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DANUBE WOOD(s)ROUTE

# Regional Action Plan of Slovakia

Activity 1.3

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# 1. Introduction

## 1.1. General information of the Partner

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| PROJECT                        | Danube Wood(s) Route            |
| PARTNER ORGANISATION CONCERNED | ARR Prešov                      |
| COUNTRY                        | Slovakia                        |
| NUTS2 REGION                   | Prešovský kraj / Snina district |
| CONTACT PERSON                 | Zuzana Zemčáková                |
| E-MAIL ADDRESS                 | zemcakova@arrpsk.sk             |

## 1.1. Overall and specific objectives of the Action Plan – Poloniny Region (Slovakia)

The **Danube Wood(s) Cultural Route Regional Action Plan for the Poloniny region in Slovakia (RAP-Poloniny)** serves as a targeted implementation framework under the broader Danube Wood(s) project. Aligned with the strategic direction of the Danube Wood(s) Cultural Route Strategy, this Action Plan is specifically tailored to reflect the ecological, cultural, and socio-economic particularities of the Poloniny National Park and its surrounding communities in Eastern Slovakia.

The overarching objective of the Poloniny RAP is to promote the **sustainable use of the region's extensive forest resources**, while integrating **traditional wood-related cultural heritage** into a comprehensive and responsible ecotourism model. As one of Europe's most biologically diverse forested regions and home to **UNESCO-listed primeval beech forests, wooden churches of the Carpathian Arc, and dark-sky reserves**, Poloniny offers unique assets that can be carefully valorised through sustainable tourism, heritage interpretation, and conservation initiatives.

This Regional Action Plan translates the common transnational strategy into **concrete, locally-relevant actions** for Poloniny. It identifies **actionable measures** that not only address the challenges of ecological protection and economic stagnation but also build regional identity, strengthen community engagement, and support youth retention

through new opportunities in woodcraft, forestry, and tourism. It sets a basis for **stakeholder consensus**, enabling cross-sectoral cooperation among local and regional municipalities, national park authorities, NGOs, artisans, and tourism boards.

A key goal of the RAP is to **create structured, integrated and thematic visitor experiences** that connect locations of natural and cultural significance – from the **Stužica Primeval Forest** to the **wooden churches**, and from **traditional carpentry workshops** to **forest hiking trails**. These will be supported by infrastructure such as interpretive signage, mobile apps, and eco-friendly rest stops. By linking fragmented assets through storytelling and accessible routes, the plan helps fulfill the core vision of the Danube Wood(s) Route: transforming heritage into a driver of sustainable regional development.

The RAP-Poloniny emphasizes investment in **nature- and culture-based services**, including community-run eco-lodges, mobile visitor centers, and small-scale woodcraft production units. It also outlines conservation actions aimed at **safeguarding traditional architecture, rare habitats, and endemic species**, while managing tourism flows to prevent ecological degradation.

Capacity-building is another cornerstone of this RAP. Through **training programs for local guides, workshops for youth and artisans, and networking platforms for entrepreneurs**, the plan strengthens the ability of the region's stakeholders to actively shape and manage their cultural and natural assets. This approach ensures that development reflects **local priorities** and generates tangible benefits for residents.

The RAP also supports **innovation in sustainable forest-based entrepreneurship**, including **certified wood processing, eco-design, and bio-based product development**. By reviving traditional skills such as **shingle-making, wooden iconography, and joinery**, while promoting digital and circular economy tools, the RAP helps diversify rural income sources and fosters resilience.

Finally, education and awareness are at the heart of the RAP's implementation. By integrating **forest and wood heritage education into school programs**, organizing **public nature events**, and promoting **citizen science and eco-volunteering**, the plan aims to cultivate a shared sense of responsibility and pride in the region's exceptional natural and cultural resources.

In sum, the Regional Action Plan for Poloniny is a practical and visionary document that bridges strategy with action. It ensures that the Danube Wood(s) Route becomes a catalyst for **inclusive, community-led, and ecologically balanced development** in one of the most pristine forest landscapes of the Danube region. Through heritage

protection, ecotourism development, forest innovation, and education, it contributes directly to the long-term and sustainable valorisation of Poloniny's wood-based natural and cultural assets.

## 2. Regional Analysis

The regional analysis of the Poloniny RAP was conducted to identify the most pressing **challenges and opportunities** that can be addressed through targeted measures developed in Section 4.

### 2.1. Natural and cultural assets

This assessment places a strong emphasis on the unique ecological characteristics of the **Poloniny National Park** and the broader **Horný Zemplín** region, while also recognising the significance of its **cultural and forest-based heritage** within the Danube Wood(s) Route project.

Poloniny is one of the most **ecologically valuable and least disturbed regions in Slovakia**, and indeed in Central Europe. It encompasses the Slovak part of the **Primeval Beech Forests of the Carpathians**, a **UNESCO World Heritage Site**, and is part of the **East Carpathians Biosphere Reserve**. This transboundary protected area, shared with Poland and Ukraine, is a core node in a continental biodiversity corridor and harbours exceptionally high conservation value.

Thanks to its remoteness and low population density, Poloniny plays an essential role in preserving **ecosystem services**. These include climate regulation, carbon sequestration, clean water retention, and protection from erosion. Moreover, the region is home to **critically endangered species** such as the **European bison (*Bison bonasus*)**, **Eurasian lynx (*Lynx lynx*)**, **brown bear (*Ursus arctos*)**, and **rare forest birds** like the **Ural owl (*Strix uralensis*)**. Its old-growth beech forests provide refuge for countless fungi, insects, and epiphytes that depend on deadwood habitats, highlighting the region's **irreplaceable role in maintaining biodiversity**.

However, these assets face several **pressures and risks**. Forest ecosystems are increasingly vulnerable to the effects of **climate change** (e.g. drought, altered precipitation, habitat shifts), and in some areas, to **illegal logging or insensitive tourism practices**. Human-wildlife conflicts have also increased, particularly with large carnivores. At the same time, **rural depopulation**, **economic stagnation**, and the **loss**

**of traditional knowledge** present socio-cultural challenges to maintaining both forest-related livelihoods and intangible heritage.

The Slovak part of the Carpathians, including Poloniny, contributes significantly to Slovakia's overall **forest coverage**, which stands at over **40% nationally**, with even higher rates locally. Forestry in the region is still based on **selective harvesting** and is largely PEFC-certified. However, there is an urgent need to improve the **integration of sustainable forest management with ecotourism, cultural storytelling, and small-scale wood product innovation**.

While Slovakia fares well in terms of legal protection, with over **37% of the national territory designated as protected areas** (surpassing EU targets), actual enforcement and **public engagement** remain uneven. Protected areas within Poloniny need **active interpretation, infrastructure support, and community involvement** to fulfil their potential as living classrooms and sustainable tourism zones.

Culturally, the region preserves a rare network of **wooden churches of the Eastern Rite**, some of which are included in the **UNESCO World Heritage List**. These sacred wooden structures, located in villages such as **Ruská Bystrá** and **Topoľa**, represent an outstanding example of **spiritual wooden architecture**, deeply intertwined with local identity and craftsmanship. Nevertheless, **many of these churches face risks** related to depopulation, lack of maintenance funding, and disconnection from the regional tourism offer.

Poloniny also stands out for its **astronomical darkness**, hosting Slovakia's only **Dark-Sky Park** near the **Kolonické Sedlo Observatory** – a highly promising asset for **eco- and astro-tourism**. This rare combination of natural silence, night sky quality, and wilderness landscapes offers unique opportunities for thematic tourism development that links **biodiversity, spirituality, and wood heritage**.

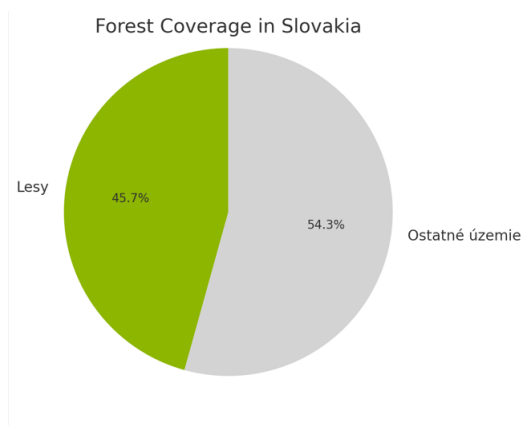
In conclusion, the regional analysis reveals both the **immense value** and the **fragility** of Poloniny's natural and cultural landscape. The RAP is thus designed to support **balanced development**, reinforcing conservation with economic revitalization through **wood-based ecotourism**, community education, and sustainable forestry innovation. By enhancing access, interpretation, and local participation, Poloniny can emerge as a **flagship model** for heritage-driven sustainability in the Danube region.



### 2.1.1. Forest Coverage and Management in the Poloniny Region (Slovakia)

Forests cover approximately **40.3% of Slovakia's national territory**, with the **Prešov Region**—and particularly the **Poloniny area**—ranking among the most densely forested parts of the country. In this region, forest coverage often exceeds **60–70%**, particularly in the **Bukovské vrchy Mountains**, which form the ecological backbone of **Poloniny National Park**.

Figure 1: Forest Coverage in Slovakia



*"Forests cover over 60% of the Poloniny region, making it one of the most densely forested areas in Slovakia and a UNESCO-listed biodiversity hotspot."* (UNECE, 2023)

Nationally, about **50% of forests are state-owned**, while approximately **41% are in private or communal ownership**, including **urbariáty (forest cooperatives)** that play an important role in forest management at the local level. The majority of Slovakia's forests are managed under **sustainable forestry practices** and are certified under **PEFC** (over 1.24 million ha) or **FSC** standards, ensuring compliance with ecological and social sustainability goals.

The **total volume of standing wood stock in Slovakia** is estimated at more than **530 million m<sup>3</sup>**, with an annual increment of about **7.2 m<sup>3</sup> per hectare**. However, in high conservation areas like Poloniny, actual harvesting levels are **very limited or entirely restricted**, due to the **strict protection regimes** in place, particularly in core zones of the **UNESCO-listed primeval beech forests** (e.g., Stučica, Havešová, Rožok).

While forest areas in other parts of Slovakia continue to expand through **reforestation and afforestation programs**, Poloniny represents a unique case: rather than increasing forest cover, the region focuses on **preserving old-growth ecosystems and allowing natural forest dynamics to unfold** without direct human intervention. This makes the area one of the few true examples of **non-intervention forestry** in the country and a critical reference site for natural forest evolution in Europe.

In Slovakia, **forest management planning is regulated in 10-year cycles**, with objectives that increasingly incorporate **biodiversity conservation, climate resilience, and ecosystem services**. In Poloniny, however, standard forestry operations are largely replaced by **adaptive management focused on nature conservation**, ecological research, and **low-impact ecotourism**.

Forest carbon stocks in Slovakia are also significant, contributing over **527 million tonnes of carbon**, including aboveground and soil carbon. The extensive, **naturally regenerated forests of Poloniny** play an important role in this regard, serving as one of the most effective carbon sinks in the Carpathian region.

The ongoing challenges in the region include **balancing protection with development, managing human-wildlife conflicts**, and ensuring that **local communities benefit economically** from the forest's existence through **non-timber forest products, sustainable tourism, and wood-based innovation**. Addressing these tensions is a core ambition of the Poloniny RAP.

In summary, while forest expansion through planting may be the goal in many European regions, Poloniny's strategy is one of **deep preservation, minimal intervention, and ecological integrity**, positioning it as a **flagship site for conservation-based forest management** within the Danube Wood(s) Route initiative.

### 2.1.2. Historical Context and Composition of Forests in Poloniny

Unlike other regions of Central Europe where large-scale artificial forest plantations have been introduced over the past century, the **Poloniny region in Slovakia** has retained a significant proportion of **natural and semi-natural forest ecosystems**. This makes it one of the **least anthropogenically altered forest landscapes** in the Danube Basin. The forest cover in Poloniny consists primarily of **naturally regenerated deciduous woodlands**, dominated by **European beech (*Fagus sylvatica*)**, and interspersed with **maple, fir, ash**, and other native species.

Whereas in other regions forest establishment focused on quick timber production or soil protection using **fast-growing non-native species**, such practices have been rare in Poloniny. The rugged topography, inaccessibility, and ecological sensitivity of the area prevented the widespread adoption of large-scale plantation forestry, resulting in **high ecological integrity and structural diversity**. As such, Poloniny today contains some

of the **last remnants of primeval beech forests in Europe**, now protected under **UNESCO World Heritage status**.

The local forest composition is shaped not by plantation history, but rather by **long-term sustainable forestry traditions**, selective logging, and, in many areas, **complete non-intervention management**. Approximately **80% of the national park's area** falls under strict nature protection or limited-use regimes, where forest dynamics follow **natural successional processes**, creating a mosaic of **multi-aged, mixed stands** with high deadwood content – a crucial habitat for thousands of forest-dependent organisms.

The region's **biodiversity is directly tied to this unmanaged forest structure**. It supports species requiring mature or decaying wood, such as **beetles, woodpeckers, bats, and rare fungi**. Unlike artificial monocultures, these forests host complex food webs, natural regeneration patterns, and high resilience to climate-induced stress.

Though artificial forest plantations (e.g., spruce or hybrid poplar) exist in other parts of Slovakia, their presence in Poloniny is minimal and mostly restricted to peripheral zones. Even here, **restoration efforts** are ongoing, including the **conversion of unnatural monocultures into mixed, native forests**, with a long-term aim of restoring natural dynamics and improving biodiversity.

Importantly, **no recent afforestation efforts have taken place within the core zones of Poloniny**, in line with Natura 2000 objectives and Slovak conservation law. Instead, current forestry-related actions focus on:

- **Enhancing natural regeneration**, particularly after windthrow events
- **Controlling invasive species** in buffer zones
- **Creating forest-pasture mosaics (silvopasture systems)** where culturally appropriate

While **Slovakia's national Rural Development Program** supports afforestation and agroforestry in more intensively used lowland regions, these schemes have limited applicability in Poloniny. However, there is growing interest in **traditional land-use restoration**, such as the revitalisation of **wooded pastures and culturally significant clearings** with solitary trees, which also enhance biodiversity and landscape aesthetics.

In conclusion, the Poloniny region stands apart from the general European trend of plantation-dominated forest expansion. Its strategy is based on **deep conservation, ecological restoration, and traditional forest stewardship**, offering a **reference model for biodiversity-friendly forestry and low-impact land use** in mountainous regions. These conditions support the Poloniny RAP's goal of **leveraging the ecological and cultural uniqueness of the region to build a resilient, locally rooted forest-based tourism and heritage economy**.

### 2.1.3. Forest Composition, Naturalness, and Age Structure in Poloniny

Forests in the **Poloniny region** of Eastern Slovakia are considered some of the most **natural and species-rich forest ecosystems in Europe**, particularly within the **temperate broadleaf forest zone**. Unlike many European landscapes where forests were heavily altered or replaced with artificial plantations, the woodlands of Poloniny have retained a **high proportion of native species, a natural age structure, and complex ecological dynamics**.

In Slovakia, around **70% of forests are dominated by native species**, but in Poloniny this figure is considerably higher — exceeding **90%** in the **core zones** of the **Poloniny National Park**. These forests are mainly composed of **European beech (*Fagus sylvatica*)**, **sessile oak (*Quercus petraea*)**, **Norway maple (*Acer platanoides*)**, **silver fir (*Abies alba*)**, and other indigenous species forming **mixed deciduous stands**. The few existing patches of non-native conifers or poplars are mainly limited to **peripheral or formerly cultivated areas** and are now being gradually restored to native composition.

Beech and oak forests dominate the park, with **beech forests representing both the ecological and symbolic heart of the region**. These are the forests that earned Poloniny its inclusion on the **UNESCO World Heritage List** as part of the **Primeval Beech Forests of the Carpathians**. Their significance lies in their **uninterrupted forest dynamics, rich understorey vegetation, and diverse fauna**, including numerous species that depend on deadwood or old-growth microhabitats.

In contrast to regions with active plantation management, Poloniny's forests are characterized by a **high proportion of old and natural-aged stands**. While **younger forests (under 50 years)** dominate many commercial zones of Slovakia, in Poloniny:

- ❑ **Forests over 100 years old make up a significant portion of the landscape**, especially within non-intervention and protected management zones.
- ❑ **Stands exceeding 200 years** exist in the **Stužica, Havešová**, and **Rožok** primeval forest areas, with some trees aged over **300 years**.

The age structure in Poloniny supports a **mosaic of forest types**, from regenerating canopy gaps to fully mature and senescent stands. This diversity contributes to:

- ❑ **Greater carbon storage**
- ❑ **Higher biodiversity**
- ❑ **Resilience to climate change and pests**

In addition to biological diversity, the **naturalness of forest structure**—including **multi-layered canopies, deadwood presence, and undisturbed soil horizons**—is one of Poloniny's most valuable ecological features. These characteristics are essential for habitat specialists, such as **bats, owls, woodpeckers, saproxylic beetles**, and **rare lichens and fungi**.

In terms of forest management, the national park follows a **zonation approach**:

- ❑ **Core zones** are strictly protected with zero intervention
- ❑ **Buffer zones** may allow limited selective harvesting or restoration planting (with native species only)
- ❑ **Transition zones** support education, low-impact tourism, and sustainable forestry

Thus, while other parts of Slovakia and Central Europe contend with high proportions of non-native species or uniform age structures, **Poloniny stands out as a living archive of Europe's natural forest history**. Its forest policy does not aim at afforestation with fast-growing exotics, but rather at **preserving continuity, promoting passive restoration**, and ensuring that **traditional woodlands remain a functional, biodiverse landscape** for future generations.

## 2.2. Social and economic conditions in the region

The **Poloniny region**, located in the **Snina district** of **Prešovský kraj (region)**, represents one of the **most remote and economically disadvantaged areas** of Slovakia and the entire Danube macro-region. While macroeconomic indicators show moderate progress across Slovakia, **regional disparities remain stark**, particularly between western Slovakia (including Bratislava) and eastern borderland regions such as Horný Zemplín.

According to **Slovak Statistical Office data and Eurostat**, the **GDP per capita in the Prešov Region** reached only **58% of the EU average** in 2022, making it one of the **lowest in Slovakia** and significantly below the national average (which was at 74%) (Eurostat, 2023). Within this regional context, **Snina district**, home to the **Poloniny National Park**, ranks among the most underdeveloped districts by all socio-economic metrics:

- ❑ **High unemployment**, especially among youth and Roma populations
- ❑ **Low levels of private investment and innovation**
- ❑ **Negative population trends**, including depopulation and aging
- ❑ **Limited infrastructure and public transport accessibility**

The combination of **geographical isolation, mountainous terrain**, and **absence of major economic drivers** has led to systemic disadvantages. Local economies are still heavily reliant on **small-scale agriculture, public sector employment, forestry**, and **seasonal migration**. In contrast to Slovakia's urban hubs like Bratislava or Košice, where wages and purchasing power have grown substantially, **household income and consumer spending in Snina district remain low** and vulnerable to inflationary shocks.

Despite these challenges, **rural development dynamics in the region show pockets of resilience**. The rise of **eco-tourism, micro-entrepreneurship in crafts and forestry**, and **cross-border cooperation** (especially with Ukraine and Poland) has

opened new development avenues. Community initiatives, such as those led by **NGOs like Aevis or Take naše**, and cultural tourism projects supported by the **Danube Transnational Programme**, are contributing to **incremental socio-economic revitalisation**.

Importantly, **natural capital in the Poloniny region is high**, and its potential remains largely untapped. The area's **rich biodiversity, UNESCO sites, and dark-sky reserves** are drawing increasing interest from niche tourism markets. However, the local capacity to manage and benefit from these trends is still limited due to:

- ❑ **Lack of trained local workforce in ecotourism and cultural interpretation**
- ❑ **Insufficient infrastructure (e.g., accommodations, signage, digital services)**
- ❑ **Underutilisation of EU and national development funds at the local level**

Cross-sectoral cooperation remains weak, and **rural depopulation continues**, driven by the outmigration of young people to larger cities or abroad. Traditional skills (woodworking, carpentry, herbal medicine, folklore) are disappearing, and there is a growing need for **intergenerational knowledge transfer and vocational reinvestment**.

The **Danube Wood(s) Route RAP for Poloniny** aims to address these systemic issues by developing a sustainable economic model rooted in **heritage-based tourism, forest-linked innovation, and community education**. By aligning cultural and natural assets with job creation and local entrepreneurship, the RAP supports a **long-term transition toward a greener and more inclusive rural economy**.

In summary, while **economic indicators in the Poloniny region lag significantly behind national and EU averages**, the area possesses **unique territorial capital** in its forests, crafts, and culture. Leveraging these assets in a strategic and community-driven way is critical to reversing negative trends and unlocking a **resilient, self-sustaining development pathway** for this marginal but ecologically invaluable part of Slovakia.

### **2.2.1. Social Vulnerability and Education in the Poloniny Region**

The **Poloniny region**, situated in the **Snina district** within the **Prešov Region of Slovakia**, faces **persistent social and educational challenges** that mirror broader

patterns of marginalisation in Eastern Slovakia. These conditions present significant obstacles to economic self-sufficiency, intergenerational stability, and local capacity-building – all of which are vital for the success of the Danube Wood(s) Route initiative.

According to data from the **Slovak Statistical Office and Eurostat**, the **Prešov Region has one of the highest poverty rates in Slovakia**, with over **15% of the population living at risk of poverty or social exclusion**. Within Snina district – a largely rural, forested area with few industrial or urban centres – poverty levels are even more pronounced. Vulnerable groups include:

- **Unemployed or underemployed youth**
- **Elderly residents with limited pensions**
- **Roma communities living in marginalised settlements**
- **Families dependent on seasonal or informal income**

The limited availability of well-paying jobs, combined with low levels of economic diversification, forces many residents – particularly the younger generation – to seek work outside the region or abroad. This contributes to **long-term depopulation and “brain drain”**, weakening local human capital and community resilience.

One of the most pressing indicators of social vulnerability in the region is **early school leaving**. According to regional data, the **dropout rate among 18–24-year-olds** in the Prešov Region **exceeds 15%**, placing it well above the national average and among the **highest in the country**. In areas with higher Roma populations and limited educational infrastructure, the figure may be significantly higher.

Low educational attainment is compounded by:

- **Limited vocational opportunities tied to local heritage or crafts**
- **Inadequate transport to secondary schools or apprenticeships**
- **Low digital literacy and internet access in rural areas**



These factors create barriers to youth engagement in sustainable forestry, wood-based entrepreneurship, or ecotourism – sectors with growth potential in the Poloniny region.

On a more positive note, several **community initiatives and NGOs**, such as **Aevis, Take Naše, and the Slovak Forestry Society**, have begun addressing these issues through informal education, skills workshops, and forest-based learning. However, the scale of these interventions remains limited by funding and coordination constraints.

The **Danube Wood(s) RAP for Poloniny** aims to:

**Create pathways for youth engagement** in green careers, traditional craftsmanship, and nature-based tourism

**Integrate forest and wood-related knowledge** into local educational curricula

**Support early intervention programs** that combine education, environment, and culture

Addressing **social vulnerability and educational disadvantage** is not only a moral imperative – it is essential to ensure that the benefits of cultural route development are **equitably shared** and that local communities are **active co-creators** of the region's future.

In conclusion, **the fight against poverty and early school leaving in Poloniny is intertwined with the region's ability to retain its population and revitalise its rural economy**. The RAP will support targeted actions to close these gaps, with a focus on empowering disadvantaged groups and fostering inclusive participation in heritage-based development.

## 2.3. Summary of the regional assessment

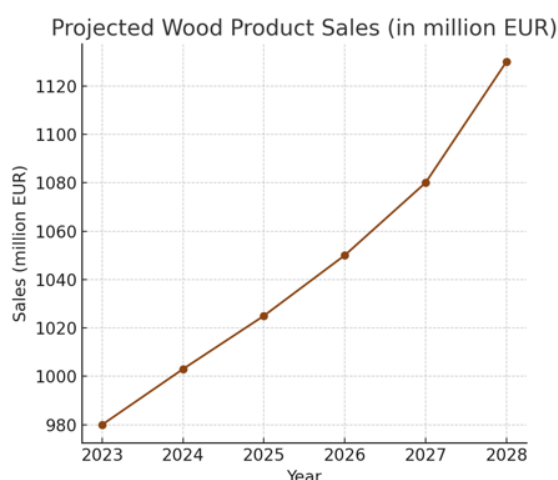
The **Poloniny region** represents one of the most ecologically valuable and socio-economically vulnerable forested landscapes in Slovakia and the broader Danube macro-region. This regional assessment has highlighted how **biodiversity, natural resources, cultural heritage, and community well-being** are deeply intertwined in this remote mountain area.

Forests in Poloniny play a **vital ecological role**, preserving some of Europe's last **primeval beech ecosystems**, which host an extraordinary range of **native plant and animal species**. The **UNESCO-listed old-growth forests**, such as **Stužica, Havešová, and Rožok**, are among the few remaining examples of untouched Carpathian forest dynamics. These forests contribute significantly to **carbon storage, soil and water regulation, and climate resilience**, making them essential both locally and globally.

Unlike regions dominated by monocultures or artificial plantations, Poloniny's woodlands are primarily **naturally regenerated and composed of native species**, forming structurally diverse and ecologically intact systems. However, this ecological wealth faces increasing threats from **climate change, habitat fragmentation, invasive species**, and **unsustainable tourism practices**. Although protected by strict nature conservation designations, these forests require **active and adaptive management** to preserve their long-term health.

***"Wood product sales in Slovakia are projected to grow from €980 million in 2023 to €1.13 billion by 2028."*** (Reportlinker, 2023)

**Figure 2: Projected Growth of Wood Product Sales (2023–2028)**



The social and economic realities of the region present major challenges to sustainable forest stewardship. With **one of the lowest GDP per capita levels in Slovakia**, high rates of **unemployment**, and **youth outmigration**, the local economy is fragile and heavily reliant on **public services, seasonal work, and state forestry operations**. Traditional livelihoods, including **woodworking and subsistence farming**, have declined significantly, while **modern alternatives are limited** by poor infrastructure, low investment, and administrative fragmentation.

The forestry and timber sectors still provide important employment opportunities in the region, particularly through small enterprises and cooperatives. However, the **aging workforce**, combined with the **loss of traditional skills**, threatens the long-term

viability of these industries. There is a clear need for **vocational training, youth engagement**, and **knowledge transfer** to ensure a resilient future for forest-based livelihoods.

From a biodiversity perspective, Poloniny's forests remain a sanctuary for species that have disappeared from other parts of Europe. Yet **overpopulation of large herbivores**, such as **wild boar and deer**, combined with changes in land use and climate, are placing pressure on natural regeneration. While commercial timber harvesting is limited in core protected areas, **fuelwood collection, game management, and localized tourism** still require careful balancing with conservation goals.

The **social perception of forests** has also shifted in recent decades. Forests are no longer seen solely as a resource for fuel and construction but increasingly as spaces for **recreation, education, spirituality, and identity**. The presence of **wooden churches, dark-sky parks, and eco-spiritual tourism** reflects this evolving relationship. However, **environmental awareness** and **community participation** remain underdeveloped, particularly in marginalised settlements.

To address these complex interdependencies, the Poloniny RAP proposes a holistic approach that integrates:

- **Ecological conservation** with **economic revitalisation**
- **Heritage protection** with **modern innovation**
- **Community education** with **governance reform**

The RAP also aligns with the “**One Health**” principle, recognising that **human health, ecosystem integrity, and cultural vitality** are inseparable. Forests are not just carbon sinks or biodiversity repositories—they are **living systems that support human well-being**, especially in rural and mountainous communities.

Moving forward, achieving sustainability in the Poloniny region will require:

- **Cross-sectoral cooperation**
- **Long-term investment in nature-based economies**
- **Stronger policy frameworks**

## □ Support for bottom-up initiatives and local leadership

By supporting **community-based forest management**, enhancing environmental literacy, and creating value-added opportunities from **wood and culture**, the Danube Wood(s) Route can serve as a **model for inclusive, heritage-driven development** in sensitive forested regions across Europe.

## 2.4. Challenges and opportunities

The following chapter summarises the challenges and opportunities identified in the Regional Analysis.

### 2.4.1. Ecological Challenges and Opportunities in the Poloniny Region

The Poloniny region is one of the most ecologically valuable territories in Central Europe, renowned for its biodiversity, well-preserved old-growth forests, and internationally recognized protection status (National Park, UNESCO World Heritage Site, Natura 2000, and Biosphere Reserve). However, the region faces rapidly evolving environmental conditions that require proactive action and cross-sectoral coordination. These challenges can be grouped into three thematic areas, each of which is also accompanied by promising opportunities for long-term sustainability and regional development.

| Challenges  | Opportunities  |
|---|--|
| <b>1. Impacts of Climate Change and Weather Extremes</b><br>The forest ecosystems of Poloniny are increasingly affected by the consequences of climate change, including prolonged droughts, abrupt temperature fluctuations, storm events, and secondary outbreaks of pests and diseases. While wildfires are not common in this region, rising temperatures and altered | <b>Opportunity:</b><br>Poloniny's inclusion in UNESCO and Natura 2000 opens access to European and international funding dedicated to climate adaptation, biodiversity conservation, and ecosystem restoration. These tools offer structured pathways to address |

| Challenges  | Opportunities  |
|---|--|
| microclimates have increased their likelihood, particularly during dry periods. These climate pressures can disrupt natural forest processes, destabilize ecological balance, and significantly increase management costs.  | environmental threats proactively.   |
| <p><b>2. Biotic Stressors and Forest Regeneration Challenges</b></p> <p>Natural forest regeneration in Poloniny is hindered by excessive populations of wild herbivores, especially deer and wild boar, which severely suppress seedling growth. Additionally, the spread of invasive plant species and diseases negatively affects native undergrowth diversity, weakening the ecosystem's overall stability and resilience.</p>   | <p><b>Opportunity:</b></p> <p>Poloniny's high species diversity provides excellent conditions for environmental education, field research, and low-impact ecotourism (e.g. birdwatching, wildlife observation, educational hiking). These can be expanded through partnerships with conservation NGOs, schools, and research institutions.</p>   |
| <p><b>3. Systemic and Societal Gaps in Conservation</b></p> <p>Despite multiple layers of protection (NP, UNESCO, Natura 2000), there is no unified and efficiently coordinated zoning and management system in place. Administrative fragmentation and capacity gaps hinder effective monitoring, planning, and intervention. Furthermore, local community involvement in conservation remains limited, with environmental issues often perceived as distant or irrelevant. Practical environmental education and inclusive engagement mechanisms are lacking.</p> | <p><b>Opportunity:</b> Existing local initiatives—such as Aevis, the State Nature Conservancy (SOP SR), eco-educational schools, and volunteer groups—form a solid foundation for expanding community engagement and awareness. The rising demand for forest therapy, nature-based experiences, and citizen science offers new channels for public participation and eco-literacy.</p> |

## 2.4.2. Forestry and Timber Economy in Poloniny – Challenges and Opportunities

Forests and the wood-processing sector have historically been integral to life in Poloniny. Thanks to preserved forest complexes and traditional forest management, the region has developed unique craft techniques, wooden architecture, and local production systems with the potential to revitalize the rural economy. Today, however, the sector faces numerous challenges limiting modernization, integration with tourism, innovation, and sustainability. Nevertheless, emerging ecological trends and technological progress present new opportunities.

| Challenges   | Opportunities  |
|--|--|
| <b>1. Scarce Access to Raw Materials and Complex Supply Chains</b> Small and family-run enterprises in the region often struggle to access a stable supply of raw timber, facing competition from larger industrial players. Strict conservation regimes also limit local logging, while high transport costs hinder product distribution. | <b>Opportunity:</b> Several strong micro-enterprises (e.g. BEKY, UDAVA, H&L Tesárstvo) could anchor a regional "Poloniny Wood Cluster" focused on knowledge-sharing, resource pooling, and collective branding. A short supply chain model (local harvesting → local processing → local sale/export) could reduce costs and boost competitiveness. |
| <b>2. Low Innovation and Technological Obsolescence</b> Most small producers operate with outdated equipment, limiting productivity and quality. Access to CNC machines, low-emission dryers, or digital modeling tools is rare, despite growing demand for sustainable materials and designs.   | <b>Opportunity:</b> Establishing an innovation hub or "next-generation workshop" for eco-design, biomaterials, or cross-laminated timber (CLT) could transform production. Digital tools (e.g. 3D visualization, e-commerce, online training) would enable market expansion beyond the local area.   |
| <b>3. Decline of Traditional Crafts and Intergenerational Transfer</b> Crafts like shingle-making, icon painting, and hand woodworking are vanishing, with few masters remaining and youth migration accelerating. There is little linkage between heritage  | <b>Opportunity:</b> A School of Traditional Woodcraft and Carpentry could combine heritage skills with modern sustainable design. Such a center could also function as a tourist attraction, training facility, and creative workshop.   |

| Challenges  | Opportunities   |
|---|---|
| techniques and contemporary applications.   |   |
| <b>4. Low Public Awareness of Certified Sustainable Wood</b> Few consumers understand the value of FSC/PEFC-certified wood, which weakens demand for eco-products and hampers regional branding like "Wood of Poloniny." Producers also lack marketing resources. | <b>Opportunity:</b> A unified regional identity and brand for Poloniny wood products could enhance market visibility and value. Storytelling, visitor engagement, and collaboration with architects and designers could elevate perception and foster demand. |
| <b>5. Weak Connection to Research and Development</b> The region lacks institutional ties to academic and research bodies, reducing opportunities for testing new solutions or adapting innovations to local needs.   | <b>Opportunity:</b> Collaborating with universities (e.g. Zvolen, Prešov) or design schools could spark prototype development, joint research, and innovative curricula. Poloniny could become a living lab for sustainable forestry in biosphere landscapes. |

### 2.4.3. Wood Heritage and Cultural Tourism – Challenges and Opportunities

Poloniny's wooden monuments and cultural woodcraft represent a valuable yet fragile asset. The region hosts a unique ensemble of wooden churches, craft workshops, and intangible heritage. If properly developed, these could become the foundation of strong cultural and experiential tourism. However, infrastructure, human resource, and system-level barriers currently limit this potential.

| Challenges   | Opportunities   |
|--|---|
| <b>1. Condition and Preservation of Wooden Monuments</b> Many of the region's wooden heritage sites—including churches, barns, drying houses, and traditional dwellings—suffer from neglect and lack of maintenance. Without targeted investment and technical | <b>Opportunity:</b> UNESCO-designated churches serve as flagship cultural icons. Their status enables access to cross-border cultural funding (e.g. Creative Europe, Interreg). Joint initiatives with Ukraine and Poland can support promotion and shared conservation |

| Challenges   | Opportunities  |
|--|--|
| care, these authentic structures face ongoing degradation.   | of Carpathian wooden heritage.   |
| <b>2. Missing Thematic Tourist Product</b> There is no integrated thematic route linking wooden heritage, crafts, and natural attractions. Marked trails, signage, guides, and tailored packages for various audiences are underdeveloped or absent.                         | <b>Opportunity:</b> A "Wood & Stars Trail" combining heritage sites, forest paths, and dark-sky experiences could serve as a signature product. Innovative tools (QR codes, mobile apps, AR storytelling) would enhance interpretation and appeal to younger visitors. |
| <b>3. Limited Experiential and Community-Based Tourism</b> Support for workshops, festivals, and hands-on visitor activities is currently fragmented. Tourism offerings are often passive and do not tap into the growing demand for interactive, participatory experiences. | <b>Opportunity:</b> Hosting themed festivals, craft days, and living museums would activate local skills, attract new markets, and strengthen community identity.  |

#### 2.4.4. Socio-Institutional Context – Challenges and Opportunities

The Poloniny region remains on the periphery of Slovakia's socio-economic development. Outmigration, demographic aging, and institutional capacity gaps present systemic barriers. However, these also open space for new, community-driven development models grounded in heritage and sustainability.

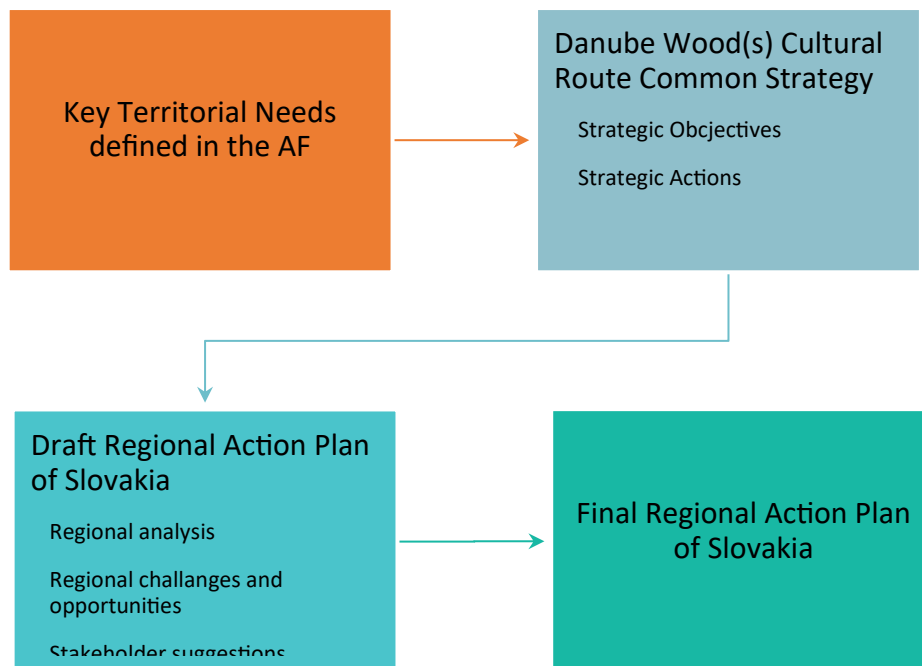
| Challenges  | Opportunities   |
|---|---|
| <b>1. Demographic and Human Resource Weaknesses</b> Youth outmigration, including skilled craftspersons and creative minds, interrupts generational knowledge transfer. Meanwhile, many municipalities lack the staff | <b>Opportunity:</b> The rise of ecotourism, nature-based education, and rural entrepreneurship offers chances to engage youth through training, volunteering, and new enterprises |



| Challenges   | Opportunities   |
|--|---|
| to initiate and manage development projects.   | (e.g. eco-lodging, guiding services).   |
| <b>2. Weak Coordination and Actor Fragmentation</b> Municipalities, schools, artisans, businesses, and NGOs often work in silos, without shared strategy or data exchange. | <b>Opportunity:</b> Strong local organizations (Aevis, Take Naše, CHKO) and existing digital platforms (regionpoloniny.sk, ekopoloniny.sk) can form a collaborative network to pool resources and implement joint actions.                  |
| <b>3. Infrastructure and Digital Isolation</b> Remote geography and limited internet access constrain economic activity, outreach, and market connectivity.                | <b>Opportunity:</b> Low-cost digital solutions (e.g. e-learning, social media, storytelling platforms) can increase visibility and sales—even from remote locations. These are vital for promoting regional brands like "Wood of Poloniny." |
| <b>4. Financial Dependence and Short-Termism</b> Many development efforts depend on short-term project cycles without long-term vision or continuity.                      | <b>Opportunity:</b> Programs such as Interreg, Life, Erasmus+, and Kult Minor offer long-term, impact-driven funding to support sustainable community development and capacity-building.  |

# 3.Strategic framework

The Danube Wood(s) RAPs have a well-defined methodological approach with the following stages:



*Figure 3: Development of the Regional Action Plan*

To be clear on the basis of Actionable measures, the following table explains the connection of objectives between the objectives Danube Wood(s) project, the Danube Wood(s) Route Strategy, and the RAP. The RAP Key Focus Areas have to be in line with Strategic Actions and Objectives. Actionable measures are grouped under the RAP Key Focus Areas.

Original Key Focus Areas:

- Preservation and Conservation Initiatives — Actions to conserve forest areas and wood-based cultural heritage, like habitat restoration, reforestation, and the promotion of traditional woodcrafts.
- Economic and Tourism Development — Building an infrastructure to support tourism products that promote cultural and natural assets related to wood, including workshops, cultural routes, and eco-tourism initiatives.

- Educational and Awareness Campaigns — Increasing local and stakeholder awareness about the importance of sustainable forest management and wood-based heritage.

New arrangement corresponding to the Regional Analysis:

- **Preservation and Conservation of Local Wood Heritage** – Integrated actions aimed at protecting natural forest ecosystems and safeguarding the cultural legacy of wood through habitat restoration, biodiversity conservation, and the revitalization of traditional crafts and wooden architecture.
- **Promotion of Wood-Based Ecotourism** – Development and promotion of sustainable, nature-based tourism offerings that highlight forest landscapes and wood-related cultural heritage, while supporting rural economies and raising environmental awareness through experiential travel and educational engagement.
- **Sustainable Forestry and Wood-Based Economy Development** – Fostering an innovative and climate-resilient forestry sector that balances ecological sustainability with economic viability through responsible resource use, carbon market integration, and the advancement of green technologies in wood-based industries.
- **Education and Awareness for Sustainable Forestry and Wood Heritage** – Strengthening public and professional knowledge of sustainable forest management and wood culture through targeted educational programs, community involvement, cross-sector collaboration, and accessible knowledge-sharing platforms.

The **Strategic Framework** of the Poloniny Regional Action Plan (RAP) is designed to directly support and translate the overarching goals of the **Danube Wood(s) project** and the **Danube Wood(s) Route Strategy** into **locally actionable priorities**. This structure ensures that regional implementation is not only aligned with transnational ambitions but also tailored to the **unique socio-ecological and cultural landscape of the Poloniny region**.

To guide the planning and implementation of actionable measures, the RAP identifies **four Key Focus Areas** (KFAs). These KFAs are derived from both the **Danube Wood(s) Route Strategy** and the **challenges and opportunities identified in the Poloniny regional analysis**, particularly from the SWOT assessments of biodiversity, forestry, and wood heritage.

Each focus area is associated with **strategic objectives** that integrate the principles of **sustainability, resilience, and community empowerment**, and provide the framework for the specific measures described in Chapter 4.

Figure 4: Strategic framework of the Regional Action Plan (RAP)

| Strategic Objectives<br>(project and strategic objectives)  | Danube Wood Cultural Route<br>Strategic Actions   | RAP Key Focus Area   |
|---|---|--|
| <b>Danube Wood Cultural Route Strategy</b><br><b>Objective 1</b> Preserve and/or Restore Biodiversity and Natural Resources | <ol style="list-style-type: none"> <li>1. Monitor Biodiversity</li> <li>2. Strengthen Forest Governance</li> <li>3. Promote Sustainable Forestry Practices</li> <li>4. Actions for the restoration of biodiversity and natural resources</li> <li>5. Financial framework for assuring biodiversity payments (regional/national level)</li> </ol>  | <b>Sustainable Forestry and Wood-Based Economy Development</b> |
| <b>Danube Wood Cultural Route Strategy</b><br><b>Objective 2:</b> Develop a sustainable forest-based economy.               | <ol style="list-style-type: none"> <li>6. Enhancing and accessibility to forest resources</li> <li>7. Enhance market access for “regional” timber products</li> <li>8. Valorisation of forest products and services other than timber</li> <li>9. Encourage Local Entrepreneurship</li> <li>10. Foster Innovation: Invest in research and development for innovative wood-based bio-economy solutions.</li> </ol> | <b>Sustainable Forestry and Wood-Based Economy Development</b> |
| <b>Danube Wood Cultural Route Strategy</b><br><b>Objective 3:</b> Valorize cultural heritage related to wood                | <ol style="list-style-type: none"> <li>11. Promote Traditional Craftsmanship</li> <li>12. Annual Festivals and Events</li> <li>13. Cultural Tourism Initiatives</li> <li>14. Establish strong regional networks among key stakeholders</li> <li>15. Develop Heritage Centers</li> </ol>   | <b>Preservation and Conservation of Local Wood Heritage</b>    |
| <b>Danube Wood Cultural</b>   | <ol style="list-style-type: none"> <li>16. Cultural Tourism Products</li> </ol>   | <b>Promotion of</b>  |

| Strategic Objectives<br>(project and strategic objectives)  | Danube Wood Cultural Route<br>Strategic Actions  | RAP Key Focus Area   |
|---|--|--|
| <b>Route Strategy</b><br><b>Objective4:</b> Develop Sustainable Tourism.  | 17. Active Tourism Products<br>18. Capacity Building for Tourism Stakeholders<br>19. Infrastructure Enhancement<br>20. Promotion   | Wood-Based Ecotourism  |
| <b>Danube Wood Cultural Route Strategy</b><br><b>Objective5:</b> Raise awareness and build community engagement | 21. Educational Campaigns<br>22. Educational Programs<br>23. Digital Awareness Programs<br>24. Community Workshops<br>25. Public Information Platforms<br>26. Stakeholder Collaboration Forums | Education and Awareness for Sustainable Forestry and Wood Heritage |

## 4.Actionable measures

The following two tables showcase the identified actionable measures in Hungary. Two of these measures will be elaborated further, based on the stakeholder reviews, and suggestions.

Figure 5: Actionable Measures addressing the identified challenges

| N o. | Actionable Measures  | RAP Key Focus Area   |
|------|--|--|
| 1    | <b>1.1. Forest Protection and Natural Habitat Restoration</b><br><br>Restore degraded forest edges and transitional zones using <b>native species</b> , with a focus on <b>buffer areas</b> of the <b>UNESCO beech forest core zones</b> . Pilot <b>natural regeneration</b> over replanting where possible. | <b>Preservation and Conservation of Local Wood Heritage</b><br><br>Integrated actions aimed at protecting natural forest ecosystems and safeguarding the cultural legacy of wood through habitat restoration, biodiversity conservation, and the revitalization of traditional crafts and wooden architecture. |
|      | <b>1.2. Wildlife Management for Ecological Balance</b><br><br>Develop a local action plan to manage <b>overpopulation of wild boar and deer</b> , including <b>community consultations</b> and partnerships with <b>forest rangers</b> and <b>hunters</b> .  |  |
|      | <b>1.3 Safeguarding Wooden Architecture</b><br><br>Support the restoration of <b>historic wooden churches</b> (e.g. Ruská Bystrá, Topoľa), including conservation of <b>carved iconostases</b> and <b>shingle roofing</b> , in cooperation with <b>heritage authorities</b> and <b>parishes</b> .            |  |
|      | <b>1.4 Traditional Craft Revitalization</b><br><br>Support local artisans through <b>small grants, training programs</b> , and participation in regional   |  |

| N<br>o. | Actionable Measures  | RAP Key Focus Area  |
|---------|--|---|
|         | <b>woodworking markets and festivals.</b>  |   |
| 2       | <b>2.1 Creation of “Drevo Polonín” Thematic Trail</b><br><br>Establish an interpretive trail connecting <b>key natural and cultural sites</b> (UNESCO forests, wooden churches, dark-sky sites) using <b>QR-coded signage, storytelling, and local guides.</b> | <b>Promotion of Wood-Based Ecotourism</b><br><br>Development and promotion of sustainable, nature-based tourism offerings that highlight forest landscapes and wood-related cultural heritage, while supporting rural economies and raising environmental awareness through experiential travel and educational engagement. |
|         | <b>2.2 Support Eco-Tourism Microbusinesses</b><br><br>Provide mentoring and seed funding for <b>eco-lodges, forest retreats, guided tours, and dark-sky observation experiences.</b> Encourage <b>female and youth entrepreneurship.</b>                       |   |
|         | <b>2.3. Low-Impact Tourism Infrastructure</b><br><br>Develop <b>eco-friendly visitor infrastructure</b> , including <b>wooden shelters, e-bike charging stations, and information panels</b> using <b>local materials and artisans.</b>                        |   |
|         | <b>2.4. Cross-Border Eco-Tourism Collaboration</b><br><br>Launch joint initiatives with <b>Poland and Ukraine</b> (East Carpathians Biosphere Reserve) to co-develop <b>transnational eco-tourism packages</b> and events.                                     |   |
| 3       | <b>3.1 Strengthen Local Timber Value Chains</b><br><br>Map and connect <b>micro sawmills, carpenters, furniture makers, and logistics providers</b> to create a <b>“Poloniny Wood Cluster”</b> for added value and branding.                                   | <b>Sustainable Forestry and Wood-Based Economy Development</b><br><br>Fostering an innovative and climate-resilient forestry sector that  |

| N<br>o. | Actionable Measures   | RAP Key Focus Area   |
|---------|---|--|
|         | <b>3.2 Green Innovation in Wood Processing</b><br><br>Support investments in <b>low-emission kilns, CNC machines, and eco-certification</b> to improve competitiveness of local wood enterprises.                                     | balances ecological sustainability with economic viability through responsible resource use, carbon market integration, and the advancement of green technologies in wood-based industries.  |
|         | <b>3.3. Wood-Based Product Innovation Lab</b><br><br>Establish a <b>design hub or co-working space</b> for artisans, architects, and students focused on <b>sustainable product design using local wood</b> .                         |  |
| 4       | <b>4.1 Forest Education in Schools</b><br><br>Develop forest-based education modules for <b>local primary and secondary schools</b> , including <b>field trips, craft workshops</b> , and <b>biodiversity games</b> .                 | <b>Education and Awareness for Sustainable Forestry and Wood Heritage</b><br><br>Strengthening public and professional knowledge of sustainable forest management and wood culture through targeted educational programs, community involvement, cross-sector collaboration, and accessible knowledge-sharing platforms. |
|         | <b>4.2. School of Traditional Woodcrafts</b><br><br>Create a <b>community-run learning centre</b> offering <b>courses in carpentry, icon painting, shingle-making</b> , and <b>sustainable forest management</b> .                    |  |
|         | <b>4.3. Public Awareness and Campaigns</b><br><br>Organize <b>seasonal public events</b> (e.g., Wood Day, Forest Week), local <b>media campaigns</b> , and <b>citizen science initiatives</b> to boost environmental literacy.        |  |
|         | <b>4.4. Stakeholder Training &amp; Knowledge Platforms</b><br><br>Host cross-sector training for <b>forest professionals, local authorities, and tourism actors</b> , and develop a <b>digital hub</b> for best practices and project |  |



| N o. | Actionable Measures | RAP Key Focus Area |
|------|---------------------|--------------------|
|      | resources.          |                    |

The following table presents a set of **concrete, regionally tailored measures** designed to implement the objectives outlined in the strategic framework. These measures reflect the **local priorities, stakeholder insights**, and **environmental conditions** of the Poloniny region. Each measure addresses a key challenge and contributes to long-term sustainability through **cross-sector cooperation, community involvement**, and **innovation**.

Figure 6: Actionable measures building on Strategic Actions

| Strategic Actions                                | Actionable Measures   | Poloniny-Specific Context / Notes  |
|--|---|--|
| <b>16. Cultural Tourism Products</b>             | 1.3 Safeguarding Wooden Architecture<br>1.4 Traditional Craft Revitalization                            | Focus on restoration of <b>wooden churches</b> (e.g. Ruská Bystrá), <b>iconostases</b> , and revival of local woodcraft through festivals and workshops.     |
| <b>3. Promote Sustainable Forestry Practices</b> | 1.1 Forest Protection and Natural Habitat Restoration<br>1.2 Wildlife Management for Ecological Balance | Native regeneration and targeted <b>wildlife population management</b> in buffer zones to preserve natural forest dynamics and reduce regeneration pressure. |
| <b>15. Develop Heritage Centers</b>              | 4.2 School of Traditional Woodcrafts  | A hands-on <b>educational hub</b> in Ulič or Snina focused on <b>carpentry, shingle-making, and icon painting</b> , bridging tradition with sustainability.  |
| <b>26. Stakeholder Collaboration Forums</b>      | 2.4 Cross-Border Eco-Tourism Collaboration  | Collaboration with <b>Ukraine and Poland</b> in the <b>East Carpathians Biosphere</b>  |

| Strategic Actions                                | Actionable Measures   | Poloniny-Specific Context / Notes   |
|--|---|---|
|  |   | <b>Reserve</b> , promoting shared wooden heritage and ecological corridors.   |
| <b>16. Cultural Tourism Products</b>             | 2.1 Creation of “Drevo Polonín” Thematic Trail                                      | Establishment of a <b>trail network</b> linking churches, forests, observatory, and woodcraft sites with interpretive content.    |
| <b>19. Infrastructure Enhancement</b>            | 2.3 Low-Impact Tourism Infrastructure   | Development of <b>shelters, signage, and cycling routes</b> using local timber and engaging local craftspeople.                   |
| <b>16. Cultural Tourism Products</b>             | 2.2 Support Eco-Tourism Microbusinesses   | Training and financial incentives for local operators to offer <b>dark-sky tours, craft sessions, and ecological stays</b> .      |
| <b>12. Annual Festivals and Events</b>           | 1.4 Traditional Craft Revitalization<br>4.3 Public Awareness and Campaigns          | Launch of <b>annual Wood Festival</b> , with school involvement, artisan markets, and open workshops.                             |
| <b>3. Promote Sustainable Forestry Practices</b> | 3.1 Strengthen Local Timber Value Chains<br>3.3 Green Innovation in Wood Processing | Emphasis on <b>PEFC/FSC certification</b> for local producers and <b>selective harvesting in buffer zones</b> .                   |
| <b>9. Encourage local entrepreneurship</b>       | 3.4 Wood-Based Product Innovation Lab   | Establish a creative hub to prototype <b>eco-designs, traditional-meets-modern wooden products</b> , and new uses for waste wood. |
| <b>10. Foster Innovation: Invest in</b>          | 3.3 Green Innovation in Wood Processing   | Support <b>pilot projects</b> in sustainable timber architecture using local species.   |

| Strategic Actions   | Actionable Measures  | Poloniny-Specific Context / Notes  |
|---|--|--|
| research and development for innovative wood-based bio-economy solutions. |  |  |
| <b>22. Educational Program</b>  | 4.1 Forest Education in Schools<br>4.2 School of Traditional Woodcrafts              | Curriculum-linked programs with <b>on-site experiences</b> , craft apprenticeships, and forest literacy modules.               |
| <b>21. Educational Campaigns</b>  | 4.3 Public Awareness and Campaigns<br>4.4 Stakeholder Training & Knowledge Platforms | Focused on <b>climate resilience, heritage value, and forest stewardship</b> , especially among youth and marginalised groups. |
| <b>23. Digital Awareness Programs</b>                                     | 2.1 QR-coded Drevo Polonín Trail<br>4.4 Knowledge Platforms                          | Integration of <b>mobile apps, digital interpretation</b> , and storytelling-based promotion (AR/VR elements).                 |
| <b>26. Stakeholder Collaboration Forums</b>                               | 4.4 Stakeholder Training & Knowledge Platforms                                       | Establish a <b>regional innovation platform</b> linked to Prešov University, ŠOP SR, NGOs, and rural actors.                   |

This matrix links each **strategic priority** of the Danube Wood(s) Route to the **on-the-ground actions** needed to make them happen in Poloniny.

The next section is a structured elaboration of the two actions, which were selected based on their short-term feasibility while maximising long-term effect.

## **4.1. Action1 - 2.1 Development of “Drevo Polonín” Thematic Trail**

### **4.1.1. Relevance of the measure:**

The Poloniny region offers a unique intersection of rich forest heritage, traditional woodworking skills, and untouched Carpathian nature. Despite this potential, the wood-based heritage remains underrepresented in the tourism offer. The development of a thematic route focused on woodcraft and forest culture will contribute to local economic development, especially in underutilized rural areas. It will also enhance visibility of sustainable forest use and strengthen the cultural identity of the region within the Danube Wood(s) Route network.

This action directly addresses the identified need to better integrate local forestry, timber heritage, and eco-tourism in the Poloniny region. It builds on existing strengths (rich woodcraft traditions and protected beech forests) while addressing weaknesses such as low visibility and limited infrastructure. It also links to regional identity, sustainable rural development, and the objectives of the Danube Wood(s) Route.

### **4.1.2. Nature of the action:**

The action proposes the creation of a thematic visitor route titled "Poloniny Woodcraft and Heritage Experience"—to be known regionally as the “Drevo Polonín” trail. This route will interconnect significant places related to the region’s timber traditions—historic wooden churches, artisan workshops, forest education sites, and craftsman demonstrations. The route will blend cultural interpretation with nature-based experiences, offering tourists and school groups engaging ways to explore the relationship between forest use and regional lifestyle. Activities include hands-on workshops, guided tours, QR-coded signage, storytelling.

### **4.1.3. Activities performed under the Action**

The successful implementation of the Poloniny Woodcraft and Heritage Experience Route will require a combination of preparatory, organizational, and promotional activities. These will be carried out in close coordination with local stakeholders and will focus on ensuring both authenticity and accessibility of the experience. The planned activities are:

- **Mapping and site selection:** A detailed mapping process will be conducted to identify suitable craftspeople, woodworking workshops, forest interpretation spots, and architectural heritage sites. This step will ensure that the route highlights diverse and meaningful locations with a strong connection to the woodcraft and forest traditions of the region.
- **Development of interpretation tools:** The project will produce bilingual (Slovak and English) signage, educational panels, printed brochures, and a user-friendly mobile application. These tools will enhance visitor engagement and allow independent exploration of the route. Each stop will include storytelling elements related to forest use, craftsmanship, or ecological significance.
- **Training and capacity building:** Selected local guides, educators, and artisans will participate in training sessions focused on communication, visitor interaction, and sustainable tourism practices. This will improve the quality and consistency of visitor experiences along the route.
- **Promotional and branding campaign:** A targeted communication campaign will be launched to promote the route to ecotourists, cultural travelers, and schools. The campaign will include regional media outreach, collaboration with tourism boards, and digital marketing strategies.

**Educational integration:** Partnerships with schools and youth programs will be established to incorporate the route into educational excursions. This will help cultivate environmental awareness and appreciation of traditional crafts among younger generations.

#### 4.1.4. Potential Point(s) of Interest along the Danube Wood(s) Route

The route will connect a range of tangible and intangible heritage sites that collectively showcase the depth of Poloniny's wood-based identity. The selected points of interest will offer visitors a varied and immersive experience combining cultural heritage, active learning, and nature interpretation. Key examples include:

**Wooden churches of Topoľa and Ruský Potok:** These architectural landmarks exemplify traditional Carpathian carpentry and reflect the historical use of local timber in sacred construction. They are registered cultural monuments and serve as iconic symbols of the region's wooden architecture tradition.

**Workshops of regional artisans:** Several local craftsmen have already demonstrated readiness and capability to host visitors. Notably:

*Milan Karľa* specializes in handmade wooden tools, rooted in traditional techniques.

*Miroslav Buraľ* is known for producing handcrafted wooden shingles used for roofs and restoration works.

*Ladislav Horváth* crafts intricately carved wooden pipes, combining function and artistry.

*Ján Hančín* builds unique miniature wooden bicycles and cars, which fascinate both children and adults.

**Stužica primeval forest interpretation zones:** As one of the last remaining ancient beech forests in Europe and a UNESCO World Heritage Site, Stužica offers educational trails and opportunities for guided walks. These will be enhanced with interpretation elements focusing on forest ecology, sustainable logging, and the role of beech wood in regional history.

Each of these locations contributes to the narrative of how forests have shaped life, livelihoods, and culture in Poloniny—and how they continue to do so in a sustainable way today.

#### 4.1.5. Stakeholders involved

The successful delivery of the Poloniny Woodcraft and Heritage Experience Route depends on strong collaboration among a diverse group of regional actors. The inclusion of local craftspeople and institutions will ensure authenticity, community ownership, and sustainability of the route. Key stakeholders include:

- **Traditional woodcraft artisans and demonstrators** – such as Milan Karľa, Miroslav Buraľ, Ladislav Horváth, and Ján Hančín, whose skills and workshops will form the core experiential elements of the route.
- **Municipalities** – including Snina, Ulič, Topoľa, and other nearby villages that host historic wooden structures and serve as access points to forests and workshops.
- **Správa NP Poloniny (National Park Authority)** – responsible for managing forest areas, visitor trails, and educational materials within the park, including UNESCO-listed primeval beech forests.
- **Regional tourism boards and cultural centers** – tasked with integrating the route into broader tourism offers and providing promotional support.
- **Educational institutions and schools** – will be involved in pilot testing of the route for school groups, and in developing youth education modules focused on traditional wood use and sustainability.

- **Local NGOs and heritage associations** – supporting preservation, training, and public engagement around woodworking and forest-related traditions.

Active involvement of these groups will foster a networked approach to cultural tourism and wood-based interpretation in Poloniny.

#### 4.1.6. Timeline for implementation

The proposed action will be implemented in three stages over a period of three years:

- **18 months – Planning and stakeholder coordination:**
  - Initial meetings with craftspeople, municipalities, park authorities, and tourism actors
  - Mapping of heritage sites and selection of key participants
  - Drafting of route concept, interpretation plan, and educational framework
- **12 months – Development and pilot phase:**
  - Installation of signage and interpretation materials at selected locations
  - Training of guides and coordination with school and group tour operators
  - Launch of the mobile app and website content
  - Trial runs of the route with pilot groups
- **24 months – Public launch and promotion:**
  - Official opening of the route, local festival or community event
  - Full marketing campaign targeting regional and international audiences
  - Monitoring of visitor data, feedback collection, and evaluation of results

This phased approach ensures quality delivery, community readiness, and allows for iterative improvements based on feedback and testing.

#### 4.1.7. Estimated costs

The implementation of the Poloniny Woodcraft and Heritage Experience Route will require a carefully structured budget that supports both tangible and intangible elements of the action. The total estimated cost is **€180,000**, with the following indicative breakdown:

- **Planning and coordination activities** – including stakeholder engagement, administrative support, and route design: approximately €20,000
- **Interpretation infrastructure** – development and installation of signage, panels, and route markers: approximately €35,000

- **Digital tools and media** – mobile application, interactive map, website, and digital content: approximately €25,000
- **Training and capacity building** – workshops for guides, craftspeople, and educators: approximately €20,000
- **Promotional campaign and materials** – graphic design, printed brochures, PR events, online promotion: approximately €30,000
- **Monitoring and evaluation** – visitor surveys, feedback collection tools, route adjustment fund: approximately €10,000
- **Contingency and miscellaneous costs** – covering permits, insurance, and adjustments: approximately €40,000

Funding may come from a combination of sources including EU Interreg programmes, national tourism and culture grants, and regional development funds. Some in-kind contributions are also expected from municipalities and local organizations.

#### 4.1.8. Output and result indicators

To measure the impact of the action and guide future improvements, the following key indicators have been defined:

- **Number of new tourism products created:** 1 thematic visitor route dedicated to forest and timber culture
- **Number of physical points of interest included:** At least 10 locations with interpretation or interactive elements
- **Number of local artisans actively participating:** Minimum of 4 craftspeople featured as core experience providers
- **Visitor participation:** At least 200 visitors reached during the first pilot year, including school groups, individual tourists, and special interest travelers
- **Visibility and engagement:** Measured by media coverage, online interactions, and social media reach related to the route
- **Educational and cultural value:** Increased awareness among youth and local communities about sustainable wood use, traditional crafts, and forest heritage
- **Long-term integration:** Inclusion of the route into regional tourism offers and Danube Wood(s) Route promotional materials



## 4.2. Action 2 Establish Local Wood Clusters and Networks

### 4.2.1. Relevance of the measure

The Poloniny region is characterized by a rich yet underutilized ecosystem of local woodcraft, small-scale sawmills, cultural NGOs, and sustainable tourism providers. However, these stakeholders often operate in isolation, missing out on opportunities for synergy, innovation, and joint promotion. This fragmentation limits the visibility and development of the wood-based economy. Establishing a local wood cluster will enhance coordination, build trust among local actors, and create a unified identity under which local wood and craftsmanship can thrive.

### 4.2.2. Nature of the action

This action proposes the creation of a functioning regional wood cluster that brings together diverse local actors: artisans, small wood processors, sawmills, forestry experts, local NGOs, tourism operators, and educators. The cluster will operate as a participatory and informal platform dedicated to improving cooperation, strengthening regional identity linked to wood, and building capacity through shared actions and representation.

The cluster will:

- Serve as a communication and support hub for local wood-based businesses
  - Facilitate joint planning of events, product development, and marketing
  - Encourage innovation by sharing best practices and knowledge
  - Create a collective brand or label such as "Drevo Polonín" to represent regional values
- The action focuses on creating a functioning regional wood cluster, bringing together local artisans, small processors, tourism actors, conservation managers, and educators. The cluster will serve as a platform for communication, joint planning, promotion, and mutual support. It will strengthen local wood identity and enable collective visibility under a shared label such as "Drevo Polonín." The network will be supported by a part-time coordinator and will grow organically through regular meetings and shared actions.

### 4.2.3. Activities performed under the Action

To successfully establish and activate the local wood cluster in Poloniny, the following activities are foreseen:

- **Stakeholder mapping and engagement:**
  - Identify active and potential participants, including artisans, sawmills, NGOs, municipalities, tourism providers, and educators
  - Conduct individual outreach, interviews, and mapping of needs and expectations
- **Facilitated workshops and trust-building sessions:**
  - Organize 3–4 thematic meetings in Year 1 to define shared goals, values, and collaboration mechanisms
  - Use participatory methods and professional facilitation to promote transparency and openness
- **Creation of a shared identity and visual presence:**
  - Develop a regional brand (logo, motto, graphic design) to represent the cluster in public
  - Create basic communication materials (flyers, banners, social media visuals)
- **Joint marketing and education initiatives:**
  - Develop a small promotional catalogue or joint brochure of cluster members
  - Coordinate participation at local and regional fairs and exhibitions
  - Launch a basic cluster website or interactive map with member profiles
- **Knowledge exchange and external learning:**
  - Organize 1–2 study visits to other wood clusters in Slovakia or neighboring countries
  - Invite guest speakers or trainers to conduct workshops on marketing, pricing, or digital presence

These activities will build the foundation for a dynamic, self-sustaining network that supports traditional and modern wood-based initiatives in the region.

#### 4.2.4. Potential Point(s) of Interest along the Danube Wood(s) Route

The wood cluster will help elevate and connect several key sites in the Poloniny region, integrating them as part of the Danube Wood(s) Route and building stronger narratives around local wood identity:

- **Local artisan workshops** – Milan Karľa (traditional tools), Miroslav Bural (shingles), Ladislav Horváth (pipes), Ján Hančin (wooden miniatures). These sites serve as authentic, living demonstrations of regional craftsmanship.
- **Community centers in Ulič, Snina, and Topoľa** – These venues can host cluster meetings, temporary exhibitions, and promotional events, and serve as public-facing platforms for regional wood heritage.
- **Forestry interpretation trails in NP Poloniny** – Trail sites like Stužica and Rožok with existing signage and infrastructure can host seasonal events or outdoor learning activities tied to sustainable forestry.
- **Tourist Info Center Poloniny (Sninské rybníky)** – Managed by Aevis, it can serve as a communication node and meeting place for wood-themed tours, events, and school outreach programs.

These places offer infrastructure and symbolic value while being easily accessible to residents and visitors.

#### 4.2.5. Stakeholders involved

The wood cluster will draw strength from a broad and complementary mix of stakeholders:

- **Traditional artisans and small wood-based businesses** (e.g., BEKY – wood panels, DREVOP – wooden packaging, UDAVA – pallets)
- **Municipalities and micro-regions** – Snina, Ulič, and Topoľa provide key logistical and political support for meetings, events, and local engagement.
- **Správa NP Poloniny** – Can support with educational content, forest knowledge, and coordination in conservation areas.
- **NGOs** – Aevis and Karpatské Cerkev are experienced in tourism, heritage, and nature education, making them strong implementation partners.
- **Regional tourism and development organizations** – Including Regionpoloniny.sk and TIC Poloniny, who provide visibility, networking, and outreach.
- **Schools, cultural houses, and libraries** – Important multipliers for awareness-building and outreach into communities and youth programs.

Together, this diverse mix will ensure relevance, ownership, and sustainability of the cluster.

#### 4.2.6. Timeline for implementation

The action is planned over a three-year period, structured to allow gradual development and stakeholder integration:

- **2025 – Initiation and groundwork:**
  - Mapping of actors and initial outreach by project lead or coordinator
  - 2–3 small meetings with key individuals (craftspeople, mayors, educators) to shape the vision
  - Establishment of working group and agreement on initial principles and goals
- **2026 – Launch and pilot phase:**
  - Start of cluster communication activities (joint materials, digital presence)
  - Facilitation of joint participation in exhibitions and community events
  - Study visit to another region with a functioning wood cluster or cooperative
- **2027 – Consolidation and long-term planning:**
  - Reflection and evaluation workshops
  - Development of cluster’s long-term strategy and potential legal structuring (association or cooperative)
  - Preparation of funding applications or cross-border collaborations

This timeline ensures adequate time for trust-building and incremental implementation.

#### 4.2.7. Estimated costs

The action is designed as a low-investment but high-impact initiative, with an estimated budget of **€65,000**. This funding supports coordination, content creation, outreach, and knowledge exchange:

- **Cluster coordination and facilitation:** €25,000
  - Part-time coordinator or facilitator, basic travel and admin
- **Communication materials and tools:** €15,000
  - Logo, shared brand identity, brochures, online map or site
- **Workshops and stakeholder meetings:** €10,000
  - Room rental, catering, materials, honoraria for facilitators
- **Study visits and external learning:** €10,000
  - 1–2 visits to Slovak or cross-border cluster examples
- **Monitoring and documentation:** €5,000
  - Simple reports, photo/video documentation, feedback tools

Funding can come from regional development schemes, LEADER programs, Interreg small-scale project calls, or national cultural and SME support schemes.

#### 4.2.8. Output and result indicators

To measure the success and long-term viability of the cluster, the following outputs and indicators will be tracked:

- **1 regional wood cluster established**, with a clear identity and coordination structure
- **At least 15 stakeholders** from across crafts, forestry, tourism, and education involved by the end of Year 2
- **3 or more joint marketing or promotion initiatives** launched (e.g., shared brochures, participation in regional fairs, website launch)
- **1 functioning online visibility platform** (e.g., website, digital map, or member directory)
- **Improved internal collaboration and trust**, monitored through stakeholder surveys
- **Growing interest from new members** or youth to join the network

These indicators reflect both structural development and social cohesion within the cluster.

## 5. Implementation plan and monitoring system

## 5.1. Monitoring framework

To ensure the effectiveness of sustainable forest management and cultural heritage protection, it is essential to develop a comprehensive monitoring system. Appropriate indicators and metrics help objectively assess the progress and efficiency of Actionable measures.

## 5.2. Evaluation plan

To ensure the effectiveness of actions, a well-developed evaluation plan is essential, enabling the regular review and fine-tuning of outcomes:

- Prepare annual reports on the progress of strategic objectives.
- Hold regular consultations with stakeholders to evaluate results and determine necessary adjustments.
- Involve independent experts to ensure the credibility of evaluations.
- Conduct impact assessments to analyse long-term sustainability and economic effects.

## 5.3. Action indicators

The table below shows the measurable indicators for the implementation of the actions:

| Measure<br>(number) | Indicator                              |       | How<br>(method)  | Who<br>(PP or other acronym)         |
|---------------------|--|-------|--|--------------------------------------|
|                     | Measurement unit                       | Value |  |                                      |
| Action 1            | thematic trail created and operational | 1     | Field verification, documentation of signage and route map | PP ARR Prešov                        |
| Action 1            | physical POIs activated                | 10    | Site monitoring reports, photos                            | PP ARR Prešov                        |
| Action 1            | artisans actively involved             | 4+    | Workshop participation logs, signed cooperation agreements | PP ARR Prešov                        |
| Action 1            | visitors during pilot                  | 200+  | Visitor logbooks, surveys at key POIs                      | TIC Poloniny + Schools + NP Poloniny |

|          |                                     |                           |   |                                     |
|----------|-------------------------------------|---------------------------|---|-------------------------------------|
| Action 1 | Interpretation materials completed  | 1+                        | Printed and digital materials review              | PP ARR Prešov                       |
| Action 2 | wood cluster established            | 1                         | Cluster registration or formal agreement          | PP ARR Prešov + cluster coordinator |
| Action 1 | 15+ stakeholders engaged            | 15+                       | Attendance records, stakeholder list              | cluster coordinator                 |
| Action 2 | joint actions initiated             | 3+                        | Reports from fairs, exhibitions, marketing output | PP ARR Prešov + cluster mebers      |
| Action 2 | Online visibility platform launched | 1                         | Website link and analytics                        | PP ARR Prešov + web administator    |
| Action 2 | Stakeholder collaboration improved  | at least 65% satisfaction | Annual survey on collaboration quality            | PP ARR Prešov + External Evaluator  |

*Figure 7: Indicators for the implementation of actions*

## 6. Potential funding opportunities

To support the implementation of the proposed actions in Poloniny, several funding instruments at local, national, and EU levels are available or could be mobilized. These funding sources are aligned with the themes of sustainable forestry, cultural heritage, rural development, environmental education, and community cooperation.

## 6.1. European Union Programs

- **Interreg Danube Region Programme** – Support for transnational cooperation projects, small-scale initiatives, and pilot actions with thematic focus on heritage, tourism, green economy, and innovation.
- **Interreg Slovakia–Hungary / Slovakia–Poland / Slovakia–Ukraine CBC** – Opportunities for cross-border cooperation projects involving municipalities, NGOs, and SMEs.
- **LIFE Programme** – Funding for environmental and climate-related projects, including biodiversity conservation, sustainable land use, and awareness campaigns.
- **Creative Europe – Culture Strand** – Can support cultural heritage activities, storytelling, and crafts promotion related to wood heritage.
- **Erasmus+** – Supports education, training, and youth initiatives, including school outreach or cluster-based vocational education actions.

## 6.2. National and Regional Sources

- **Ministry of Environment SR – Operational Programme Slovakia** – Supports actions focused on sustainable natural resource management and biodiversity.
- **Ministry of Tourism and Sport – Tourism development schemes** – Potential support for interpretive trails and small infrastructure.
- **IROP – Integrated Regional Operational Programme (2021–2027)** – Offers funding for regional development, local action plans, and community-led tourism.
- **LEADER / Community-led local development (CLLD)** – Small-scale rural initiatives funded through Local Action Groups (LAGs), including support for cultural and economic clusters.

## 6.3. Other Support Mechanisms

- **National Trust / Cultural Heritage Funds** – Financing for wooden architecture, traditional craftsmanship, and interpretation.



- **Corporate Social Responsibility (CSR) programs** – Local wood and energy companies may support environmental awareness or education.
- **Crowdfunding and community fundraising** – Especially relevant for locally led events, small exhibitions, or micro-projects.

A combination of these funding channels will be sought, using coordinated project development through local partnerships and supported by experienced grant writers and cluster members.

## 7. Conclusion

### 7.1. Summary of key points

This Regional Action Plan for the Poloniny region demonstrates the significant value of forest-based cultural heritage as a driver for community development, environmental awareness, and sustainable tourism. Through the formulation of two primary actions—

Action 1: *Development of the “Drevo Polonín” Thematic Trail* and Action 2: *Establishment of a Local Wood Cluster*—the plan offers concrete and feasible strategies to strengthen regional identity, encourage collaboration, and activate the local wood economy.

The plan:

- Builds upon the existing assets of the Poloniny region, including primeval beech forests, traditional crafts, and rural tourism potential.
- Responds directly to national and transnational RAP measures, ensuring alignment with strategic objectives of the Danube Wood(s) Route.
- Emphasizes low-cost, high-impact initiatives that are practical and inclusive.
- Prioritizes collaboration between stakeholders across forestry, culture, education, and tourism sectors.

These actions are designed to produce measurable results while being scalable and replicable across similar rural regions.

## 7.2 Future directions and recommendations

To build upon the foundation laid by this plan, the following steps are recommended:

- **Deepen local ownership:** Ensure that actions are implemented with strong participation from local communities, artisans, and small businesses. Establish advisory groups or rotating leadership to maintain bottom-up momentum.
- **Create a long-term funding strategy:** In addition to project-based funding, explore sustainable financing mechanisms such as member contributions, cooperative models, and CSR partnerships with local enterprises.
- **Embed the actions in policy frameworks:** Integrate the thematic trail and wood cluster into local development strategies, school curricula, and tourism master plans.
- **Strengthen branding and promotion:** Finalize the identity and visibility tools for “Drevo Polonín” and promote the region across regional, national, and Danube-wide channels.
- **Support continuous learning and exchange:** Facilitate regular knowledge-sharing between stakeholders and with other regions involved in the Danube Wood(s) Route.

By following these recommendations, the Poloniny region can continue to grow as a recognized model of forest-based sustainability, cultural authenticity, and intersectoral cooperation.

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