

## Good Practices for Biological Streams in the Nitra Region (Expert Paper)

### Introduction

Within the BIOREGIO project implementation, **four Good Practices** have been identified so far in the area of the Nitra Self-Governing Region. According to BIOREGIO definitions, Good Practices are cooperation models or technologies, which are successfully proved in practice and fulfil the following criteria:

- Promote circular economy
- Are related to biological materials i.e. bio-based materials
- Promote social and environmental sustainability, as well as economic growth
- Are resource efficient and economically feasible
- Minimize waste according to waste hierarchy directly or indirectly
- Encourage closing the loops and emphasizing longer cycles/cascades
- Preferably include joint actions (discussions/cooperation/business) among different stakeholders, e.g. RDI, government, companies and consumers
- Are most likely transferable and scalable in different European regions

### Overview of the Good Practices

#### Programme to Support Integrated Rural Development LEADER NSK

LEADER NSK operated by the Office of the Nitra Self-Governing Region is a unique instrument that provides funding for implementing small-scale projects to support circular economy in rural areas.

It is based on the principles of the generally-known EU initiative LEADER (Liaison Entre Actions de Développement de l'Économie Rurale), but it does not use any EU funding; it is funded entirely from the own budget of the Nitra Region. Thanks to the BIOREGIO project, new sub-activities related to circular economy were introduced into the LEADER NSK, e.g. design of bio-waste energy strategies or support of bio-waste processing technologies. Final beneficiaries are the Local Action Groups (LAGs) and final users are applicants and project promoters, e.g. municipalities; municipality associations; civic associations; foundations; non-profit organizations, interest associations, etc. registered in the LAG.

LEADER NSK is as an innovative and successful instrument reflecting local needs through the "bottom-up" principle. Since the extension of LEADER NSK with environmental activities and the circular economy, the demand and the number of implemented projects increased. Projects have achieved more efficient separated waste collection and higher environmental awareness of citizens.



*Examples of waste collection points in the municipalities of the Nitra Region established with the support from LEADER NSK Programme*

## Separate Collection and Recovery of Biodegradable Waste

Association for Separate Waste Collection of the Ponitrie Region launched a successful project for more than 80,000 inhabitants of 57 municipalities in the Nitra Self-Governing Region. Project is aimed to reduce the amount of landfilled municipal waste by separating its components and mainly the biowaste as the largest part of the waste.

The Project addresses the problem of the comprehensive management of municipal waste in the member municipalities in a unified manner. Plastics, paper and glass are transported to the logistics centre. From there, they are transported to several Slovak and foreign processors. Biodegradable waste is crushed and modified by composting in own composting plant and then it is returned back to the municipalities (e.g. for treatment of public areas). Collection system uses special technology that can weight each container and send the data online within few minutes.

Thanks to its systematic work, the Association contributed to a significant reduction in the amount of mixed municipal waste, as well as the number of illegal landfills in the territory of municipalities. For the project, the Association was awarded the "Golden Ant" prize in 2018 in the category "Communal Waste Management". Project also launched very good cooperation within local community (willingness of people to separate the waste, know-how on communication among self-government, municipalities, etc.).



*Waste management facilities of the Association for Separate Waste Collection of the Ponitrie Region*

## Separate waste collection and composting of biowaste on municipal level

Small municipality of Veľké Turovce (754 inhabitants) located in one of the most underdeveloped areas of the Nitra region successfully operates separate waste collection and a small composting plant using its own resources.



*Separate waste collection and small composting plant in the municipality of Veľké Turovce*

The municipality is a member of the regional association of municipalities for the separate collection and it separates paper, plastics, glass, metals and multilayer composite materials. Collection of edible fats and oils is ensured within the association. On the basis of the necessity to solve the issue of bio-waste

processing, the municipality proceeded to build its own small composting plant with a capacity of up to 100 tons from its own resources. It also bought a small tractor with additional equipment. Composting plant is built on the municipality's own land and its operation is provided by 1 – 5 municipal employees, depending on season.

Thanks to its active approach, the municipality of Veľké Turovce reaches the highest value of average amount of separated waste per capita among the member municipalities of the Association – 50 kg per capita (the average of the Association is 25 kg). It is also the leader of this approach in the region. This example shows that effective waste management system is possible to operate even for the small village using its own resources.

### **Production of biofuels from crops and oils**

The Envien Group focuses on saving natural resources and protecting environment by producing biofuels from agricultural crops and oils. It is the largest group interconnecting the most significant biofuel producers in Slovakia. Three production plants in Slovakia (ENVIRAL, MEROCO, Poľnoservis) are focused on producing bioethanol from maize by fermentation process; producing biodiesel from rapeseed oil, used cooking oil and other oils that are pre-treated and by transesterification process modified to FAME (Fatty Acid Methyl Ester, biodiesel); and producing rapeseed oil by pressing and extraction of rapeseed seeds.

These production plants represent a waste-free production system, since each main product together with related production side-streams have their market applications. Main biofuel products are blended to obtain conventional mixtures of diesel and gasoline for the Slovak and international market. Envien Group employs more than 420 employees dealing with production as well as experts qualified in logistics. Since 2007 only the ENVIRAL plant has produced more than 1 million m<sup>3</sup> of bioethanol, which has replaced almost 750,000 tons of petroleum for the petrol production, thus saving about 1 million tons of carbon dioxide.



*Production plants of the Envien group producing bio-based fuels*

### **Conclusions**

Examples of Good Practices from the Nitra Region show that circular economy can be developed by different means, such as funding schemes, effective work of associations, enthusiasm of self-government, but also advanced technologies. To ensure further progress the cooperation among stakeholders plays very important role. Based on the cooperation between the Slovak University of Agriculture in Nitra and the Office of the Nitra Self-Governing Region, issues of the bio-based circular economy have been involved into binding documents (e.g. Programme of the Economic and Social Development of the Nitra Self-Governing Region and its Action Plan) and the first related projects have been successfully implemented. Cooperation within associations and active approach of some municipalities show that developing bio-based economy at local level does not require large financial resources but brings many positive changes in local environment.