



Local example for the compensation of negative global environmental phenomena

Pál Balázs¹, Imre Berki², and Adrienn Horváth³

¹University of Sopron, Department of Ecology and Bioclimatology, Sopron, Hungary (balazs.pal@uni-sopron.hu)

²University of Sopron, Department of Ecology and Bioclimatology, Sopron, Hungary (berki.imre@uni-sopron.hu)

³University of Sopron, Department of Environmental Protection, Sopron, Hungary (horvath.adrienn@uni-sopron.hu)

The main negative global phenomena are climate change, biodiversity loss and biological invasions. Attaining the 2050 climate neutrality target is of great importance in agriculture and forestry. Land use is a significant factor in carbon sequestration from the atmosphere (carbon sink) and can be employed to potentially store carbon for decades. Land use can also contribute to climate change adaptation against aridification, preserve biodiversity, and reduce CO₂ and NO_x emissions. In addition, growing global environmental problems impact the entire world, which compels society to live with changed circumstances. Nevertheless, negative processes do not affect all territories equally. Some areas are more vulnerable and sensitive to changes, while others are more flexible and demonstrate higher resilience against negative changes. Nature compensates negative global environmental phenomena and people can contribute to this process. This compensation is hard in semi-arid and arid regions of the world, however, in humid regions it needs less effort.

Órség - one of the southwestern landscape of the Carpathian basin - is a typical example of a humid-mesic climate. Due to its unique ecological, economic, and social characteristics, Órség shows higher resistance against global changes. The humid-mesic climate and the acid soil with low fertility promote the forest succession on abandoned arable lands and pastures. Due to the warming and the anthropogenic CO₂ and NO_x forest areas show accelerating growth. High forest coverage (62%), extensive land management, high humidity, high proportion of nature close areas, unique landscape structure, and soft tourism all manifest themselves in higher stability against negative changes. Under these specific site conditions, reviving capacity of forests is relatively high: uncultivated lands quickly become forests without human intervention. Therefore, the best line of action would be to support this natural afforestation process with tree species that are less climate-sensitive and more drought-tolerant. The increasing proportion of forests parallel with the decreasing proportion of uncultivated land reduces the possibility of the invasion of alien plant species. The afforestation process of rural areas is highly supported by the present Hungarian policy.

Our research aims to enhance the observation that rural landscapes provide great examples for sustainability. These areas have not only remained viable, they also safeguard our future.

