

The role of agroforestry innovation networks in post-2020 rural development of the eastern European region

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Introduction

Agroforestry is the land use practice of integrating woody vegetation with crops and/or livestock systems to optimise the benefits from their ecological and economic interactions. As multi-purpose mixed and integrated system, agroforestry has thousands of types with different combination of woody, herbaceous and animal components, adapted to local conditions. Furthermore, AF practices may vary both by spatial and temporal point of view. (*Cap and agroforestry – Mosquera-Losada et al 2016*). Agroforestry systems can increase resource efficiency, enhance productivity, and improve the overall resilience of agro-ecosystems. All these aspects are key to recognize the important role that AF has to play as a technique for mitigation and adaptation to climate change. The FP5 Silvoarable Agroforestry For Europe (SAFE) research project (2001-2005) used field experiments and modelling to show that agroforestry could increase land resource use efficiency by up to 40%, relative to “standard” monoculture arable or monoculture woodland systems (*Dupraz et al. 2005*). The introduction of agroforestry practices can greatly contribute to increase the sustainability of farming and diversifying production (e.g. fruits, woody biomass, fibres) making farms more resilient to market changes and more profitable.

State of Agroforestry in Eastern Europe

Agroforestry is a traditional land use practice in the whole of Europe, still there is limited information available on the extent of agroforestry in the Central-Eastern region, especially as regards the modern practices. At the same time recent studies implies that agroforestry – both in traditional and modern form – might be present to a notable extent in the landscape of this region. According to a newly published study on the state of agroforestry in Bulgaria, a particular attention has been placed on the creation of agroforestry systems, in relation with the energy crisis, the recently raise of prices of conventional fuels as well as in regard to climate change. There are known successful forms of implementation of agricultural use in plantations, protective forest belts, forest-grassland complexes, and specialized plantations of fast growing tree species. Also high value fruit bearing trees such as ordinary walnut, hazel, almond, and wild cherry among others are cultivated in plantations. The development of the forest farming is particularly suitable and promising in Bulgaria. (*_chova and Mosquera-Losada, 2015*) In Romania, large areas of wood pasture can be found in Southern Transylvania. These were created by the grazing of closed oaks woodlands and they are considered to have high cultural and natural value due to the presence of the ancient oak trees. These dynamic systems derived from previously closed woodlands during the past two centuries due to the increasing demand for timber and agricultural products. Agroforestry practices have been traditionally used also in Czech Republic. According to a recent study on national inventory of agroforestry a significant area of traditional farming systems combining trees and agricultural crops is still remaining in small-holders. (*Zelba et al., 2015*) In Poland, experts have recognised and evaluated diverse services and products offered by woody patches and belts in agricultural areas, particularly soil protection, water balance improvement and biodiversity enhancement functions or amenity values. The extensive studies on these aspects are supportive of the environmental policy in terms of protecting trees in the agricultural landscape, however current legislation considers merely natural protection of individual trees, thereby blocks development of agroforestry systems within farms. Despite of this, agroforestry systems become to be incorporated in farms, especially on pastures and hilly areas, some farmers introduce also hedges among their fields. Recently, therefore a strong national cooperation of foresters and agronomists started to promote agroforestry nationwide. (*Borek, 2015*) Still in Central and Eastern Europe, particularly in Romania, Bulgaria and Poland, significant part of agroforestry areas is related to diversified land cover use on highly fragmented structure of agricultural holdings, within arable as well grassland areas. This implies that large area of rural areas in these countries can be considered as traditional agroforestry at the landscape scale. In Hungary agroforestry was a widespread technology of land use but has been regressed and disappeared from large areas of the Hungarian countryside during the last decades. (*Varga and Bölöni, 2009, Vityi, et al. 2015*). Nowadays - with the exception of forest belts (16 000 ha) and traditional silvopastoral systems (5500 ha), agroforestry technologies are not widely used in Hungary. Other arable agroforestry systems such as alley cropping and forest garden considered as new (atypical) land use technologies in Hungary – are existing mostly in small farms or newly established pilot systems for educational and/or experimental purposes. (*Szalai et al. 2012; Vityi et al. 2014*) In Hungary the high ratio of agricultural territories (60%) and of the agro-environmentally sensitive and/or “triple-risky” areas (floods, droughts, inland waters) demonstrates the strong need for development in climate-adaptive agrotechnologies. The more extent use of arable agroforestry systems or re-adaptation of traditional ones could become a new pathway for realising a more resilient and sustainable agricultural production. (*Vityi, et al. 2013*) In the previous CAP Hungary was the only country in Central Europe to implement the EU Measure 222 (First Establishment of Agroforestry on Agricultural Land with the aim of maintaining a sustainable land management and facilitate protection of soils against erosion.

(Szedlák, 2006)

Examples to follow: Agroforestry Innovation Networks

During 2014, a participative research and development network was established to focus on different types of European agroforestry systems within the frame of AGFORWARD project. This international network comprises 12 national arable agroforestry stakeholder groups, 8 stakeholder groups dealing with agroforestry systems for livestock and 10 stakeholder groups of AF systems that are recognised for their high natural and cultural value. The stakeholder groups include farmers, breeders, foresters, landowners, representatives of regional and national associations, agricultural services companies, extension services, nature-related NGOs, local action groups, policy makers and scientists. The facilitators of these groups synthesised their results to identify key areas on which to focus research and development in the next years. (Moreno G et al. 2015; Mirck J et al. 2014; Hermansen JE et al. 2015)

In cooperation with the network of national associations of EURAF, the network of agroforestry stakeholders are continuously growing throughout Europe. Development of successful AF systems and knowledge share are common attributes of these groups which are framed by AGFORWARD project and the European Agroforestry Federation (EURAF). In the last years more and more Central-Eastern-European countries (eg. Czech Republic, Romania, Poland, Bulgaria and Hungary) got the possibility to participate in this rural revolution by contributing to the successful activities of this community.

Examples of AF innovation networks in Eastern Europe

The Hungarian AF innovation network The Hungarian Agroforestry Network was established in 2014 in the 1st National Agroforestry Forum, with more than 70 stakeholders. (Vityi, 2014) The members are farmers, extension services, related NGOs, local action groups, policy makers and scientists. The scope of activity ranges from organising national and international forums to share knowledge and experiences to representation of interest and catalyze common innovations. Regular meetings, conference attendance, consultations and participatory work with farmers ensure the fastest way of knowledge exchange, instant feedbacks for policy development and opportunity for farmers to realize common ideas together with other stakeholders. As result of the network's activity the number and total area of AF systems has increased, the Hungarian Agroforestry Civil Association has been created, 14 members joined to the organisation of EURAF, and agroforestry has been more integrated into the educational programme of the University of West Hungary Faculty of Forestry. The network serves as potential base for National Operational Groups, LEADER groups and other RD organisations. The Polish AF innovation network Polish AF innovation network is based mainly on cooperation between foresters, agronomists and ecologists, initiated in 2014 by present members of Polish Agroforestry Association (OSA). The group has ambition to develop agroforestry systems in Poland cooperating with farmers and advisors and participate in consultative meetings at governmental level, particularly for Ministry of Agriculture and Rural Development. Presently, the main Polish research unit engaged in AF activities is Institute of Soil Science and Plant Cultivation – State Research Institute in Pulawy, a unit conducting numerous interdisciplinary studies in the framework of policies on sustainable agriculture, involving farmers and advisors from all the country. Important role in dissemination all innovative agricultural ideas is played by public network of agricultural advisors, managed by Agricultural Advisory Centre at Brwinów, responsible for dissemination and knowledge exchange through a network of Agricultural Provincial Advisory Centers. The unit is the core of the National Network of Innovations in Agriculture (SIR) as a part of EIP-AGRI. Agricultural universities and other agricultural state research institutes are relevant stakeholders.

Based on the good experiences, AF could be a recommended practice for the CEE countries.

Recent options for agroforestry in the rural development programmes

In CAP 2014-2020 grants are available for agroforestry within Pillar I. and Pillar 2.

In Pillar 2 grants available for establishment of new agroforestry systems on either agricultural or forest land. The main instrument for new agroforestry systems on agricultural land is submeasure 8.2, which has been activated only by Hungary out of the surveyed CEE countries. In case RDPs fully implemented, the total area of newly established agroforestry in Europe will reach 74,000 ha. In addition to submeasure 8.2, funding is available to assist agroforestry in other measures and submeasures related to, among others, operational groups, advisory services or climate adaptive land use practices of lower production risk and higher environmental benefits. Pillar 1 grants are also available for agroforestry, but practically the uptake is limited. In case newly established Ecological Focus Areas (EFAs) grant for agroforestry is only eligible if the EFA is established on arable land and within a Pillar 2 scheme. So, from the surveyed CEE countries only Hungary are able to use the agroforestry EFA measures. In Pillar 1 the eligibility of the area for Direct Payments remains an uncertainty. (Lawson et al. 2015) A recent study from EU-JRC compared the ecological benefits of eighteen of the EFA elements and found agroforestry highest in almost all countries surveyed. (Tzilivakis et al. 2015). According to the Ricardo/IEEP study published recently agroforestry is among the mitigation actions having the greatest potential. The aim was to make a meta-review of mainstreaming climate action in the CAP; in total 22 mitigation actions were assessed. New results of project SOLMACC proves that it is possible to reduce GHG emission

from agriculture practices such as agroforestry, improved on farm nutrient recycling, or improved crop rotation and among all agroforestry had the highest record in GHG saving.

Therefore it is a pity that most of the surveyed countries in the region did not activated measure 8.2. and the agroforestry EFA.

Conclusion

Results of recent studies and achievements of the European agroforestry networks show that agroforestry has high potential in ecological, economical, and social improvement of rural areas. Agroforestry is one of the most recognized practices to fight against climate change and an effective tool for climate adaptation of agriculture.

Thus networks promoting agroforestry strongly contributes to the sustainable and climate adaptive development of the rural areas. Despite of the fact that agroforestry has a tradition in all European countries, agroforestry networks are less developed in the Eastern European region. Also CAP instruments for new agroforestry systems are more poorly implemented compared to the rest of Europe as shown in the survey made by the European Commission. The discussion on the next CAP reform should take into consideration the necessity of evaluation of all the benefits of land use practices and systems. Current and future implementation of Rural Development Plans should better encourage the use of beneficial agricultural practices such as agroforestry.

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