the State Emergency Service – 2%, the Ministry of Infrastructure – 1%, and others 2% (State Forest Resources Agency of Ukraine, 2022).

Before the war in Ukraine, forest monitoring and control were established, but not at a high level. The functions of monitoring, economic planning, inventory, issuing logging licenses, tracking and monitoring sales were performed in many cases by separate specialized state enterprises, which led to complex coordination and low effectiveness of monitoring. Similarly, the forest control system did not function properly, with the State Environmental Inspection of Ukraine (SEIU) lacking all the legal instruments and administrative staff to effectively exercise control over Ukrainian forests. The SEIU itself is not authorized to fine logging licenses issued in violation of legal regulations, as the State Forest Resources Agency of Ukraine (SFRAU) is responsible for issuing licenses (Boke *et al.*, 2018).

Hrynyk (2022) drew attention to the problems with deforestation, which took place in Ukraine mainly due to an outdated approach to forest management, which is based on the Soviet practice of the “dominion of nature”, i.e. the logging of natural forests, which are then replaced by unnatural plantings struggling with sensitivity and vulnerability to climate change, natural conditions, and biodiversity. As a result of the war, plans to increase the volume of timber harvesting were also accelerated, which were subsequently approved to increase the volume of harvesting by 150% compared to the previous year, in 2021. The reason for these plans is the issue of a difficult period for the Ukrainian war economy, and there is also the risk of attacks on the country's energy infrastructure, which results in the accumulation of firewood by the local population. The government itself has also promised to help all residents in need with the supply of firewood, and thirdly, there is a need for wood for the military purposes of the Ukrainian army.

Another problem is the occurrence of mines and unexploded ordnance in the forests due to the war with the Russian Federation. When retreating, the troops left behind thousands of hectares of land that will be risky for residents and workers not only in the forestry sector in the future. In 2022, it was estimated that over 650,000 hectares of forest land needed to be demined, which is impossible to farm due to this danger (Silvarium, 2023).

According to Bolochovec (2024), foresters working in areas close to the front line risk their own lives every day. This war has already claimed the lives of more than 90 foresters, colleagues defending Ukraine from the Russian aggressor. It is difficult to imagine what is happening directly in the occupied territories. It has been noted that the occupiers are exporting timber from Ukrainian forests to Russia. The war has also restricted access to many public documents, including current forest maps. As a result, it is currently virtually impossible to find out where logging is planned in national parks, biosphere reserves, and other areas of the country.

### **Forestry Development Projects in Ukraine Supported by the Czech Republic**

In the past, Ukraine held the status of a so-called priority country within the Czech Republic. It now has the status of a so-called specific country, meaning a country that is not among the priority countries of foreign development cooperation but is granted special attention and funding. Since 2014, development activities in Ukraine have primarily targeted the education sector and, to a lesser extent, the healthcare sector. Ukraine has also been a recipient of humanitarian aid since 2014, especially in connection with the armed conflict in the Donetsk and Luhansk regions.

The Czech Republic, through the Ministry of Agriculture and later with the support of the Czech Development Agency, has supported several forestry development projects in Ukraine aimed at strengthening capacities and harmonization with European standards, forest inventory, and forestry planning. Current major activities include the project “Strengthening Ukraine's Capacities in the Field of Forest Monitoring,” which involves equipping and supporting research, as well as the TechInLes project, which focuses on the national forest inventory. Most projects emphasize building modern educational infrastructure and improving monitoring methods. Historically, and to date, the main implementer of forestry development projects in Ukraine has been the National Forestry Institute, formerly known as the Institute for Forest Management Brandýs nad Labem.

The National Forestry Institute previously implemented projects in Ukraine, among others, in the forest enterprises of Chrepeliv and Buchtivěts for the first project, and Maximěc and Bystricja for the second project, all located in Nadvirnijanskij leschoz in the Ivano-Frankivsk region in the Eastern Carpathians. Within the project “Tools and Economic Regional Forestry Planning for Ukraine“ (N.134/05-07/MZE/B,

2005–2007) and the project “The System of Differentiated Management of Forest Ecosystems in the Ukrainian Carpathians“ (N.33/MZE/B/08-10, 2008–2010), the classification of permanent natural conditions was carried out using a modified geobiocenological system.

The aim of these projects was to prepare conditions for the introduction of a differentiated forest management method, depending on the natural conditions of the Ukrainian Carpathians. The projects also sought to create a recommended methodology for Ukrainian specialists, incorporating principles of careful landscape use, sustainable development, and biodiversity conservation in the Carpathians. This included developing a methodology for differentiated management depending on natural conditions and a methodology for using remote sensing in forestry mapping as a basis for functionally differentiated management methods.

The study presented here evaluates the project with the goal of creating a system of differentiated management of forest ecosystems in the Ukrainian Carpathians.

## Results

### Results of the Project “Forest Inventory and Sustainable Forest Management in Protected Areas Tusheti, Georgia” and its Evaluation

A model forest management plan was compiled, which aims to provide an overview of the possibilities of using wood regarding the current state of the forest cover. The project also included a series of forest maps and methodologies related to forest inventory and management planning. The impact of this project on the Tusheti region was assessed as high in effectiveness in the Ministry of Foreign Affairs of the Czech Republic evaluations, including significant cooperation with the Tusheti Protected Landscape Administration and with local universities and scientific institutions.

All planned objectives were achieved within the project. The implementation of workshops and planned trainings was completed, including the creation of a forest management plan for the pilot area (total 2,353 ha). The development objective of the project was fulfilled. The greatest impact of the project solution is perceived on the Tusheti Protected Landscape Area organization, when they themselves began to harvest and sell wood. During the project, they also pushed through a change in the Forest Act, allowing them to sell wood themselves and manage forest ecosystems in protected areas from an ecologically friendly perspective (the wood supply is so large and the wood harvest is so extensive that the total current growth rate will never be exceeded, even with regard to availability in the field, the size of the territory, or the demand for wood), economically viable (it is calculated that with a harvest of 36,500 m<sup>3</sup> over 5 years, the annual harvest is only 7,300 m<sup>3</sup> on an area of 907.6 ha), including the generation of jobs and an increase in the demand for wood; socially fair (the harvested wood is not expensive, one group of residents is not favoured over others, the project outputs are applied throughout the region).

The implemented project directly integrates the principles of sustainable development into the policy of Georgia, i.e., into the forestry and environmental policy.

The economic and financial viability of the project does not depend on the implementation of the future forestry management plan into practice but rather offers the creation of a working environment for the actual implementation of the forestry planning documents, which should be based on the submitted “concept.” It is a possibility of variants; it does not bind and does not want to bind.

Among the basic aspects strengthening the viability of the project, the following can be mentioned:

- Creating a series of methodologies and analyses for the preparation of individual forest management plans for the entire area (Tusheti National Park, Tusheti Protected Landscape, Tusheti State Nature Reserve); furthermore, it was necessary to take into account zoning for individual plans – this was considered within the project, and a sample forest management plan was prepared for all types of zones of the Tusheti protected areas (State Protection Zone, Tusheti Nature Reserve, Protected Landscape, Traditional Use Zone, Administration Zone). A significant part of what the project worked with was taking into account forest functions (ecosystem services) based on natural conditions and current use.
- Systematic training of the same persons who went through the entire project cycle (at the final workshop in Tusheti and subsequently in Tbilisi or in the Czech Republic). When handing over the certificates, everyone was tested. This should create a prerequisite for using the acquired knowledge and information during the project solution and implementing it in practice.
- Establishing contacts between individual partners and their joint or at least targeted training also provides a prerequisite for ensuring the viability of the project. For example, organizing a regional (or international) conference with the participation of students and members of the target group provides a prerequisite for building closer relationships, including the possibility of recruiting new workers (especially for TPLA) from the Agricultural University of Georgia.
- Final handover of methodological procedures and analyses in printed form to all members of the target group.

- We also consider the creation of a forest management plan as recommendatory, not binding, to be effective. The approach of using photographs of the state of a specific forest stand is very innovative – when a clear idea of the state of the forest ecosystem is obtained, this limits the guesswork about whether the workers in question visited a specific forest stand.

The sustainability of the project outputs was strengthened by the cooperation of several institutions and members of the target group. Educational institutions were also involved, so the implemented project could have further successors in its ideological essence.

Further strengthening of the sustainability of the project impacts can be seen, for example, by the involvement of educational institutions in the solution of development projects in Georgia today, not only in forestry, but also in general environmental protection.

### **Results of the Project “The system of Differentiated Management of Forest Ecosystems in the Ukrainian Carpathians” and its Evaluation**

The development goal of the project was to “transfer” the tools of Czech economic forestry planning to the Ukrainian forestry environment, to contribute to the construction of an information system for forests of Ukrainian forestry using the latest products of informatics, monitoring, and computer technologies, and thus to help introduce sustainable management in the Ukrainian Carpathians.

The basis of the entire system of application of regional forest development plans is detailed knowledge of the ecological conditions of the environment. Vegetation tiers were mapped in interest. Based on the known forest categories in the Czech Republic, the categories used in Ukraine, and the nature of the model area, the following forest categories were proposed: category A – economic forests, category B – protective forests, and category C – special purpose forests. All the data obtained were entered into GIS layers, which was a completely new element in the Ukrainian forestry environment at the time of the project. The main negative impact significant for the state of forest stands is forest grazing, which can also be considered one of the important functions of forests in the area. Given that cattle grazing is a traditional way of livelihood for residents, its regulation is a difficult task. The occurrence of bark beetles is also a potential risk for the future.

As part of the project, a comprehensive road network design was prepared with a construction priority order. In essence, it can be said that this is a design of a basic network of haul roads and landfills. The regional forest development plan compiled in this way, which is based on detailed knowledge (mapping) of ecological conditions, including entry into the GIS environment, is an ideal tool for the sustainable development of not only the forest but also the landscape. The developed plan serves as an example of a management method that considers the sustainable principle with a comprehensive view of the use of forest ecosystems. The prepared plan fulfils Articles 4, 5, and 7 of the Carpathian Convention (Framework Convention on the Protection and Sustainable Development of the Carpathians), to which the Czech Republic and Ukraine are signatories.

One of the basic objectives of the project was the preservation of biodiversity and protection of mountain ecosystems of the Ukrainian Carpathians. The project enabled the harmonization of economic development with the preservation of natural wealth, which is a prerequisite for the sustainable development of the region. This is mainly contributed to by mapping biotopes, defining European important sites according to the rules of the Natura 2000 system, and proposing rules for a differentiated approach to management based on natural conditions. For forestry, the possibility of monitoring the state of forests using innovative and modern methods is also an important factor.

The use of the project results did not place high demands on further financing. The training of Ukrainian specialists and their subsequent cooperation and direct participation in the implementation of the project created sufficient conditions for the usability of the declared project objectives even after its completion and the further application and use of the methodologies by the Ukrainian side. The system of differentiated management depending on natural conditions could be in accordance with the sustainable development of the landscape in the mountainous areas of the Ukrainian Carpathians and will contribute to the development of the region and to the more efficient management of the landscape of the Ukrainian Carpathians.

### **Discussion and Conclusion**

Forestry development in Georgia is largely neglected, often associated with nature conservation, although in practice it is perceived separately. There are not many development cooperation projects in Georgia that are forestry-oriented and focused on the development of the given field. Forestry infrastructure is lacking – especially the forest transport network and wood processing; forestry planning is still in its infancy and is constantly being taken over from “old Soviet schools,” and in combination with modern technologies used, for example, in forest inventory, it causes great chaos (the situation was similar in Ukraine before the war). Forestry development projects in Georgia often focus on supporting forest inventory or building nurseries, although the infrastructure just mentioned – equipment for cutting and processing wood – is significantly lacking.

Socio-cultural factors are reflected in Georgia within the framework of development cooperation in forestry and education, perhaps in several factors. Georgia has enormous forestry potential, but forestry itself is at a very low level, especially in terms of wood processing and goods generation – the economic viability of the sector, even though natural conditions are very rich in forestry and wood products, is low.

Georgia is achieving the greatest development in forestry and the related education in ecological aspects – the declaration of new protected area territories, deepening care. Unfortunately, this again comes at the expense of economic and subsequently social aspects – the simplicity of implementing nature conservation management leads to significant bans on traditional landscape use, which can cause an outflow of population from the countryside to cities and the subsequent loss of interest in nature, landscape care, and the development of sustainable management in the landscape. All this may be a consequence of declining interest in forestry as such. Another option is to find ways to increase employment of the rural population in the landscape.

A somewhat different chapter in the evaluation of the project results is in Ukraine, where a war is currently underway. It can simply be stated that now a lot of the knowledge and experience gained by the project by Ukrainian institutions is completely lost, since even the buildings of institutions that participated in the project no longer exist, and unfortunately, not even the people themselves. Dozens to hundreds of lives of foresters who were enthusiastically dedicated to the management and care of forest ecosystems and further developed these ideas, and who were affected by the project results, have been lost. In this regard, there is no point in assessing the impacts on the Sustainable Development Goals. We hope that this sad chapter will pass as soon as possible and that relationships, ideas, and work results will be restored and established.

Forestry focuses on the restoration and use of forest products (wood and non-wood), care for forest ecosystems, prevention of the occurrence of abiotic and biotic harmful factors (drought, fires, viral diseases, bacterial diseases, etc.), and protection of the gene pool of tree species, thereby contributing to social development, which includes building job capacities, economic development (e.g., support for the sustainable use of natural resources – firewood, emphasis on energy sources at the local level, assistance in technical modernization – assistance in the appropriate construction of a forest transport network, which can also be used on a general scale).

Development cooperation in the field of forestry and the establishment of appropriate care for forest ecosystems, where the knowledge of the state of forest ecosystems is a necessary and primary condition, is followed up by the Czech Republic as one of its priorities in the field, contributing to the fight against climate change and the fulfilment of the Sustainable Development Goals.

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