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Participatory learning supports local adaptation in small communities in Hungary

Community-driven learning builds climate-resilient and self-sufficient food systems in Northern Hungary

Improving inhabitants' knowledge, incentivising more autonomous livelihood strategies, enhancing networks of mutual support and reframing indigenous knowledge boost community resilience in a just and fair way.

Key Learnings

- **Engagement:** Emphasising the social aspect of climate adaptation allows for encouraging an ecological lifestyle and mindset as crucial elements of climate change adaptation. Building on ecological community gardens reconnects people with nature. Supporting gardening activities helps citizens become skilful gardeners and valuable community members.
- **Collaboration:** Strengthening cooperation between local authorities, experts, and residents ensures that adaptation actions are inclusive and grounded in local realities. Joint learning and shared responsibility build trust and enable long-term resilience planning at the municipal level.
- **Knowledge Transfer:** Practical, hands-on learning in community gardens effectively shares ecological and traditional knowledge. Testing plots and mentorship activities help spread sustainable practices across villages, laying the groundwork for continuous local adaptation.

About the region

Northern Hungary (Észak-Magyarország) is a region located in the northeastern part of Hungary, covering approximately 13,400 km² and home to around 1.2 million people. The landscape is quite diverse with mountain ranges (including the Mátra and Bükk Mountains), deep forests, hills, karst formations, and valleys. This topography supports a rich natural heritage – including cave systems, beech and oak forests, and protected areas. The region's villages are often fairly small. For example, Penc covers approximately 21 km² with just over 1,500 inhabitants, Püspökszilágy has a population of less than 760 inhabitants living in an area of about 25 km², and only about 370 inhabitants populate Terény's area of about 24 km².

Climate Hazards

Droughts, Extreme Heat, Flooding, Water Scarcity

Sector

Agriculture, Biodiversity protection

Key system

Land Use and Food Systems, Local Economic System, Ecosystem and Nature Based Solution



Climate Threats

The historic drought of 2022, along with shifting rainfall patterns and extreme temperatures across Hungary and Europe, revealed the high vulnerability of small rural settlements. These communities heavily depend on agriculture and natural resources. However, they lack adequate funding and policy support, which further increases their exposure to climate risks. Climate change is forcing these communities to adapt, but this is becoming increasingly difficult as they lose essential resources, such as local knowledge and networks of mutual support. As a result, the ageing population, which holds this knowledge, is sharing this with newcomers to the area who bring new perspectives but less experience with local natural systems.

Designing a garden for better climate resilience – The Garden of our Future

Participatory learning is an educational approach where learners actively engage in the learning process through collaboration, dialogue, and hands-on experiences. The participatory learning model applied in the three testing communities – Penc, Püspökszilágy, and Terény – empowers small rural settlements to advance their climate adaptation efforts. Raising climate awareness, enhancing food self-sufficiency, and improving both livelihood strategies and long-term health strengthen community resilience. By developing a widely replicable model, the [LIFE Co-Clima](#) project highlights the importance of integrating the needs of small rural communities into climate adaptation policies and tools. At the beginning of the project, a survey among the inhabitants of the villages provided an understanding of their current lifestyle, gardening practices, and attitudes towards climate change.

The demand for being able to grow at least some of their own food was clear. However, this is becoming increasingly difficult due to changing climate conditions and the emergence of new pests. Broadening their knowledge and toolset under these changing circumstances seemed to improve the villages' climate adaptability.

As a first step in the project, the municipalities themselves established their own biointensive vegetable gardens to enhance community food security and foster behavioural change. Biointensive gardens are small-scale, highly productive gardens designed to

grow the maximum amount of food in the minimum amount of space, while building healthy soil and using natural, sustainable methods. These gardens serve as community hubs, learning centres for ecological gardening and food processing, and demonstration sites for sustainable practices. Because the gardens lie at the heart of the initiative, the project was aptly named "The Garden of Our Future."



Figure 1: Visitors from the local community in the Biointensive garden of Penc (partner village). Image Credit: Co-Clima.

Climate adaptation goes hand in hand with community resilience



Figure 2: Local cooking competition in Püspökszilágy (Project coordinator). Image Credit: Co-Clima.

Various community-building activities welcomed visitors into the gardens and encouraged hands-on participation. Some of these events focus on demonstrations (Figure 1), where the gardens open their gates and gardeners showcase techniques such as compost mulching, wood mulching, or permanent bed gardening. Other events focused on knowledge transfer with experts in areas such as water management and garden biodiversity.

The survey of inhabitants' needs shaped the development of a local Community Resilience Programme. Thereby, the team empowered local residents to adopt more sustainable lifestyles, practice ecological gardening, and reconnect with their neighbours. The programme includes capacity-building workshops, one-on-one mentorship with experienced biointensive gardeners, and community events focused on healthy, sustainable food. It also offers financial incentives that help participants transition to more ecological gardening and household practices. The programme remains active, with plans to renew it annually and involve new residents each year.

"The LIFE Co-Clima model is developed to help small rural settlements in their climate adaptation efforts. We aim to promote community resilience, raise climate awareness, improve the self-sufficiency of residents in food security, strengthen their livelihood strategies and long-term health."

Anna Mészár, Co-Clima Project Manager

Building institutional capacity through participatory learning

Testing the participatory learning model has connected local authorities, residents, and experts in a continuous process of joint development and mutual learning. Strengthening adaptive capacity not only at the household level but also within municipal governance ensures communities can anticipate, plan for, and respond to climate risks more effectively. Knowledge-sharing networks help translate local experience into regional and national adaptation strategies.

Improving institutional cooperation and developing guidelines to integrate community-based adaptation into local planning frameworks provides a basis for mainstreaming adaptation. This can include templates for municipal adaptation strategies, recommendations for acquiring funding, and training materials that can be applied in other small rural settlements across Hungary and Europe. Combining social innovation, practical know-how, and ecological principles provides a replicable model for enhancing resilience in vulnerable rural areas.

Summary

Developing and testing practical measures improves the adaptive capacity of small rural villages to climate change. It strengthens participatory learning methods to build community resilience, systematises institutional support to promote autonomous livelihood strategies and mutual learning networks, and reframes traditional knowledge to reduce vulnerability and improve self-sufficiency – particularly in food security. Now entering its third year, the LIFE Co-Clima project continues to generate experience and insights that will inform future adaptation practices in rural communities.

Further information

The work presented in this adaptation story is part of the [LIFE Co-Clima](#) project.

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- Facebook page: <https://www.facebook.com/JovonkKertje>
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