

# NUTRINFLOW

A good practice examples of environmentally friendly drainage systems were introduced.



## Summary

The project aimed to establish good practical examples of win-win measures for agricultural producers in water management for the retention of nitrogen and phosphorus. Through working with farmers and landowners, the project promotes and demonstrates with concrete investments the benefits gained from holistic planning and coordinated implementation of water retention and on-farm drainage management measures. To show good practice examples on the Ailes stream construction project was developed and confirmation (contracts) with landowners signed. The overall project was lead by Proagria (Finland). Union “Farmers Parliament” (Latvia) was one of the project partners.



### Problem description

The project responded to the common pan-Baltic challenge to implement more effective and acceptable measures to reduce nutrient inflows to the surface waters and the Baltic Sea from agriculture. It is evident from recent history of implementing on-farm agri-environment measures, that they have not yielded the results needed in terms of reduced nutrient losses and that complementary measures in the drainage network and landscape are needed. In part, this is due to the multifaceted hydro-morphological, physical and biochemical processes in the soil and the aquatic environment, which also makes the effect of these individual measures difficult to measure. Through addressing water flow, water storage and retention it is possible to tackle the problem of nutrients losses outside the growing season when there is no uptake by the crops. According to studies and estimates, up to 90% of nutrients are lost outside growing season which indicates great potential for nutrient loss reductions by the above mentioned measures. At the same time, there is great potential to be gained for agricultural production, but also for the production of ecosystem services for the society from measures targeting water flows and retention in the landscape. Through a holistic catchment level management, an optimal combination of measures in the landscape, the stream network and on farm could ensure sustainability and viability of agriculture while reducing the external nutrient loading to the sea. The fact that the project’s partner countries are faced with the need to renovate agricultural drainage infrastructure, provides an ideal ground to introduce new, more sustainable measures to meet the needs of agricultural production and the aquatic environment. Attention to sustainable drainage management is especially critical in the foreseeable climate change with increased precipitation and on the other hand increased summertime water shortages.

### COLLECTIVE



All 72 landowners along the Ailes stream were contracted.

### PUBLIC GOODS



**Water quality –** to reduce nutrient inputs in the Baltic Sea and to have increased attractiveness and feasibility of a holistic water management approach for agricultural catchments across the Central Baltic Region.

### INDIRECT EFFECTS

Local innovation and action groups stimulating voluntary action and entrepreneurship in water management.

### LOCATION

### LATVIA



NUTS 3, LV009 (Zemgale)

Regional/Local contract, but could be applied to the whole country

## CONTRACT

Contracts with landowners for the introduction of the environmentally friendly elements on the drainage systems (the Ailes stream).

Landowners agreed that they allow access to the Ailes stream and manage the coastline (buffer zones) of their land near the Ailes stream for construction of pilot (4) elements.



Public – private – civil society contract  
State – landowner - NGO

**Contract conclusion:**  
Written agreement

**Payment mechanism:**  
Tender and/or price comparison for the implementation of construction work



**Financing party:**  
Government (with Eu-funding), Union "Farmers Parliament" (for the design of technical project 10%)

**Length of participation in scheme:**  
2 years



**Start of the program:**  
2016 spring  
**End:** 2018 autumn

## Objectives

1. Control and reduce nutrient inputs into natural watercourses and water bodies;
2. Control soil erosion;
3. Enrich oxygen content in water;
4. Promote natural self-purification processes in water;
5. Increase awareness among farmers, advisors and municipal authorities and services on drainage techniques and approaches to integrate field and basic drainage measures -lowering the barriers for the execution of sustainable drainage management and combination of environmental and production benefits.

## Data and Facts - Contract

**Involved parties:** Landowners/managers who produce agriculture production and their land lying next to the Ailes stream. State Limited Liability Company "Real Estates of Ministry of Agriculture", which are responsible for maintenance of the drainage systems in Latvia. Union Farmers Parliament, with objective to educate farmers.

**Management requirements for farmers:** The contract solution was foreseen for collaboration between landowner and the company contracted by Union "Farmers Parliament" to develop the construction plan.

**Controls/monitoring:** The results are controlled and monitored by State Limited Liability Company "Real Estates of Ministry of Agriculture" staff of the Zemgale Region. They control functionality and physical presence of demo elements (stones, plants etc.) on the spot. For 5 years State Limited Liability Company "Real Estates of Ministry of Agriculture" is responsible of removal overgrowth, removal of beaver dams, cutting of shrub shoots. The State Rural Support Service is controll authority. In case of complaint, Building board implement on site controll to prevent illegal construction activities. Fine can be assigned to the landowner in case of law infringement.



## PARTICIPATION

- Landowners - 72
- Catchment area- 35,6 km<sup>2</sup>
- Agriculture land - 90%
- Length of the stream - 14,2 km

**Conditions of participation:** All 72 landowners along the Ailes stream were contracted. The demonstration areas were chosen on the places where landowners agreed to allow access the stream with the construction machinery. The Protocol (agreement) was developed professionally by the Construction plan developer. There are no consequences planned for the landowners at the agreement. State Limited Liability Company "Real Estates of Ministry of Agriculture" staff follows that the drainage systems are managed properly. If requirements are not respected, landowners can be penalized which can lead to reduction of direct payments.

**Risk/uncertainties of participants:** Financial risks – how management of the environmental elements will be financed in the long term;  
Administrative Risks - Objects are publicly accessible on a national watercourse, but adjacent areas are privately owned and the question is how the shores will be managed?  
Knowledge and understanding of the public so that objects are not destroyed.  
Natural Risks - beaver damage and other invasive species.  
Water Analysis - effectiveness of measures.

**Funding/Payments:** The demonstration area technical project was financed by Union "Farmers Parliament" (ZSA) partner budget (75% Central Baltic Sea Region programme 2014-2020, 5% Latvian state and 10 % ZSA). ZSA contracted the company for design of the technical project. The implementation of the construction works was done by the company contracted by State Limited Liability Company "Real Estates of Ministry of Agriculture".



## Context features

**Farm structure:** Traditionally, the most important specialization areas in Latvia are arable farming (42.6% of the total number of farms), dairy farming (15.1% of the total number of farms), as well as mixed crop and livestock farming (14.8% of the total number of farms). Farms in Latvia are mainly family-owned businesses. In 2016, 69.0 thsd. or 98.7% of farms belonged to one natural person, of which 31.4 thousand. or 45.5% of the farms were owned by women. Cereal farming is one of the most important agricultural sectors in Latvia - it provides the population with both food and feed in the livestock sector. Almost no livestock sector can survive without grain. Recently, cereal production is increasingly being used in other sectors, such as energy



## SUCCESS OR FAILURE?



The NUTRINFLOW case is successful in terms of environmental elements demonstration. The good practice examples stated by Latvian Agriculture policy are presented and tested «on the ground». The investments demonstrate a holistic, cooperative approach and lead to reduced nutrient losses from agricultural land to the watershed. The investments will decrease nutrient load to rivers on the pilot territories, and this is a concrete improvement to the water quality of those water bodies and coastal regions, but wider objective is to spread the results to the Baltic Sea Region. Reduction of nutrient flows from agricultural lands is a complex issue, and the holistic approach to flow and nutrient management on fields, soils and waters aims to develop and assess the most effective measures and practices for this. To scale up the impact of the project in leading to nutrient loss reduction and nutrient retention measures in other areas, the project communicates actively about the process of designing the measures and their results across the Baltic Sea Region.

### Reasons for success:

- The results and experiences are sustained.
- The experiences are shared internationally and the project will transfer the experiences from the practical measures and the planning process across the national advisory service operations
- The efficiency of different agri-environmental measures and in particular sustainable drainage management. The project builds on the knowledge and understanding that measures to improve water quality in the agricultural context have to be integrated with the farm management and field drainage, in particular, provides a setting to combine both environmental and productive goals, with the possibility of expanding the scope of measures in the adjacent landscape.

### SWOT analysis

